

**FOUNDATIONS  
OF TRANSBORDER ECONOMICS  
AND STATISTICS**

**Edited by**  
Marek Cierpiął-Wolan  
Dawid Lasek  
Józef Oleński

Rzeszów 2014

## REVIEWER

prof. dr hab. Dariusz Tadeusz Dziuba  
prof. dr hab. Grzegorz Ślusarz

ISBN

978-83-63529-04-8

## THE CARPATHIAN EUROREGION



*Together for the development of the Carpathian Mountains!*



## THE ASSOCIATION OF THE CARPATHIAN EUROREGION POLAND

The Interregional Union of the Carpathian Euroregion has no legal personality. It is an informal platform for cooperation between representatives of the border areas which are its members. Each of the national party adopts legal and organizational solution that is the most appropriate form of cross-border cooperation.

In Poland the Carpathian Euroregion has been represented by Association of the Carpathian Euroregion Poland since 2001. The Association operates by being supported by its members - the local government units (63 in 2014). The legislative body of the Association is formed by the General Meeting of Members. The responsibility for the current organization of work of the Association lies with the Association Board headed by the President who is elected by the General Assembly. Audit Committee is another body that works within the Association. The functions and responsibilities of these bodies are laid down in the Statute of Association and relevant regulations.

## MISSION

*The mission of Association of the Carpathian Euroregion Poland is „creating common socio-economic space that uses internal potentials of the Carpathian Mountains as well as forming extensive territorial partnership between the entities of public, private and non-governmental sector for international development cooperation with the aim of improving the quality of lives of residents.*

## ACTIVITY

The Association runs multifaceted and multi-branch international activity whose aim is to realize the Mission and its objectives of development. While being the basic structure of cross-border cooperation in the Carpathian Euroregion on the Polish side, it coordinates the actions of its shareholders that is local governments and other organizations in the field of territorial cooperation and regional development. What distinguishes the Association of the Carpathian Euroregion Poland from other associations involving LGU in the Subcarpathian Voivodeship and from other national sites of the Carpathian Euroregion, is the fact that the Association acts as the Authority Implementing some of the components of cross-border cooperation programmes of the European Union.

By 2013, under the PHARE CBC, the National Programme PHARE, INTERREG III A , the Neighbourhood Programme Poland - Belarus - Ukraine INTERREG IIIA / TACIS CBC and Programme of Cross-border Cooperation Poland - Slovak Republic 2007-2013, a total of 319 projects were subsidized by the agency of the Association. In addition to the funds which the Association has at its disposal, it offers the member governments comprehensive support and assistance in the preparation of any other cross-border and interregional projects and international ventures of social or economic character. The Association is also an expert organization that supports and organizes the communities and people related to regional development and economic cooperation.

## ADDRESS OF THE PUBLISHER

Cooperation for development of border areas has been one of the paradigms of European politics since the 60s of the last century. The problem of their social and economic marginalization was connected directly to the historical heritage of the two largest conflicts in the history of humanity world's - World Wars. A term "*borders are the scars of history*" was coined. On the other hand, in the post-war period, Western Europe countries decided to introduce a modern model of integration - European Communities were formed, and finally the European Union. One of the elements of this great and complex process was an attempt to create mechanisms to support cross-border cooperation in the economic, social and political dimensions. The first Euroregions were established - as voluntary and bottom-up structures that bring together partners of public sector they drew attention to the risk of marginalization of border areas, while searching for their new European identity, and creating mechanisms for cooperation. Over time special European programs were introduced to support border areas of the Member States of the European Communities, as well as INTERREG Community Initiatives, with the European Territorial Cooperation as their continuation nowadays.

Today, at the beginning of the second decade of the twenty-first century, cross-border cooperation should still be promoted, especially in the new Member States of the European Union, despite it receives support from it. In this part of Europe marginalization of border areas is particularly measurable and detrimental to the character of the inhabitants. Therefore, it is extremely important to work together in the interest of socio-economic development. The key is to create solutions and support institutions coordinating cross-border cooperation. One such leading institution is the Carpathian Euroregion - the oldest territorial organization in Central Europe. Since 1993 we have been working towards a common socio-economic space in the Carpathians. After years of reforms, reorganization and development of the institutional basis, the Carpathian Euroregion Poland Association is a mature and professional organization which fully understands that the future of the Carpathians lies in a broad international partnership of entities of public, private and NGO sectors, as well as in bringing a strategic and economic dimension to this cooperation.

Therefore, it has been with great pleasure to accept the invitation of Mr. Józef Oleński, Professor, and Mr. Marek Cierpiał-Wolan, Director, to participate in the publishing initiative which aims to draw attention to very important economic determinants of cross-border cooperation. We are convinced that „cross-border economy” and „cross-border statistics” are not only new, innovative fields of science, but also practical knowledge necessary for professional management of international socio-economic processes of territorial nature. Many years of experience of our organization, its organizational basis and the platform for cooperation, as well as broad international connections give guarantees that the knowledge given in this work will hopefully serve all individuals, communities and institutions involved in cross-border cooperation not only in Europe.

I would also like to thank Mr. Martín Guillermo-Ramirez, Secretary General of the Association of European Border Regions, for accepting the patronage of this project.

**Dawid Lasek**

*Vice-President of the Association  
of the Carpathian Euroregion Poland*

## ADDRESS OF THE SECRETARY GENERAL OF THE ASSOCIATION OF EUROPEAN BORDER REGIONS

The “Association of European Border Regions” (AEBR) is the oldest association of regions in Europe, founded in 1971, and the only one dealing with cross-border cooperation (CBC) in the whole continent. With almost one hundred European border and cross-border regions as members, the AEBR is a forum for CBC and makes the regions’ voice heard at European level. As in previous periods since the birth of Interreg, the AEBR has actively been involved from scratch in the processes developed in the EU to prepare the new programming period 2014-2020. The association took part in many debates and discussions with representatives of European institutions, national authorities, programme and project managers and other stakeholders, focusing on the future of European cohesion policy and territorial cooperation, but particularly on CBC. In general, the AEBR welcomes the contents of the new legislative cohesion package that came into force by the end of 2013, and especially the elaboration of an own regulation for territorial cooperation, which is one of the most important instruments for European Cohesion, as it creates political, economic and social added value. However, a major question still remains on how to measure this added value and assess the impact of European policies. This question is particularly challenging in case of CBC, as the foundations for the definition of adequate indicators and cross-border data is only in exceptional cases available. There are already several initiatives concentrated on this subject in Europe. One of these initiatives is this publication initiated by the Carpathian Euroregion, very much welcomed by the CBC community. This will support cross-border stakeholders in many border areas to define new and innovative approaches to CBC, to achieve best and most beneficial results, and to further promote research on cross-border impact assessment.

**Martín Guillermo Ramírez**

*Secretary General of the Association  
of European Border Regions*

## FOREWORD

Processes of globalization, more extensive political, social, technical and economic cooperation between countries and liberalization of trade have changed the functions of borders between countries. For centuries political borders between states were also the lines of relative isolation of societies and economies. The processes of changing the functions of borders from isolation into the lines of junction of different political, social, cultural and economic systems has become the objective of international and supranational organizations that were created by the states in XX century, especially in the 2<sup>nd</sup> half of the last century. United Nations, regional supranational organizations in Europe and in other continents, free trade zones, common economic spaces and multilateral agreements between countries facilitating the contacts between people and businesses, have strong impact on international cooperation both on macroeconomic level as well as on local level of neighbouring countries.

During the last decades the transborder diffusion of economic, social and technological processes created new forms of economic systems that were described by scientists and statisticians involved in statistical monitoring and analyses of these phenomena as *transborder economy*. For scientific analysis of *transborder economies* specific concepts, methods and models are necessary. Economic reality, development of transborder economies in many parts of the world, requires specific scientific approach that may be called *transborder economics* as a specialized domain in economic sciences. Observation, monitoring and measuring transborder phenomena and processes need specific statistical methodology, statistical categories and indicators, i.e. *transborder statistics*.

This publication presents the results of research in the field of transborder economy, transborder economics and transborder statistics, of Polish research institutes, universities and regional statistical offices, cooperating with their counterparts that were involved in research of transborder processes that have been “exploded” in the transborder regions of Poland along with the processes of transition from centrally planned to market driven economy, after political changes in Europe in 1989. The transborder processes initiated and stimulated by the processes of transition of political systems and national economies in Europe after 1989 were and still are good field of observation of creation and development of transborder economies, from full isolation to full integration of economies of transborder regions.

The result of research and statistical monitoring of transborder processes on the basis of experiences of the transition countries of central Europe seems to be up to date and interesting enough to be presented to researchers, statisticians and practitioners that may be interested in this specific phenomenon of modern open economies.

This volume is the first from the series of publications that present the results of theoretical, methodological and statistical researches in the field of transborder economics and statistics, inspired by scientific analysis and statistical surveying of the development of transborder economies in the process of transition in central and eastern Europe, with special reference to the experiences of Poland and neighbouring countries.

As the scientific editors we would like to express our gratitude to the publisher Carpatian Euroregion and to the technical editor - Regional Statistical Office in Rzeszow for technical editing, careful preparation of texts for printing. Special acknowledgements are passed to Dariusz T. Dziuba, professor of Warsaw University, the scientific reviewer of this publication.

**Marek Cierpiał-Wolan  
and Józef Oleński**

*Scientific Editors*

## CONTENTS

	Page
<b>ADDRESS OF THE PUBLISHER</b> .....	4
<b>ADDRESS OF THE SECRETARY GENERAL OF THE ASSOCIATION OF EUROPEAN BORDER REGIONS</b> .....	5
<b>FOREWORD</b> .....	6
<b>CHAPTER 1.</b> TRANSBORDER ECONOMY AND TRANSBORDER ECONOMICS IN GLOBALIZED WORLD (JÓZEF OLEŃSKI) .....	10
<b>CHAPTER 2</b> CONTEMPORARY CHALLENGES TO OFFICIAL STATISTICS AT INTERNATIONAL, NATIONAL AND REGIONAL LEVELS (MAREK CIERPIAŁ-WOLAN) .....	15
<b>CHAPTER 3</b> DEVELOPMENT OF TRANSBORDER AREAS IN GLOBALIZED ECONOMY – STATE AND PROSPECTS (MAREK CIERPIAŁ-WOLAN) .....	21
<b>CHAPTER 4</b> ECONOMIC PROCESSES IN TRANSBORDER AREAS – SIGNIFICANT IMPACT ON THE ECONOMIC GROWTH (MAREK CIERPIAŁ-WOLAN) .....	31
<b>CHAPTER 5</b> TRANSBORDER PROCESSES IN GLOBALIZED ECONOMY – IDENTIFICATION, MONITORING AND ANALYSIS (SERHII USTYCH) .....	40
<b>CHAPTER 6</b> ASYMMETRY OF ECONOMIC POTENTIALS AS THE DRIVING FACTOR OF INTEGRATION OF ECONOMIES IN TRANSBORDER REGIONS (JÓZEF OLEŃSKI) .....	48

<b>CHAPTER 7</b>			
HUMAN CAPITAL, SOCIAL CAPITAL AND INSTITUTIONAL CAPITAL AS FACTORS OF SYNERGY OF ECONOMIC DEVELOPMENT OF TRANSBORDER REGIONS IN KNOWLEDGE BASED ECONOMY (WITH SPECIAL REFERENCE TO KNOWLEDGE – BASED ECONOMY) (JÓZEF OLEŃSKI) .....	68		
<b>CHAPTER 8</b>			
INTERNATIONAL OUTSOURCING AS THE INSTRUMENT OF STRENGTHENING AND INTENSIFYING ECONOMIC COOPERATION IN TRANSBORDER ECONOMIES (EWA SZKIC-CZECH) .....	80		
<b>CHAPTER 9</b>			
TRANSPARENCY OF INTERNATIONAL INFORMATION ENVIRONMENT AS THE PREREQUISITE OF TRANSBORDER COOPERATION AND DEVELOPMENT (JOZEF OLENSKI).....	95		
<b>CHAPTER 10</b>			
TRANSBORDER OUTSOURCING – NEW METHOD OF SYNERGIZING THE RESOURCES OF NATIONAL ECONOMY (EWA SZKIC- CZECH) .....	108		
<b>CHAPTER 11</b>			
SYSTEM OF INDEXATION AND MONITORING OF TRANSBORDER COOPERATION AT THE NEW EASTERN BORDER OF THE EUROPEAN UNION (SEHYII USTYCH) .....	115		
<b>CHAPTER 12</b>			
COMPLEMENTARITY – BASED SYNERGY EFFECT OF TRANSBORDER STATISTICAL COOPERATION OF DEVELOPED, POST-TRANSITION AND TRANSITION COUNTRIES (JÓZEF OLEŃSKI) .....	128		
<b>CHAPTER 13</b>			
TREE-LAYERED POLICY FILTER IN FREE MOVEMENT FOR WORK AND WELFARE – CONCEPTUAL FRAMEWORK OF THE EU SOCIAL SECURITY COORDINATION, NATIONAL SOCIAL SECURITY AND TAXES ON THE WELFARE OF FRONTIER WORKERS (IRINA BURLACU) .....	138		
<b>CHAPTER 14</b>			
CROSS–BORDER COOPERATION OF UKRAINE: PROBLEMS AND PERSPECTIVES (N. L. GAVKALOVA) .....	169		
		<b>CHAPTER 15</b>	
		BORDER TRAFFIC AND MOVEMENT OF GOODS AND SERVICES- METHODOLOGY AND RESULTS (MAREK CIERPIAL-WOLAN) .....	173
		<b>CHAPTER 16</b>	
		TOWARDS COHERENT RESEARCH SYSTEM FOR TRANSBORDER AREAS (MAREK CIERPIAL-WOLAN)	195
		<b>CHAPTER 17</b>	
		INTEGRATION AND MATCHING OF SURVEY DATA AND ADMINISTRATIVE DATA FOR MONITORING AND ANALYSIS OF ECONOMIC PROCESSES IN TRANS-BORDER AREAS (MAREK CIERPIAL-WOLAN, ZOFIA BARBARA LIBERDA, WLADYSLAW WIESLAW LAGODZIŃSKI) .....	218
		<b>CHAPTER 18</b>	
		AUTOMATIC ROAD TRAFFIC MEASUREMENT – THE SYSTEM OF ECONOMIC MONITORING THE INTENSITY OF TRANSBORDER COOPERATION AND INTEGRATION (EWA SZKIC-CZECH) .....	227
		<b>CHAPTER 19</b>	
		INTEGRATION OF IT ENVIRONMENT AS A PREREQUISITE OF ECONOMIC COOPERATION IN TRANSBORDER ECONOMIES (RÓŻA WERYŃSKA) .....	248
		<b>CHAPTER 20</b>	
		STATISTICAL PARAINFORMATION PLATFORM – THE FOUNDATION OF INFORMATION TRANSPARENCY IN HETEROGENEOUS INTERNATIONAL ENVIRONMENT WITH SPECIAL REFERENCE TO TRANSBORDER ECONOMIES (JÓZEF OLEŃSKI) .....	258
		<b>BIOGRAPHIES</b> .....	272

**JÓZEF OLEŃSKI**

*Lazarski University Warsaw  
The Bronislaw Markiewicz State  
Higher School of Technology  
and Economics in Jaroslaw  
(Poland)*

## **TRANSBORDER ECONOMY AND TRANSBORDER ECONOMICS IN GLOBALIZED WORLD**

### **1. IMPACT OF GLOBALIZATION ON FUZZINESS OF NATIONAL ECONOMIES**

During last decades the phenomena of globalization in politics, economy and social processes have changed the structures and functioning of economies on regional, national and local scale, as well as in sectors and branches of the economy. The forms and strength of impact of globalization on branches and national economies depends on the development and implementation of technological progress, especially in ICT, transport, mechanization and automation of production processes, increase of scale of production.

Nowadays some branches of economy are global, are becoming global or supra-national, e.g. banking sector, other branches of financial sector (insurance sector, stock exchange, financial intermediary services etc.), air and sea transport, telecommunication, research and development, specialized education, specialized health services, production and distribution of strategic raw materials and energy. All those phenomena of globalization are of interest of politicians, businesses and economic sciences. Branch – oriented economic sciences have developed theoretical foundations, methods of monitoring and measuring and models of national economies and branches in globalized economic, political and technological environments.

However the impact of globalization was observed and analyzed - as a rule - only on supranational scale of branches represented by global organizations of producers or distributors of products, on the level of supranational companies and international organizations. The impact of globalization on regional or local scale or on branches that had not created their institutionalized representations on global level, was not the priority for economists and for economic policy of countries. The domains of economic and social life that were not the priority for scientists and politicians up to now were transborder economies.

The formation of transborder economies as specific economic systems is the consequence of liberalization of economic policy of neighbouring countries, reduction of institutional, political, legal and technical barriers of cooperation of social and economic subjects – residents of different countries. In western Europe this process started in the 50<sup>th</sup>. The countries of central and eastern Europe (CEE) joint this process of accelerated development of transborder economies in the beginning of the 90<sup>th</sup>, thanks to political and economic changes in the CEE region. The consequence of political transition was the change of functions of borderlines between neighbouring countries. For centuries the borders were the lines of isolation and tools of full control of economic and social contacts between subjects – residents of different countries. All contacts between subjects were monitored, controlled and limited by very detailed specific laws, executed by customs, border crossing control, licenses, permissions, prohibitions, orders etc.

The isolative character of borderlines was the tool of forming the national economies as closed economic and social systems. Thanks to relatively full control of all processes between national economies and contacts of residents of different countries, it was possible to identify and define national economies as relatively independent, separated systems. The isolating function of political borders was considered the basis for development of macroeconomics, starting from Quesney and Ricardo.

The basic concept of all macroeconomic theories was the concept of *national economy* as the system separated conceptually from the *rest of the world*. The same paradigm is the unquestionable foundation of the system of national accounts (SNA) and all theories of macroeconomic growth and development of national economies, economic categories and statistical indicators measuring all economic and social processes on all levels. This assumption, or rather a dogma on the *isolative functions of political borders*, is also accepted by microeconomics - microeconomic subjects are identified and analyzed as entities of national economies, operating within the frames of national economies, contacting the rest of the world through the gateways created for them by the governments of national economies. It is also the basis of supranational regulations and regulative indicators (e.g. convergence criteria), especially in the European Union.

The assumption on the isolation of national economies by political borders is not true in the regions, in which the governments of countries have decided to liberalize international trade of goods and services, introduce more freedom of movement of people, conducting economic and social activities by non-residents of countries. WTO regulations, free trade zones, common economic spaces, and – last but not least – the creation of political, social and economic unions like the European Union, are rather common forms of the cooperation between national economies and between social and economic subjects of different countries “above” traditional isolative political borders.

Nowadays in many parts of the world, *national economies as economic and social systems are fuzzy*. However macroeconomics and official statistics seems to neglect this common and obvious fact. Macroeconomists, econometricians and politicians all the time use the SNA indicators as the self – contained, full information system sufficient not only for analysis of economies of different countries, ranking and rating the economies, but also – how awful ! – to take concrete decisions on the basis of algebraic relations between incidentally selected SNA indicators, including the punishing of the governments and countries, if their national economies do not meet arbitrarily values of those relations (e.g. in the EU it was recommended that the relation between budget deficit to GDP should not exceed 3 % ; why not 3,14 % - the magic number of “Pi”). This kind of decision making on macroeconomic level belongs to the phenomenon of *economic numerology*, rather popular in some circles of macroeconomists and so called *GDP-iers*.

The lack of understanding of the fuzziness of national economies may lead to erroneous macroeconomic decisions of governments. The price of these errors is paid by microeconomic subjects – individuals, households, entrepreneurs.

Happily there are economists and practitioners that understand well the importance and specificity of fuzziness of national economies as economic systems. Good understanding of this specificity of national economies in globalized world is well understood on local level, in the areas, in which direct diffusion of economic and social phenomena and processes is observed in everyday life.

The diffusion of social and economic processes between countries is extremely extensive and decisive for economic development in the neighbouring areas of countries that have liberalized the contacts of their residents through the borders. These processes of liberalization are advanced in many regions of the world, especially in Europe, America and in some regions of other continents. Also in the regions, in which the isolative and control function of borders is tight, there are often some areas of economic activity, that are liberalized, e.g. international tourism, transborder trade of some goods, common transborder labor markets, common development and use of infrastructures and common environmental projects.

The globalization, liberalization of international trade, technological cooperation and political initiatives of common researches and infrastructural project has created in many regions of the world new type of economic systems – transborder economies.

In this chapter are discussed the proposals of the definition of the concept of transborder economy as the special type of economic systems, that is different from other economic systems defined in economic theories and doctrines (e.g. national economy, sector of national economic, economic branch, specific type of market etc.).

## 2. TRANSBORDER ECONOMY – SPECIFIC TYPE OF ECONOMIC SYSTEM IN MARKET –DRIVEN GLOBALIZED ECONOMY

### 2.1. DEFINITION OF TRANSBORDER ECONOMY

Transborder economies (TE) are specific economic systems that are different from national economies and economic regions of countries. Transborder economy is an economic system that has following characteristic attributes:

- a) Economic subjects cooperating in the TE system are residents of different neighbouring countries;
- b) Economic processes in TE (*transborder processes*) are realized under regulations, laws, social, economic and natural conditions of neighbouring regions of different countries;
- c) Economic and social subjects that are the stakeholders of *transborder processes* represent different human, social and technological potentials; the differences between these potentials are the main driving forces of economic processes and have significant, often decisive, impact on economic efficacy of those processes;
- d) Thanks to qualitative and quantitative differences of potentials between subjects operating in economic, social and institutional environments of neighbouring countries, all subjects participating in these processes may and can achieve profits or other benefits as the result of comparative cost effects or thanks to institutional differences between countries.

### 2.2. TRANSBORDER PROCESSES IN SMALL – SCALE NATIONAL ECONOMIES

The transborder processes are very extensive in small national economies (SMNE). Small – scale national economies – if not isolated by very large distances or by natural environmental conditions (e.g. small island states), are under the influence of transborder processes. Large parts of their territories or even the whole territory of national economy, and of the branches of economies are entire parts of transborder economies covering the territories of small national economy and neighbouring regions of other countries.

For small – scale national economies the macroeconomic approach represented by the System of National Accounts (SNA) is not only insufficient, but also may lead to erroneous evaluations, conclusions and decisions. The SNA – based approach to small – scale national economies influenced by transborder processes should be accompanied by respective information and models of relevant transborder economy.

Transborder processes should be of special interest for scientists, politicians and businesses in small – scale national economies.

Transborder processes may be also decisive for economic and social development of regions of large and very large countries, situated close to borderlines of other countries. Regional governments of those

countries as a rule understand well the importance of transborder processes and transborder cooperation. However in macroeconomic analyses and official statistics in middle and large countries the role of transborder processes in economic and social development of regions is often underrated.

## 3. NEED OF TRANSBORDER ECONOMICS AS NEW DISCIPLINE IN ECONOMIC SCIENCES

Development of transborder economies is a constant phenomenon of globalized modern economy. The importance of transborder processes is growing also because of the development of deep institutional interventionism in economic and social life. This interventionism is determining and petrifying qualitative differences of regulations of economic activities in different countries. Processes of economic integration in many parts of the world do not reduce the level of deep institutional interventionism. Political and economic integration of countries may only homogenize some regulations, usually making them deeper and more detailed.

Because of deeper institutional interventionism in modern globalized economy, the differences of potentials and regulations “inside” transborder economies, between the parts of those economies regulated by different national laws and institutions, are becoming stronger factors stimulating or – vice versa – hampering the cooperation and development of transborder regions.

*Transborder economics* as specific domain of economic sciences should provide concepts, methods, models and information necessary for central and regional governments, businesses and institutions providing social services. Common understanding of the specificity of transborder economies by regional and central governments of countries shall create the platform for better understanding of benefits that may be achieved by all stakeholders thanks to optimization of transborder processes.

Development of transborder economics as a science and as methodology supporting practical activities and decision making processes is the duty of economic sciences of today.

## 4. TRANSBORDER STATISTICS

Transborder economies need harmonized information. This information should be supplied first of all by official statistics. However global systems of official statistics is based on the idea of national accounts (SNA). Basic social, economic and even ecological objects in official statistics are national economies delimited by political borders of countries. In international statistical standards the concepts describing transborder processes do not exist up to now. Statisticians and economists that are trying to measure and to analyze transborder phenomena and processes have to use official statistical categories and data elaborated for national economies as autonomous social and economic objects. Also categories and data measuring economic branches are describing branches as entire parts of national economies as a whole.

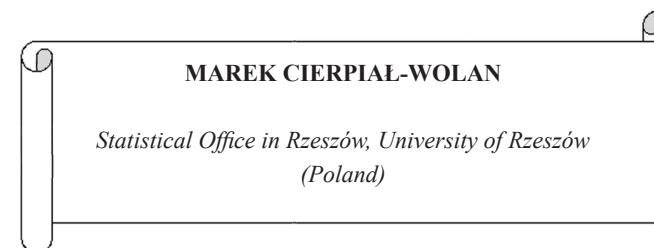
This “SNA-centralism” does not meet the information needs of economists and practitioners in governments and businesses in transborder economies. Simple “bringing data to comparability” on the basis of official statistics of countries is not sufficient for modeling and decision making in transborder regions.

There is the need of defining transborder statistics as specific domain of statistics. The transborder statistics should define categories relevant to identification, delimitation and measuring transborder phenomena and processes. Building transborder statistical data bases is strongly recommended.

## 5. CONCLUSIONS

From the considerations above the following conclusions for economic sciences and for official statistics shall be driven:

- A) Transborder economies are specific economic systems in globalized, institutionalized world.
- B) Transborder economics as a specific domain of economic sciences is needed for identifying, delimiting, observing, explaining and modeling transborder phenomena and processes, and supporting decision making and activities of all stakeholders operating in transborder economies.
- C) Transborder statistics should be developed as a specific domain of official statistics.



## CONTEMPORARY CHALLENGES TO OFFICIAL STATISTICS AT INTERNATIONAL, NATIONAL AND REGIONAL LEVELS

### 1. INTRODUCTION

The contemporary, global economy is paradoxically determined by integration and disintegration processes. They take place in conditions where the position of the national economy and its entities is established by the state's international position, which is also significantly influenced by the military potential. Important attributes of socio-economic life are primarily infrastructuralisation and metropolisation of development, as well as detachment of the financial sector from the real sector, which is an important cause of social and economic crises.

The dynamics of social changes and economic situation is significantly influenced by infrastructural resources, not only in the field of energy, transport and telecommunications, but also in the information infrastructure, which in the age of global information society is a prerequisite for sustainable development.

The production of information on an unprecedented scale can be observed. Research shows that in the past two years mankind created more information than in the previous history. It should be noted, however, that the mass production of information does not respect the standards of quality and that the decisive role in replacing better information with the worse one is largely played by the media. Additionally, deepening of information asymmetry can be noticed in many areas, primarily due to failures of the information market.

Thus, being aware that the global social information order is becoming today one of the most important determinants of socio-economic development, and the market mechanism cannot establish procedures for self-regulation in the information market, some kind of interventionism seems to be required on this market. The official statistics, which produces, disseminates and enforces standards for information (meta standards, concepts and definitions, classifications, nomenclatures, typologies, codes, etc.), can be considered a natural regulator and coordinator in this area.

The mission of official statistics is to produce the desired range of data in good quality, which are easily and quickly available, and which can be used for different purposes of diagnosing, programming and monitoring of socio-economic development. In recent years it has been mainly associated with the following areas of statistics: social dimensions of economic growth, quality of life, trends in population development, information society, transborder processes, etc. An important challenge is also to develop integrated measures of individual components of sustainable development (partial or synthetic indicators). In the coming years statistics will face a challenge of necessary use of alternative sources of data, which in a huge amount are becoming available on the information market (Big Data).

The aim of this work is to identify new areas of research which should be considered by official statistics with special attention in the coming years due to the dynamic changes of the socio-economic reality.



## 2. THE NEED TO REDEFINE THE ROLE OF STATISTICS IN THE MODERN WORLD

For many years, the role of statistics has been mainly to describe the socio-economic reality, and therefore it relied on the use of statistical data to meet the needs of analysing the current state of development, its diversity in various sections and the factors that determine the development.

As a result of global economic crisis, the expectations of statistics focus more on using it in decision making and development management. Therefore, there is a growing need for statistical data, which are now used not only to develop the socio-economic diagnoses but primarily to develop and monitor development policies and programs, as well as signalling adverse events and trends in socio-economic development.

Regardless of the purpose for which statistics are used, it is expected now to obtain good quality statistical information, a much wider range of thematic studies and analyzes of official statistics, as well as statistical data made available more quickly due to the high dynamics of changes important to users. One should not forget also about the new methods of communication that facilitate access to data, and flexible response to changing user needs. Therefore, it is extremely important to program statistical surveys so as to take into account their appropriate scope, that is the one that includes the most important aspects of the surveyed reality.

It is important to build a program which retains correct proportions of fixed, cyclic and new surveys, especially in current environment, characterized by additional demands on the official statistics, and also its limited possibilities for implementation due to budgetary constraints. Therefore, competent examination and understanding of the needs for statistics of major domestic and foreign users are becoming increasingly important. Some of these needs result from specific national and international regulations, and are associated with the new phenomena and processes that require in-depth statistical knowledge. Hence, international organizations and national statistical systems has been systematically broadening the range of research topics, improving methodology and working to enhance comparability of data on an international level.

## 3. MEASURING QUALITY OF LIFE AND SUBJECTIVE WELL-BEING

Among the thematic issues that deserve attention due to their growing importance in official statistics in many countries are also issues related to the improvement of measuring quality of life and well-being, as well as their role in surveying levels and living conditions of whole populations, selected socio-demographic groups or local communities. Particular emphasis is placed on complementing traditional concepts, which refer to objective measures, by subjective measures. Based on such categories as happiness, satisfaction, social progress or well-being of a given category of persons (e.g. children or the elderly), these surveys are one of the fastest developing surveys in the world because of their growing attractiveness and relevance in redistribution policy in its broad sense, as well as due to their not ultimately defined methodological status (lack of homogeneity of concepts) and different places they occupy in the systems of official statistics of individual countries. The most advanced in this regard research programs are the programs conducted by the Statistical Office of the United Kingdom (*The Measuring National Well-being Programme*, carried out since 2010). Extensive research and implementation works are also being undertaken by statisticians in Italy.

Most countries, however, are trying to employ temporary solutions which combine the use of data from existing surveys with experimental thematic modules, e.g. INSEE in France. The use of different measurement scales reflects specific national conditions and needs, taking into account the objectives of internal policy on the one hand, and the attitudes and opinions in fields relevant to the subjective aspects of well-being on the other.

What is promising is the fact that international organizations, led by the OECD and Eurostat, are directly involved in this problem. They have also presented programs on the methodology and coordination of research on the subjective aspects of well-being on international and intercultural scale. Particular attention should be paid to the achievements of the OECD, especially to the work published in the second half of the last year titled: *Guidelines on Measuring Subjective Well-being*. It is an attempt to standardize the concepts and approaches along with recommendations for official statistics and with the intention to allow international comparisons in this difficult matter. It is not, however, the only publication – there are also surveys of the quality of life and subjective well-being in Australia and Scotland, which are relatively the closest to the recommendations of the OECD.

Eurostat, on the other hand, while respecting in principle the OECD approach to the measurement of subjective well-being, recommends the creation of a system of indicators of quality of life and well-being as a complementary system of national accounts system, with a suggestion, among other things, to go beyond the questions used so far in the EU-SILC (e.g. to include questions about the subjective aspects of well-being in the Household budgets surveys and Time budget survey), with parallel use of indicators on environment and sustainable development.

All of the current methods for measuring subjective well-being deserve thorough consideration not only in order to meet the methodological criteria but also to develop recommendations for national statistical surveys practice to take into account both the specific needs of policy of economic and social spheres.

## 4. PHENOMENA IN TRANSBORDER AREAS - A SIGNIFICANT COMPONENT OF SOCIO-ECONOMIC DEVELOPMENT PROCESSES

Dynamics and interdependence of socio-economic phenomena in the contemporary world require appropriate instruments to be developed to monitor them. This becomes especially evident in the case of transborder areas, which are differentiated in terms of the socio-economic potentials, on the one hand, along with a growing gap in the data system for transborder areas, on the other. What is more interesting is the fact that transborder areas cover around 25-30% of the whole territory of Europe. Therefore, it seems to be essential (especially in countries in transition) to create a coherent research system that collects, processes and disseminates information for such areas. Recognizing these needs, the Polish official statistics has initiated works towards establishing a suitable infrastructure. The results of this research (based on household surveys, border traffic surveys, entrepreneurship surveys, etc.) have shown, rather unexpectedly, that estimates of some items in Balance of Payment are being changed. Consequently, they should be taken into account in the calculation of Gross Domestic Product.

What is worth stressing is the supranational and multidimensional nature and the scale of transborder processes. In consequence, the functioning of a coherent research system for transborder areas has been providing opportunity to use the results of analyses on micro-meso-macroeconomic levels. The results of the survey on the scale of foreigner's expenditures allow entrepreneurs to set up firms or branches in transborder areas. Simultaneously, local authorities can create additional incentives for development of entrepreneurship, with this kind of information. On the regional level, functioning of such a system makes it possible for self-government and government institutions to lead politics to increase competitiveness of each region. By means of coherent research system we can take common or compatible decisions on both sides of the border (e.g. common roads, migration policy, new border crossings, legislation on local border traffic).

Therefore, it is necessary to develop a system of transborder surveys which includes both monitoring socio-economic phenomena based on the statistical and non-statistical sources of information, and introduces and modifies surveys dedicated to transborder areas.

## 5. BIG DATA AS A POTENTIAL SOURCE OF DATA FOR OFFICIAL STATISTICS

As part of the modernization of official statistics, especially in the organization of surveys, the use of alternative data sources plays an important role, as such sources are not limited only to administrative data, but also concern other sources available in electronic form and modern technology (so-called Big Data). For several years they have been the focus of official statisticians' interest in the context of their use for statistical purposes. Big Data (huge information resources/large data sets, also known as mass data, particularly when applied to data from scientific research) have been defined by the United Nations Economic Commission for Europe (UNECE) as a large number of fast and diverse data that require efficient, innovative forms of data processing. Today, they are increasingly used to create information policy.

Any attempts to use such data in practice should consider the specificity of such enormous collections of information, which are characterized by great diversity - from social and economic information through climate, astrophysical, medical, environmental and experimental ones, as well as microsimulation information generated within practically every field of activity, including research. Without a doubt, in the coming years, the use of Big Data will affect the functioning of official statistics, but one should not forget that this is associated with both opportunities, and threats. The importance of this type of data has been controversially commented by one of the authors of an article published in „Le Monde” titled *Google knows more or can find out more about France than INSEE*.

The possibilities of Big Data result mainly from the large scale of production of public data, which simultaneously are supported by the more frequent use of digital devices. Data from various sources such as social networking, mobile phones and transactions on-line are characterized by high diversity and frequency. It is worth emphasizing that they include human activities, experiences, desires, intentions and expectations, and can be used, for example, for monitoring inflation and creating economic growth rates or testing migration in real time. New types of data derived from individuals and communities from their daily life can be used to create alternative measures of poverty and prosperity.

At the same time, innovations and improvements in computer technology, as well as increasing computing power of devices allow to organize these large and complex data streams.

It should be noted that in many countries the official statistics services are faced with a shortage of financial, technical and human resources, and therefore they often have difficulty in providing basic statistics. Thus, is Big Data an opportunity for statistics or maybe it is a kind of threat to it? It depends on the scale of the effective use of Big Data in the systems of official statistics.

Nevertheless, the use of such data is a significant challenge for traditional forms of data collection and processing in statistical offices due to the amount, time needed for obtaining data and processing speed. It should be undoubtedly emphasized that Internet data sources, based on systematic monitoring and recording transactions relating to observation units in a defined population, seem to offer obvious benefits to official statistics. In reality, however, they require a change in thinking and infrastructure in relation to the collection and processing of data. The structures of these data are usually harmonized between countries, uniform or easy to standardize. They can be therefore a valuable and fast source of information.

What is also particularly necessary in the case of Big Data, is more systematic and coordinated cooperation of statistical organizations in the international forum, the exchange of experience between countries, the implementation of pilot projects and cooperation with universities.

It is worth noting that this topic is very popular but has not been evenly organized in terms of the selection of key issues to be solved, with regard to their usefulness for public statistics. While considering the use of modern technology in the statistics one should pay attention to the need to utilize it for better communication with the users of statistical data, and, therefore, better, more user-friendly and faster data available. Possibilities in this regard are now incomparable to those from the past. This is an important

problem of improving statistics in order to improve its image, usability and playing an active role in managing the development.

In addition to intensively discussed methodological and technical aspects, the issue of the use of mass data in official statistics also raises new challenges for access and security policies, including confidentiality of individual data (especially important for the so-called social data, both in terms of national and global levels, due to, for example, transborder scope of certain transactions). Such challenges are related not only to the nature of data, but also with new types of procedures and cloud computing infrastructure, which allow one to store, share and process data in network systems, but also to expose them to various kinds of attacks and cyberterrorism.

## 6. POPULATION AND HOUSING CENSUSES

A lot of attention is being paid to issues related to modern organization of censuses. This applies mainly to questions about the future of population and housing censuses in terms of financial constraints, more and more difficulties in the implementation of interviews-based surveys and an extremely complicated organization of traditional censuses. Hence, there were attempts to seek answers whether traditional censuses are likely to be continued, even in conditions when in the last round of census surveys more than 85% of the countries carried out the census in a traditional way. For this reason, interest in new developments in the implementation of censuses is very large. Often comparisons of advantages and disadvantages of various options are being made. Apart from a few countries that implement censuses exclusively based on administrative sources, currently the most popular solutions are the mixed ones. This also applies to Polish experiences, where a new methodology of the census was introduced (a combination of administrative data with representative in-depth survey) as well as new sources of obtaining data. It is a solution that has the greatest chance for wider application in the next round of censuses around the world.

Censuses carried out in recent years resulted in an increase in applications of geospatial methods and technologies in data collection, as well as a huge increase in geocoded data units. This is of enormous interest in the development and application of new “spatial” approach both in determining samples (not only in research related to agriculture, ecology, epidemiology, etc.) and obtaining data. It applies to studies involving methods of spatial statistics at the lowest estimation level, which perfectly complements a model estimation technique of small areas.

## 7. CONCLUSION

The IT revolution, started primarily by the rapid development of ICT, caused a decline in the cost of collecting and transmitting information. This resulted in the emergence of huge sets of information on the one hand, and in deepening information imperfections such as asymmetries, gaps or information overload, which do not lead to increased transparency and rationality of management processes, on the other. Therefore, the observation of last century economists on „paralyzed hand of the market” is still valid in terms of information imperfections.

Official statistics, which in the information market has always had a dominant position, is faced with two main challenges. Firstly, it must meet the market competition (many suppliers of vast amount of non-statistical data, a number of increasingly demanding customers), especially under conditions of budgetary constraints. Secondly, it should ensure societies the security of information, which is a prerequisite for stability and development in a situation of unprecedented quantities of junk information and deepening of the phenomena of replacing better information with the worse one, especially by the mass media.

Rising expectations of official statistics, as well as its functioning in far different geopolitical, technical and communication conditions are so demanding that they necessitate the need for a new approach to the organization of the surveys and the whole system of official statistics, an approach different from the one used in the past. Therefore, international organizations are trying to develop new strategic goals for official statistics, the consequence of which is to implement changes in the organization of surveys.

An important task of statistics is innovation in the creation of its products by searching for new sources and use of data, integration with already available data and improving the quality of statistical products. All statistical products should be in accordance with the contemporary users' needs as well as meet all the dimensions of quality (relevance, accuracy, timeliness and punctuality, accessibility and clarity, comparability, and coherence).

This situation is linked to a fundamental change in the organization of surveys that requires the strengthening of the analytical nature of the compilation of statistical data, including spatial recognition as well as faster and more user-friendly data dissemination.

Each modernized stage of statistical research should take into account the growing demand for data aggregated by territory, and thus encourage the improvement of regional statistics while maintaining international comparability.

Taking into account the main challenges which are faced by the official statistics, as well as the need to take a number of modernization projects, also within the organization structure resulting from the potential of a given statistical system, it is worth paying attention to the areas of research which in recent years have been of particular interest to theorists and practitioners - issues of multi-faceted use of Big Data, as well as researches dedicated to the quality of life in the broad sense. The specific challenge for official statistics is also multidimensional nature of transborder processes. The results in these areas are a source of inspiration for the modernization of official statistics, and thus set the direction of its long-term transformation. It should be noted, that in the scope of these issues Polish official statistics has undertaken numerous project at methodological and organizational level.

#### REFERENCES

- CIERPIAŁ-WOLAN, M., (2009). The measures of adaptability in Poland's system of official statistics under crisis, *Statistics in Transition* new series, Warsaw, Vol. 10, No. 1, 163–170.
- CIERPIAŁ-WOLAN, M., MARCINIAK, G., OKRASA, W., WITKOWSKI, J., (2014). Contemporary problems of statistics – theory and practice in a global perspective. 59<sup>th</sup> World Congress of Statistics, Hong Kong 2013, *Statistical News*, Warsaw, No. 4, 42–55.
- GDP and beyond measuring progress in a changing world*, Communication from the Commission to the Council and the European Parliament, Brussels, 20 August 2009.
- Measuring sustainable development: A conceptual framework and suggested indicators*, Short presentation of the Report of the Joint UNECE/Eurostat/OECD Task Force prepared by the UNECE secretariat; papers for the session: *Measuring sustainable development and in follow up to Rio+20*, Conference of the European Statisticians, Geneva, 10–12 June 2013.
- OLEŃSKI, J., (2006). Information infrastructure of state in globalized economy, Warsaw University
- WITKOWSKI, J., (2014), Official statistics and global challenges, *Statistical News*, Warsaw, No. 4, 1–15.

MAREK CIERPIAŁ-WOLAN

*Statistical Office in Rzeszów, University of Rzeszów  
(Poland)*

## DEVELOPMENT OF TRANSBORDER AREAS IN GLOBALIZED ECONOMY – STATE AND PROSPECTS<sup>1</sup>

### 1. INTRODUCTION

Due to globalisation processes the economy becomes a blurred system in many cases, with supranational labour markets as well as goods and services markets being created. On the one hand, we can observe integration processes. The most recognizable one in Europe is the extended Schengen Area. On the other hand, disintegration processes are visible.

In the countries where the Schengen Area is being introduced, open borders facilitate communication, running business, etc., but they generate many information gaps. The removal of border controls and cessation of recording the traffic of people and vehicles cause the information deficit in this regard. This is why there is necessity of replacing the lost source of information through retrieval of data in another way.

What is more important is the fact that opening the borders in some countries usually leads to tightening the rules of crossing the borders in others, in this case at the EU's external border. It is the reason why we can frequently observe higher intensity of non-registered socio-economic phenomena in this area.

Therefore, integration and disintegration processes cause the need for more and more information concerning transborder areas, thereby growing interest in regional statistics.

Regional statistics often comes across different problems of, among other things, limited availability of data for areas located on both sides of the national border, lack of information on a certain level of aggregation in individual countries and low level of data comparability, especially those pertaining to economic issues.

Therefore it is essential, to create a coherent research system for transborder areas which would allow for gathering and analyzing comparable data from sample surveys and administrative registers.

In response to a greater demand for information Polish official statistics resumed in 2008 the survey of goods and services turnover in border traffic. Initially, it was carried out on the Polish-Ukrainian border, and since 2010 at the whole European Union's external border on the territory of Poland.

Results of this survey turned out to be unexpected - the scale of unregistered trade was surprisingly high. It was the turning point in the process of creating of a coherent research system for transborder areas. The aim of the article is to characterize some methodological issues connected with transborder surveys.

<sup>1</sup> Extensive excerpts from this article were published in *Statistics in Transitions* new series, December, 2011, Vol. 12, No. 3, pp. 537-545.

## 2. DELIMITATION OF TRANSBORDER AREAS

There exist, of course, numerous ideas for setting transborder area. Thus, its delimitation is pre-arranged to a large extent and depends on the purpose it serves. The delimitation can be carried out based, for instance, on morphological criterion, with geographical features taken mainly into consideration (in particular the lie of the land), or on functional criterion, viewed as a commonly dependent production and consumption actions, and those related to exchange and administration. Delimitation in the institutional sense does not denote a compact area — it creates a kind of a network because it is determined by locations of units cooperating within the transborder area (units of territorial division on NUTS 4—5 level, entities etc.). As part of these criteria, common problems to solve, e.g. areas of ecological threat or common chances for development, for instance, creation of transborder touristic area, are also taken into consideration. Groups of indicators reflecting various processes of socio-economic development can be also used for delimitation. It should be stressed, that, as a result of numerous criteria the boundaries of transborder area are fuzzy since spatial scope of individual features does not coincide with each other. In practice, preliminary delimitation is carried out first. It is based on limited, not finally coherent list of variables that include law, administrative, political and factual aspects. Systematic analysis of socio-economic phenomena in preliminary defined transborder area, which mainly focuses on labour market, entrepreneurship, tourism, environmental protection or institutional infrastructure, usually leads to changes of the outlined area, what can be named as dynamic delimitation.

An instance of defining transborder area is a preliminary delimitation based on three criteria: Regulation No. 1931/2006 of the European Community, dated 20 December 2006, according to which the border zone covers an area of 30—50 km from the border; the rule stating that the smallest administrative unit is a unit of territorial division on NUTS 4 level; and the results of surveys on journeys to work. The first reason for initial corrections of the preliminary delimitation can be analysis of results of sample surveys carried out on borders concerning, for example, goods turnover, in which we ask the respondent about distances from the border to the place of residence and shopping.

## 3. MONITORING OF SOCIO-ECONOMIC PHENOMENA

In order to maintain comparability, the first step seems to be creation of a uniform set of variables concerning individual socio-economic fields (e.g. demography, entrepreneurship, environmental protection), which will be based on joint glossary of terms, often relating to various classifications.

Only a set of variables prepared in this way allows to use a great number of data analysis methods, such as neuron networks, genetic algorithms, taxonomic methods, classification and regression trees, supporting vector methods or association and sequence methods. In regional statistics, taxonomic methods — hierarchical and non-hierarchical — appears to be particularly useful. Aiming at comparability, one should not forget about a unique character of individual regions. What seems to be vital in this context, is distinguishing the most important exogenous factors which influence economy and region's development. Combining both approaches enables to create a „portrait of transborder region”.

## 4. DATA SOURCES

Administrative and statistical databases can be the primary data sources used in monitoring of transborder areas. Data of customs service and border guards, which are exceptionally important in generalizing results of sample surveys, plays a special role here.

A potential source of information is also outcomes of automatic points of road traffic measurement, which can estimate its intensity (by selected days of a week, month. etc., including seasonal fluctuation), and also cover categories of vehicles.

In some countries, the automatic measurement system can precisely identify a vehicle (e.g. registration number, number of persons travelling), and its localization at any point of time.

Collecting of data used in transborder surveys may be carried out also through bank system. Information on the usage of credit cards might be particularly useful. It should be emphasized, though, that in most countries reports

on this matter made by central banks for the purpose of payment balance are of virtually no use for transborder areas (e.g. in accordance with the EU regulations, transactions not higher than 12.5 thousand euro are not registered).

Due to confidentiality of bank data, functioning of an independent information system, powered by commercial banks for regional purposes, appears, however, difficult to realize.

The next interesting path to follow is combining information from the registers and sample surveys especially in terms of budget constraints.

## 5. SAMPLE SURVEYS

Analysis of processes observed in transborder areas requires creation of such a system of sample surveys that covers the possibly broadest scope of socioeconomic phenomena. Among the most important areas, the following should be mentioned: surveys of households, enterprises, tourist accommodation facilities and questionnaire surveys on borders.

In the household survey, the module concerning changes which occur in the labour market, with focus on non-registered employment (reasons, kind and frequency of starting non-registered work, socio-demographic characteristics of persons performing such work, incomes from non-registered work, etc.) is very important. Another important module is the survey of non-registered shopping level in households (characteristics of households buying in non-registered zone, shopping frequency, amount of expenses on goods from non-registered zone made by households, structure of selected purchased goods, etc.).

The module which is also important, is the one connected with migration of population, of which foreign tourism in particular (aim, time and directions of migration, amount of expenses made. etc.).

In surveys of enterprises located in transborder areas, a greater attention should be paid to the module of non-registered transactions (size and costs of employment, basic balance data and financial indicators concerning grey area, etc.).

On the other hand, the survey of tourist accommodation establishments should be first and foremost addressed to foreign visitors (number and structure of visitors by country of permanent stay, place of crossing the border and means of transport, aim of travel, kind of accommodation, expenses on goods and services, frequency of crossing the border, duration of stay, etc.).

In most of the countries such surveys are being carried out. Their disadvantage is, though, the size of the sample because it does not allow to generalize the results for transborder areas delimited on the NUTS 4—5 level. A good example is a survey of economic situation in enterprises and households, economic activity of population or household budgets. Moreover, in different countries they are conducted under different methodology, what results in the lack of comparability of results.

A separate group is questionnaire surveys on borders. One should note, that on land borders, it pertains mostly to countries not covered by liberalization of the rules on requirements as to crossing the border.

The nature of questionnaire surveys on borders concerns both the process of preparing those surveys (it concerns the sample design in particular), and their realization.

In the sample design for transborder surveys, a two-step approach, namely choosing a unit prior to structuring the frame, seems to be natural. In questionnaire surveys on borders, the total population is often divided into homogenous strata, which make up observation of a given day, from a given crossing, and also, if it concerns land crossings, in accordance with a given way of crossing the border. An important element in preparing a survey is setting the days for carrying it out. The reason for this is the traffic intensity which significantly changes during a year, and the value of observed variables. For sampling the week days, the ones which are non-representative (e.g. national, religious holidays) should not be taken into it. The selection of elements for a sample from each stratum is usually made, for practical reasons, by means of systematic sampling. Theoretically, a proper sample design should include sampling of time segments during a day, unless previous analyses of border traffic profiles allow to assume that the population structure is not substantially diverse at that time. For individual border crossings, sampling intervals are usually set.

They include expected intensity of visitors traffic on particular crossings and chances for a pollster to carry out the questionnaire survey at a given time.

In order to maintain the quality of collected information and low level of “non response”, border surveys require experienced and professional pollsters. The most challenging part of such a survey is to recruit a respondent since they are in the course of journey, often annoyed by awaiting customs and passport clearance for a long time. In such conditions, the pollster usually works under time pressure.

Therefore, a selective recruitment of pollsters, intense training courses, and also effective monitoring of their work plays a significant role. The questionnaire itself is an element of a great importance. To achieve a proper effect, the questionnaire should be designed in the simplest and clear way, namely, it must be relatively short and comprehensible, contain clearly formulated questions, as well as easy to fill in (respondent-friendly).

Due to the nature of questionnaire surveys on borders, it is desirable that pilot test and surveys are prepared with care. They will allow, for the most part, to assess to feasibility of the survey’s objectives, sample design, estimation methods, precision, data collection methods and their analysis. At this stage, it is particularly important to prepare a programme for maintaining a proper quality level of each stage of the survey. Sets of indicators for assessing sampling errors and minimizing non-sampling errors are usually used for this purpose. Practice proves that indices of “non response” and procedures for dealing with respondents who refuse to answer are especially important.

## 6. TOWARDS TRANSBORDER INDEX

Creating a coherent research system Polish official statistics launched two modules – monitoring of socio-economic phenomena in transborder areas on the basis of administrative registers and statistical databases as well as sample surveys at the border and in the neighbourhood.

All sorts of information which can be found in statistical databases and administrative registers adjusted to transborder areas fall within the ambit of the monitoring. Most of the findings of our investigations argue that there is higher activity in transborder areas.

The plan of actions which should be taken up, that is the scope of surveys and the schedule of their implementation, was worked out. Firstly, four kinds of surveys should be conducted: questionnaire survey at the border, survey of travelling foreigners in tourist accommodation establishments, household survey (modules concerning international tourism, unregistered work, volume of unregistered purchase), and survey of unregistered economy (market points, retail sales points, etc.), with the use of experience of Shadow Economy Research Centre.

Being in possession of great variety of partial indicators based on monitoring and data of surveys on the one hand, and observing ongoing specific changes in transborder areas on the other, a natural consequence seems to be the development of synthetic indicators.

In spatial analysis, where areas of different countries are being surveyed the problem is the choice of the object of a study. We must not forget about the need to compare spatial units which are similar especially in terms of population and area. It is worth stressing that because of these two criteria, the spatial breakdown varies in different countries.

According to the above we should avoid comparing some administrative units in individual countries, although these units fulfil the same administrative functions.

Based on many years of experience in the development of common transborder information system, it should be noted that the best spatial unit is LAU level 1. In many countries administrative units on this level are very comparable in terms of population and area.

### ➤ CREATION OF COMPLEX FEATURE

In order to investigate differences in development of territorial units at various levels of aggregation, we can use a synthetic indicator. This index, as it is well known, is constructed based on partial indicators which may come from different fields. They can be used to analyze a specific area of research (e.g. economy, human capital, environment) or the general socio-economic development of a given region.

In the selection of partial indicators both substantial and formal criteria are taken into account. A properly selected set of variables should describe the phenomenon under study as precisely as possible, and at the same time be not too numerous.

It is always difficult in these kind of studies precisely specify these factors that is select appropriate variables, which is often subjective in character. In the selection of variables the clustering scheme for regional competitive advantages was used. From the wide array of factors three broad factors, which have significant influence on regional and national competitiveness, were specified and taken under consideration in this paper [Gardiner B. 2003, p.5-6]:

1. **Infrastructure & accessibility** (Basic Infrastructure: road, rail, air, property; Technological Infrastructure: ICT, telecoms, internet; Knowledge infrastructure: educational facilities; Quality of Place: housing, natural surroundings, cultural amenities, safety)
2. **Human resources** (Demographic trends: migration of skilled, workers, diversity; High skilled workforce: knowledge-intensive skills)
3. **Productive environment** (Entrepreneurial Culture: low barriers to entry, risk taking culture; Sectoral Concentrations: balance/dependency, employment concentration, high value-added activities; Internationalization: exports/global sales, investment, business culture, nature of FDI; Innovation: patents, R&D levels, research institutes and universities, linkages between companies and research, spillover effects /untraded interdependencies/ Governance and institutional capacity: Capital availability; Specialization; Nature of competition).

A more complete set of variables having the effect of increasing the competitiveness of regions was proposed by Coobes M., Wong C, (1994).

The next step is to use various statistical methods including correlation and regression analysis to eliminate the variables that contain the same or very similar information on the investigated phenomenon, or showing little variability. It is important that empirical data should be available for each region and comparable between them.

A set of comparable variables available at NUTS 2 and LAU 1 was prepared for Polish-Slovakian-Ukrainian border area,

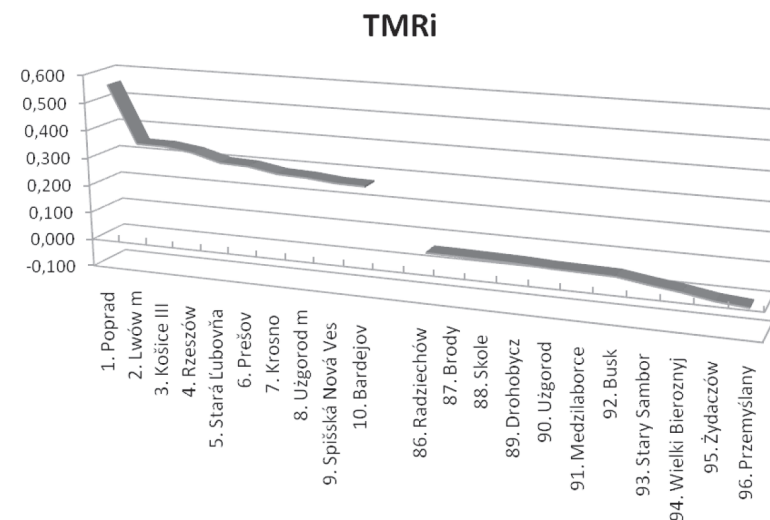
To obtain the taxonomic measure of development the following steps should be taken. First, a set of variables which contains essential elements undergoes the process of standardization. As a result, a matrix of standardized values of features is obtained. Then, a set of the taxonomic patterns, whose coordinates are given in the form of a vector is being determined. In relation to the pattern, distances are calculated for each tested object (region), using the Euclidean metric. In this way, taxonomic measures of development of objects are being obtained, which undergo the process of standardization. They take values whose level depends on development of an object or region – the more developed the object is, the higher values the measure takes.

Taking into consideration spatial units on NUTS level 2, we receive the following ranking, in which Małopolskie voivodship is placed first and Volyn oblast is ranked last.



**Figure 1.** The ranking of the units on NUTS level 2 on the Polish-Ukrainian-Slovakian border  
 Source: Cierpiał-Wolan M.(2011)

As far as the units on LAU level 1 are considered, a similar ranking can be created, in which Poprad from Slovakia is ranked the highest and Przemyślany from Ukraine the lowest.



**Figure 2.** The positions of the units on LAU level 1 on the Polish-Ukrainian-Slovakian border  
 Source: Cierpiał-Wolan M. (2011)

➤ **STAGES OF SWOT ANALYSIS OF ADMINISTRATIVE UNITS WITH THE APPLICATION OF THE ANALYTIC HIERARCHY PROCESS (AHP)**

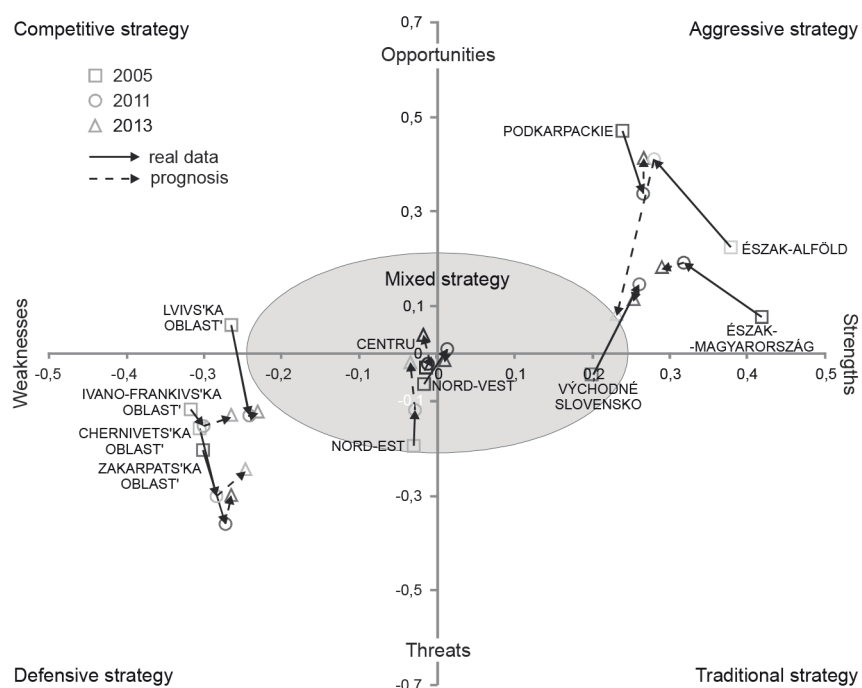
AHP allows one to assess the validity of the factors affecting the development of local units (strengths and weaknesses as well as opportunities and threats), to determine their synthetic assessments of internal and external conditions, and on this basis, to identify the types of developmental units.

Construction of two hierarchical structures related to the external and internal conditions of socio-economic development – specification of the strategic fields and an appropriate choice of sub-indicators for them (selected elements of a SWOT analysis of administrative unit) is the first step in developing this indicator. Then, experts assess the chances and risks as well as strengths and weaknesses of particular administrative unit. The next important stage consists in determining indicators weights of the SWOT analysis with the application of the AHP method. The AHP method involves pair-wise comparison of SWOT indicators at each level of the hierarchy with the application of the Saaty's Scale. Saaty's Scale defines the nature of dependency (e.g. an index has the same significance as the second one, an index is absolutely more important than the other). Verification of the correctness of carried out comparisons with the application of the CR marker, which determines the extent to which cross-comparisons of the characteristics are consistent, as well as standardization of indicators in cross-administrative units are also significant. The last two steps include calculation of coordinates value of administrative units position in terms of external and internal development conditions, and presentation of the position of administrative units on in the diagram that is divided into quarters representing four types of growth strategies: aggressive, conservative, defensive and competitive.

Aggressive strategy (maxi-maxi) is created for areas where strengths and opportunities prevail in their environment. This is a strategy of strong expansion and diversified development. Conservative strategy (maxi-mini) is based on the large internal potential but must also attempt to overcome the threats from the

outside. Competitive strategy (mini-maxi) is created for areas where strengths outweigh weaknesses, and the layout of external conditions is favourable. Defensive strategy (mini-mini) is created for areas where there are fewer developmental opportunities than in areas belonging to other strategies. These areas exist in less favourable surroundings and their potential for growth is weaker. This strategy is mainly to provide them such a position that is currently in the country and minimize risks and weaknesses occurring within the area. For other areas that do not have clear strengths and weaknesses mixed strategy is created (so-called mixed strategy).

The Carpathian Euroregion, which is a model structure from this perspective, with its regions merging a variety of economic and social processes, provides an excellent possibility for studying endogenous and exogenous factors that shape its development, especially of units on NUTS2 level. The Carpathian Euroregion is one of the largest such structures in Europe, being composed of both the countries belonging to the European Union and non-members of this organization. The analysis presented below is directly related to the identification of the strategic directions of development of the various regions of the Carpathian Euroregion, operating in different economic systems in a globalized world.



**Figure 3.** Types of development strategy for the Carpathian Euroregion (AHP method)

Source: Cierpiał-Wolan M., Wierzbinski B. (2013)

As a result of AHP procedure we get assignment of a given spatial unit to one of five kinds of strategies.

The arrows indicate changes of strategies which could be observed during a year. According to this graph many regions are very active aiming at higher level of socio-economic development. The formal evidence is the direction of the arrows that is up and right.

Spatial models (spatial error models, spatial delay models), allow for tracking demand and supply shocks both in time and space.

Taking into account the location and neighbourhood one can evaluate quite precisely and comprehensively the position of the surveyed territorial unit as compared to others – whether, e.g. it is an island among completely other ones, or a part of a greater territorial structure.

## 8. CONCLUSION

There are some important steps which should be taken to create the coherent research system for transborder areas. The first one is determination of the specificity, and creation of a typology of border crossings. In order to create an effective typology we have to take into account specification of the factors that determine the intensity of border traffic (e.g. type of road which leads to the crossing, the number of lanes, border crossing infrastructure, size of towns near the borders) and use of equipment for automatic traffic measurement (co-operation with the General Directorate for National Roads and Motorways, government and self-government authorities, technical universities).

Another essential factor is the determination of the specificity and creation of a typology of border areas. This process should take into account specification of the most important endogenous and exogenous factors affecting the economy and regional development (entrepreneurship, labour market, border trade, exchange rates, price levels, environmental protection, living conditions, migration, tourism, etc.). The clustering of border areas in terms of similarity is very useful in analysis of transborder areas.

Inventory of information resources of official statistics is another important element. It may happen that we have unknowingly a lot of information concerning transborder areas. Sometimes only a deep insight into statistical databases or a little modification in statistical forms is required so as to adapt survey to our needs.

We have to bear in mind that employing extra-statistical sources of information can be fruitful, that is using mobile telephone operators, data on passenger air traffic, rail traffic, travel agencies, regional offices (permits to work issued for foreigners), employment agencies assisting in employment of citizens abroad by foreign employers and foreign administrative sources such as Workers Registration Scheme in the UK, Social Insurance System (e.g. Personal Public Service in Ireland).

While analysing social-economic processes in transborder areas, the taxonomic measures of development play a valuable role, in particular, spatial models. They allow, among other things, for detecting whether there was diffusion, exchange or interaction – whether other regions become infected or whether local changes are a response to exogenous shocks. The results of such modelling can be disseminated on the local, regional, national and international levels (micro-mezo-macro-inter), and can be useful not only for analysts but also for policy-makers and decision-makers in business.

What is crucial in creation of a coherent research system is determination of the areas of research and, of course, conducting joint research what in general means creating a uniform information infrastructure, in other words creating knowledge base on transborder areas (individual data, micro-aggregates, aggregates, macro-aggregates, meta-information, para-information) and methodological reports.

- CHANG H.-H., HUANG W.-C. (2006): *Application of a quantification SWOT analytical method*. "Mathematical and Computer Modelling", Vol. 43, Issues 1-2, pp. 158–169.
- CIERPIAŁ-WOLAN, M., (2008). *Cross-border surveys – some methodological aspects*. "Statistic in Transition new series", Vol.9, No. 2, pp. 361-366.
- CIERPIAŁ-WOLAN, M., (2011). Directions for development of transborder areas – state and prospects, *Statistics in Transition new series*, Warsaw, Vol.12, No. 3, 537–545.
- CIERPIAŁ-WOLAN, M., WIERZBINSKI B., (2013). Importance and directions of regional development in the context of competitiveness within Carpathian euro-region, *Institutional Vector of Economic Development*, Melitopol Institute of Public and Municipal Administration of the "Classical Private University" Melitopol, s. 141-155
- COOBES M., WONG C., (1994). Methodological steps in the Development of Multivariate Index for Urban and Regional Policy Analysis, *Environment and Planning A*, Volume 6.
- GARDINER, B., (2003). Regional Competitiveness Indicators for Europe - Audit, Database Construction and Analysis. *Regional Studies Association International Conference* (Pisa, 12-15 April), p. 5-6.
- HARKER, P. T., VARGAS L. G., (1990). *The theory of ratio scale estimation: Saaty's Analytic Hierarchy Process*. "Management Science", Vol. 33, No. 11, pp. 1383-1403.
- ŁUCZAK, A., WYSOCKI, F., (2010). Evaluating powiats' development strategy of the *Wielkopolskie voivodship using analytical hierarchical process*, *Statistical News*, No. 3, pp. 54-67.



**MAREK CIERPIAŁ-WOLAN**

*Statistical Office in Rzeszów, University of Rzeszów  
(Poland)*

## **ECONOMIC PROCESSES IN TRANSBORDER AREAS – SIGNIFICANT IMPACT ON THE ECONOMIC GROWTH<sup>1</sup>**

### **1. INTRODUCTION**

Analyses of the processes of socio-economic development in the modern world clearly indicate the need to study phenomena occurring in transborder areas. Integration and disintegration processes between countries and regions result in higher interaction within socio-economic issues (through the difference of potential) including an increase in the scale of unregistered and illegal transactions. It is worth stressing that unregistered trade usually means all goods which are not registered on customs documents but can be legally transferred across the border. It does not cover shadow and underground economy. All these circumstances cause the specific behaviour of both households and businesses.

Therefore, it seems necessary to conduct numerous socio-economic surveys to examine the distinctiveness of transborder areas. While considering the question of developing a coherent research system, one should bear in mind that it should be based primarily on an extensive methodological structure. This will be of practical value both for the countries with and without liberal rules regarding requirements as to crossing the border (it will be especially useful in the countries with both kinds of border crossings, e.g. internal and, at the same time, external borders of the European Union). To function effectively such a system requires assistance of standardized sources of information (official registers, administrative sources of data, bank registers, automatic measurement of traffic, other Big data sources) and various projects to be developed - projects that will not only focus on surveys on borders, but will include, above all, issues related to phenomena observed in the vicinity of the border.

The economic crisis that emerged in the world economy in 2008 showed how important it is to have detailed information on economic activity. It is worth noting that an important part of the structure of GDP is the trade balance and the balance of spending part of foreigners and residents of a country.

Despite the fact that humankind in the last year produced more information than ever, paradoxically, we can observe growing information gaps and failures in the functioning of the information systems concerning transborder areas. Thus, it is important to work on continuous improvement on methodology of research system for transborder areas.

In order to meet the demand for information, both research community and Polish official statistics undertake various actions concerning the use of different sources of information, monitoring socio-economic phenomena in transborder areas, and above all, improving and designing new surveys for these areas.

<sup>1</sup> Extensive excerpts from this article were published in the "Statistics in Transitions new series", Autumn 2013, Vol. 14, No. 3, pp. 399-428.



Within the framework of these projects, the integrated surveys for the needs of tourism statistics, national accounts and balance of payments has been launched by Polish official statistics. The results of the pilot survey turned out to be unexpected, and influenced the development of a coherent research system on transborder areas.

The objective of this paper is to present results of this surveys on the micro-meso-macroeconomic level. When it comes to macroeconomic level, incomplete information causes a disturbance of GDP structure from expenditure approach and failures in economic growth rate.

## 2. ENTREPRENEURSHIP IN BORDER AREAS – SELECTED ASPECTS

A border area of a country is a place of the impact of close neighbourhood of the other country. This neighbourhood creates opportunities and threats. Having an influence on border area it should make it a unique microeconomic area. Numerous questions arise while investigating border areas whether they are homogenic with the rest of the country or homogenic with other border areas.

### ➤ BUSINESS DEMOGRAPHY

Polish northern and eastern border area in general does not have such developed entrepreneurship as Poland on average except the Polish-Russian area. In Poland there are almost twice as many firms per 1000 inhabitants as by eastern border. Similar situation can be observed in the number of entities with foreign capital participation – on western border there are almost four times as many firms as on eastern border.

What is remarkable, is that the number of firms in the border area as a whole was increasing better than in Poland, especially by the Polish-Belorussian border in 2010-2013.

Economic slowdown caused a significant decrease in the number of firms between 2010-2011. The turning point is 2011 when we can observe a steady increase in dynamics in all analysed areas.

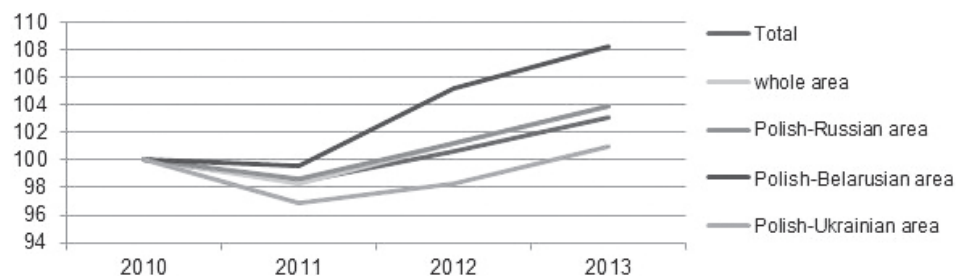


Figure 1. Dynamics of the number of entities per 1000 inhabitants (2010=100)

Nevertheless, systematic increase in this indicator signifies that border areas are becoming a more and more attractive place for foreign investments, especially near the Polish-Ukrainian border.

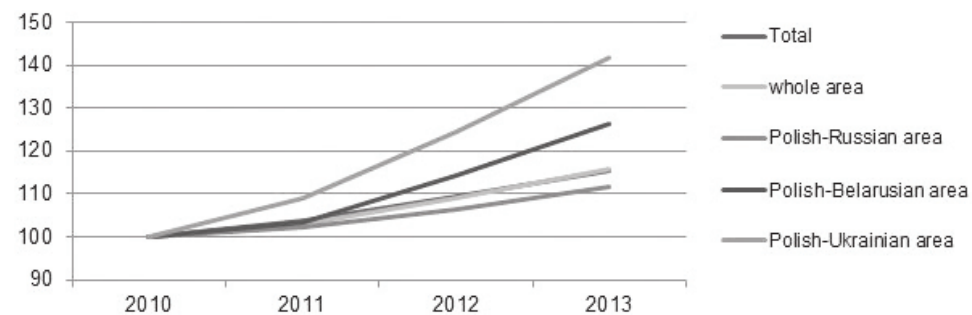


Figure 2. Dynamics of the number of entities with foreign capital participation per 10,000 inhabitants (2010=100)

Analysis of dynamics of newly registered firms is especially useful in this context.

An example of legal conditions that have impact on local economy may be noticed during 2009-2010 in dynamics of newly registered firms by the Polish-Ukrainian border.

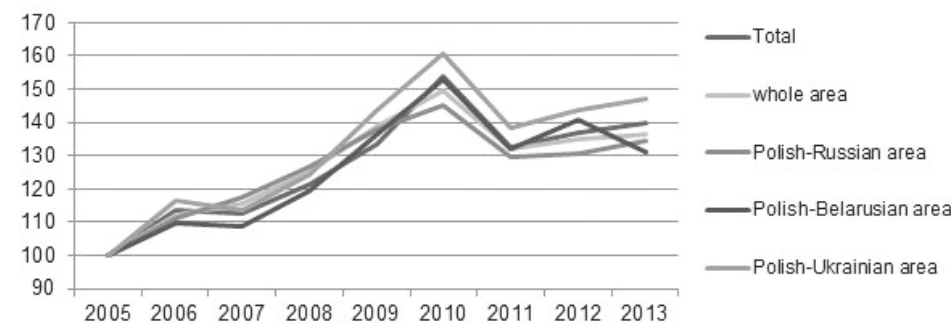


Figure 3. Dynamics of newly registered entities (2005=100)

Local border traffic agreement between Poland and Ukraine caused additional incentives for dynamics of newly registered firms to grow. Despite that opportunity which arose recently, many enterprises did not survive the economic crisis which lowered dynamics of newly registered firms between 2010 and 2011.

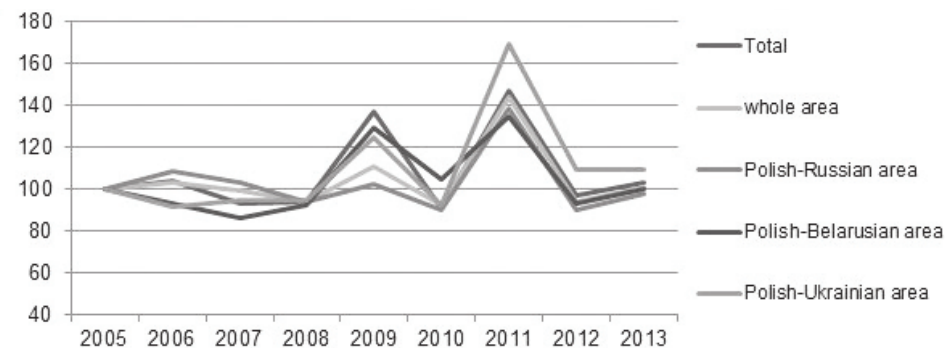
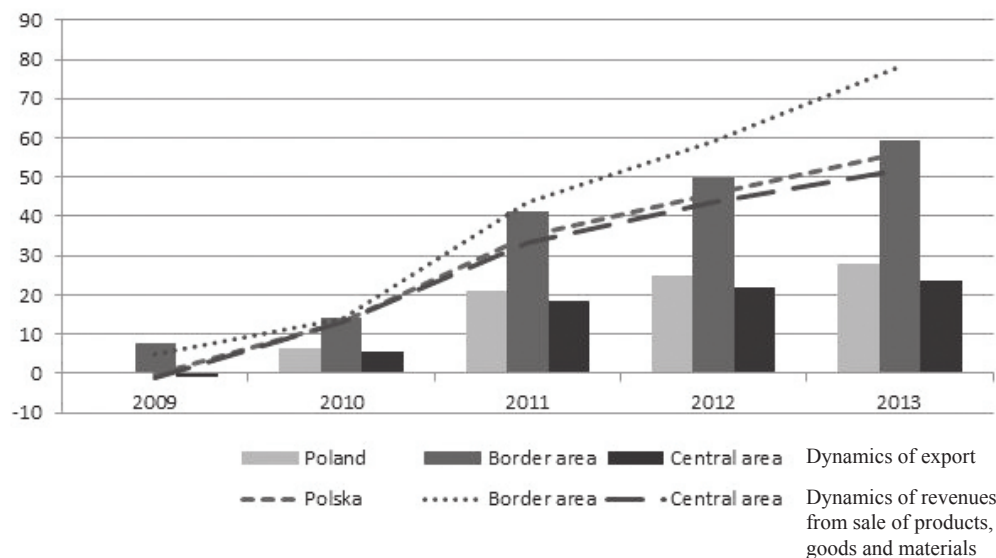


Figure 4. Dynamics of deregistered entities (2005=100)

Fluctuating tendency in dynamics of deregistered firms is amplified in the analysed period 2009-2011.



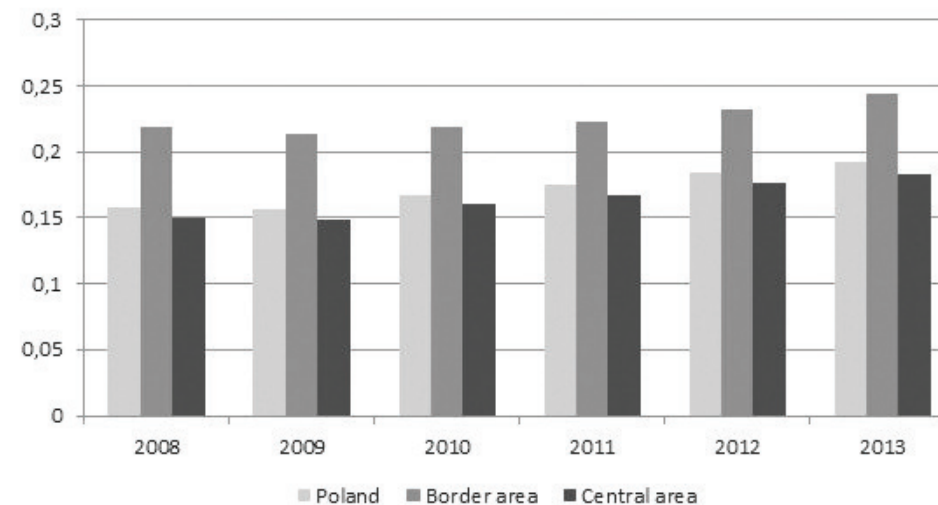
**Figure 5.** Dynamics of revenues from sale of products, goods and material as well as dynamics of export

An important factor in the process of assessment of financial situation is dynamics of both revenues and export. These phenomena show a clear upward trend in the analyzed period. For both these observed facts the largest increase occurred in 2011. Border area throughout the whole period is characterized by higher dynamics than the national average.

Complex specificity of border areas can be expressed well with a set of economic indicators such as liquidity, profitability, debts.

Enterprises by the eastern border show high current liquidity - mainly thanks to stocks. Firms by the Ukrainian border also maintain a high level of quick liquidity in opposite to enterprises by the Belorussian border. Cash asset liquidity ratio in whole border area is slightly lower than in Poland as a whole. The significant rise of newly registered firms, stimulated by Local Border Traffic agreement and the EU's funds, brings about relatively high level of this indicator near Polish-Ukrainian border.

Overall liquidity situation near EU's external border is associated with the operations in the shadow and underground economy and unregistered trade. Enterprises by the eastern border maintain a certain level of stocks officially and perform unregistered transactions, so they show only a part of the turnover. As a result, the cash conversion cycle is overestimated.

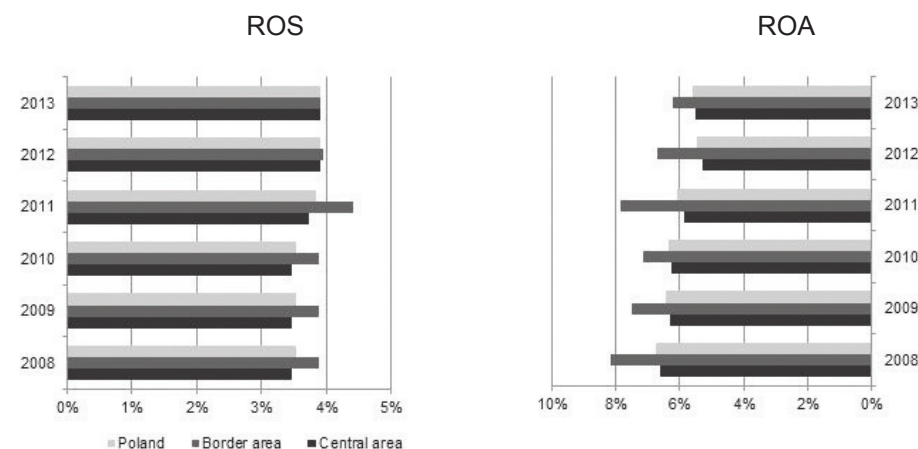


**Figure 6.** The share of revenues from exports of products, goods and materials in revenues from sales of products

The share of revenues from exports of products, goods and materials in revenues from sales of products, goods and materials is the evidence for competitiveness of companies in the market.

The level of the rate for the border area was growing steadily from 2010 up to almost 25% in 2013. It is worth noting that since 2010 the difference in this ratio between border area and Poland remained at a similar level (about 5 percentage points).

What is worth stressing, is the fact that enterprises by the eastern border show surprisingly poorer results. The level of this indicator is artificially low because export to Ukraine and Belarus is underestimated. The specificity of trade with the countries by the eastern border is that residents of Ukraine and Belarus purchase an enormous amount of goods in Poland and carry them to their country.



**Figure 7.** Return on sales rate (ROS) and return on assets rate (ROA)

The rate of return on sales, calculated as a share of net profit in revenues from total activity, illustrates the level of profit margins used by the company. High margins contribute to increase profitability but can also adversely affect the company's competitiveness in the market. By 2010, in the border area a slight increase in the rate of return on sales was recorded. In 2012 and 2013, the rate was lower than in the two previous years.

Return on assets, calculated as the ratio of operating profit (EBIT) to total assets, reflects the financial result subject to loads due to financial costs (interest and taxes).

Both in the country and in central area the rate decreases in the reporting period, while in the border area there was an increase in 2011 compared to the years 2009-2010. Throughout the entire period under analysis one can clearly observe a higher value of this index for the border zone. In 2012 and 2013, in all areas the index recorded a decrease to the lowest level in the last five years.

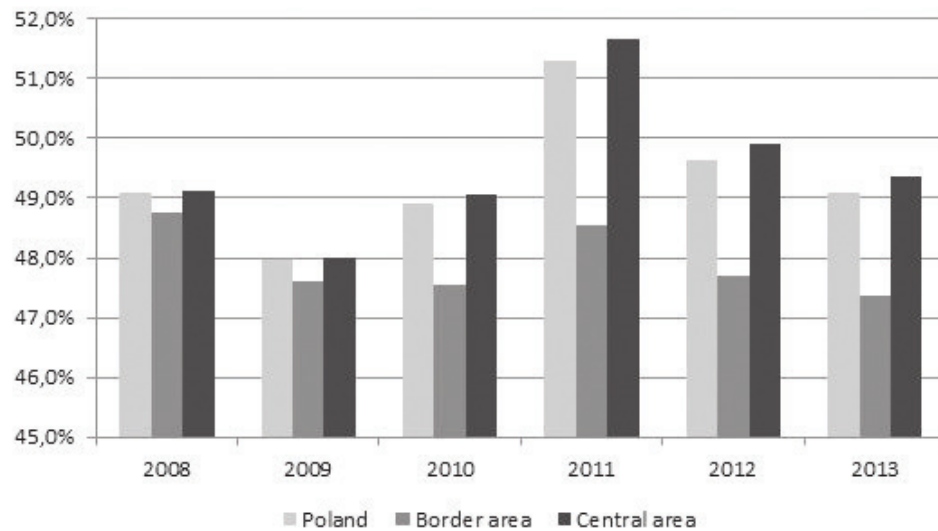


Figure 8. The debt ratio

The debt ratio is calculated as the ratio of liabilities to assets, informs about the amount of debt per unit of assets. Even high value of the index at a satisfactory profitability and liquidity preserved need not be the reason for a negative assessment. Thus, this indicator should be analyzed in the context of other financial indicators.

In 2008-2010, the debt ratio for the border area was declining from year to year. In 2011 it recorded an increase (insignificant one compared with the index for Poland), and in 2012 and 2013 returned to the level of 2010. It is worth emphasizing that throughout the analyzed period this rate is lower both compared with the rate for Poland and the central area.

On the basis of the total debt ratio and the return on assets rate one can determine the rate of return on equity. The combination of these three indicators allows one to evaluate the effect of leverage. It is worth noting that the lower level of overall debt in the border area did not influence significantly the deterioration of financial leverage, because the disparities in the values of ROE and ROA between the border zone and the whole Poland are similar.

The complement of business demography and financial health is business tendency survey. It is a set of high-frequency indicators which shows current economic situation and reveals entrepreneurs attitude about future. Even in this field a variety of behaviors with respect to border areas may be observed.

Entrepreneurs at the Polish-Ukrainian border more often consider their overall economic situation as bad than entrepreneurs in the other sections of the border and Poland in general. Entrepreneurs at the Polish-Belarusian border, especially during the period from May to July, clearly assess their current situation as better compared to the index value of the current economic situation in Poland. Despite this, all groups of entrepreneurs usually evaluate your situation negatively.

Indicator evaluating the economic situation of the company in the next three months shows that among entrepreneurs a fear for the future in the months of October to December is visible, due to political events across the eastern border, which should be particularly evident at the Polish-Ukrainian border.

Interestingly enough, Polish entrepreneurs evaluate future much more emotionally and generally more optimistically in relation to the subsequent evaluation in the present time.

Generally, entrepreneurs in the trade section frequently assume that they will reduce employment than increase it. Similar results can be observed in other sections. Despite the fact that more than half of the entrepreneurs declare that there are no plans of changes, it seems that dismissing employees is more likely planned than their employing.

Entrepreneurs from industry section preferably assess future economic situation compared to the other sections, interestingly this also applies to companies that do business on the border with Ukraine.

**Impact on the economic growth**

The developed research system proves that there is a greater economic activity and entrepreneurship in border areas. Obviously, this has an impact on the condition of companies and macroeconomic indicators.

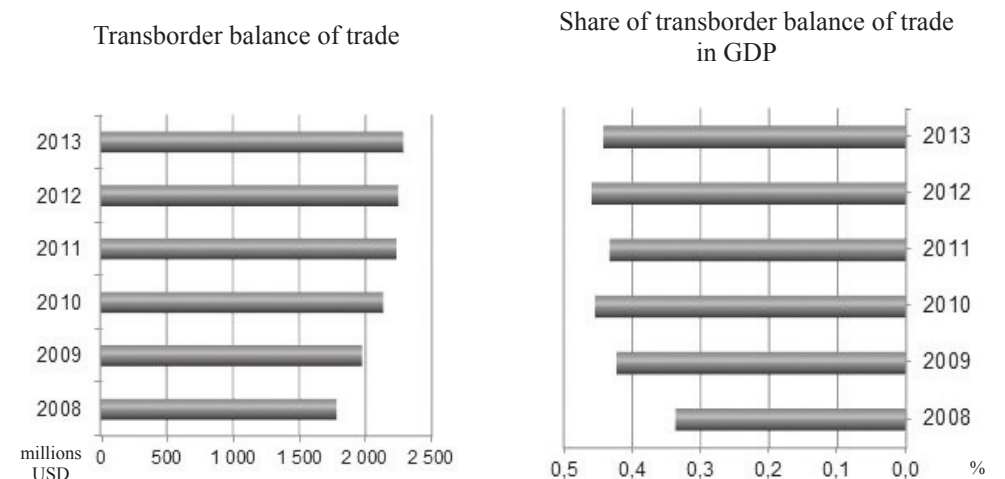
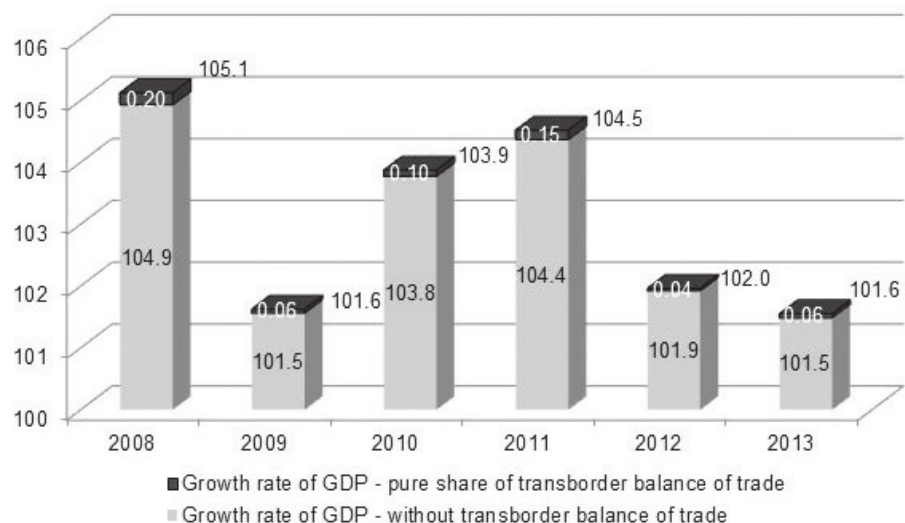


Figure 9. Transborder balance of trade and share of transborder balance of trade in GDP

The bar chart on the right shows the share of the balance of trade in tourism for transborder areas in GDP - transborder balance of trade (expenses of foreigners in Poland minus expenses of Polish citizens during foreign travel). What is important is the fact that an increasing tendency can be seen in the analyzed period with the exception of 2011 and 2013, when insignificant decrease can be observed. It is also worth stressing that this share does not exceed 0.5%.



**Figure 10.** The rate of economic growth

In order to calculate how the balance of foreigners and Poles' expenditure influenced GDP growth, appropriate calculations of expenditure values into constant prices of the previous year and the fixed prices of the base year were made, using appropriate price indices for this purpose. In this way, the GDP growth rate was calculated without the participation of tourism expenditure. The resulting dynamics was compared with the officially published data on economic growth.

The grey part of the bars shows the rate of economic growth if we would not take into consideration the transborder balance of trade in tourism. The black parts illustrate pure share of this balance in economic growth.

We noticed systematic increase in transborder balance of trade. However, the nature of transborder processes is the reason why this increase cannot last indefinitely. So, as you can see, this red shares can be slightly higher or lower when comparing one period to another, but they still sustain the process of the economic growth in the analyzed period.

### 3. CONCLUSIONS

In terms of the economic slowdown that we see in many parts of the world, precise estimates of individual components of GDP are becoming particularly important. The experience of several European countries shows that the phenomena occurring in the border areas have a significant impact on the balance of payments. Nowadays, economic growth is determined by details, and export is one of the most sensitive component of GDP. Therefore, precise information concerning BoP obtained from a coherent research system for transborder areas is crucial.

The analysis of the results from monitoring and surveys show clearly higher activity of enterprises and households operating in the border areas. This also means that the socio-economic phenomena in these areas have a significant impact on the processes of economic growth. This is evidenced by the relatively high proportion of transborder balance in creating economic growth in Poland. It is particularly important during economic downturn when higher activity of enterprises in these areas acts as a stabilizer of socio-economic situation.

SERHII USTYCH

*The Institute for Trans-frontier Co-operation Uzhgorod  
(Ukraine)*

## TRANSBORDER PROCESSES IN GLOBALIZED ECONOMY – IDENTIFICATION, MONITORING AND ANALYSIS<sup>1</sup>

### 1. PROBLEM STATEMENT

At the time, the social implementation of the institute of border has become a large-scale human invasion into the organization of the world, in particular, its spatial characteristics. The border<sup>2</sup>, having set artificial inter-state delimitations, has „broken” the space in political way. It thus became one of the most controversial phenomena of society.

*Modern globalization has produced a new philosophy of spatial delimitation of states, and with it – the life of a human.* We have witnessed how the highly contradictory process unfolded: on the one hand - almost complete overcoming of borders (as in the case of the European Union member states), or at least their „dilution», on the other hand - a kind of reincarnation of rigid state territorial delimitations. In particular, modern borders between East and West of Europe restrict, by strict regulation, one of the basic human rights - the right for free movement<sup>3</sup>.

Given the radical political changes associated with the collapse of the Soviet Union and the emergence of new players on the geopolitical scene in Europe in the early 90s of the 20th century, communication across borders transformed significantly. It acquired a greater scale, dynamics and it became more pragmatic. As a result, border associated phenomena have an ever increasing impact on the livelihoods of people.

### 2. ANALYSIS OF RECENT RESEARCH AND PUBLICATIONS

In view of the above mentioned the issues of borders in the past and currently caused significant cognitive interest in the society. Therefore, the scientific community advanced considerably in the analysis of specific aspects of the borders and their related phenomena. In particular, examined large sets of historical data about how the borders emerged have been examined. Various information about their

1 Director of the Institute for Transborder Cooperation, PhD, Associate Professor, Ambassador, Uzhgorod, Ukraine

2 The concept of “border” today stands for actual or imaginary lines on the earth’s surface that define the boundaries of the land and water area of the state (state territory).

3 Sad, but today, at the beginning of the III millennium, many people can remember with envy the first „unwritten” constitution of England - „Magna Carta” («Magna Charta libertatum»), enacted in 1215. Articles 41 and 42 of this legendary document affirm the right of everyone to freedom of movement both within the country and outside the kingdom.

nature and development trends have been presented. The veil of secrecy about the interdependence of the elements in the triad „border, war, and peace” has been raised. In short, there are significant factual and conceptual achievements in understanding of these critical phenomena of social life [2].

The more surprising is the fact that today, in my opinion, *some important issues that affect the very essence of modern borders remain unsolved.* These questions are far from scholastic. Answers will allow avoiding confusion and errors in the theoretical research, hence, confusion in practice.

First, *it is about a clear identification of the content of the basic notions* that reflect the essence of borders. No wonder, even Kant called discussants „First, let us agree about the notions!”

One evidence that the categorical presentation of phenomena related to borders has some „white spots” is the fact that scientific research and political and legal documents *often depict the same phenomena by different notions.* In particular, today a lot of terms describe collaboration of objects across borders: “transborder cooperation”, „border ties”, „crossborder cooperation”, „interterritorial cooperation”, „interregional cooperation”, „transnational cooperation”, and etc.

By itself, diversification of notions is positive, *however it should be based on reflection of factual discrepancies of objects and their clear definition.* Otherwise, the chain of related problems can happen, when *uncertainty of generic concepts leads to confusion in the specific sense.* As a proof it is appropriate to recall the situation that took place on the executive forum of statistical agencies leaders and European countries researchers – the International conference „Development of the European Statistical System with the Eastern Partnership – Directions and Strategy” (Krakow, Poland, October 2011). During the debate the notion of „transborder statistics” was widely used which should have been standing for communication processes across borders. However, the question of what was the content of the term and what was the scale of the phenomena it displayed could not be answered neither by the Eurostat management, nor by the participants. This is not surprising, because statistics only evaluates in quantitative form some objective phenomenon, in this case relating to the border. *If there is no common understanding of the phenomenon themselves, it is clear there will be no adequate statistical representation.*

Another problem can happen in connection with *substitution of notions.* For example, in 2002, the Federal Assembly of Russia ratified approved in 1980 European Outline Convention on Transfrontier Cooperation between Territorial Communities or Authorities. However, the official translation of documents into Russian («Европейская рамочная конвенция о приграничном сотрудничестве территориальных сообществ и властей») instead of the term «transfrontier cooperation» uses the term “cross-border cooperation”. Thus, the legislator significantly narrowed the notion of „transborder” [3]. The same interpretation of the term is given in the official translation ratified by Russia in 2008 of the „Protocol number 2 to the European Outline Convention on Transfrontier Cooperation between Territorial Communities or Authorities concerning inter-regional cooperation” [4]. Even earlier the term „cross-border cooperation” was recorded in the main intrastate document governing external relations of the regions – the „Concept of cross-border cooperation in the Russian Federation” approved by the Government of the Russian Federation in 2001 (law on this subject has not yet adopted) [5].

Sometimes the use of border related terms has a clearly visible *political expediency.* For example, only this can possibly explain the fact that the number of countries covered by the policy of the European Union and reflected in the concept of „Eastern Partnership”, the „eastern-most” of the eastern states – Russia – is not included [6].

Unfortunately, there are cases when the designation of certain boundaries or geopolitical realities uses *the quirky blend of scientific impropriety and political engagement.*

*The aim of this article, hence, is the analysis of the nature of transborder processes and their conceptual representation.*

### 3. THE MAIN MATERIAL OF THE STUDY

The border is a static phenomenon. Transborder<sup>4</sup> processes (TBP) (transborder phenomenon, transborder flows, transborder) are a dynamic form of border existence. Transborder processes exist ever since borders exist<sup>5</sup>. They may be limited by certain parts of the state area (in particular, territory), or they can cover all its depth. The following can equally be called transborder processes: the military invasion into the territory of another state, or a romantic communication of lovers across borders through pigeons.

Because transborder processes have been somewhat underdeveloped or exist in primitive forms, on the one hand, and that they use to be the case mostly on the areas immediately close to borders, on the other hand – *transborder communication for a long time (until the recent decades) associated with the border communication*.

However, with the revolutionary scientific and technical progress (in particular, the emergence of a fundamentally new means of transport and communication) and related globalization and dynamism of social development in the second half of the last century, *the scope, intensity and variety of transborder processes forms increased dramatically*.

To relate the fundamentally new quality of transborder communication in the Procrustean bed of „border relations” („border connections”) came to be totally wrong from a scientific point of view, and counterproductive from the practical standpoint.

I believe, that to adequately capture the essence of modern transborder processes we should be guided by the *methodology of systematic study of society*. This choice is due to three main reasons.

1. It is only the systemic methodology as a tool for integrative analysis that can currently adequately reflect the natural, organic unity of factors, different by nature, affecting borders - from subjective to material factors.
2. It is only the systemic methodology that provides analysis of both functional and dynamic characteristics of objects that is able to reveal the complex mechanism of transborder processes operation and development.
3. Finally, it is only the systemic methodology that has a powerful apparatus of practical developments that can translate the limologic<sup>6</sup> research from primarily descriptive to the practically necessary category.

Scientists are increasingly aware that theoretical border problems should be translated into practical developments *on a totally new level – from primarily one-factor analysis to interdisciplinary research*.

As V. Kolosov emphasized, geography came to be the first science dealing with border areas. Two main branches of geography – physical and socio-economic geography – dealt with border problems and their delimitation in particular. Geography pioneered the study of political borders.

The history of mankind is the history of wars, and most wars aimed at changing the borders. Therefore, without studying the history of wars one can not study the history of frontiers. The so-called new political geography that emerged in the mid-70s of the 19th century and is closely related to other social sciences, including political science and international relations, explores the impact of borders and their stability on the resolution of territorial disputes and conflicts, and on peace. Those and other areas of knowledge, according to V. Kolosov, should provide an interdisciplinary approach to the study of borders [8, page 606].

<sup>4</sup> «Transborder (transfrontier)» (Eng.) means “across the border, on the other side of the border”.

<sup>5</sup> The International research group created in the Institute for Transfrontier Cooperation is engaged in border theory and transborder process development. The Group consists of scientists, diplomats, state authorities representatives, businessmen. They prepared a number of research, in particular [7].

<sup>6</sup> Limology – the science dealing with borders.

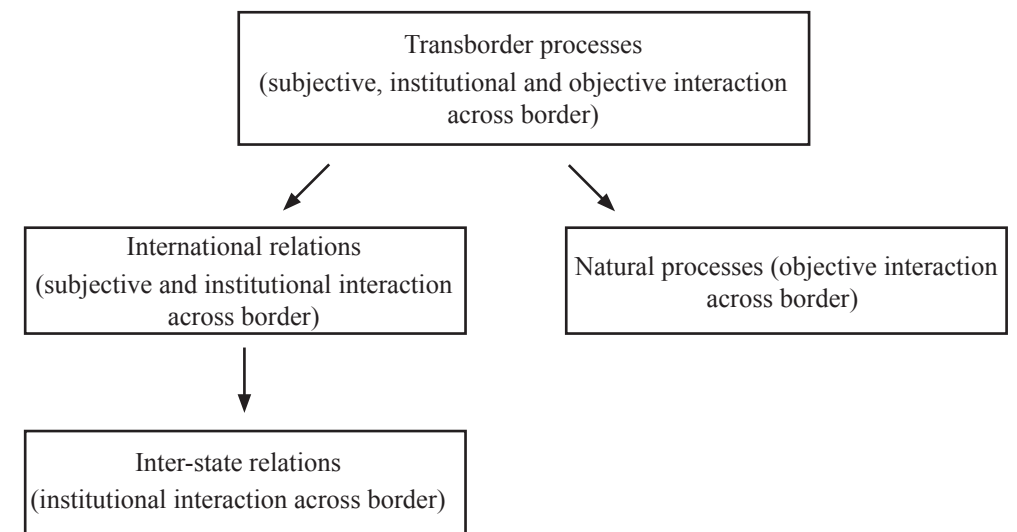
In turn, other prominent scientist E. Brunet-Jailly, believes that the development of interdisciplinary theory of borders should take advantage of four equally important analytical dimensions: 1) the impact of market and trade flows, 2) the political activity of various levels of government at joint borders, 3) special political impact of border communities, and 4) the specific culture of the latter [9, page 625].

Based on a systematic vision of the object, *the essence of transborder processes*, in my understanding, is *subjective communication, relations, interaction or natural flowing of matter, energy, etc., associated with the crossing of the state border*. Thus, transborder processes (cross-border) *differ from international relations*. They are wider in their meaning, constituting not only a wide range of *subjective interaction across the border* (which is the content of international relations), but also *a wide range of natural transborder phenomena* - the overflow of water and air resources, migration of populations of animals (a kind of object interaction) etc. Of course, they are richer in content compared with interstate relations, the *subjects of which are only public institutions*.

The multifaceted systemic phenomenon of “transborder” *by their criteria of depth of area coverage with transborder activity and their spatial scale include three levels: macro<sup>7</sup>, meso and micro*.

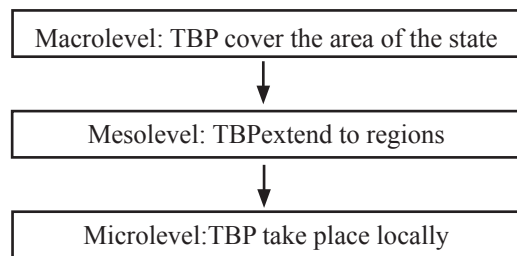
Macro level corresponds to transborder processes covering in scope *the entire territory of the state* (eg, international relations, inter-state relations, international relations of national actors, international exchange of goods, etc.). Meso level is formed by transborder effects that *extend into regions* (eg, regional cooperation of state bodies and local communities, barter, natural processes, etc.). Micro level of transborder processes is associated with the crossing of the state border (organized or spontaneous, legally or illegally) by specific actors (representatives of government, civil society organizations, groups or individuals), or barter, natural events *at the local level*.

Proposed understanding of transborder processes, is of course, presented in a somewhat schematic form. However, in my view, it adequately reflects the essence and structure of transborder effects. Here is the attempt to depict it graphically:



**Scheme 1.** Essence of transborder processes

<sup>7</sup> Як відомо, існують також транснаціональні процеси. Вони пов'язані із перетином кордонів декількох, чи навіть багатьох держав.



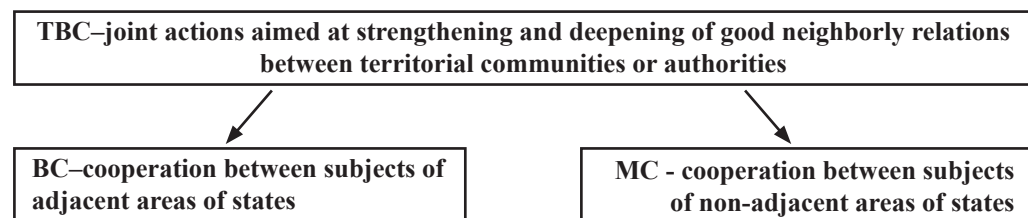
**Scheme 2.** Levels of transborder processes

The above approach to the essence of transborder processes and reflecting it generic notions also allow to more accurately depict the content of derivative, narrower by scope, transborder phenomena and related specific notions. First, it refers to transborder cooperation (TBC), which in the present context has ever increasing practical importance.

As is known, in the European sense, „transborder cooperation (TBC)» - «the Transfrontier co-operation (TFC)» or «the Cross-Border Co-operation (CBC)» - means any concerted action aimed at reinforcing and deepening of the good-neighborly relations between territorial communities or authorities within the jurisdiction of two or more contracting parties and the conclusion for that purpose of appropriate contracts or related agreements [10, page 3]. Transborder cooperation is an organized, usually institutional form of transborder processes.

For a long time this definition of the TBC was actually interpreted as being identical to the notion of “border cooperation”, that is the notion depicting cooperation of neighboring border areas of the states. However, real life, the practice of transborder cooperation forced to make adjustments to this interpretation. The point is that cooperative relationship also tended to get established and developed not only between adjacent regions but also between regions with no common area in between. Therefore the content of TBC was clarified. This clarification is contained in the already mentioned „Protocol number 2 to the European Outline Convention on Transfrontier Cooperation between Territorial Communities or Authorities Concerning Inter- territorial Cooperation” [11].

Hence, as of today, *two types of transborder cooperation are identified: transborder cooperation (TC) covering cooperation of subjects of adjacent areas of the states and territorial (mostly regional) cooperation (MC) covering interaction of subjects of non-adjacent areas.* In terms of matching the spatial levels of transborder processes, both transborder border cooperation and transborder territorial cooperation correspond to meso- and mini- levels of transborder processes<sup>8</sup>



**Scheme 3.** Essence and types of transborder cooperation

The systemic methodology is also vital for the effective analysis and management. Unfortunately, as the authoritative Ukrainian researcher N.Mikula points out, „... currently in science there are no systematic studies of transborder regions and transborder cooperation” [12, page 9]. Attempt to fill this gap in

<sup>8</sup> For consistency and correctness in the analysis, we should note that transborder cooperation is also featured on the macro level of transborder processes (as a party of international and inter-state relations). However, identification if this level o TBC is not determined by practical needs yet.

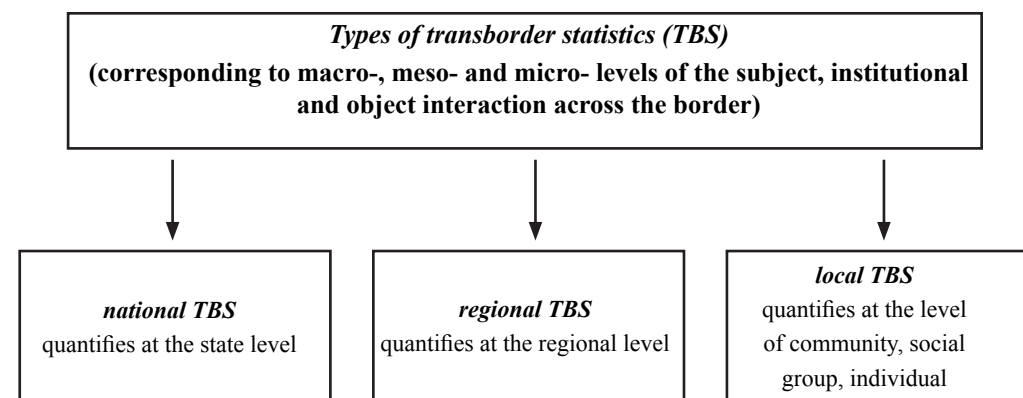
theoretical reflection has been made by the Institute for Transfrontier Cooperation and its partners in the implementation of the international project „Borders for people”.

The project was prepared by the Institute for Transfrontier Cooperation (Uzhgorod, Ukraine) with Hungarian, Slovak and Romanian partners in the framework of the European Union ENPI Program (2007-20013). It was implemented in the period between 2010-2012. Overall project objective was the optimization of transborder cooperation of the neighboring regions of Romania, Slovakia, Hungary and Ukraine. The main outcome of the project is creation of *indexation and monitoring* system of transborder cooperation and methods of its social implementation. Without going into a detailed analysis of it<sup>9</sup>, let me point out that the transborder cooperation indexation and monitoring system (MIS) in Europe *is a set of theoretical, organizational and practical measures that provides the correct analysis and comparison of common and distinctive features and trends in transborder cooperation in various regions of Europe in order to improve its efficiency, primarily by management optimization.* MIS is a universal model for analysis and optimization of transborder cooperation both at the new Eastern border as a whole and in its individual segments in particular.

It is encouraging that the systematic approach to the analysis of contemporary transborder processes applied in the project was supported by the expert community. The presentation of MIS at international forums was the proof. In addition, the methodology has been already implemented on other segments of the European border, particularly on the Norwegian-Russian [14], Finnish-Russian, Polish-Russian [15] borders. For preparation and implementation of this project the Institute for Transfrontier Cooperation was awarded by the Association of European Border Regions (AEBR) with the award “For outstanding achievements in European transborder cooperation.”

Another international project of the Institute for Transfrontier Cooperation deals with the problems of transborder statistics. It is called “Modern transborder processes and their statistical mapping.” The project is implemented within the Vysehrad Foundation Program (start of implementation - June 2012).

The project is based on systemic understanding of transborder processes. In accordance with this understanding three types of transborder statistics are proposed to be identified, corresponding to macro-, meso- and micro- levels of transborder processes. *The national transborder statistics* quantifies the subject, institutional and object interaction across the border at the state level, *regional transborder statistics* - at the regional level, *local transborder statistics* - at the local level.



**Scheme 4.** Content of transborder statistics and its types

<sup>9</sup> Methodological and methodical foundations of indexation and monitoring of transborder cooperation are presented in the findings of the Institute for Transfrontier Cooperation, published in 5 languages [13].

Regional transborder statistics and local transborder statistics are much wider in terms than the *statistics of border cooperation*.

The project involves eminent researchers, particularly known in Europe and worldwide experts - in the past many years the Head of the Polish Statistical Office, now - Lazar University Professor J. Olenski and former director of the Research Institute of Rosstat, Vice-President of the Russian Academy of Economics and Business Professor V. Symchera.

To sum up, the following conclusions can evidently be made:

1. The sociological reflection of modern transborder processes must “keep up” with their most dynamic development, with constant enrichment with innovation methods.
2. The system methodology is an effective cognitive and transformational tool of transborder processes, allowing considerable clarifying and specifying the categorical knowledge about the transborder phenomena and structure essence.
3. One of the greatest advantages of the system research methodology is its practical orientation. This is proved by the findings of the international project, dealing with modern transborder processes analysis and management.

Only first steps have been made in the integral understanding of transborder processes. A lot of work for the wide range of researches and practitioner is still ahead, in particular in terms of development of the system model of transborder processes, improvement of methods of quality and quantity assessment of transborder phenomena, efficient social implementation of the information received.

#### REFERENCES

1. *Magna Charta libertatum* [Electronic resource]. - Access to article:[http://uk.wikipedia.org/w/index.php?title=%D0%92%D0%B5%D0%BB%D0%B8%D0%BA%D0%B0\\_%D1%85%D0%B0%D1%80%D1%82%D1%96%D1%8F\\_%D0%B2%D0%BE%D0%BB%D1%8C%D0%BD%D0%BE%D1%81%D1%82%D0%B5%D0%B9&oldid=3158192](http://uk.wikipedia.org/w/index.php?title=%D0%92%D0%B5%D0%BB%D0%B8%D0%BA%D0%B0_%D1%85%D0%B0%D1%80%D1%82%D1%96%D1%8F_%D0%B2%D0%BE%D0%BB%D1%8C%D0%BD%D0%BE%D1%81%D1%82%D0%B5%D0%B9&oldid=3158192).
2. Гальчинский А. Україна на перехресті геополітичних інтересів/ Гальчинский А.– Київ: Знання України, 2002. - 150 с.; Карпатський регіон та його роль в забезпеченні безпеки та співробітництва в Європі// Матеріали міжнародної конференції. - Ужгород: Ліра, 2008. – 230 с.; Кіш Є.Б. Центральна Європа в сучасній системі євро регіональної інтеграції/Кіш Є.Б. – Ужгород: Ліра, 2008.- 420 с.; Макарычев А. С. Пространственные характеристики трансграничной безопасности: концептуальные контексты/Макарычев А. С. // Безопасность и международное сотрудничество в поясе новых границ России. Москва: НОФМО, 2002. - с. 15 – 91; *Cichocki B. The Eastern External Border of the Enlarged European Union/ Cichocki B. – Warsaw: Batory, 2004. – 153 s.; Slovensko-ukrainská cezhraničná spolupráca: analýza problémov a stratégia rozvoja// - Prešov: Nova, 2006. – 223 s.; Communication and European Frontiers// - Debrecen - Oradea: Oradea University Press, 2011. – 219 p.*
3. Европейская рамочная конвенция о приграничном сотрудничестве территориальных сообществ и властей[Electronic resource]. - Access to article [http://www.szrf.ru/doc.phtml?op=1&nb=00\\_00&year=2009&iss\\_id=179&doc\\_id=22](http://www.szrf.ru/doc.phtml?op=1&nb=00_00&year=2009&iss_id=179&doc_id=22).
4. Протокол №2 к Европейской рамочной конвенции о приграничном сотрудничестве территориальных сообществ и властей, касающийся межтерриториального сотрудничества [Electronic resource]. - Access to article:  
[http://www.szrf.ru/doc.phtml?op=1&nb=00\\_00&year=2009&iss\\_id=179&doc\\_id=22](http://www.szrf.ru/doc.phtml?op=1&nb=00_00&year=2009&iss_id=179&doc_id=22).

5. Концепция приграничного сотрудничества в Российской Федерации//Собрание законодательства Российской Федерации. – 2001.- №8.- с.35-64.
6. Спільна заява Саміту Східного партнерства у Празі [Electronic resource]. - Access to article: <http://eu.prostir.ua/library/234749.html?print>.
7. Транскордонне співробітництво як альтернатива новій «залізній завісі» та конфліктам/ Керівник авторського колективу С.І.У стич. - Ужгород: Карпати, 2007.-239 с.; Устич С. Кордон, війна та мир в долі сучасного світу/ Устич С.// Ужгород: Карпати, 2010.-326 с.; *Ustich S. Analysis and conclusions for the Ukraine-EU borders/ Ustich S. // Ex borea lux? Learning from the Finnish and Norwegian Experience of Cross-border Cooperation with Eastern Neighbours. Prague: ISD, 2012. – p. 35-45.*
8. *Vladimir Kolossov. Border Studies: Changing Perspectives and Theoretical Approaches / Vladimir Kolossov// Geopolitics. – 2005. - No 10. – p. 601-625.*
9. Brunet-Jailly, E. Theorizing Borders: An Interdisciplinary Perspective/ Brunet-Jailly, E.// Geopolitics. - 2005. – No.10. - p. 620-634.
10. European Outline Convention on Transfrontier Co-operation Between Territorial Communities or Authorities / - Strasbourg: Division des publications et des documents, 1980. 15 p.
11. Протокол №2 к Европейской рамочной конвенции о приграничном сотрудничестве территориальных сообществ и властей, касающийся межтерриториального сотрудничества[Electronic resource]. - Access to article:  
[http://www.szrf.ru/doc.phtml?op=1&nb=00\\_00&year=2009&iss\\_id=179&doc\\_id=22](http://www.szrf.ru/doc.phtml?op=1&nb=00_00&year=2009&iss_id=179&doc_id=22).
12. Мікула Н. Міжтериторіальне та транскордонне співробітництво/ Мікула Н.// Львів: Арал, 2012. - 394 с.
13. Устич С.І. Концепція оптимізації системи транскордонного співробітництва / Устич С.І.// Оптимізація системи транскордонного співробітництва: концепція та її пілотна імплементація. Ужгород: Ліра, 2012. – с.4-40; Устич С.І. Методика індексації транскордонного співробітництва / Устич С.І.// Посібник із індексації та моніторингу транскордонного співробітництва. Ужгород: Ліра, 2012. – с.5-71; Індекси дослідження транскордонного співробітництва / - Ужгород: Ліра, 2012. - 244 с.’
14. Index of TBC [Electronic resource]. – Access:<http://www.borderdialogues.eu/index>.
15. Projekt „Liczmy się z granicą” [Electronic resource]. - Access to article: [http://www.eurobalt.org.pl/index.php?option=com\\_content&view=category&layout=blog&id=46&Itemid=92](http://www.eurobalt.org.pl/index.php?option=com_content&view=category&layout=blog&id=46&Itemid=92).



**JÓZEF OLEŃSKI**

*Lazarski University Warsaw  
The Bronisław Markiewicz State  
Higher School of Technology  
and Economics in Jarosław  
(Poland)*

## ASYMMETRY OF ECONOMIC POTENTIALS AS THE DRIVING FACTOR OF INTEGRATION OF ECONOMIES IN TRANSBORDER REGIONS<sup>1</sup>

### 1. FORMULATION OF THE PROBLEM

In modern, open, market-driven and knowledge-based economy the driving forces of economic development and stimulators of social and economic activity are the asymmetries of potentials between countries, regions and branches of economy:

- asymmetry of social, technological and economic potentials,
- asymmetry of information resources,
- asymmetry of human and social capital,
- asymmetry of institutional regulations, laws and procedures.

These asymmetries and differences of potentials may positively influence economic cooperation and development between enterprises, non-profit organizations, national and regional economies generating the effect of complementarity of economies. The asymmetries of potentials, resources, capitals and regulations in economy are necessary for creating the effect of comparative costs of economic and social activity and for generating the synergy effects of economic cooperation and mutually profitable collaboration for all parties.

However these social, technological and economic symmetries may also have negative impact on economic cooperation and development. One of most important reasons of blockades and difficulties in generating positive synergy from the asymmetries in economy, are (a) the incomplete information on the economic and social asymmetries, (b) incoherence between laws, regulations and procedures generating the asymmetries, (c) information gaps between subjects operating in asymmetric economic and social environment, (d) lack of information transparency of markets and institutions.

<sup>1</sup> Prof. Józef Oleński, profesor of Lazarski University, Warsaw and of the State Higher School of Technology and Economics in Jarosław.

In transborder regions the asymmetries of neighboring local economies are extremely deep and multidimensional. Main causes of these asymmetries are of political, institutional, social and cultural nature. Often also the differences in development of infrastructural factors may play important role in generating the asymmetries.

In transborder regions the asymmetries are deeply influencing all spheres of social and economic life. Therefore good identification, understanding and monitoring of asymmetries and the analysis of impacts of different types of asymmetries on economic and social life in transborder areas of neighbouring countries and regions is of utmost importance for regional governments, social organizations and businesses.

Main thesis of this paper is that in globalized knowledge-based economy, the transborder regions are becoming the areas of more dynamic socio - economic cooperation and development than other regions apart from the borderlines. This specific dynamism is based in the asymmetry of social, institutional and economic potentials concentrated in relatively small geographic space.

The asymmetries of potentials are generating the effects of economic synergy thanks to social and economic complementarity of branches, enterprises and other organizations. Active policy of regional governments and their cooperation, direct involvement in the initiatives in building harmonized social and economic infrastructure, institutional support to the cooperation of enterprises and non-profit organizations, support to joint cultural, scientific and other social initiatives, is the prerequisite of the development of transborder regions in integrated Europe.

### 2. BASIC CONCEPTS AND DEFINITIONS

Transborder economy needs specific theoretical, methodological and information foundations. Economic theories oriented for analysis of national economies as entire systems (based on the SNA model of national economy) are not sufficient for observation, measuring, evaluation and modeling of economic processes in transborder regions. Transborder economics as the discipline within economic science needs special conceptual framework.

Below there are presented the proposals of selected basic concepts and definitions relevant for elaborating transborder economics as the specialized discipline within economic sciences.

Transborder region

- region located on the territories of two or more countries, in which the interference of social, cultural, economic, ecological, infrastructural and political processes is taking place.

Transborder area

- entire part of transborder region located on the territory of one or more countries delimited from the point of view of specific criteria, e.g. area of border crossing, area of recreation and health services visited by residents of transborder region of neighbouring countries, industrial area employing the inhabitants of neighbouring cross-border region.

Transborder system

- social, economic or infrastructural system acting in the transborder region, on the territory of two or more countries, e.g. transborder labor market, transborder retail trade, transborder wholesale trade, transborder energetic infrastructure, transborder road and railway infrastructure, transborder ecological infrastructural facilities, services for non-resident businesses and organizations, etc.

Transborder process

- social or economic processes conducted in transborder region, on the territory to or more countries, in which are taking active part the subjects – residents (governments, NGO's, businesses, social institutions etc.) of different countries.

#### Transborder economic potential

- Social, human, cultural, natural, ecological, technological, productive and financial resources of governments, enterprises, NGO's, households, individuals and other subjects that are the stakeholders of transborder systems and transborder processes.

#### Institutional transborder potentials

- Laws, regulations, administrative procedures and organizational units (governments, other organizations authorize by governments to realizing the functions and duties determined in laws and regulations, related to transborder systems and processes.

#### Asymmetry of transborder potentials

- qualitative or quantitative differences of economic and institutional potentials (resources and capacities) of regions, localities, enterprises or other organizations based in transborder areas of different countries. Institutional, organizational, technological, economic, social and human asymmetry are of special importance for complementarity of economies of transborder regions, systems and processes.

#### Economic transborder asymmetry

- qualitative and quantitative differences of economic capacities, economic infrastructure and market conditions; economic asymmetry may be measured using relevant statistical indicators (prices, wages and salaries, social insurance, costs of production, costs of trade, taxes, customs, etc.).

#### Institutional transborder asymmetry

- differences of legal regulations and administrative procedures officially adopted and practically used in economic and social activities on the territory of different countries in transborder regions; institutional asymmetry may be identified by comparative analysis of regulations related with concrete economic transborder processes or phenomena and by comparative simulation of impact of these regulations on economic conditions on the areas of different countries in transborder regions.

#### Positive transborder asymmetry

- qualitative and quantitative differences of economic and institutional potentials that stimulate more extensive processes of cooperation and development thanks to the complementarity of economic processes and potentials, e.g. effects of direct contacts of subjects and citizens that are the residents of different countries (thanks to free transborder movement and free trade zones), differences of prices for the same products, differences of wages, differences of local demand and supply of products on local transborder markets, differences of quality of goods and services, differences of exchange rates of currencies, difference of quality of environment, differences in institutional and legal regulations creating more convenient conditions for economic activity in one part of the transborder region for foreign subjects than in the country of residence etc. Positive transborder asymmetry enables the subjects to optimize their activities by using the effect of comparative costs on wider transborder markets.
- Positive transborder asymmetry may be the result of asymmetries of all types of resources listed above, i.e. social, human, cultural, natural, ecological, technological, productive, financial resources and between institutional potentials, laws, regulations and procedures.

#### Negative transborder asymmetry

- qualitative and quantitative differences of economic and institutional potentials that are discouraging the subjects, increase costs or create excessive administrative or economic difficulties of cooperation of businesses, individuals and governments (e.g. complicated border crossing system, excessive customs, excessive control of labor market, local cooperation of microbusinesses, excessively low limits for local transfers of goods and currencies etc.). Main reason of negative transborder asymmetry is caused by incoherence of laws and administrative regulations of neighbouring countries (e.g. passport and visa regulations, currency exchange regulations, registration of foreign enterprises, etc.) and formal barriers of transborder cooperation and contacts of subjects.
- Negative transborder asymmetry may be the result of asymmetries of all types of resources listed above, i.e. social, human, cultural, natural, ecological, technological, productive, financial resources. In modern economies most important role is played by the negative asymmetry of institutional potentials, i.e. laws, regulations and procedures and their implementing in practice by governments and other institutions acting in transborder regions.

### 3. TYPES OF ASYMMETRY OF ECONOMIC POTENTIALS IN TRANSBORDER REGIONS

The following types of asymmetries are of special importance for development of transborder regions:

- Institutional asymmetry,
- Economic asymmetry,
- Technological asymmetry.

The asymmetries listed above should be not only identified by scientists and practitioners, but it is also necessary to measure the impact of these asymmetries on economic processes and phenomena in transborder regions.

#### 3.1. INSTITUTIONAL ASYMMETRY

Decisive and necessary factor of stimulation of development in transborder regions and complementarity is the *institutional asymmetry*. The *institutional asymmetry* in practice means that in one transborder region all economic, social and political activities are regulated by different legal systems. There are also differences in functions and organization of regional and local governments, different competences of particular governmental units and other institutions, differences of rights and duties of economic subjects and physical persons determined by laws and realized in practice. There are also differences of administrative procedures realizing the same or similar functions, as well as their realization in practice. The subjects – businesses, NGO's, individuals - operating in transborder regions should be acquainted both with the laws, procedures and with real practical implementing and use of these laws in all fields of political, social and economic activity.

Laws and administrative procedures based on those laws are regulating the transborder systems and processes. National laws and procedures are “crossing” - in some sense - the borders and have the impact on the activities of economic subjects on the territories of neighbouring countries. This *transborder interference* of national laws and administrative procedures should be carefully analyzed by stakeholders (governments, businesses, social organizations, NGO's, households and individuals) from the point of view of the impact of institutional asymmetry between different national segments of multinational

transborder region. The subjects – as a rule – are acquainted with administrative procedures and the ways of their executing in their countries of residence. However the subjects – non-residents do not have full information on the equivalent or similar regulations and procedures that are obligatory on the territories of neighbouring countries. In such situations the institutional asymmetry in transborder regions is creating the “legal traps” for businesses and all other groups of social and economic subjects. The reasons of those traps are:

- (a) Different regulations of the same economic and social processes in the laws and administrative procedures of neighbouring countries;
- (b) Lack of complete, clear information of laws and procedures, understandable for all stakeholders and easy interpretable in concrete cases and situations of subjects.

Common information platform collecting and disseminating all laws and administrative procedures and their presentation understandable and accessible for all subjects operating in transborder areas is necessary to the avoiding of the “legal traps” by the stakeholders and to use the institutional asymmetry as the positive factor of development of transborder areas, to achieving higher efficacy of economic and social transborder processes and cooperation of subjects from neighbouring countries.

For example, the asymmetry of laws regulating labor markets in Poland, Ukraine, Slovakia, Hungary and Romania (*Carpatian Euroregion*) from the point of view of costs of labor, social insurance, stability of work, level of wages and salaries, conditions of work other rights and duties of employees and employers, as well as the regulations of employment of foreign citizens on the territory of other countries, may help the entrepreneurs to optimizing the policy of employment and the location of different activities on the territories of different countries and shall help employees to take proper jobs.

The comparative analysis of laws regulating the environment protection and their economic and ecological impact for economic activity may help to optimize the decisions on localization of economic activity, used technology and profile of investments in environment protection. Detailed comparative analysis of symmetries and asymmetries of tax laws, laws regulating social insurance and health insurance, environment protection, investments etc., are of special importance.

The information system covering – for all countries of transborder region - all laws, regulations, administrative procedures regulating economic activities of businesses, social activities of NGO’s and other non-profit organizations, procedures adopted by governments and institutions responsible for supervision, control and monitoring of economic and social activities in transborder areas, is the prerequisite of transparency of institutional asymmetry of transborder areas.

### 3.2. ECONOMIC ASYMMETRY

*Ceteris paribus*, in given institutional frameworks in transborder regions, the economic asymmetry is the main driving force of mutually profitable cooperation and development in transborder regions. Economic asymmetry could be evaluated by following indicators measured and compared in the local areas of transborder regions in different countries:

Economic asymmetry is the most important stimulator of development of transborder trade, transborder labor market, localization of production, organization of cooperation with other entrepreneurs within the existing legal and administrative environments. It is influencing the development of transborder economies in short term, as well as in middle term.

### 3.3. TECHNOLOGICAL ASYMMETRY

Technological asymmetry of economies in transborder regions is the consequence of differences of technological standards between countries and the level of technology of production processes. These differences are strengthening the complementarity of production processes and differences of technological level and quality of produced goods and services. Technological asymmetry is also the cause of differences of economic efficiency of production processes and of the impact of production processes on natural environment.

Technological asymmetry in industrial production, trade, transportation, is the middle – term factor that may positively stimulate the development of transborder cooperation between enterprises of different countries.

Technological level of industry and trade is dependent on investments of businesses in modern technologies, most of them imported from highly developed countries. Therefore in central and eastern Europe for many years, before the transition in the beginning of the 90<sup>th</sup>, the technological progress was depended on the policy of import of modern technologies. This policy has created deep differences of technological level of branches and enterprises between countries. After 1990 the processes of technological modernization of many branches of economy have been accelerated. However up to now in transborder areas the technological asymmetry between countries is still visible. The difference of technological level of branches and production processes in transborder areas causes the differences in efficiency and quality of produced goods and services. It could be an important factor stimulating the cooperation and technological cooperation of enterprises in transborder regions.

One should remember however that - in long term - the transfer of technologies in open, market - driven economies is reducing the scale of technological asymmetry and its impact on stimulation of cooperation.

### 3.4. COMPLEMENTARITY VS. SUBSTITUTION IN TRANSBORDER REGIONS

In transborder regions the complementarity of economic and social capacities, technologies and branches of economy is an important factor mutually profitable cooperation. The more complementary are the economies the stronger is the propensity to establishing middle-term and long-term cooperative links. The complementarity is based on the asymmetry of natural resources, social and human capital, financial capital, technological level and infrastructural capacities. Economic complementarity is the foundation of strong positive asymmetry.

However often in transborder regions the relation of substitution between some branches, capacities, technologies or natural resources are observed. In market driven economy the substitution is generating the competition between businesses. Competition is also stimulating progress thanks to modernization of technologies, better management and more offensive marketing. From this point of view transborder markets create better conditions of development based on competition.

Regional governments should resist the temptation to using the national administrative tools for controlling and limiting the competition of resident entrepreneurs with the businesses from other countries. Regional governments may also encourage the businesses operating in competing branches to coordinate their activities. Such approaches of “coordinated competition” and joint development of infrastructure for mutual benefit of all stakeholders is adopted in touristic areas in transborder regions.

### 3.5. INTEGRATION VS. DISINTEGRATION

In transborder regions two contradictory trends of development of economies are observed:

- a) integration and concentration,
- b) disintegration and distribution.

Ad (a) Integration of existing structures of economic and social activity by creating more stable forms of cooperation of organizations and units, for example international consortia of national subjects – residents on the territories of neighbouring countries (enterprises, NGO's, local governments, social organizations). Integration and coordination of activities of national subjects is also realized by signing bilateral or multilateral agreements of cooperation and coordination of activities, in different forms: letters of intent, organization of joint task forces and working groups, coordinating councils etc. The integration processes help to achieve the synergy effect by concentration of complementary capacities of subjects operating on the territories of two or more countries and supporting to choosing optimal forms and places of the activity in transborder regions. Transborder outsourcing is one of effective tool of reaching the effects of synergy as the specific form of integration of economic and social activity.

Ad (b) Disintegration of activities by supporting independent local social initiatives and NGO's, non – profit organizations realizing concrete goals on local level is also an alternative approach to optimizing economic and social activities. Disintegrated forms of cooperation in transborder areas are efficient for realization of social, cultural and local ecological initiatives on local level. These decentralized forms of cooperation may stimulate the activity of citizens and micro-entrepreneurs on local level. Good results of disintegrated cooperation of many independent units may be achieved within bilateral agreements of partnership cooperation of regional governments, small towns, villages, local cultural initiatives. These agreements create political and legal conditions of reliable cooperation of many independent businesses and organizations, especially in such domains like culture, social activities, health, education, research. The prerequisite of achieving mutual effects of disintegrated forms of activity is the transborder information transparency achieved by developing and maintaining common transborder information platforms for interchange of information between subjects and citizens.

### 3.6. ASYMMETRY OF SOCIAL AND CULTURAL POTENTIALS

Social and cultural variety of societies living in transborder regions is an important potential of regional development. Cultural and social asymmetry should be used by regional governments as the field of cooperation of social and cultural organizations. This cooperation is creating political and social atmosphere of cooperation in other domains, especially in economic activities.

In the Carpathian Euroregion this positive asymmetry seems to be well understood by regional and local governments of all countries. Many joint cultural events and social initiatives are undertaken, stimulating the development of tourism, local culture and strengthening social capital on local level. Direct contacts of organizations and people is facilitating the development of cooperation in other domains.

Partnership agreements between self-governments of cities, towns and other local governments is also important contribution to the creating of better conditions of cooperation in other domains of economic and social life in transborder regions.

### 4. METHODOLOGICAL PROBLEMS OF DELIMITATION OF TRANSBORDER AREAS IN THE LIGHT OF ECONOMIC ASYMMETRY

Important practical problem for all active stakeholders of social and economic systems and processes in transborder regions is the delimitation of transborder areas. For efficient use of positive effects of economic asymmetry by governments, entrepreneurs and non-profit institutions in transborder areas it is necessary to identify properly geographic space of transborder systems and processes for specific types of social and economic phenomena, processes and systems.

From theoretical and practical reasons each transborder region should be identified not as a single geographic space, but as a set of geographic areas delimited from the point of view of different criteria. The criteria of delimitation of transborder regions are defined for practical purposes, for the needs of politicians, entrepreneurs, social organization, cultural institutes and researchers. Delimitation of transborder areas should be based scientific methodology and on solid statistical and factographical information.

Methodology of delimitation of purpose – oriented transborder regions, areas and local territorial units is an important integral part of transborder economics as the discipline within economic science. Geographic space of transborder regions should not be delimited taking into account the geographic distance between localities, towns and cities. The delimitation of transborder regions should be multicriterial and multidimensional, taking into account the interference of economic and social processes stimulated and strengthened by different forms of economic asymmetry: institutional, technological, economic *sensu stricto*, social and cultural etc. Special attention in the delimitation of transborder areas from the point of view of different criteria should be paid to asymmetries that generate the complementarity of goods and services, complementarity conditions of economic activity and of the availability of social and economic resources (human capital, social capital, technical infrastructure, natural resources etc.).

For practical purposes of policy making, social and economic activity, as well as for scientific research, the following objective – oriented transborder areas are or should be delimited:

- A. Transborder ethnographic and cultural areas
- B. Transborder labor markets
- C. Transborder retail trade markets
- D. Transborder consumer services
- E. Transborder services for businesses
- F. Transborder tourist areas
- G. Transborder education systems
- H. Transborder health services systems
- I. Transborder ecological and environment protection areas
- J. Transborder cities and metropolies
- K. Areas of border crossings

For practical needs of concrete groups of economic units and socio – political organizations active in transborder areas, also other criteria of delimitation of specific transborder sub-regions and local areas may be defined.

For research, for analytical purposes and for decisions taken by stakeholders, the geographic space of a transborder region may be defined as the concatenation of purpose – oriented transborder areas delimited on the basis of selected political, cultural, social, economic and ecological criteria.

Regional and central policy makers, social organizations and economic units should define and delimit “their own” transborder areas, taking into account specific criteria relevant to their fields of activity, responsibility and interests. For each transborder area specific methods of identification and delimitation should be adopted.

The areas delimited from the point of view of specific criteria in transborder regions are creating common domain - oriented transborder spaces. E.g. for cultural institutions of national minorities for delimiting the transborder area relevant to their activities the methods used by historians, social anthropologists, linguists shall help to define *common transborder cultural space*. For the *common transborder labor market space* the delimitation shall be based on the analysis of complementarity of demand for labor and supply of potential employees, concatenated with the commuting infrastructure, border crossing facilities and laws regulating the work of foreigners on the territory of other country and on statistics of local labor markets along the borderlines.

For *commonecological transborder space* there should be used the variety of different methods of delimitation of transborder water resources (rivers, lakes, seas), the conditions of water resources use and protection, threat of water pollution, air pollution and other environmental risks. Also the impact of investments in infrastructure and industry on natural environment and tourist, health and recreation resources should be taken into account. Special attention should be paid to analysis, monitoring and simulation of “exports” and “imports” of pollution of water, air and land through the borders. This set of many criteria and factors is necessary for proper delimiting of *common transborder ecological space*.

Methodology of delimitation of transborder regions and specific transborder areas still needs more research. Elaboration of scientific foundations, criteria, methods and information of delimitation of transborder regions and spaces should be the domain of joint research projects of multinational teams of experts from universities and institutes of collaborating regions.

##### 5. MULTIPLIER’S AND ACCELERATOR’S EFFECT OF ASYMMETRY OF POTENTIALS IN TRANSBORDER REGIONS

The bigger is the difference of potentials and the asymmetry of potentials in all spheres of social and economic life and in all kinds of resources: human and social capital, cultural potential, institutional capacities, infrastructure, industrial and technological potential, natural resources etc., the stronger are the processes of mutually effective interchange of resources and cooperation of all types of subjects operating in transborder regions.

The asymmetry of potentials is often generating the multiplier’s effects and accelerator’s effects in different domains of economy, in social and cultural activity. For example, difference of level of prices between countries is creating additional demand for products that are cheaper in one country. Higher level of wages and salaries in one country will encourage people from other side of the border to take jobs abroad, especially in transborder region. The bigger are the differences of wages and salaries, the wider will be the area of transborder local labor market. Better quality and reliability of financial services on one side of the border may encourage the entrepreneurs to locate their activity in that country.

If the differences of potentials are creating the syndrome (complex of interrelated economic, social, environmental and political factors) of interrelated complementary factors, the accelerator’s effect may be set in motion. For example, the concatenation of the differences of wages and salaries, exchange rates of currencies, prices for some goods, good commuting facilities, open border crossing and “friendly” laws for transborder trade and work, may stimulate the development of underdeveloped economic local areas

into the areas of high economic dynamism and technological progress. Such syndromes do not appear outside the transborder region.

Multipliers’ and accelerators’ effects in many branches of economy are generating the synergy effect of development in transborder region as a whole. However often the multiplier’s and accelerator’s effects appear only in *specific common transborder spaces*, e.g. local labor markets, technological parks, local spaces of border crossings etc.

Economic regional policy, local liberalization of crossing of the borderlines, local labor market, more free trade for small businesses and individuals, special facilities for cooperation of SME based in transborder regions, should be oriented on the creation of positive asymmetry, on strengthening the multipliers’ and accelerators’ effect. Active policy of regional governments and establishing common coordinating institutions as well as systematic scientific statistical monitoring in necessary for proper development of economies and preventing negative phenomena and processes, that may also occur in the regions of accelerated development e.g. shadow economy and activities prohibited by law.

Analysis and measurement of multipliers’ and accelerator’s effects as the results of economic asymmetry in different branches of economy should be the topic of systematic researches of cooperating scientific institutes and universities in transborder regions. The form of international scientific consortia has proven its usefulness and high efficacy.

##### 6. MAIN INDICATORS OF ECONOMIC INTEGRITY STIMULATED BY THE ASYMMETRY OF POTENTIALS

As it was mentioned above, for each branch of economy, each field of social and economic activity, specific methods of monitoring, measurement and analysis of effects (especially multipliers, accelerators and effects of synergy) are necessary. Useful are simple quantitative indicators that are helpful for measuring economic asymmetry between identical or similar phenomena and processes of the areas of transborder regions of different countries.

For monitoring, analysis and evaluation of economic asymmetry useful seem to be the following types of indicators:

- a) Indicators measuring the intensity of transborder relations and integration of branches and subjects (e.g. number of individuals crossing the border, number of foreign customers of businesses, turnover between businesses based on other sides of the borderline, number of foreign employees working in businesses in transborder region, value of joint projects realized by regional governments etc.).
- b) Indicators measuring positive economic asymmetry i.e. the differences between economic potentials that is stimulating mutually profitable cooperation and trade (e.g. differences of prices, wages and salaries, .
- c) Indicators measuring negative asymmetry, i.e. the differences of regulations that hamper transborder cooperation of governments, entrepreneurs and citizens, and the consequences of those regulations for citizens, businesses and governments on other sides of the borderline (e.g. time spent by individuals, trains and vehicles on bordercrossing and losses for individuals and businesses resulted by that, informal costs of crossing borders, administrative costs of transborder operations, custom duties, border taxes and other payments, costs of juristic services paid by businesses and individuals, costs of visas, etc.) .

Selected examples of indicators measuring (a), (b) and (c) are proposed below:

(a) Intensity of transborder relations

- Number of residents of transborder region crossing the border (frequency: daily, weekly, annually, seasonal changes of border crossing, costs of commuting through borders);
- Number of visas (by duration, type of visa, class of applicants for visas)
- Intensity of transborder telecommunication contacts of residents of transborder regions (telephone, internet; by types of subjects, frequency, seasonal frequency, costs);
- Number of subjects (businesses, NGO's, non-profit organizations) cooperating with partners from other parts of transborder regions (profile and type of cooperation, type of subjects);
- Value of turnover between cooperating subjects – residents of transborder regions
- Number of enterprises registered in transborder areas of two or more countries and quantitative indicators of the scale of their activities in different countries (turnover, sales, imports, exports, employment, wages and salaries, investments, fixed assets)
- Transborder consortia created by residents of neighbour countries (number, forms, profile of activity, scale of activity);
- Qualitative characteristics of types, profiles and intensity of cooperation of regional and local governments;

(b) Positive economic asymmetry

- Wages and salaries (differences by type of work and employers);
- Demand for employees on local labor markets (profile, seasonability, stability of work offered);
- Unemployment rates (on local labor markets);
- Differences of retail trade prices for goods and services on local markets;
- Differences of wholesale prices for goods and services on local markets;
- Taxes: VAT, CIT, PIT, etc.
- Custom duties for exports and imports
- Comparative costs of production and trade
- Exchange rates of currencies (national and international currencies exchange rates)

(c) Negative asymmetry

- Administrative formalities of border crossing and their costs for enterprises and individuals (e.g. visa requirements and their costs, formalities connected with transport by vehicles and trains and their costs etc.);
- Administrative limitations of economic activity for foreign citizens (licenses and permissions, national certificates for occupations and professions);
- Incoherence of laws regulating the conducting of economic activity by foreign subjects on the transborder territory of other country;

- Information gaps and lack of transparency necessary for economic and social activity and cooperation;
- Linguistic barriers, especially concerning the laws, documentation, primary registers, contracts.

*Positive asymmetry* is generated mainly by the differences of economic and technological factors (comparative costs, differences of prices, wages, insurance rates etc.). Positive asymmetry stimulates the processes of cooperation and competitions.

*Negative asymmetry* is generated mainly by the difference of legal and administrative regulations and practices of administration. Information gaps, rigid language requirements causing difficulties of proper understanding and interpretation of administrative procedures and laws in broader institutional conditions of other country, are also important forms of negative asymmetry for most of stakeholders.

Negative asymmetry caused by incoherence of laws and regulations and by lack of information transparency is generating excessive costs for all stakeholders and may also create the conditions for corruption and for the development of shadow economy.

## 7. METHODOLOGICAL PROBLEMS OF MEASURING TRANSBORDER ECONOMY

Identification and proper use of positive asymmetry of transborder economies by governments, entrepreneurs and individuals needs the measuring of complex of quantitative indicators of differences of potentials. Some examples of those indicators are listed above. Official statistics shall include to the programs of surveys the collecting and compiling of the indicators characterizing transborder asymmetry of most important economic, social and administrative factors of regional development.

Up to now however the transborder surveys and indicators statistics is not the priority for official statistics of countries. Even in official statistics of small scale national economies, which territories are as a whole are under the influence of transborder processes, official surveys do not include the transborder factors to the monitoring and analysis of the economies.

Moreover, because of the autonomy of official statistical systems of countries it is difficult to collect complete sets of comparable information from the transborder areas of countries from regional statistical data. Additional difficult methodological problems of comparability of information are caused by the differences of economic and social concepts and indicators defined in national laws and incorporated into national statistical surveys.

Transborder regions are relatively small and need detailed information on small areas (localities, towns, areas along the railways and roads, areas close to the border crossings etc.) Furthermore, there are also gaps and inconsistencies of statistical data referring to relatively small areas of transborder regions.

It seems that for transborder regions there should be conducted special harmonized surveys, oriented for collecting statistics necessary for monitoring transborder processes on all sides of borders. Such harmonized transborder surveys should be oriented on the measuring the differences of potentials important for decision making, for local economic policy and for evaluation of administrative procedures by local governments and - if necessary – by central governments.

Methodological harmonization of official statistics is an important task of official statisticians. Therefore the cooperation of regional statistical offices in transborder regions is an important prerequisite of information transparency of transborder economies. Transborder statistics should become an integral layer of European official statistics.

## 8. IMPACT OF ASYMMETRY OF POTENTIALS ON ECONOMIC PROCESSES IN TRANSBORDER REGIONS – SELECTED EXAMPLES

### 8.1. LABOR MARKET

Common local labor market is an important economic sphere of optimization of use of the asymmetry of human capital and social capital. The difference of wages and salaries is encouraging both entrepreneurs and employees, to take jobs in neighbouring localities of other countries.

Transborder labor market is usually shaped by the transborder commuting infrastructure crossing the border. There are following main factors influencing the development of transborder labor markets:

- Supply of complementary human and social capital in different parts of transborder regions;
- Asymmetry of wages and salaries;
- Regulations supporting the work of citizens of other countries on the territory of transborder region (free transborder movement of people and goods);
- Efficient and relatively cheap commuting facilities (short time of access to jobs);
- Harmonization of social insurance of employees in transborder regions;
- Supervision of transborder labor market by regional governments, oriented for the stimulation of its development and elimination of pathologies.

### 8.2. RETAIL TRADE

Retail trade in transborder regions is stimulated by the asymmetry of two factors:

- 1) Differences of comparative costs of substitutive products
- 2) Complementarity of production and supply of products

Referring to the factor of comparative costs of substitutive products, the transborder retail trade is stimulated mainly by the differences of costs of production (including administrative costs, taxes, marketing etc.), differences of prices of equivalent goods and services in neighbouring areas on other sides of the borderlines, and transaction costs connected with the trading abroad, in different economic and legal environment. The efficiency of local retail trade is also stimulated by the premium for the risk of changes of exchange rates of currencies.

Microbusinesses, small and medium businesses are also trying to increase the profitability of transborder retail trade conducting the trade of imported goods in the region of residence, and at the same time exporting goods from the country of residence and trading in transborder region of neighbouring country. The differences of exchange rates of currencies and the use of international currencies (Euro, USD) as the intermediary currency may also increase the profitability of transborder retail trade, although it also increases the risk of fluctuation of exchange rates of currencies in short term.

In some branches the transborder retail trade (and also the wholesale trade) is more effective if the exchange of goods is based on barter. However for transborder barter trade more advanced forms of cooperation are necessary, e.g. joint ventures and consortia.

Referring to the factor of complementarity of goods, liberalization of trade, reduction of customs, reasonable tax policy of all countries of transborder region may create positive synergy of development of production and trade effective for all parties.

The governments should resist the temptation of “overloading” complementary goods by excessive taxes and customs, and should support the development of cooperation of subjects producing and trading complementary goods.

### 8.3. CONSUMER SERVICES

Main factors of development of the branches of consumer services in transborder areas are:

- 1) supply of consumer services by type of service, volume and value,
- 2) demand for consumer services of non –residents,
- 3) complementarity of products offered in the form of consumer services in transborder areas of countries,
- 4) asymmetry of comparative costs of production,
- 5) asymmetry of prices for services,
- 6) differences of total costs of access to the services on local markets of transborder areas paid by consumers,
- 7) transborder transport infrastructure for consumers and costs of transborder transport,
- 8) quality of consumer services offered on local markets in transborder areas

### 8.4. SERVICES FOR BUSINESSES

Foreign subjects need support from the part of specialized firms offering services for businesses: marketing, financial and tax advisory services, information services, juristic services.

The availability of these services for foreign subjects operating in transborder areas of neighbouring countries is necessary for the safety and stability of economic processes and subjects, especially for non-residents operating in the transborder areas of other countries.

Important problem for businesses that are potential clients of companies offering the services necessary for conducting the activities on the territories of other countries is the verification of professionalism of suppliers of those services

Proper, good quality of services for businesses in transborder areas requires high level of professionalism of firms offering these services. Attorneys, solicitors, legal advisors, tax advisors and other subjects supplying different kinds of know - how in the field of law and organization of activity in transborder areas should well know the laws, procedures and habits of all countries of transborder regions. The same requirements of high level of professionalism, professional ethics and trust is expected from other subjects in such areas like logistics, financial services, certification, supervision of technological processes, quality control of products.

Central and regional governments should monitor the quality of services offered for foreign and national businesses and react in case of low quality of those services.

Indicators measuring the services for businesses are similar to those used for measuring of consumer services, e.g.

- 1) supply of services for businesses by type of service, volume and value,
- 2) demand for services for businesses of non –residents,
- 3) complementarity of products offered in the form of services for businesses in transborder areas of countries,

- 4) asymmetry of comparative costs of production,
- 5) asymmetry of prices for services for businesses,
- 6) differences of total costs of access to the services on local markets of transborder areas paid by businesses,
- 7) transborder transport infrastructure for businesses and costs of transborder transport,
- 8) quality of services for businesses offered on local markets in transborder areas.

#### 8.5. *FINANCIAL SERVICES*

Banks, insurance companies, and other subjects of financial sectors of economy are operating on global markets. Financial institutions are rather well prepared and experienced in offering different financial products needed and expected by economic and social subjects operating in transborder areas.

However the strengthening of international cooperation of national institutions of supervision of financial sector focused of the specificity of transborder regions seems to be necessary (supervision banks, insurance companies, and especially the intermediaries offering products of banks, insurance companies and other financial institution).

#### 8.6. *SOCIAL SERVICES: HEALTH, EDUCATION, CULTURE*

Synergy of development of social services in transborder areas is based on the complementarity of those services from the point of view of quality and detailed profiles of services offered by resident businesses and non-profit subjects for the population of transborder region as a whole.

The capacity of subjects offering social services in transborder areas, technical and economic conditions of supply of these services should be oriented for potential users transborder regions as a whole.

Regional governments may stimulate the development of social services by harmonization of the development and maintenance of the infrastructure of social services, marketing and technical information on the supply of social services available for inhabitants of transborder areas on the territories of neighbouring countries.

#### 8.7. *TOURISM*

The role of tourism in economic development of transborder areas is correlated with the level of wealth and incomes of households. In Europe all countries have reached the level of economic development in which tourism is becoming the integral part of household budgets. The demand for tourist services is growing continuously, new forms of tourism are becoming popular.

Tourism in transborder regions is based on ecological, cultural and social asymmetry of subregions of the areas and on the complementarity of tourist products: nature, culture, sports, recreation, health services etc.

The development of tourism in transborder regions should be based on the principle of “co-ordinated competitions” of substitutional products and on creation and maintenance of the infrastructure necessary for tourist activities: tourist information infrastructure, environment protection, transport infrastructure, hotels and accommodation facilities, safety and security of tourists, standards of quality of services for tourists, tourists products offered as a supplementary products, e.g. to business meetings, education processes or scientific conferences.

Co-operation and active coordination of tourist policy in transborder areas is one of important issues in which regional governments of neighbouring areas of countries may play an important role. Also co-operation of chambers of businesses and subjects active in tourism is necessary.

Scientific analysis of asymmetry and complementarity of transborder areas from the point of view of tourist capacity is the prerequisite of creating of information for identification optimal policy in tourism, elaboration of methods of cooperation of governments and businesses and for long term policy of development and maintenance of tourist infrastructure, covering all layers: protection of nature, ecology, cultural wealth of regions, civilizational attractions, recreation facilities, and technical infrastructure: transportation, accommodation, tourist information etc.

#### 8.8. *BORDER CROSSINGS*

Specific kind of activity and business in transborder areas are border crossings. In the EU, in the Schengen area, the border crossing disappeared. The advantage of this decision was the reduction of costs of transportation for citizens and businesses. One may expect that this process of making the borders transparent will be continued.

However in most of the countries the border crossings are specific “enterprises” that are supplying specific services of control of the process of transfer of goods, means of transportations and people between countries. The development of international trade and tourism needs the supply of these specific services. The border crossings are becoming the enterprises using most modern technologies and ICT for better and faster providing of control services and related financial services.

For businesses and citizens of transborder areas the border-crossing business is first of all an additional, excessive cost of transborder cooperation and contacts (costs of visas, time lost for crossing the border by cargo and people etc.). From the point of view of entire development of transborder regions the processes of crossing border should be minimized. The only forms that should be still maintained are the forms of the control necessary for safety and security of economies and people.

Modern border crossings are important for local markets. For local communities the border crossings are important enterprises creating jobs for people. The processes of crossing borders is also generating the demand for auxiliary services: accommodation and gastronomic services for drivers waiting days and night in the queues on the border, parking and security services, financial service (currency exchange, banking services, insurance services etc.) as well as other social and cultural services. For local communities the “border crossing business” may be rather attractive. The less effective is the process of crossing a border, the higher is the demand for auxiliary services for the stakeholders – people and subjects. However in long term more effective is simplification and – finally – the elimination traditional control on political borders of countries.

In transborder regions complicated processes of border crossing are limiting the possibilities of effective use of economic asymmetries and complementarity economies in transborder areas. Therefore regional governments in transborder areas should identify – with the help of scientists and experts representing economic practice – the branches and kinds of activity for which the traditional control on the borders should be replaced by more simple forms or eliminated. Local, free trade zones, zones of free movement of people, special economic zones in transborder areas have already proven their efficacy and positive impact on local economies. The development of these forms of local economic and social integration needs support of regional and local governments and respective legal foundations.



## 8.9. COMPLEMENTARITY OF INFRASTRUCTURE

In modern economies the development and progress in transborder areas is based on the quality of infrastructural systems: energy, transport (roads, railways, airlines, pipelines e.a.), telecommunication, environment protection infrastructure, municipal infrastructure, social infrastructure (health, culture, education, information systems).

Harmonization and coordination of all types of infrastructure for transborder areas is the prerequisite of cooperation in other field of economy. The neighbouring areas of transborder regions may optimize the development of infrastructures using the effects of complementarity. Modern technologies enable to build infrastructural constructions which capacity may meet the needs of enterprises, households and individuals, towns and villages located in transborder areas on both sides of the border. The optimizing of resources and reduction of costs is achieved thanks to the effect of scale. For example the border crossing could be built as one investment operated jointly by officers of both countries, one sewage treatment plant may be sufficient for towns located on both sides of the border, one highway along the borderline may be sufficient for the traffic of inhabitants of localities on both sides of the borderline, etc.

Harmonized development of common infrastructures for transborder areas optimized on the basis of effect of complementarity is the tasks of regional governments with respective support of central governments of countries. The development of common infrastructural capacities in transborder regions is the “non - zero sum game”. If governments and enterprises cooperated jointly, all parties will win, although some may gain more, and the other less. However without the cooperation in the field of building and maintaining common infrastructures in transborder areas, all parties will lost.

## 9. SYNERGY EFFECTS OF ASYMMETRY OF POTENTIALS IN TRANSBORDER REGIONS

The asymmetry of economic and institutional potentials in transborder regions is creating the conditions for synergy of different factors of economic and social development. As it was mentioned above, the effect of synergy may be positive or negative. Here are some examples of effects of synergy.

- (a) Synergy effect generated by the creating of the zone of free transborder movement of inhabitants in delimited areas on both sides of the borderline is the effect of concatenation of i.a. following factors:
  - (1) transborder local retail free trade,
  - (2) extension of the market of wholesale trade,
  - (3) transborder local labor market in the zone,
  - (4) open access of inhabitants and businesses to complementary services,
  - (5) higher profitability of businesses based on the difference of costs,
  - (6) optimization of localization of enterprises
  - (7) effects of scale achieved by businesses and other units thanks to the extension of market on the territory of two or more countries
- (b) Synergy effect generated by coordination infrastructural investments for the use of the transborder areas, especially in transport, energy, environment protection, is achieved thanks to the following factors:
  - (1) Lower costs of investments for each country,

- (2) Lower costs of exploitation and maintenance of infrastructural facilities for the subjects (businesses, individuals) achieved thanks to the effect of scale,
- (3) Better infrastructure makes the transborder areas more attractive for investors,
- (4) Multiplier's effect of increase of investments in the area in the form of development of SME offering services for investors and other businesses
- (5) Higher budgetary incomes of local and regional governments enable them to improve the quality of life of inhabitants (communal investments, education, health care, culture, safety and security etc.)

- (c) Synergy effect generated by transborder harmonization of laws and procedures and cooperation of regional and local governments is achieved thanks to the concatenation of following factors (e.g.):
  - (1) Lower costs of administrative procedures and lower costs of legal services for businesses,
  - (2) More possibilities of extension of economic activities within the frames of existing laws and procedures,
  - (3) Higher safety and security of running businesses thanks to the transparency of laws and procedures for entrepreneurs,
  - (4) More possibilities of cooperation in the fields regulated by national laws, e.g. health care, social aid, education, financial services (banking, insurance),
  - (5) Cooperation of NGO's and other non-profit organizations is extending the possibilities of mutually profitable cooperation in many fields etc.

The identification of possible effects of synergy generated by the asymmetry of economies in transborder areas is an important task for scientists, research institutes and universities interested in the development of transborder economics. For each identified field of synergy it would be recommended to elaborate models explaining the processes of synergy, simulating the effects that may be achieved and identifying the prerequisites of positive synergy based on proper use of asymmetries in transborder regions.

## 10. CONCLUSIONS FOR RESEARCH OF TRANSBORDER ECONOMIES

The economies in transborder regions are developing on the basis of different processes and mechanisms than national economies as a whole. As it was discussed above, main factors of development of economic activities in transborder regions are the asymmetries and differences of potentials of geographically close areas, but regulated by different laws and administrative procedures. There are also qualitative and quantitative differences of the level of development of different branches of economies, technological level and economic efficacy of enterprises.

Transborder economies are covering large part of the territory of Europe. The transborder processes are also important for economic development in other parts of the world. They are of high importance for small – scale national economies, as well as for regional development of many other countries.

Nowadays, in globalized, more open economy the specificity of transborder processes should be taken into account for proper analysis, evaluation and monitoring of economic development on regional level. And for small – scale national economies the analysis, evaluation and monitoring transborder processes is essential for macroeconomic policy.

Transborder economies need specific theoretical foundations, methodological approaches, information base and special statistical methods and surveys. The development of *transborder economics* as special discipline in economic sciences is an urgent task for researchers, both theoreticians and scientists involved in application analyses, prognoses and modeling of processes in transborder regions.

#### 11. CONCLUSIONS FOR SOCIAL AND ECONOMIC POLICY OF GOVERNMENTS AND NGO'S IN TRANSBORDER REGIONS

Regional governments, enterprises, NGO's and other non – profit organizations operating in transborder areas should be delivered the information that properly presents the specificity of transborder regions and economies. They shall take their decisions taking into account the factors specific for concrete regions, subregions and areas. Special attention should be paid to the impact on the economies on regional and local level, as well as on enterprises, social organizations and households, of:

- (a) Institutional asymmetries, including differences of laws and procedures;
- (b) Technological asymmetries;
- (c) Economic asymmetries;
- (d) Asymmetry and level of compatibility of information systems
- (e) Differences of development of technical infrastructure;
- (f) Differences of development of social infrastructure;
- (g) Identification of factors generating the synergy effects, stimulating the effects of multiplier's and accelerator's in specific economic processes;

The implementing and maintenance *common transborder information platform* (governments, enterprises, other organizations including research institutes and universities, individuals) providing verified and complex data for all stakeholders, is one of the tasks that shall be realized jointly by research institutes and regional governments of transborder regions.

#### REFERENCES

- [1] CZECH-SZKIC, E., *International outsourcing as the instrument of strengthening and intensifying economic cooperation in transborder regions*, Proceedings of the Scientific International Conference of the ENPI Cross-border Cooperation Programme Hungary-Slovakia-Romania-Ukraine, *Ways to Improve Efficiency of Transborder Cooperation on the New Eastern Border of the European Union*, Slovenska Akademia Vied Spolocenskovedny Ustav Kosice, Institute for Transfrontier Cooperation Uzhorod, 18-19 September 2012, Stara Lesna, Slovakia.
- [2] OLEŃSKI, J., *Statistical parainformation platform – foundation of information transparency in heterogeneous international environment (with special reference to the Eastern Partnership initiative)*, Proceeding of the International Conference *Development of the European Statistical System from the Eastern Partnership perspective – directions and strategy*, Central Statistical Office, Cracow, 18-10 October 2011.
- [3] OLEŃSKI, J., *Transparent international information environments as the prerequisite of transborder cooperation and development*, Proceedings of the Scientific International Conference of the ENPI Cross-border Cooperation Programme Hungary-Slovakia-Romania-Ukraine, *Ways to Improve Efficiency of Transborder Cooperation on the New Eastern Border of the European Union*, Slovenska Akademia Vied Spolocenskovedny Ustav Kosice, Institute for Transfrontier Cooperation Uzhorod, 18-19 September 2012, Stara Lesna, Slovakia.

**JÓZEF OLEŃSKI**

*Lazarski University Warsaw  
The Bronisław Markiewicz State  
Higher School of Technology  
and Economics in Jarosław  
(Poland)*

## HUMAN CAPITAL, SOCIAL CAPITAL AND INSTITUTIONAL CAPITAL AS FACTORS OF SYNERGY OF ECONOMIC DEVELOPMENT OF TRANSBORDER REGIONS IN KNOWLEDGE BASED ECONOMY<sup>1</sup>

### 1. THESES

#### 1.1. MAIN THESES

- 1) *Critical mass* of harmonized human capital, social capital and institutional capital in transborder regions of neighbouring countries is necessary for efficient use of the capacities of those regions and their synergic development.
- 2) Development of *critical mass* and harmonization of institutional capital in transborder regions of countries is necessary for effective use of human and social capital and achieving the effect of synergy of.

#### 1.2. AUXILIARY THESES

- 1) *Critical mass* of human capital is necessary for social and economic development on sectorial, local, regional and national scale.
- 2) The prerequisite of capacity building of the critical mass of human capital is the coherence and harmonization of *institutional capital* developed and maintained in in transborder regions of neighbouring countries.
- 3) Creation of *critical mass* of social capital in transborder regions needs the transparency and harmonization of objectives of social and political organizations based on mutual trust. Common and harmonized social capital is the prerequisite of synergic interference of factors of economic, technological and social development in transborder regions.
- 4) Harmonized institutional capital in transborder regions of countries is the prerequisite of synergy of political, social and economic processes and creation of common economic and social space in transborder areas.
- 5) Harmonization of institutional capital is the stimulator of more effective use of human, social and economic capital in transborder regions.

<sup>1</sup> Prof. Jozef Olenski, professor of Lazarski University, Warsaw and the State University of Technology and Economics, Jarosław.

### 2. BASIC CONCEPTS AND DEFINITIONS

The concept *capital* for defining, specifying and measuring human, social and institutional resources is used by analogy with other forms of economic capital: financial capital, industrial capital, capitalized economic assets etc. The concept of human, social and institutional capital is argued to have similar scientific and practical benefits, although less measurable. However, the analogy with economic capital is misleading to the extent that, unlike traditional forms of capital, human, social and institutional capital are not depleted by use. To the contrary the capital (human, social, institutional) is depleted by non-use („use it or lose it”). The more human, social and institutional capital is used the more resources of these capital are created.

#### 2.1. HUMAN CAPITAL

##### 2.1.1. DEFINITION OF HUMAN CAPITAL

*Human capital* is the stock of competencies, knowledge, social and personality attributes, including creativity, embodied in the ability to perform labor so as to produce economic value. It is an aggregate economic view of the human being acting within economies, which is an attempt to capture the social, biological, cultural and psychological complexity as they interact in explicit and/or economic transactions. Many theories explicitly connect investment in human capital development to education, and the role of human capital in economic development, productivity growth, and innovation has frequently been cited as a justification for government subsidies for education and job skills training<sup>2</sup>.

Human capital includes all the knowledge, skills and capabilities that people already have accumulated. By extension it includes what they can learn, invent, create, and contribute to the community as a whole. To strengthen the human capital in our communities, we need to develop strategies that increase capabilities on every level. People who live up to their potential enhance their lives and the life of their communities. Maintaining these capabilities also involves developing systems that enhance wellness, and that care for people who are sick, physically and mentally challenged, too young or too old to care for themselves. It means building the caring capacity of our communities, so that people feel supported, feel a sense of belonging and mutual support, and where family relationships and social networks are healthy for the individuals in them.

In official statistics the non-material and non-financial economic assets are classified as called intangible assets or *intangibles*<sup>3</sup>. Human capital is one of intangible assets. It consists of all of the competencies, general and professional knowledge, professional and managerial skills, experience, potential and capacity, as well as commitment of the people within an organization and society. Other examples of intangible assets include: trademarks, brand, software, design, know-how, position on the market, working methods and customer relationships. The human capital asset captures all the people oriented capabilities needed for successful social, cultural, political, scientific and economic activities.

Human capital could be (a) potential and (b) effective. By potential human capital we understand the capacities of individuals that may be useful in some conditions. By effective human capital we understand the capacities of individuals that are efficiently used in concrete time, place, organization and society. Often the potential human capital is the set of capacities which are only partly used in practice. In knowledge - based economy full use of human capital is one of most important factors of economic development. Proper identification and creation of conditions of full use of human capital is the task of managers and politicians. Human capital building requires the cooperation of individuals, governments and businesses in

<sup>2</sup> Becker G., Human Capital: A theoretical and empirical analysis with special reference to Education. The University of Chicago Press, 1994.

<sup>3</sup> Olenski J., Ekonomikainformacji – podstawy, PWE, Warszawa 2001.

an organization in the field of education, training, support and stimulation of investment in learning and maintenance of skills of individuals.

### 2.1.2. ATTRIBUTES OF HUMAN CAPITAL

The following attributes are characterizing human capital of individuals:

- Knowledge
  - o general (including civilizational and cultural)
  - o professional
- Education
  - o level
  - o profile
  - o quality
- Skills
  - o general
  - o professional
  - o managerial
- Experience
  - o general
  - o professional
  - o managerial
- Capabilities and abilities
  - o creativity
  - o self-organization
  - o self-discipline
  - o communication
  - o cooperation abilities
- Ethics
  - o general
  - o professional

The attributes of human capital are generating the effects of synergy of human capital of individuals. Human capital increases through education and experience. Human capital is important for an organization. Human capital is also important for the success of cities and regions.

### 2.1.3. USE OF HUMAN CAPITAL

Human capital in economy and society may be passive or active. If an individual representing certain resources of human capital is not active as an employee, manager, politician, scientist, or is not involved in other forms of participation in society or economy, his or her human capital is passive. For example human capital of an unemployed person representing high level of education, experience and skills, is useless for the society and economy.

It often happens that individuals are effectively using only some part of their human capital. However it may also happen that an individual does not represent human capital necessary for proper fulfilling of economic or social duties as an employee, manager or politician. The larger are the resources of human capital of an individual, the smaller part of this capital is effectively use in practice.

Human capital when viewed from a time perspective consumes time in one of key activities:

1. Knowledge (e.g. activities involving one employee),
2. Collaboration (e.g. activities involving more than one single employee),
3. Processes (e.g. activities specifically focused on the knowledge and collaborative activities generated by organizational structure – such as silo impacts, internal politics, etc.) and
4. Absence (e.g. annual leave, sick leave, holidays, etc.).

The creation and management of human capital is one of most important theoretical and practical problems of information society and knowledge – based economy.

## 2.2. SOCIAL CAPITAL

### 2.2.1. DEFINITION OF SOCIAL CAPITAL

*Social capital* as a sociological category is the expected potential social or economic or economic benefits derived from the cooperation between individuals and groups. The core idea of social capital is that social networks, links, cooperation and interactions between individuals representing certain resources of *human capital* are of greater value than value of the “sum” of *human capital* of single individuals. Social capital is created in the processes of linking or integrating human capital of individuals by establishing stable or temporary social networks, like social organizations, associations, societies, clubs and any other forms of cooperation and communication of people. The efficacy or productivity of organized groups of individuals is – as a rule – greater than that of individuals. Different social sciences emphasize different aspects of social capital. In economic sciences the social capital is classified as *intangible resources* or *intangibles*.

Social capital can be transferred or taught. International policies also often address human capital flight, which is the loss of talented or trained persons from a country that invested in them, to another country which benefits from their arrival without investing in them.

### 2.2.2. ATTRIBUTES OF SOCIAL CAPITAL

Social capital is defined as the concatenation of human capital of members of organizations. In other words social capital is the organized resource of human capital for realization of concrete goals of an organization: an enterprise, government, research institute, cultural or social society etc. However it refers only to human capital useful for concrete organization as a social or economic subject.

Human capital not relevant for the objectives of an organization is not creating its social capital. Social capital is recognized as social cohesion or social resilience and related concepts like celebrity or fame, as distinct from the talent that an individual has developed that cannot be passed on to others. It is also important to avoid a situation where the social capital in one sector of the community works against the ability of other sectors to have connections with the community as a whole.

Main attributes of social capital of an organization are *inter alia* the following:

- Relevance of human capital of the members of an organization with its goals, methods and tools of activity
- Effective use of relevant human capital of individuals participating in the activities of an organization
- Number of individuals actively and effectively participating in the activities of an organization
- Involvement of an organization in investing in the development of relevant human capital of individuals participating in the activities of an organization
- Cooperation of an organization with other social organization to achieve the effect of more efficient use of social capital of organizations.

In knowledge - based economy the building of social capital by the cooperation and links of many organizations is becoming more common approach to the development and more effective use of social capital in on the level of branches of economy, domains of research, in domains of social services (education, health, culture), on regional and local level. For example, the consortia organized for realization of specific objectives of for long – term cooperation in research, education, social services etc., have proven their efficacy in many economic processes and systems, social activities, domains science as well as in regions.

Social capital is co-decisive in managing of very large or very complex systems and processes. It is important in transborder regions because of extreme complexity, variety and dynamics of transborder processes and systems in heterogeneous political, cultural, social and economic environment.

### 2.3. INSTITUTIONAL CAPITAL

#### 2.3.1. DEFINITION OF INSTITUTIONAL CAPITAL

A standard definition of institutional capital is hard to find – to some it means the financial resources controlled by key institutions and to others it represents the institutional framework governing the economy. In other words institutional capital are the structures, organizations, legal, and financial frameworks that enable a society to function. This includes the legal system and the rule of law, the insurance system that helps communities manage risk, the systems that establish different exchange mechanisms (national and complementary currencies), the regulatory structures that protect the natural environment, human rights, and human health and well-being, and all the institutional arrangements that provide a foundation for economic activity.

The concept of *institutional capital* was defined within the frames of neoinstitutional organization theory<sup>4</sup>. One of most important assumptions of the neoinstitutional organization theory is the statement that the competitive advantage of economic or social systems and processes is strongly affected by its institutional environment.

In the neoinstitutional organization theory *institutions* are be defined as “*behavioral expectations* that can be sanctioned if violated”<sup>5</sup>.

<sup>4</sup> Bresser R, Millonig K, Institutional Capital: Competitive Advantage In Light Of The New Institutionalism In Organization Theory, in: Schmalenbach Business Review, Vol. 55, July 2003, pp. 220-141.

<sup>5</sup> ibidem

Two broad types of institutions are distinguished:

- fundamental institutions
- secondary (deduced) institutions.

*Fundamental institutions* represent generally accepted norms and values that have evolved at a societal level, for example, human rights or professional ethics. They are adhered to largely at a subconscious level, because individuals have internalized the respective norms and values and often cannot even conceive of alternatives. Fundamental institutions are taken for granted and are difficult to change through purposive design.

*Secondary institutions* are deduced from fundamental institutions to regulate specific societal problems. They include laws, contracts, organizations, and organizational rules and procedures. Thus, secondary institutions are much more amenable to conscious design than are fundamental institutions. Although many norms and values represented by secondary institutions are consciously perceived, they too can become internalized by social or economic subjects and by individuals representing those units. For instance, organization members internalize the values constituting an organization’s culture over time and then take them for granted.

*Institutional capital* is the complex of laws, procedures, organizational structures and legal entities and other subjects that create internal and external *institutional* environment of economic or social processes and systems.

#### 2.3.2. TYPES OF INSTITUTIONAL CAPITAL

Three types of institutional capital are distinguished:

- cognitive capital,
- normative capital,
- regulative capital.

*Cognitive institutional capital* consists of knowledge about institutions, their objectives, task and duties and forms of activity in a given social, political or economic system.

*Normative institutional capital* consists of laws, regulations and standards determining the organization and functioning of organizations that are creating the institutional environment of society and economy.

*Regulative institutional capital* consists of procedures incorporated and followed by organizations that are creating institutional environment of branches of economy, regions or states.

#### 2.3.3. HUMAN, SOCIAL AND INSTITUTIONAL CAPITAL – PREREQUISITE OF SYNERGY OF ECONOMIC PROCESSES

Human, social and institutional capitals are creating the environment in which all processes and systems are functioning. They create the conditions of the sustainability and efficacy of use and development of all other types of resources.

Harmonization of all kinds of capital: human, social and institutional and achievement of the critical mass of these capitals for concrete processes and systems is creating the conditions for synergetic development effective or profitable for all subjects operating in transborder regions.

### 3. HUMAN CAPITAL IN TRANSBORDER REGIONS

In transborder regions human, social and institutional capital is developed within the environment of different political system. In Europe the differences refer also to ethnical specificity, culture, historical traditions. On relatively small geographic space there is the variety of qualitatively different resources of all kinds of capital, human, social as well as institutional capital. These differences may stimulate the creation of new resources supporting the development of economies and societies of neighbouring regions of all countries, or – to the contrary – may hinder the transborder cooperation.

From the point of view of the impact of human capital on transborder cooperation and development the following aspects should be analyzed:

- 1) Symmetry vs. asymmetry of human capital
- 2) Complementarity and substitution of human capital
- 3) Critical mass of human capital in different domains and branches

#### 3.1. SYMMETRY AND ASYMMETRY OF HUMAN CAPITAL

By symmetry of human capital we understand the coherence of attributes of human capital of different individuals, necessary for contacts, cooperation and collaboration, for example, knowledge and use of common languages for communication, equivalence of levels of education, relevance of professional knowledge and experience, identity of professional and business ethics, equivalent computer literacy etc. Symmetry of human capital is the prerequisite of formation of common social capital in transborder regions. Regional governments should be interested in building the symmetry of human capital in the domains that are important for communication and collaboration of entities, organizations as well as the contacts between people.

Asymmetry of human capital means that there are qualitative differences in knowledge, experience, ethics, between individuals and social groups. As a rule, asymmetry of human capital is hindering communication and cooperation of people and entities. Identification of asymmetries of human capital is necessary for policy makers in transborder regions for evaluation of social barriers of cooperation and for undertaking the initiatives and activities to reduce or eliminate those barriers.

In transborder regions the priority in reducing the excessive asymmetry of human capital should be given to the following aspects:

- Common languages of communication between people and entities
- Dissemination of general information on transborder regions via mass media and internet (information on social and cultural events, information on economic activities, tourist information, information on laws and procedures)
- Facilitation of common use of social infrastructure and other capacities that are forming human capital, by people from different localities of transborder regions (e.g. secondary schools and universities, research institutes and research projects, cultural infrastructure, health care infrastructure)

Some level of asymmetry of human capital may stimulate the processes of production, transfer and absorption of knowledge that are bringing the information resources to symmetry. However in some domains the reduction of asymmetry needs long time and efforts, e.g. education on primary and secondary levels, university education, learning of common languages, ethical formation, collecting the professional and managerial experience, training of officers of governments etc.

Cooperation and coordination of activities of institution responsible for formation of human capital (education system, mass media, cultural institutions, other units providing social services that have the impact on the formation of human capital) in transborder areas is necessary for achieving necessary level of symmetry of human capital of individuals and social groups.

#### 3.2. COMPLEMENTARITY AND SUBSTITUTION OF HUMAN CAPITAL

Complementarity of human capital in transborder regions is in knowledge based economy an important factor of social and economic development. For example, complementary knowledge and experience of scientists working at the universities or in research institutes based in different countries is facilitating the organizing of research consortia for realizing scientific projects. Complementary knowledge and expertise of specialists in any other domain of social services or economic activity is good basis for profitable and reliable outsourcing of their auxiliary activities by organizations based in different countries.

Substitution of human capital in transborder regions may create international competition and optimization of use of talent, knowledge and experiences of professionals. It is important especially in the domains in which highest level of skills is expected.

Identification of complementarity and substitution of human capital is the task of governments and managers responsible for the domains of economy and social activity, in which the quality of services offered by staff is necessary.

#### 3.3. CREATION OF CRITICAL MASS OF HUMAN CAPITAL IN TRANSBORDER REGIONS

Critical mass of human capital is the number of people volume of knowledge and people In different domains critical mass of human capital for effective social or economic activities is different. For example, in culture relatively single individuals or small groups of people disposing artistic talents may create critical mass of human capital for region or for the country. In research – as a rule – critical mass of human capital is created by some number of scientists conducting research of some topics and exchanging their ideas and findings by organizing seminars, conferences, by publications and direct personal links. In economic activity, production and trade, the critical mass of human capital is achieved by concatenation of knowledge and experiences of scientists, technologists, economists, managers, lawyers and other experts cooperating in some organization, region or branch of economy or technology.

The concatenation of knowledge and experience of people representing individual complementary human capital is creating critical mass of human capital for an organization, branch of economy, domain of research, domain of culture. The use of effects of complementarity and substitution of human capital can be achieved only if human capital exceeds critical mass necessary for specific area.

In open transregional environment the creation of critical mass of complementary human capital for specific domains of culture, economy or research is – potentially – easier and cheaper as within the frames of border region of one country. The reason of this phenomenon is that in each one of border regions of neighbouring countries there is developed human capital complementary to that on the border territory of other countries. The complementarity is created by the differences in culture, habits, education systems, laws and regulations, administrative procedures.

Regional governments, social and cultural institutions, research institutes and businesses in transborder areas should analyze and identify the complementarity of human capital of individuals and groups of individuals to organize critical mass of human capital for solving specific problems or realizing projects. Stimulation of development of human capital oriented on the creation of its critical masses in concrete domains or localities is also the duty of regional governments and NGO's.

### 3.4. *HUMAN CAPITAL AS THE BASIS OF SOCIAL AND INSTITUTIONAL CAPITAL IN TRANSBORDER REGIONS*

Critical mass of human capital is the foundation of creation and development of social and institutional capital. In transborder regions the resources of human capital exceeding critical masses for specific domains or projects should be developed and maintained with the help of regional governments. This activity should be coordinated on the level of regional governments of transborder areas.

## 4. SOCIAL CAPITAL IN TRANSBORDER REGIONS

Quality of social capital in transborder areas is the foundation of cooperation of individuals and subjects in social and economic space of regions along the borderlines. Moreover, common social capital of transborder regions has the impact on delimitation of transborder areas. Main attributes of national social capital developed in the regions close to the borderlines influencing the development of common social capital in transborder areas are:

- Symmetry and asymmetry between national social capitals,
- Complementarity and substitution between national social capitals.

### 4.1. *SYMMETRY AND ASYMMETRY OF SOCIAL CAPITAL*

Social capital is symmetric in the transborder region if the subjects representing social capital have intellectual, organizational and technical capacity of cooperation and collaboration with their counterparts on the other side of the borderline. Symmetry of social capital is necessary for creation of common social capital in the transborder space, e.g. research consortia for realization of common projects, development of common information systems supporting economic, social and cultural activities of organizations based and operating on the territories of countries in transborder regions.

Asymmetry of social capital means that there are the gaps between organizations representing social capital, that enable these organizations to cooperate or make this cooperation more difficult and less effective. Those gaps mainly refer to the lack of necessary level of symmetry human capital, information gaps, difference in skills of staff. Low level of asymmetry of social capital may stimulate the processes of its harmonization. However is the asymmetry is deep, the harmonization of social capital needs the stimuli from outside the organizations, e.g. by realizing joint projects financed from external sources or by administrative decisions of governments.

### 4.2. *COMPLEMENTARITY AND SUBSTITUTION OF SOCIAL CAPITAL IN TRANSBORDER REGIONS*

Complementarity and substitution of social capital of the organizations based in the territories of neighbouring countries are important factors of mutually profitable cooperation of governments, non-profit organizations and businesses. The variety of social capital is an important factor of generating the effects of synergy of cooperating units.

### 4.3. *CREATION OF CRITICAL MASS OF SOCIAL CAPITAL IN TRANSBORDER REGIONS*

Effective cooperation of subjects in transborder areas needs the creating of critical mass of social capital, mainly the organization of links of units that have complementary resources of social capital, as well as establishing the networks of cooperation between units that have social capital of substitutional character. Critical mass of social capital, both complementary and substitutional, is the prerequisite of effective cooperation of effective competition and achieving the effects of scale.

## 5. INSTITUTIONAL CAPITAL IN TRANSBORDER REGIONS

Creation, development and maintenance of common institutional capital in transborder regions seems to be the *condition sine qua non* effective cooperation of people and organizations from neighbouring countries.

### 5.1. *SYMMETRY AND ASYMMETRY OF INSTITUTIONAL CAPITAL IN TRANSBORDER REGIONS*

Symmetry of institutional capital is based on harmonization of laws, procedures, organizational structures and building common institutions of supervision and control of transborder processes and systems, e.g. border control, customs, common investment projects, environmental control, common social services (incl. health, education, social care etc.), cooperation of system of security and justice.

Regional and central governments should pay attention especially on harmonization of laws and procedures in all fields important for transborder cooperation. It is also necessary to provide full transparency of these laws and procedures by organizing common transborder information system on laws, administrative procedures and on organization and functioning of governments and cooperating institutions.

Asymmetry of institutional capital is the relict of the past, when borders between countries were oriented on isolation of people and economies. In open, democratic societies the institutional asymmetries that are still existing, should be limited and eliminated in the process of cooperation of central and local governments. The experiences of the European Union in harmonizing laws, procedures and institutions can be good example of building common institutional capital on international level.

### 5.2. *COMPLEMENTARITY AND SUBSTITUTION OF INSTITUTIONAL CAPITAL IN TRANSBORDER REGIONS*

Institutional environment of transborder regions is diversified. Laws, regulations, procedures and the implementation of laws and procedures in practice are different in the countries of transborder areas. Those differences may hamper the possibilities of cooperation and development. But in specific cases the differences of institutional capital may create the differences of potentials between countries and may play the role of factors stimulating the cooperation and trade.

Because of that, central and regional governments should be interested in optimizing the development of institutional capital by harmonizing laws, procedures and organizing common institutions and regulators of institutional environment.

The harmonization should be oriented on the eliminating of contradictions between laws and procedures, elimination of their duplication, effective use of complementarity and substitution of institutions on the territory of transborder region as a whole. Careful analysis of complementarity and substitution of institutional capital is necessary for effective harmonization and development of common institutional capital.

### 5.3. *CREATION OF CRITICAL MASS OF INSTITUTIONAL CAPITAL IN TRANSBORDER REGIONS*

For each domain of cultural, social and economic life *critical mass* of harmonized institutional capital is necessary. By *critical mass of institutional capital* of concrete branch, sector, domain of cultural or social activities, we understand the complex of harmonized and coordinated laws, regulations, procedures and practices of institutions of all countries of transborder region, necessary for creating institutional frameworks of effective development and activities of individuals and organizations. In many branches of economy and social life this is rather the goal to be achieved than the reality. Anyway the governments should take the creation of critical mass of institutional capital for each domain important for the development of transborder region as their task of utmost priority.

For example, in transborder tourist area the priority should be the creation of critical mass of institutional capital by harmonizing laws and regulation relevant to tourism and by providing informational transparency of all procedures connected with tourism. In the transborder region involved in international transit the critical mass of institutional capital will contain the harmonization of laws and regulations of border crossing, customs, activities of businesses providing services connected with transit, etc.

Creating critical mass of institutional capital for each sector of economy and social activity important for the development of transborder region is the prerequisite of development and effective use of other forms of capital and of other kinds of resources of regions.

#### 5.4. INSTITUTIONAL PREREQUISITES OF DEVELOPMENT AND USE OF HUMAN CAPITAL AND SOCIAL CAPITAL IN TRANSBORDER REGIONS

As it was mentioned above, modern open, knowledge – driven economy is characterized by deep institutional interventionism<sup>6</sup>. In transborder regions institutional interventionism has much stronger impact than on the same processes on the level of national economy. Because of that the building of common, harmonized institutional capital is the prerequisite of use and development of other forms of capital and of other resources of transborder areas. Common institutional capital in the form of harmonized laws, regulations, administrative procedures and infrastructural information systems managed or coordinated on transborder level is duty of central governments, but especially the duty of government of transborder regions

## 6. CONCLUSIONS

- 6.1. Building common human, social and institutional capital for transborder regions is necessary for more effective development of these regions in more open, market and knowledge driven economies
- 6.2. For each domain of cultural, social and economic activities in transborder areas human, social and institutional capital for each national segment of transborder region should be defined.
- 6.3. Analysis and monitoring of symmetry and asymmetries as well as complementarity and substitution of resources of human, social and institutional capital is the task of researchers and experts involved in supporting the governments, non - profit organizations, NGO's and businesses.
- 6.4. International cooperation of research institutes in transborder regions in the field of identification, analysis and evaluation of the resources of human, social and institutional capital shall create the resources of knowledge necessary for proper governance in transborder regions.
- 6.5. The critical mass of each kind of capital (human, social, institutional) should be defined for each transborder process and system.
- 6.6. Theory and methods of identification, classification and measuring of human, social and institutional capital for transborder regions is the entire part of transborder economics as the discipline of economic sciences.

<sup>6</sup> Olenski J., op.cit.

## REFERENCES

- [1] BECKER, G., *Human Capital: A theoretical and empirical analysis with special reference to Education*. The University of Chicago Press, 1994.
- [2] BRESSER, R., MILLONIG, K., *Institutional capital competitive advantage in the light of neoinstitutionalism in organization theory*, in: Schmalenbach Business Review u Vol. 55 u July 2003 u pp. 220–241.
- [3] HALLSMITH, G., LIETAER, B., *Intentional Cities, Intentional Economies*, Ch. 3. *Creating New Capital*, www.neweconomictheory.org.
- [4] HANSEN, W., *Education, Income and Human Capital*. 1970.
- [5] KHAKKEE, A., *Assessing institutional capital building in local agenda 21 process in Goeteborg*, Planning in Theory and Practice, 2002, Vol.3, No 1, 53-68, Routhage Ed.
- [6] NORTH, D., *Institutions, Institutional Change, and Economic Performance*, Cambridge University Press, Cambridge, 1990.
- [7] OLIVER, C., *Sustainable competitive advantage: Combining institutional and resource-based views*. Strategic Management Journal, 1997, Vol. 18, pp. 697-713, .
- [8] OLENSKI, J., *Infrastruktura informacyjna państwa w globalnej gospodarce*, Wyd. Nowy Dziennik, Warszawa 2006.
- [9] OLENSKI, J., *Ekonomika informacji – podstawy*, PWE, Warszawa 2000.
- [10] Paldom M., *Social capital: one or more ? Definitions and measuring*. Journal of Economic Surveys, Vol. 14, No. 5, Blackwell Publ., 2000.
- [11] PLATJE, J., *Institutional capital as a factor of sustainable development, The importance of institutional equilibrium*, Baltic Journal on Sustainability, (2008), Vol. 14, n° 2, pp. 144-150.
- [12] ROMER, P., *Human capital and growth: theory and evidence*, NBER Working Paper No. 3173, November 1989, NBER Program(s), www.nber.org.



EWA SZKIC-CZECH

Opole University  
(Poland)

## INTERNATIONAL OUTSOURCING AS THE INSTRUMENT OF STRENGTHENING AND INTENSIFYING ECONOMIC COOPERATION IN TRANSBORDER REGIONS

### 1. INTRODUCTION

The globalization of markets together with unrecorded in the economic history of human activity growth of technique and technology, communication systems, including Internet, as well as economic unification of Europe, common access to bank currency, are the basic sources of development, dynamics and economic development, but also the enterprising spirit, which is dynamically growing together with local, national and global competition. They are also the key reasons to increase the effectiveness and streamlining of management, which is a prospect to obtain the advantage, over the other market participants and decrease the risk related with execution of business in globally changing dynamics of competing and acting. Integrated activity of listed features has attenuated the effectiveness of products competition, and the capacity to obtain the advantage over other, has transferred into the non product sphere of companies activity, such as: methods, techniques and organization systems, as well as approach to business strategies. Promotion of entrepreneurship, in subject scope assisted with the level of techniques and technology development including automation, IT implementation in production processes and labour processes, creates the non product sphere of rivalry, the modern arena of companies competition for the place on the market.

Regardless of mentioned above circumstances, also the decisions of Schengen Treaty, became an important source of competition increase process for the enterprises, including the competition of subjects on the borders and in the consequence, a chance for development of transborder economic cooperation and the stimulus for economic development of border areas.

Disestablishment of borders has opened the economic routes between the countries. It has revived the transborder traffic. The distance and time of products and entrepreneurs transport has "shortened" as the effect of all available border roads being opened, which one can get through, to neighboring country. The capacities, which are located on both sides of the border, for cooperation have increased and the barriers on common subjects availability have decreased, [9].

Rapidly growing competition and necessity to be competitive, together with growing capacities of subjects cooperation, regardless of their location, are the modern reasons for providing external outsourcing for processes, creating the value for the customer and especially conditions for development shaping, around transborder areas via outsourcing.

Subject issue, remain essential for economic experts, and especially essential for enterprises, operating on border areas.

That is why, also including the fact, that the problem of outsourcing role in transborder economic cooperation development and shaping of economic development in the border areas, it does not find proper place in expert literature and remain in the theory of management as bereaved issue, the subject of herein article would be an attempt to fill such space.

### 2. PREREQUISITES OF OUTSOURCING IN GLOBALIZED ECONOMY

To consider the outsourcing as the tool, which assists the development of economic cooperation around transborder areas, it is essential to present the reasons of philosophy growth, which is the way of business operation, because theoretical mission of own business operation on the basis of foreign resources exploitation, preserves timeless character. However real effectiveness of outsourcing is determined in a large extent with current conditions, without analysis of which it is difficult to say about creative influence of outsourcing on economic development of companies or region, where such enterprises operates on the basis of outsourcing.

The outsourcing formula has arisen in the eighties, in highly developed market economy, which level of development had an established status and firm, high standard, which was a subject only for current improvement. Subject process has brought together the enterprises to the limit of further competitiveness increase, and has initiated bigger and bigger problems in subject scope. In search for solution for above problem, the discovery of an economical value for concentration with key competences and usage of foreign resources for own economic activity and goals has been made. That is how the outsourcing has been formed. Then the Americans has described the outsourcing as usage of external companies for execution of one or few organization activities [4].

D.Minoli has extended the meaning, saying that for external service only such scope of works shall be deputed, which can be executed cheaper and more effectively, than in the enterprise, with the engagement of own material and non material resources [4]. Soon, outsourcing was perceived as shifting of some current activity of the company outside its previous organization [5]. Meanwhile the German literature identified outsourcing with entrusting to third parties the responsibility for resources [3]. Another interpretation of outsourcing supplements and stresses that external outsourcing entrust, refer to such processes, which reveal strict, that is, immanent relation with key business processes, of the party using outsourcing, and the sphere of such processes is a real area of outsourcing operation.[1],[8],[11],[10].

If the beginnings of outsourcing in Poland equated it with the form of traditional order and perceived the outsourcing with the fact of external companies engagement, e.g. cleaning services or consultant companies, now the modern, more mature economic environment is clearly saying about the external service of business processes or about the outsourcing services sector, represented by centres of advanced common services as e.g. in the scope of analysis and expert opinions, basing on modern technologies and expert knowledge and their unique, competences on the market [10]. Unless we could argue on the adequate examples found in polish literature, as the samples of business processes, which undergo outsourcing services by common services centres, *quote: Business Process Outsourcing are the centres of so called common services, where on the aim of the Client, in effective and low cost way, some of his own business processes are being executed. These may be finances and accounting, PAYROL, HR administration, purchase process elements...*" [2].

For sure taking into account the above, we are very close to convince completely the economic environment to such approach, where outsourcing does not relate to business processes, but only immanent processes related with the business. If we for example consider for the further development in subject scope calculation of employees remuneration or HR administration, although these are undoubtedly necessary processes of work and place of costs occurrence in the business activity, for production company they

do not constitute business processes. They will be such only for companies, which basic field of business operation is either services for remuneration calculation for employees of other subjects according with algorithms ordered by employers of those employees or HR administration execution, which is going to be business competence.

None of presented commercial organizations is going to submit to outsourcing its key business process, because it would be a fundamental reorganization of company and its liquidation in the effect of total elimination of statutory economic process from own structures. For instance, considered subjects will cover the transfer of only immanent processes related with basic processes as: production processes and upgrading of software, which is capable to calculate the remuneration, according with law regulations and simultaneously with remunerations regulations of an exact employer, which is being operated within his business process. [10], [8], [1]. Similarly, the enterprise is not going to entrust for outsourcing HR administration, but for instance will provide the process for exact competence profiles search on the labour market.

The essence of considered problematic aspect remains essential both for theory as well as practice of outsourcing, because establishment and maintaining the borders of available applications of outsourcing in practice is not only the condition of its economic effectiveness, but also determinant for enterprise existence in economic environment at all.

Outsourcing in Poland has occurred and gained its popularity during economical-political system transformation of the country, when difficulties with management, high and increasing activities costs, and what is most important legacy (economical and mental) after the period of centrally controlled economics, which was not obeying objective activity of economical principles, market parameters, etc. which were the source of any enterprises difficulties with management in market environment and not tolerated non competitive subjects [11].

Analysis of commencement point and development of outsourcing in highly developed countries as well as the reasons of its transfer and activation on Polish soil of economic environment, points on the presence of common reason for using of outsourcing. In both cases, the common intention of introduction of outsourcing was the need to overcome the difficulties with reaching the proper level of competitiveness, that is such, which would surpass the level of existing competitiveness in the area of exact locations. Enterprises of highly developed countries, already from high level of presented competitiveness had to reach more and more advanced level. Polish economic subjects first had to shape their competitiveness on growing national market and decrease the distance towards market competitors from highly developed economies, to operate successfully on competitive global market. Although the difference in conditions of outsourcing implementation was crucial, the aim of using it in both cases remains analogous.

It proves and is evident that outsourcing is the concept of business execution decoded to overcome cumulated obstacles, occurring on the route to obtain the increase of competitiveness and action in highly combined conditions. What remains, is only the identification of such obstacles, analysis and assessment of capacities of closer and further environment, and as a consequence, adequate to real conditions and individual business process predispositions of outsourcing client, execution of entrusted outsourcing services.

### 3. OPTIMAL OUTSOURCING ENVIRONMENT – DIFFERENCES OF TECHNOLOGICAL AND MANAGERIAL POTENTIALS

Search for capacities and scope of outsourcing application is a significant step for extent of further profits, however adequacy of its implementation in practice remains a condition of real outsourcing effectiveness, because it determines safe business level of outsourcing relations, that is such, which synergize the differ the potential, identified between the outsourcing client and subjects operating in various locations and conditions of those who provide outsourcing.

Subject adequacy of outsourcing implementation remains integrally connected with consideration of individual: conditions, peculiarity, predispositions and scope, in which the key economic process of enterprise interested in outsourcing may accept the scope of such outsourcing, being safe for the company, i.e. in which by outsourcing we are not bringing the threats on and we are not crossing safe business limits of such process.

Outsourcing brings together and joins in economic sense subjects of diverse potential, regardless of their real location. It can be implemented, where economic diversity exists e.g. between: production systems and value systems, environments of specified competences, specialization, availability of resources, competence, markets etc. Therefore distinctness is the space for outsourcing application, and their shortage is not conducive for outsourcing.

Disparities in capacities, create virtual set of complementary resources and combine specific potential of new type. These are additional economic prospects, that are capacities, deriving directly from characteristic features for specific subjects and their specific location. They are conducive for distinct interest representatives and following from above fact of different properties of such subjects and their location.

Due to technique and technology development, including communication and Internet, the prospect of outsourcing application has increased as well as economic use, through its agencies of potential differences identified in distance from each other.

Disparities in generally understood capacities of operation, are the natural and common phenomenon, which combine various different reasons. However, regardless of their source, it is the diversified territory, which becomes the sphere of particular predispositions for entrepreneurship development and competitiveness shaped by outsourcing.

The process of competitiveness increase causes the improvement of competences and specializes individuality and autonomy of subjects, which in the effect, create a stream of specified potential. Such potential is associated through outsourcing with different level of potential, and may have wider, additional and more well-balanced and competitive economic application.

Outsourcing is using the energy, which follows from difference in capacities potential. Via its agency, business cooperation of enterprises is being run, supplied with the energy from diversification, regardless of reasons causing such diversification.

Thus outsourcing alliance pursue to synergic exploitation of diversified energy potentials. Such phenomenon, displayed mainly in the scope of competences, knowledge, technique, technology and infrastructure etc. is gaining the information and combined process of specialistic knowledge creation (know how) together with processes of specific type of resources gaining, including financial and infrastructure, in dynamic development conditions, is nowadays very expensive process with its initiation and financing only for the aim of own company processes, when often enough is beyond the capacities and forces to obtain access to such resources in distinct from traditional way.

Usage of energy deriving from diverse capacities in action for business purpose, is an advantage for competitiveness increase of companies, and the meaning of subject fact in practice increases the more so, if we spot the fact that existence of different sources, which supply the economic operation by outsourcing, do not refer only to spheres belonging to common legal system, in which outsourcing is implemented mainly because of economical reasons and has the character of internal outsourcing. Due to global competition, global diversification of potential exist, and in the wake of above, global environment of potential economic energy appears, which is available for usage by external outsourcing. An example of above, are the arising settlement centres, locating their head offices in the areas of direct access to necessary type of specific resources, such as highly qualified staff or cheaper labour force. In the scope of capacities of outsourcing

centres creation, the potential for example of only Wrocław competence environment labour market was appreciated by such moguls as: Hewlett-Packard, Credit Suisse-Wipro, Volvo, Google, McKinsey, CAN, CSS Corp, Rukki, UPC, IBM, Ernst & Young [2].

#### 4. SWOT OF OUTSOURCING IN TRANSBORDER ECONOMIES

If market modern economy is characterized by local diversity of potential, thus on contact points of separate economic systems, the level of such diversity is much higher. The example of such phenomenon, are the border belts, on which subject differences result mainly from the fact of administrative separation of the country with the border line. Administratively appointed border simultaneously sets among the other things, the border of any law, which regulates the rules of operation in any field of social-economic life, on the territory of each country. Distinct approach in legal regulations foment the diversification in the rules, conditions and possibilities of running a business, and also availability of infrastructure, resources and finances, etc.

Administrative borders of a country, are also the borders of activity, territorially bounding the economic policy of each country and region, effecting in the presence of local preferences, concessions, subsidies, but also restrictions and discipline, which shape as the effect, the living conditions of citizens of such areas and the level of capacity to satisfy their various needs.

Therefore, administratively demarcated border in artificial way, divides the territories, and together with such division also cultural, religious, customs, infrastructure, technical, economical and commercial environments, in the scope where characteristic for themselves properties and features arise. They, because of its peculiarity, become commercially attractive for representatives of different, administratively separated economic systems.

Distinctness in rules, manners, methods and capacities of operation; resources structure and technical infrastructure as well as its construction and represented level of modernity; access to know how, existing on both sides of border, create the areas of increased economic capacities, especially for subjects working close to border.

Such locations are conducive to external outsourcing, mainly because of distance to alternative categories. Via his agency, entrepreneurs from one side of the border may nearby, next to, that is on the other side of the border, obtain at all or obtain on better conditions, required by the company categories. It means that such resources, may be obtained, which because of for example financial, cost, legal, technical, procedure and other reasons remain for them unavailable or difficult to reach on the side of border where they have their place of location. Thus, because of the access to neighboring, border resources, they have easier capacity to use them, by transferring the part of own immanent processes on the other side of border, related with own key process and to entrust them to outsourcing services as on illustration No. 1, or to transfer and provide outsourcing for whole immanent processes as on illustration No. 2.

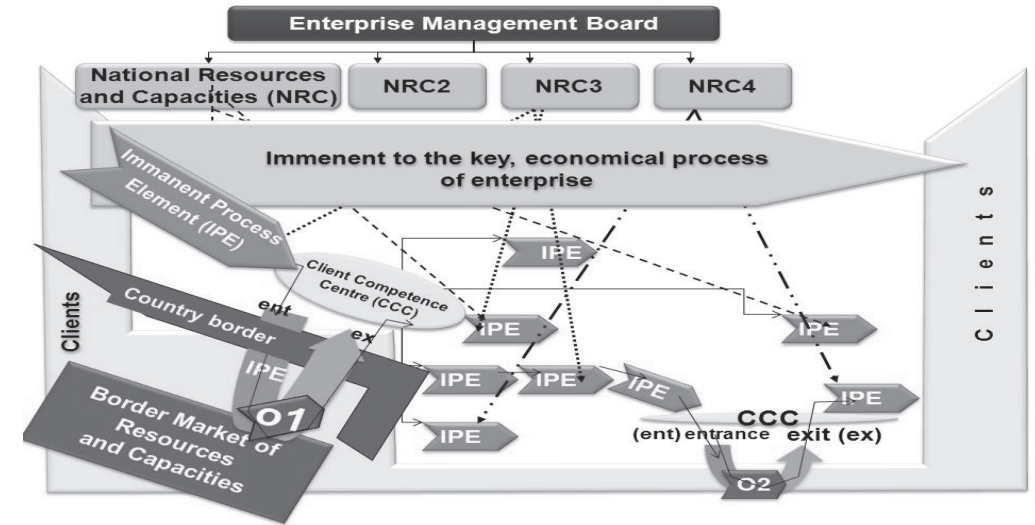


Figure 1. External outsourcing presenting part of immanent process – graphic presentation

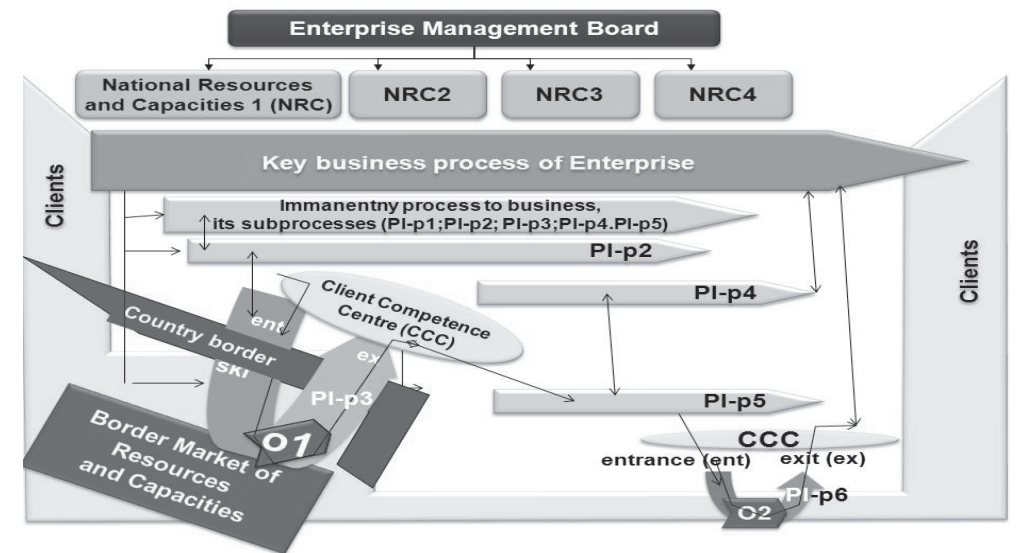


Figure 2. External outsourcing of immanent processes related with enterprise business process

Entrepreneurs located in the border areas, can assess their level of rationality for business processes, immanent processes (that is sub-processes of base process) and components of immanent processes through the wide specter of criteria. Subject extension of analysis criteria and profitability assessment level of executed economic processes, are the reference points, which exist under various forms on the other side of the border. Their active participation in activities effectiveness monitoring, causes that scope of alternative

variants, for execution of individual immanent processes or their components, is extended. Scope of such extended capacities however decreases together with increasing distance of company location to the border. It means that intensification of special business capabilities and real added economic values, which are possible to obtain with outsourcing engagement, concentrates in the near surrounding and on the contact points of separate economic systems. In above places, differences in potential occur, and together with such differences, especially profitable conditions for outsourcing services:

- Reviving the economic relations between representatives of neighboring systems,
- Intensifying transborder development of economic cooperation,
- Arousing such development in directions, which were so far passive in border areas.

Unless, internal outsourcing (national) is mainly dependent from economical aspects, it is the external outsourcing (foreign), especially outsourcing around border areas, which has to deal with the matters of institutions, prices, tax systems, costs, legal regulations, customs and etc. The example of above may be for instance more liberal legal regulations in the scope of ecology in the Ukraine than in Poland. It causes that subjects operating on this side of border, where restrictive ecological law is in force, may in external entrust of outsourcing locate such part of its activity component, which in their location undergoes a strict (most often cost consuming) law in a given scope.

Other example, which illustrates special potential and conditions for economical cooperation development of border subjects through outsourcing, may be the access to specific type of technical infrastructure, for instance to logistic centres, communication, incineration plants or waste treatment plants. Structures of infrastructure mentioned above, belonging to subject located on the other side of border, may in the confines of outsourcing, take over the service of a given immanent process or part of key production process of enterprise operating on the other side of border and eliminate therefore necessity to finance the construction or modernization of mentioned infrastructure. They also can, in the event of external outsourcing, decrease the costs related to operation of such infrastructure, which had to be born by the enterprise on its side of border.

Alike above, the things go with other type of technical infrastructure, as for example road infrastructure, car garages, warehouses, offices, etc. Crucial significance for undertaking the decision about external outsourcing has the spirit of access to specific type of homogenous resources: raw materials, geological layers or qualified or cheaper, or at all available in a given perimeter of territory (i.e. Polish IT staff, software operators and accountants are cheaper from their British or American colleagues). A strong argument for outsourcing around border area may be the difference in remuneration rates, goods prices and services, availability of technology and infrastructure and pro-capital approach of government policy, which provide towards foreign capital specific taxation improvements, for example few year tax release for foreign companies. Crucial for outsourcing decision remains also in the field of community and social background, i.e. trade unions level of activity or level of citizens trust to national financing and other institutions.

Next example of the fact that outsourcing in border areas may use its independence in legal systems and therefore activate economic cooperation of border subjects, may be the difference in tax rates, i.e. VAT tax, which for children articles on one side of the border is in the value of 23% and already on the other side, the rate of the same tax for subject group of articles is "0".

Thus transborder outsourcing (external) holds a promise for larger effects than outsourcing executed in analogous area of economical conditions, legal and social (internal), because the enterprise transfers on the other side of border, such part of its immanent fields of activity and derives more profitable for himself conditions, decreasing the costs: of remunerations, payments, materials, resources, infrastructure exploitation, etc.

## 5. OUTSOURCING RISKS IN INTERNATIONAL TRANSBORER ENVIRONMENT

Execution of business in the market system is marked with risk, and reaching domination, which aim is to outstrip competitors, in practice means the necessity to undertake activity with much higher level of risk, which as a consequence requires control and management. Economical success, as required effect of commercial activity inspires for implementation of individual ideas for a good business. It justifies application of method and strategy of highly developed action, that is solutions rich with potential predestined for significant increase of company activity. Simultaneously, however such type of venture, stimulates new sources of operational risk, and therefore general increase of diversity, complexity and extent of risk, adequately to its features, which determines the level of unconventional status for chosen competition route.

For practical effectiveness of modern competition, and particularly for streamlining of operation level by outsourcing, the key role is played by multi criteria analysis of possible risk sources and the matter of risk management. It means that together with custom operations commencement, pioneering, authorship and unconventional steps, as for example outsourcing, scope of risk is in each individual case and creates peculiar map, which integrates its individual features, connections and source relations. Their source are both individual features of outsourcing company, which is interested in outsourcing services, as well as outsourcing operation conditions, including environment features, in which it is to be implemented.

The essence of considering the risk in non standard action. It requires to include also the fact that final decision about business in outsourcing mode and its scope and choice of risk management methods of outsourcing service are undertook and determined especially by specificity of:

- Key business process of the party ordering the outsourcing and his product on market offer,
- Represented branch in the scope of which the ordering party operates on the market,
- Competitors of ordering party and delivering outsourcing services,
- Beneficiary profile, product/service for ordering the outsourcing (*that is, traditionally understood as a global Client for commercial subjects or citizen for local government and public administration*)
- Social meaning and role of subject interested in outsourcing. In such case, the peculiarity of public institution is different because of its mission and role apart from commercial subject peculiarity. It shall generate different risk for outsourcing, i.e. in the scope of its minimization capacity through spread of outsourcing risk between commercial subjects.

From the circumstances quoted above, the necessity of compatible choice of competition method results or management improvement to real, actual and legal conditions. Indeed, the basic thing is to establish the scope of capacities and limitations, which cumulatively drawing the set, around which the subject interested with outsourcing service may activate it, in a safe way, for the interest of his statutory operation, which de facto outsourcing would assist.

If we would like to illustrate the issue, we can appoint two, for example two power plants. Seemingly analogous production companies of the same branch. Two manufacturers of analogous main product – power supply. The product has the same level of hazard, and analogous non material properties, which can not be cumulated (produced for storage) and transported by general available means of transport. However each power plant will have its separate conditions for application of outsourcing, therefore not analogous factors of outsourcing risk. The following factors will decide about it: production process peculiarity and immanent processes structure, resulting from for example type of fuel, which determines the manufacturing processes (hard coal, lignite), and therefore type of applied power supply production technology.

Although the effect of power supply manufacturers production is analogous final product, the manufacturers remain non analogous subjects because of the fact that they share different groups and have their own individual factors. Following the above we can distinguish such types of power plants as: coal, water, wind farms, which do not represent analogous production systems and vary even around the same group, for example level of technological development, which follows from individuality of time period, when they were constructed and proper for subject times, access to such, and not other technical level of power supply production infrastructure. From mentioned above reasons, considered manufacturers, represent different conditions of main process execution and immanent processes, therefore different predispositions for application of outsourcing and non identified risk. To see the full scope of outsourcing individuality and its risk for such group of subjects, the following aspects combine: location of manufacturers together with peculiarity of such locations, client profiles, etc. [15].

To illustrate the issue of outsourcing risk character diversity, we may present the enterprises examples, operating around analogous location, however in different branches. In this case it is more easy to spot that the scope and range of outsourcing risk for power plant, medicine manufacturers, backpack manufacturers, dairy products or mineral water shall be determined with its peculiarity and properties of represented branch, key peculiarity, own business processes, availability of preferred resources by each subject and also the character of branch law, or specificity of the market segment providing the service, etc.

Considering individual character of outsourcing risk on the basis of practical examples, and therefore listing limitations and streaming the capacity of its application, can not be done without reference to the members of public services sector that is in fact the public and local administration. Those service providing entities, have their unique character of function and responsibility imposed by the law, what is raised and stressed by professor Oleński, and in reality it means that “they are not affected by effects of outsourcing, which are important in commercial sector, as division and risk optimization, reorganization by elimination of some tasks and functions” [6].

It is clear-cut that in practice, those subjects have no capacity to distribute their responsibility between other subjects in any form. Therefore transfers of proper responsibility for outsourcing, also by engagement of insurance products or special clauses and records in the contracts, are in the case of public or local administration units ineffective. However they remain available in outsourcing application between the commercial subjects, unless the insurance sector has such products in its offer.

Considered examples confirm the individual approach and diversity of outsourcing risk. They discredit any belief about:

- Universalism of outsourcing action strategies,
- Analogous criteria and identical level of difficulty in establishing outsourcing relations or identical features of such relations,
- Analogous scope of profits, resulting for the party, which orders the outsourcing,
- Unified level and scope of outsourcing service risk.

They also show that outsourcing, which is executed without previous identification of its individual borders of availability, set by capacities of responsibility symmetry protection, between the parties of outsourcing alliance, would increase the economic risk for ordering party of outsourcing, including actions for the loss of the company. The extreme example represented by public institutions, show that, as the Client of outsourcing, they are in the status of prisoner of the subject, which delivers outsourcing services [6], [7].

The essence of source and type of risk specificity for outsourcing, results from the fact that, it is an example for highly advanced strategy of activity performance [12], which establishes minimization of own resources and execution of own business on the basis of outside resources exploitation, what in practice may be compared to paid exploitation of other resources, from which the business receives as an effect of

such exploitation, required parameters gained by the Client. In such situation the responsibility for actions on behalf of the supplier of service. Minimization of own resources, which is the key issue in outsourcing concept, heads toward establishment of rational business relations with widely understood outside resources and their exploitation in symmetrical division, together with the transfer of responsibility in the scope of time, when subject exploitation is affecting the Client business process in well-balanced way.

Low level of own resources in the assumptions of outsourcing strategy is a binder of flexibility and huge diversity of the subject executing own business process with such system, because the system on the one hand is to effectively support management with necessary minimal own company resources, and on the other hand to give preferential treatment for relatively low budget transfer of exploitation process from current outside resources on the other, more business favour, more effective, increasing the competitiveness of outsourcing Client.

Considered outsourcing assumption does not refer to cases, when outsourcing Client risk is related with creation of threat for its key statutory process. Therefore, there is constant necessity for not only initial symmetry of responsibility between outsourcing parties, because subject symmetry is a real tool for minimization of outsourcing risk and protection of economic profits of outsourcing Client. The need of permanent symmetry of responsibility, between outsourcing parties is the source of necessity to apply, permanently, and not only initially and from time to time, efficient mechanism (tool), which would protect the Client interest against control of outsourcing suppliers, and therefore against their decisive influence on capacities of business process continuation, belonging to outsourcing Client [14].

Such case will appear within the outsourcing Client:

- will not transfer in reality and actual way or because of missing legal capacities the responsibility character for operation effects on the aim of the Client. Such type of effective transfer would not be able to be done on the aim of outsourcing service provider,
- he will allocate the entrusted service in the structure of monopolistic supplier,
- will allow to develop the proper relation of outsourcing into cooperation with monopolist,
- will expand its scope to the entrusted individual borders of outsourcing application,
- will lose the capacity of changing the supplier of outsourcing service, as the effect of missing or disappearing other suppliers of a given type of service on the market or as the effect of competence loss, that is own know how, will lose the capacity to shape content related, legal, organization, etc. parameters of outsourcing relations [14].

## 6. CENTERS OF COMPETENCE AND THEIR ROLE IN TRANSBORDER OUTSOURCING

From the above issues, further essential consequences arise for effective outsourcing, especially for outsourcing, which stimulates transborder economic cooperation development.

First of such things, relates to necessity of competition existence on the outsourcing services market providers, able to provide existence of alternative for the choice and change of such type of service supplier. Competition, mentioned above do not relate only to existence of local or national competitors, but all, to which the access of the Client of outsourcing service is real in fact. Thus, the subjects operating in transborder areas, because of favourable location peculiarity, gain the access to broad scope of tenderers, therefore to wider, competitive market offer, what shall be provided by neighboring of subjects operating on the other side of border. Such circumstance is an advantage for better outsourcing conditions in border areas and provides higher level of delivered rationality to the Client. As a consequence, the argument for economic subjects cooperation development arises on both sides of the border and is assisted by outsourcing, economical development of transborder areas.

Second matter, relates to special type of Client organization, which has to exist to provide the operation in outsourcing strategy business effectively and to entrust the Client with permanent capacity of all outsourcing relations operation, which he establishes.

Considered issue, remains directly related with establishment within the outsourcing Client structures of Competence Centres (CC), regardless of the fact whether outsourcing is being run with national of foreign subject. Competence Centres, are specialist organization categories:

- Created on the basis of remaining, in the Client structure representatives of competence scope, in which he has ceased his operation and which he transferred for execution in the structure of outsourcing service provider, and
- Located in the place of such functional company areas, which he substituted by outsourcing or established as additional organization units for outsourcing service operation in the scope of newly undertook venues by the Client [13].

The role of expert Competence Centres is to represent the competence of the Client and his business towards the outsourcing service providers, and create as well as manage of outsourcing relations and of course management of outsourcing risk.

The main tasks of Competence Centres are the following: communication of the enterprise with the market of specialistic services; execution of expert dialogue with outsourcing suppliers in the scope of competence represented by each Center; creation of content related essence of outsourcing relations and its systematic redefinition, according with changing needs of Client and his priorities, resulting from market changes; specification of effectiveness level for delivered outsourcing services together with performance of assessment for delivered service quality, monitoring of outsourcing suppliers market situation, permanent symmetrization of responsibility in individual contractual revisions of outsourcing and streaming of effective cooperation fields, as well as organization and operation of outsourcing provider change process, etc.

The essence and process of Competence Centres creation, for the aim of providing effective management over the outsourcing relation and business security back up of outsourcing Client, are presented on illustrations No. 3, 4, 5, 6.

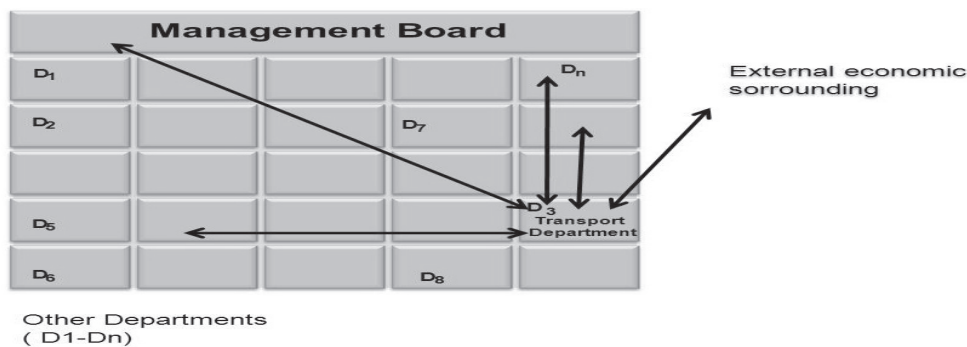


Figure 3. Enterprise, its operation (D1-Dn), their common relations

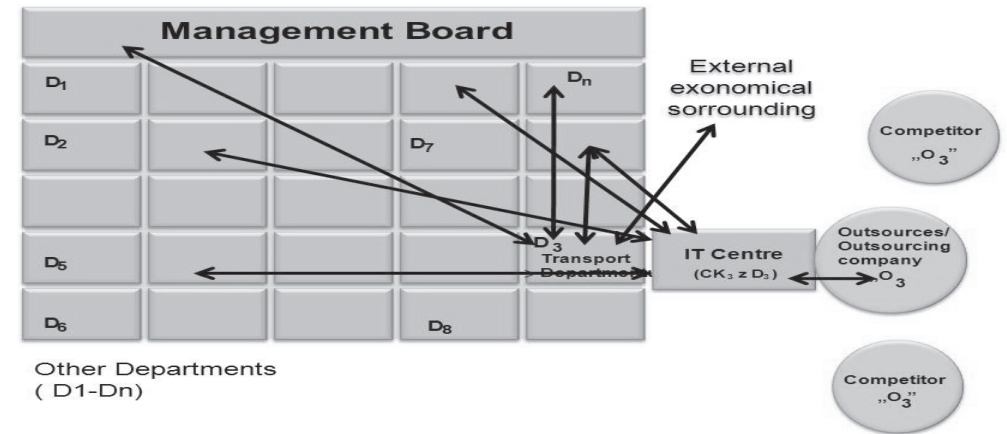
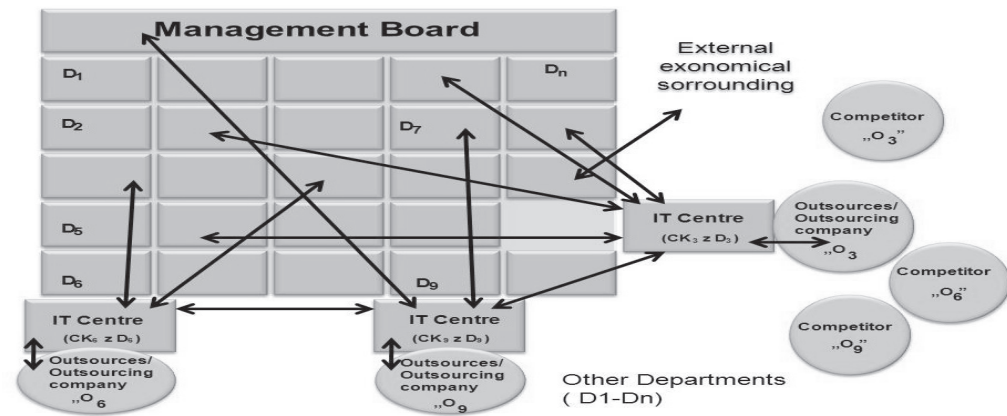
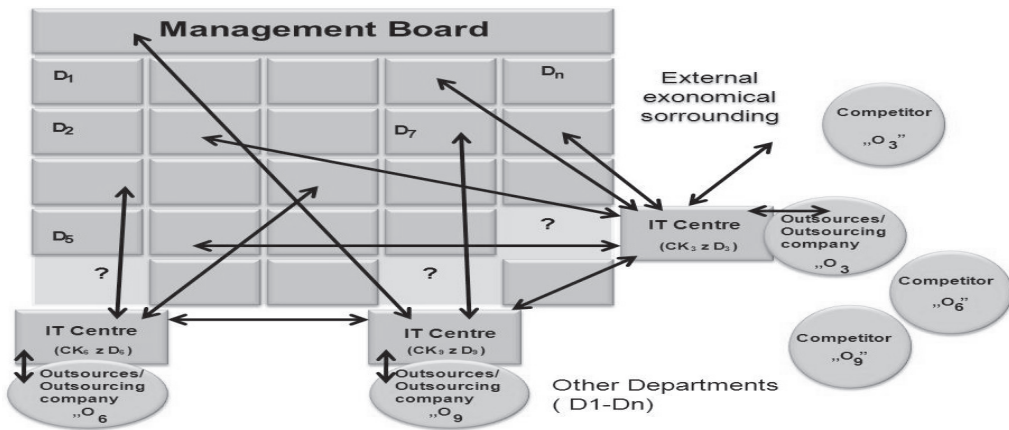


Figure 4. Desisting of transport function, establishment of CC for branch internal operation for the aim of company and outsourcing relations



Source: own study

Figure 5. Competence Centres in operation of internal company Leeds and content related Communications with suppliers of outsourcing services



**Figure 6.** Scale of discontinuity of company operation and outsourcing risk, brought on by following decision of self service on the aim of outsourcing entrust

Figure No. 6 presents the scale of broken off internal connections, with which the enterprise is dealing, giving up from many so far performed in own scope immanent processes. It presents the essence of Competence Centres in shaping of continuity of internal communication process of the company with outsourcing service suppliers. The diagram draws the attention on the phenomenon of breaking the organization integrity, breaking of its internal connections and transformation of switched off from operation fields into dead fields (on Figure No. 6 it is market with grey rectangles with question mark), what is achieved each time, when self service is being substituted by outsourcing or engagement of outsourcing without simultaneous establishment of Competence Centres for execution of functions, which were not performed so far by own system of outsourcing Client. Dead fields, are paralyzing capacity of company operation at all, and especially in the scope of outsourcing entrust. Therefore the Competence Centres are the organization category, which task is to provide and prevent or restore connections continuity, operation and efficiency of organization in locally deserted actions and those substituted by outsourcing.

Thanks to the Competence Centres, other fields of company activity and its individual organization units, resume common communication and harmony of cooperation. They preserve continuity of operation for own needs in the scope, which is substituted by outsourcing, what is taking place, as the effect of Competence Centres relations shaping with the supplier of outsourcing services, favourable for Client management priorities.

Competence Centres are the properties of outsourcing, they combine the integral categories related with each other, created for protection of interest and competence of the Client in relations with outsourcing company, especially in the fields directed on the route of outsourcing operation. Such observations, of no value in practice, seems important for outsourcing practitioners, especially for transborder outsourcing, which is carried in different legal, fiscal, currency, culture systems, etc. From those circumstances, another tasks are growing for expert Competence Centres and additional types of risks, and as a consequence the need to execute those tasks and minimize the risk. By operation of expert Competence Centres, the Client creates the conditions for creation of its business effectiveness via outsourcing. He manages each kind of outsourcing risk, however under the condition that he will establish such Centres in the fields which are

under the outsourcing, regardless the fact that he previously has given up own execution of such scope, or has undertook activity in the new field and has entrusted it from very beginning for outsourcing.

That is to say, Competence Centres, are in practice the instruments of outsourcing, managing the game of risk, credibility and safety mean for outsourcing relations, because outsourcing does not decide whether to buy? or perform by own means?, but its main goal is to maintain balance between independence and motivation and control as well as security of the party, which applies outsourcing [4], [11].

Therefore, each outsourcing relation requires Competence Centre, playing the role of outsourcing application diagnosis centre, and centres which shape, manage and operate the outsourcing relations, especially:

- Symmetrizing the level of content-related competence and scope of enforced responsibility of the party, which delivers us the outsourcing services,
- Shaping the business character of cooperation,
- Providing direct influence of Client on the course of his key business process,
- Reinforcing legal-business security of the party, which performs the outsourcing entrust.

## 7. CONCLUSIONS

Border areas as the areas of distinctness and economical diversity, represent specific potentials, which in practice represent the sources of additional and complementary economic capacities, especially for the subjects operating in the border areas. Business application of such capacities by specific companies, becomes possible via external outsourcing, which activation is pointed on exact profits obtaining by the party, which is going to use external outsourcing service.

In each case mentioned above, there is an economic cooperation of border enterprises. Enterprise from one side of the border, introduces his immanent processes from own organization and places their execution in the foreign partner structure, satisfying therefore own needs by exploitation of his resources together with simultaneous real transfer of responsibility. Supplier of outsourcing, however extends his business operation range, by transborder operation. As a result, external outsourcing established for operation of specific border subjects interests, activates in the role of economical developer of transborder cooperation creator and an instrument, which revives the economy in the border areas. As a consequence, in the effect of using the potential differences, outsourcing executes the function of a tool, assisting the economical development of border spheres and activation of trends, which profitably change the living conditions of local societies, inhabiting such areas.

Transborder outsourcing is the method using increased chances, but also an operation of increased risk, therefore the economical profits, which may be foreseen in such type of outsourcing, are determined by the need of permanent, expert management of outsourcing partners relations. We are talking among the other things about the risk minimization for outsourcing Client, which can be obtained by running expert Competence Centres, which would not only identify the limits of safe and secure outsourcing and which symmetrize the responsibilities of outsourcing alliance partners, but also shall search the capacities of increasing the outsourcing scope and profits follow from steps the Client had undertook, to satisfy such type of own business processes needs.

- [1] Outsourcing czy inna usługa. Czabański J., Chruściak M., Rzeczpospolita 273/2004.
- [2] Zewnętrzna obsługa procesów biznesowych jako nowe źródło potrzeb kwalifikacyjnych i miejsc pracy na Dolnym Śląsku, Iwicka A., Pakuła B. (w:) praca zbiorowa pod red. T. Kupczyk, Zapotrzebowanie na kwalifikacje i szkolenia pracowników przedsiębiorstw z Dolnego Śląska, wyd. WSH Wrocław 2011. ISBN 978-83-929382-3-1.
- [3] Outsourcing, Koehler- Forst W., Berlin Schmidt, 1995.
- [4] Outsourcing Systemów informacyjnych. Kubiak B.F, Korowicki A., (w) materiały z konferencji pn Human-Computer-Interaction, Gdańsk, 2001.
- [5] Beyond Business Process Reengineering, Towards the Holonic enterprise. Mc Hugh P., Merli G., Wheeler III, William A., Wiley& Sons, Cichestr., 1995.
- [6] Outsourcing w e-administracji. Oleński J., W-wa 2004.
- [7] Infrastruktura informacyjna państwa w gospodarce globalnej. Oleński J., Wyd. Uniwersytet Warszawski, W-wa 2006.
- [8] Outsourcing w działalności bankowej. Olszak M., Wyd. LexisNexis, W-wa 2006.
- [9] Skrótem przez granice, Nowa Trybuna Opolska, 19.03.2008.
- [10] Immanentność relacji procesów gospodarczych środowiskiem zastosowań outsourcingu na przykładzie biur podróży i banków. Szkic- Czech E., (w:) Studia i materiały PSZW 14, 2008 Kongres PSZW 2008).
- [11] Identyfikacja outsourcingu jako problem polskich organizacji gospodarczych. Szkic- Czech E. (w:) Human-Computer Interaction, ISBN:83-917088-5-3; mat . konferencyjne, UG, Gdańsk 2003.
- [12] Sojusze outsourcingowe - źródła zagrożeń i porażek. Szkic- Czech Ewa, PTI, Szczyrk 2005.
- [13] Centra kompetencji w obsłudze i kształtowaniu efektywności outsourcingowych więzi biznesowych. Szkic- Czech E., (w:) materiały z konferencji PTI Katowice, pt. Strategia informatyzacji cz.II, Wydawnictwo Naukowo Techniczne, W-wa- Szczyrk, 2004.
- [14] Odpowiedzialność obsługi zewnętrznej jako kluczowy parametr outsourcingowych kooperacji gospodarczych. Szkic-Czech E., (w:) Zastosowanie informatyki w rachunkowości i finansach , PTI, Gdańsk, 2003.
- [15] Optymalne granice outsourcingu w przedsiębiorstwie przemysłowym w warunkach transformacji gospodarki narodowej na przykładzie branży energetycznej. Szkic-Czech E., praca doktorska UW, W-wa 2001.



## TRANSPARENCY OF INTERNATIONAL INFORMATION ENVIRONMENT AS THE PREREQUISITE OF TRANSBORDER COOPERATION AND DEVELOPMENT

### 1. THE CONCEPT OF INFORMATION ENVIRONMENT OF INFORMATION SOCIETY AND OF KNOWLEDGE – BASED ECONOMY

*Information environment* is a complex of information resources, systems and processes producing, storing and distributing information used by people, businesses, social subjects and governments in their activities<sup>1</sup>. Any social, political and economic activity is conducted in an *information environment*. People, businesses, social subjects and governments are the stakeholders of their information environment. They are not only the users of information, but also they may be and often are the producers of information, they are storing information or are involved in distribution of information in different forms and on different scale.

We may identify and analyze the *information environment* from the point of view of an individual stakeholder, e.g. single user, single producer of information (scientist, writer, journalist), single entrepreneur producing, storing and using information, single local government, etc. The *information environment* may be also identified and analyzed from the point of view of groups of stakeholders, from the point of view of different classes of users, intermediaries, producers of information and managers of information processes, systems and resources, e.g. *information environment* of the SME's, banks, local governments, consumers, tourists, politicians, journalists, researchers, students etc.

Some classes of stakeholders actively take part in creation of their information environment. They build their own *parainformation* and *metainformation* systems needed for information retrieval from external information resources, processes and systems. They also build their own information resources by them own (primary registers, libraries of technological documentation, training of employees etc.). For special important needs the stakeholders are organizing some segments of their information environment in cooperation with other economic, social or political subjects. E.g. in many countries the banks have organized special information systems on debtors (systems of credit information), the chambers of commerce, organizations of entrepreneurs, learned societies, cultural organizations are organizing and maintain information systems and resources as the part of the information environment of their members and other subjects interested in profiled information.

Local, regional and central governments of countries are also involved in creation and maintenance of information environment for people and other subjects in localities, regions and countries. In the world of today the governments are most important active stakeholders initiating and influencing the creating, development, maintenance and use of information environment in economy, politics and social life. The

<sup>1</sup> Olenski J., *Ekonomika informacji – metody, PWE, Warszawa 2003*



governments introduce the laws that define the right and duties of all subjects acting in the country, as the stakeholders of information environment. The laws define the right and duties of units of public sector, of political, social and economic organizations, science and education systems, systems providing social services to the citizens, etc., as the producers, users, managers of information resources, processes and systems belonging to the information infrastructure of the country, region, branch of economy, sector of social services, governmental institutions. Governments should also introduce the laws determining the quality of information circulating in the information environment and other criteria of the quality of information environment of the country, regions, branches and sectors.

Any gap in the laws regulating the quality of information and of the information environment and in effective executing of the laws is immediately and completely regulated by the fundamental law of information that says: **worse information ousts better information**<sup>2</sup>.

In information society and knowledge – based economy the decisive role in creating, development, maintenance and quality of information environment is played by the *information infrastructure* of the state<sup>3</sup>. The objective of the information infrastructure for which the governments should be responsible is the *information safety* of society and economy. The information safety is based on the reciprocal *information equilibrium* applies to all classes of infrastructural information systems, i.e.

- official juristic information and information services helping to interpreting the laws in concrete usage situations,
- organizational information on governments and institutions,
- information on administrative procedures,
- public alert information systems,
- administrative information systems managed by public governments on central and regional level, i.a:
  - administrative registers,
  - tax systems,
  - social insurance registers,
  - registers of local and regional governments,
  - national business registers, territorial registers, registers of legal entities, registers managed by courts and other specialized government organs, etc.
- information systems of government organs supervising special kinds of economic, social and political activities, e.g. financial institutions,
- information systems of businesses, especially information systems of enterprises offering services for the public and businesses (supply of energy, telecommunication, consulting firms, safety, security and insurance etc.),
- information systems of social, professional and sectorial organizations acting on the basis of laws,
- mass media,
- official statistics,

2 Olenski J., Fundamentalne prawo informacji w gospodarce opartej na wiedzy, wyd. Uczelnia Łazarskiego, Warszawa (w przygotowaniu do druku).

3 Olenski J. Infrastruktura informacyjna państwa w globalnej gospodarce, wyd. Uniwersytet Warszawski – Nowy Dziennik, Warszawa 2006

- scientific, technical and educational information systems and services,
- specialized public, commercial and non-profit information services.

However in practice the functionalities of infrastructural information systems only partly meet the needs of common users and other stakeholders, e.g. respondents of statistical surveys, tax payers, SME's looking for partners and co-operating businesses in transborder region of neighbouring country.

In globalized world, in more open market – driven economy the interrelation between information environments existing in different countries have the impact on the development of economic, social and political cooperation. The interrelation between information environments and the cooperation of information systems creating these environments seems to be of highest importance in transborder regions. It creates the information preconditions for direct contacts and cooperation of people, businesses, social and cultural organizations and general political and social atmosphere necessary for regional transborder cooperation.

## 2. SPECIFICITY OF TRANSBORDER INFORMATION ENVIRONMENT

The information environment of transborder region differs from the information environment existing within the borders of one country. Main difference is not the territorial scope on which are operating the information processes, systems and resources creating the environment, but their legal and organizational frameworks, especially the laws regulating the information rights and duties of social and economic subjects. These legal regulations, the implementing of the laws in practice and the organization of national information infrastructure which is the backbone of the information environment, are integral segments of legal system of the country and of the organization and functioning of governments and other subjects.

The information environment of the transborder region is the **concatenation** of information environments of different neighbouring regions belonging to different countries. That means that legal regulations, functioning of governments, businesses and social organizations are different. Especially the laws regulating information processes and systems, determining information rights and duties of governments, businesses, mass media, citizens, science and education units, and other stakeholders of information environment.

Citizens, social and economic subjects and governments are operating in their national information environment. The information environment of neighbouring transborder regions of other countries is for them not transparent. For effective cooperation with their counterparts, colleagues, co-operators or competitors they need information that - hopefully – is somewhere stored in information resources or systems belonging to the information environment on the other side of the border. It is usually difficult, complicated and often expensive, especially for SME and individuals. The access to data stored in the information environment of other country is also time – consuming. To long time of access to information, its adoption to the needs of users, absorption and interpretation, is one of main obstacles of information interchange.

As it was mentioned above, the information environment of transborder region is the concatenation of several regionally tailored national information environments. Main differences between these concatenated parts are:

- National laws regulating information order: information rights and duties of subjects, quality of information, responsibility for information;
- Organization of governments and other active stakeholders of information environment;
- Organization and technology of information resources, processes and systems;

- Economic prerequisites and conditions of production, storage, dissemination and use of information;
- Regulations of interchange of information between information subjects, processes and systems belonging to different national information environments of neighbouring transborder regions;
- Languages – official languages and languages used in practice.

The way of integrating information environments of transborder regions is the building of the transparency for all stakeholders, including the stakeholders from other countries and reciprocal interchange of parainformation, metainformation and - last but not least – the economic, social and political information. The basis of this transparency is the developing of common parainformation systems covering all information infrastructures of transborder regions.

### 3. INFORMATION ASYMMETRY AND INCOHERENCIES IN TRANSBORDER ECONOMIES

For the stakeholders of information processes and systems in transborder economies, the mentioned above differences of information environments create the asymmetry of knowledge between subjects and regions. The asymmetry of knowledge means that the cooperating units are operating in the situation of informational disequilibrium and in the information gaps between subjects in concrete usage situations. The subjects usually are assuming that their information resources are not complete and the risk of economic or social activity in the conditions of incomplete information, is higher.

Main areas of information asymmetry that have the impact on economic activity are:

- Linguistic heterogeneity and inconsistencies of different linguistic versions of information, influencing the interpretation of laws, procedures and other information by stakeholders,
- Information on laws, regulations and administrative procedures,
- Parainformation on foreign information environment,
- Metainformation for information retrieval,
- Officially verified economic information on businesses, intermediaries and markets of transborder regions,

The information asymmetry in transborder regions is especially visible in the field of more advanced forms of cooperation of economic subjects, then the foreign trade of merchandise goods. Effective foreign trade in services in transborder regions needs more information on legal regulations in two or more countries and on possible risks. Joint ventures, investments, economic activities in special economic zones and technological parks, FDI initiatives are based on complex, complete and coherent information.

Local governments, social organizations, NGO's, research institutes, universities and other educational institutes also need complex information for developing mutually effective cooperation and joint initiatives in social and cultural activities.

Information for proper identification and management of risks in different countries is necessary to reduce the information asymmetry of cooperating businesses.

### 4. NEED OF INTEGRATED INFORMATION ENVIRONMENT OF TRANSBORDER ECONOMIES

One of main problems that are facing the stakeholders of information environment in transborder areas, both politicians, entrepreneurs, scientists, is the lack of complete and well organized parainformation systems enabling to identify the information resources available and the gaps in metadata necessary for evaluating of the quality, relevance, pertinence and comparability of accessed and used data.

The development, maintenance and updating of parainformation systems covering all important information resources, processes and systems and containing characteristics of all classes of stakeholders, is the tool of transparency and integrity of information environments of transborder areas in each country. It is also the prerequisite of concatenation of information infrastructures of transborder regions in neighbor countries.

The common parainformation system for transborder regions is the effective tool of building integrated transborder information environment. It seems that the international consortium of research institutes involved in transfrontier studies could be good organization structure for development and maintenance of joint parainformation system for transborder regions.

### 5. MAIN COMPONENTS OF INTEGRATED INFORMATION ENVIRONMENT

Main components of the integrated information environment for international transborder region are following:

- a) Common parainformation systems maintained and managed by the international consortium of transfrontier research institutes;
- b) Business registers of legal entities and entrepreneurs;
- c) Official administrative information systems: GIS's, social and economic information systems,
- d) Information systems of legal and administrative information;
- e) Regional statistical information systems;
- f) Information systems of regional and local governments;
- g) Scientific and technical information systems managed by universities, professional organizations or special information centers;
- h) Information services of specialized branch – oriented organizations of entrepreneurs, framers,
- i) Commercial information services of consulting firms, marketing businesses,
- j) Mass – media: publications and programs presenting and disseminating information on localities, local events, regional initiatives, on cultural, tourist, social and economic capacities of transborder regions;
- k) Specialized organizations (cultural, social, economic, technological) organizing different forms of contacts and information interchange between representatives of governments, entrepreneurs, cultural and social organizations, schools and universities.

## 6. ROLE OF REGIONAL GOVERNMENTS IN BUILDING THE INTEGRATED INFORMATION ENVIRONMENT

Active involvement of regional and local governments in the development of transborder cooperation is decisive for mutually effective use of complementarity of capacities of transborder regions. Regional and local government should not forget that the information interchange is the prerequisite of trust and of proper decisions of efficacy of transborder collaboration.

In transborder regions many local and regional authorities are signing the agreements on mutual collaboration and cooperation. The information storage and interchange should be an integral component of those agreements. It is also recommended that those authorities should organize special official units offering information services covering information from and on the whole transborder regions. Those units should be necessary based in the administrative structures of local and regional governments. The functions of such official information centers could be rather played by scientific and technical information centers of local and regional universities of research institutes interested in transfrontier studies. Local and regional governments should initiate, coordinate and support, also – if necessary – by co-financing, those transborder information interchange centers.

## 7. ROLE OF OFFICIAL STATISTICAL INSTITUTES

Official statistics, because of its special position and functions in the information infrastructure of the country, is responsible not only for providing qualitative, verified statistical information as the public good for any stakeholders. It is also responsible for supplying all metainformation needed for proper absorption and interpretation of users of information.

Official statistical agencies are (or should) be developing complex *metainformation* systems and metadata warehouses supporting the realization of all functions of metadata mentioned above, i.e.

- Standardization
- Identification
- Consolidation
- Integration
- Interpretation
- Evaluation of data and information
- Documenting of methodology

Official statistical agencies are also developing (or should develop and maintain) official public parainformation and parainformation warehouses supporting the realization of the functions of the *parainformation* in the information infrastructure of the country, i.e. (as mentioned above, the functions supporting:

- Specification of official infrastructural systems
- Standardization of official information systems and resources
- Organization
- Co-ordination
- Retrieval of information and metainformation
- Management of statistical resources, processes and systems
- Documenting of information processes, systems and resources.

In modern ICT environment official statistics may effectively support other official, public and administrative information systems by providing them good information standards, professionally elaborated *metadata* (classifications, nomenclatures, typologies, coding systems, registers), and professionally elaborated *paradata* (standards and tools for organizing, documenting, identifying and retrieval of systems, databases, data files, stakeholders of information processes and systems, procedures of management of information systems etc.).

Nowadays the responsibility of official statistics for information equilibrium should not be limited to official statistics only, but to the coordination and development of the transborder information environment as a whole, as an important, specific layer of information environment of the country and as the segment of international (e.g. EU, ECE) and global (e.g. UN) information system, is to help other infrastructural information systems of countries to obeying general information standards, integrity and quality rules and requirements on national and international level. It seems that in global ICT environment and in more active international cooperation the integrating and standardizing function of information infrastructure is an important mission of official statistical agencies.

The duty of official statistics is to develop end – user friendly information retrieval systems facilitating easy access of end – users to complete and pertinent information. International partnership of statistical agencies is the opportunity for developing statistical and related information retrieval systems on international scale.

## 8. ROLE OF NGO'S, SOCIAL AND ECONOMIC ORGANIZATIONS

The NGO's, social and economic organizations may and should actively contribute to the development of information environment of transborder regions. The collecting and dissemination information is often one of tasks of these organizations. However they are realizing their information duties independently from other national organizations and independently from respective organizations of other countries.

The information activities of the NGO's and other organizations shall be much more effective for all stakeholders of transborder information processes, if they join the initiatives of developing more integrated information environment and if they become the partners of international trans-border parainformation systems.

## 9. ROLE OF SCIENTIFIC INSTITUTES AND UNIVERSITIES

Dominating profiles of social and economic research projects are the processes, phenomena and systems within the borders of one single country. In national research and education systems the specificity of transborder studies is often underrated. The importance and specificity of transborder phenomena and processes is understood mainly by politicians, entrepreneurs and researchers that are personally linked with transborder regions, who understand the potential of development existing in the differences of neighbouring regions belonging to different political and economic systems. That refers also the research institutes and universities.

The universities and research institutes in transborder regions are often undertaking research projects of specific problems and phenomena of transborder areas.

Good example of effective cooperation of research and development institutes in transborder region is the Carpatian Euroregion. In the Carpatian Euroregion there are many initiatives of researches undertaken by specialized research and development institutes and by universities based in the cities of the region. Systematic cooperation of scholars and researchers, of institutes and universities, their close collaboration

with regional and local governments and organizations of entrepreneurs, cultural societies and other local communities shall stimulate the research works, shall also help to identify important problems that need scientific support.

It is recommended to establish long - term cooperation based of the formula of problem – oriented consortia conducting systematic, coordinated research projects in most important areas of transborder development. It shall create strong effect of synergy. Important input to strengthening the synergy of research works is the creation of data bases for common use of researchers from different institutes and countries. The data bases shall be developed as integral components of information environment of transborder regions.

#### 10. ROLE OF MASS - MEDIA

The role of mass - media in creating, development and maintenance of transborder information environment can hardly be overrated. Mass media have strong impact on the information environment of the society. Most of economic, political, cultural and social information are received and absorbed by the population from mass media. Also official information, scientific and technical information, statistical data, are distributed do the citizens via mass media.

The mission of mass media in democratic information society and knowledge – based economy is to serve as the intermediary between producers of useful information (governments, cultural institutions and artists, enterprises, social organizations, scientists etc.) and the public. The forms and methods of dissemination should be focused on the adjustment of disseminated data to the specificity of the absorption by different classes of users and other stakeholders of information processes. In democratic society the mass media should take care on protection of good quality of information.

Unfortunately, often the information processes and transferred by mass media is losing it quality. It is often also used by some stakeholders (e.g. by some politicians, businessmen, organizations) for dissemination of information that does not respect the quality criteria and is misinforming the society (e.g. advertisements containing misleading information on products and businesses, dishonest political propaganda, pseudo – artistic “works” etc).

Therefore the governments, social organizations, businesses and scientists should carefully control the quality of information produced by them, but disseminated via mass media. In international environment the control of quality of transborder information disseminated by mass mediabased in different countries, should be the issue of joint responsibility of all stakeholders who want to live and operate in “clean” information environment.

In democratic information society and in knowledge – based economy information is to important to be left in the hands of journalists and their employers.

#### 11. THE NEED OF INFORMATION ECOLOGY IN TRANSBORDER ECONOMIES

Within the frames of information science there are undertaken the research works in new field of research – so called *information ecology*. Information ecology as the specialization within information science is focused on the quality of information and its impact on social, economic, technological and research processes.

The concept of *information ecology* seems to be relevant and actual for the analysis, evaluation, building and use of *information environment*. All stakeholders of information processes and systems, who are interested in producing, disseminating and using information of good quality, are expecting that they

operate in “clean” information environment. That means that *information environment* should be controlled using methods and tools elaborated by *information ecology*.

In heterogeneous, international transborder information environment the control of quality of information is crucial for the usefulness of information for all stakeholders. The danger of *polluting* the information environment by misinformation, false information, useless information blocking the channels of distribution of data, in much higher in international environment, then in one single country. The stakeholders should know if and how the quality of information circulating in international transborder environment is controlled and verified.

It seems that the managers of common parainformation systems in transborder information environment should take into account the control of the “*ecological cleanness*” of information.

#### 12. COMMON PARAINFORMATION PLATFORM AND META- INFORMATION SYSTEMS AS THE BASIS OF TRANSPARENCY OF INFORMATION INFRASTRUCTURE FOR TRANSBORDER ECONOMY

The foundation of transparency of social, economic and ecological processes on international scale is the implementing of relevant international statistical standards by all partners. Extremely important are meta-information and parainformation standards.

The process of implementing international meta-information standards in official statistics is rather advanced and the use of them in statistical surveys is rather common. Statistical agencies that are using national classifications, nomenclatures and definitions of terms, have elaborated, are maintaining and updating the classifications, nomenclatures, code lists, glossaries of terms, correspondence tables and methodological comments to definitions of concepts, algorithms of computing indexes and derived indicators.

In transition countries as well as in post-transition countries the processes of implementing new standards and methods in official statistics are rather well documented. This documentation is helpful for external end users for retrieval and interpretation of data. However often those detailed documentation is not available for the public, on the website of statistical agency. The access to full meta-information resources, including detailed documenting of methodology, is the task of statistical agencies. This obligation was directly was expressed in the UN Fundamental Principles of Official Statistics.

Official statistical and administrative information systems are very complicated and non-transparent for external users, even for regular users. Usually the retrieval of relevant data is the process of several stages of identification:

- 1) country or region
- 2) information system
- 3) survey
- 4) data base
- 5) data file
- 6) pertinent data
- 7) meta-information relevant to retrieved data.

The multi-level process of retrieval and access to information is realized with the help of *parainformation*. As it was mentioned above, the information on information systems, processes, resources and stakeholders is called *parainformation*<sup>4</sup>. The development of *statistical parainformation systems* is in rather early stage of development. Methods of designing and managing parainformation have been developed by information scientists and widely adopted in librarianship and in scientific and technical information systems. It seems that statisticians should study the methods and practical experiences of librarians and adapt them creatively to the specificity of statistics.

For effective, user – friendly retrieval of statistical data there are necessary coherent metainformation standards and - what is still in the phase of research and experimental implementations – *statistical parainformation standards*. Harmonization of parainformation standards on international scale is still the future, hopefully not very distant future.

Practical information retrieval in heterogeneous information systems environment requires complex parainformation bases and metainformation bases. End – users should be given the tools for full identifying the existence of pertinent information in information systems, databases and publications. They should be navigated, how to access pertinent data, what are legal, economic administrative and technical constraints and conditions of access and use of required information. The answer to such questions shall be given by statistical parainformation bases. After getting positive answer from parainformation base, the users should be navigated to next phases of retrieval, accessing metadata base, formulating detailed queries in metadata-based retrieval language. The end - users should get final information together with all relevant metainformation.

However it would be *a wishful thinking* to expect that standards harmonizing parainformation on international scale will be commonly used in short time. Official statisticians are in the beginning of developing harmonized parainformation systems. What seems to be realistic is the designing of common platforms for storage of structured parainformation. The idea of such platform is presented below.

In many information systems (librarianship, scientific and technical information, business information etc.) effective tools supporting transparency and interchange of information on international scale are metainformation and parainformation platforms. In librarianship and in scientific information systems the interchange of information via metainformation and parainformation platforms is rather common. However in administrative and statistical information systems those methods and experiences are known by IT researchers. Statisticians have not paid the attention to the achievements of their colleagues from libraries and scientific information management centers. It seems that main problem of rather conservative approach of statisticians to information retrieval methods and techniques is the monopolistic position of official statisticians on their segment of information market, the monopoly for production and dissemination of official statistical data man metadata. However this monopolistic position has come to the end in the field of dissemination. Dissemination of official statistical information is in hands of specialized portals, professional mass media as well as other intermediaries on information markets (national and international press agencies, *infobrokers* etc.).

Dissemination of statistical information and metainformation by the mass media and other intermediaries for the public, for non-professional, casual users could be accepted by statistical offices, if the mass media and intermediaries obey the rules of precise representation and interpretation of real content of statistical data. In case of dissemination of erroneous data, erroneous interpretation and incorrect presentation of statistical variables, indicators and indexes, statisticians should actively react explaining the errors (see UN Fundamental Principles of Official Statistics).

<sup>4</sup> The term parainformation was proposed by ICT experts for information on information systems, processes, resources, and stakeholders of information systems and processes. This term is not correct etymologically, but it occurred very useful in practice

In modern ICT environment official statistical institutes have got new, exceptional opportunity of direct dissemination of statistical information to all professional users and to the public using Internet. The modern ICT enables also to define individually profiled information services for regular professional users and to provide direct information services for “VIP-users”. Those users could also be offered direct access to statistical data and metadata stored in database system or data warehouses.

Problem that needs improvement is the lack of simple, reliable, end - user friendly query languages for data and metadata retrieval. Usually each survey has its own metadata. Each database system is using specific procedures for accessing data and retrieving relevant information. On international level those problems are much more complicated. The postulate - often met in statistical ICT literature - standardization *ex ante* of all catalogues of statistical variables in the NSS, harmonization of names of variables and developing on this basis one query language for all surveys and data sets generated by surveys seems to be pure wishful thinking.

Much more realistic is the developing of *tailored metadata and paradata bases* realizing the functions of the gateways between end – users and statistical data stored and maintained in existing forms and structures. Those retrieval gateways – *metadata and paradata platforms* – are scalable according to the possibilities and need of statistical systems and end-users. They could be developed also for heterogeneous complex of many national systems in the form of common meta- and parainformation platform. The meta - and parainformation platform can also work in multilingual environment, storing metadata in many national languages and maintaining multi-linguistic correspondence tables .

The concept of the common meta- and parainformation platform for retrieval and dissemination of data is the adoption of similar platforms that are constructed in many other (but not in official statistics) information retrieval systems for multi-linguistic hypertexts. From technological point of view the parainformation platform is the data warehouse storing weak - structured information describing in harmonized form the objects of information systems and resources. Basic metainformation and parainformation objects stored on the platform are following:

- Statistical offices (institute, office, regional and local units) and its organizational structure
- Metadata bases: classifications, nomenclatures, code lists, registers, frames, glossaries)
- Statistical surveys
- Administrative records
- Administrative data sources
- Primary records used as statistical data sources
- Statistical microdata bases
- Statistical output data bases and warehouses
- Publications containing official statistical information
- Archived statistical files
- Stakeholders of statistical processes: managers of source records, respondents, intermediaries, users (all types)

The parainformation platform should also store the descriptions of similar objects of statistical systems of ministries and other institutions realizing official statistical processes. It is recommend to store on the statistical parainformation platform not only statistical paradata but also the structured descriptions of objects belonging to other infrastructural information systems of the country, e.g. national information systems of taxes, social insurance, health insurance, registers of population, business registers, territorial registers, registers of infrastructural objects etc.

General model of structured description of objects stored in the platform is the documentation format in library or in scientific information system adapted to the specificity of each type of information system and process. It seems that the list of objects can easily be reduced to limited number of types of objects.

The parainformation platform should be opened for all interested statistical agencies that are ready to share their *parainformational descriptions* of statistical objects listed above in standardized structures and form, and – reciprocally – to get free and full access to equivalent parainformation supplied by other stakeholders of the platform, i.e. the parainformation on other official statistical and administrative systems.

The parainformation platform as the common tool for navigation in numerous national statistical information systems is simple, cheap and effectively supporting the statistical information retrieval in heterogeneous international environment. The parainformation requirements do not interfere in existing laws, procedures and structures of statistical systems of participating countries and statistical offices. Each national statistical agency may take the decision of the scope of parainformation that is willing to deliver to the platform for dissemination and interchange both on national and international level. The parainformation platform is adjusted to the specificity and constrains of heterogeneous international environment.

### 13. ORGANIZATIONAL FRAMES OF DATA INTERCHANGE IN THE INFORMATION ENVIRONMENT OF TRANSBORDER REGIONS

Developing and managing the transborder information environment needs specific organizational structures. In transborder regions the stakeholders of information processes - (governments, businesses, social organizations, scientists, researchers and advisors - need information from many countries and regions. They are looking for coherent, uniformed, interpretable, comparable data. Many of them need information from one kind of source (e.g. from official statistics) matched with information coming from other sources: administrative, scientific and commercial information, and from other countries. In such cases retrieval of complete, relevant, pertinent information from many countries and from many sources is extremely complicated for regular users, and for casual users it's a real pest.

It seems that the kernel of organization of data production, storage and interchange in transborder information infrastructure is one supranational common parainformation system. This system can be created, implemented and maintained if and only if there are established (by regional governments of cooperating countries) uniformed legal basis of such parainformation system and if there is organized the consortium of non-profit institutes managing the system. The parainformation system would introduce standards for documenting information sources and for evaluating the quality of data sources, metainformation and information.

The managers of parainformation system may also initiate the development of *infobroker* services. *Infobrokering* may be useful especially for incidental and non – professional stakeholders of information processes. Practical procedures of dissemination of data and metadata and of user's access are regulated by national laws. In practice the laws, organization, procedures, economic conditions and practical information services are different in each country. For incidental and casual users, especially for foreign users from other countries, this situation is rather uncomfortable. In special cases it is possible in some countries to hire the *infobrokers* (firms specialized in providing information from different sources on individual request of users, on commercial basis), however the costs of information services offered by *infobrokers* are high and the quality of services is rather uncertain.

The parainformation system will assure the transparency of the transborder information environment for all stakeholders operating in transborder regions.

### 14. CONCLUSIONS

- A. Common integrated *information environment* for transborder regions is the prerequisite of information transparency and information equilibrium of all stakeholders cooperating and acting in transborder areas.
- B. The transparency of information infrastructure shall be achieved by building common supranational *parainformation system* managed by the *international consortium* of non – profit institutes or universities involved in the research or transborder regions and in the development of political, social and economic cooperation in transborder regions.
- C. *Information ecology* of the environment shall be the object of special care of governments, businesses, NGO's and research institutes. Special care should be put on the quality of information disseminated via mass media, to avoid the “polluting” of information environment.
- D. Building good, “*ecologically clean*” *information environment* for transborder regions as a whole is the prerequisite for all subject of the region for effective use of existing capacities and stimulate effects of synergy based on the complementarity of transborder regions of countries.

### REFERENCES

- [1] DZIUBA, D., *Ewolucja rynków w przestrzeni elektronicznej*, Nowy Dziennik – UW, Warszawa, 2001.
- [2] CHMIELARZ, W., *Systemy biznesu elektronicznego*, Difin, Warszawa 2007.
- [3] KISIELNICKI, J., *MIS – systemy informatyczne zarządzania*, Placet, Warszawa 2008
- [4] OLENSKI, J., *Ekonomika informacji – metody*, PWE, Warszawa 2003.
- [5] OLENSKI, J., *Infrastruktura informacyjna państwa w globalnej gospodarce*, wyd. Uniwersytet Warszawski – Nowy Dziennik, Warszawa 2006.
- [6] TERRANOVA, T., *Network culture: politics for the information age*, Pluto Press, Ann Arbor 2004.
- [7] United Nations ECE Resolution on fundamental principles of official statistics for the European region, Geneva, www.unecce.org.

EWA SZKIC-CZECH

Opole University  
(Poland)

## TRANSBORDER OUTSOURCING – NEW METHOD OF SYNERGIZING THE RESOURCES OF NATIONAL ECONOMY

### 1. INTRODUCTION

Increasing competition development seems nowadays more and more efficient barrier of management, which is felt in the environment of local, regional and national competition. Because of markets globalization also the competition became global. Borders of enterprises operation, have exceeded the administrative country's borders, opened and enlarged the entrepreneurs operation and strategic space of management. Companies use a wide spectrum of possibilities for actions, such as for example:

- transfer business activity to more favorable for their business location (8),
- new competence quality, knowledge, technology,
- new, multi-strand markets, that is, customer and work environments, scientific-technical environments.

The dynamics of global and local multi-strand changes, competition conditions as contemporary running forces of possible development directions and market dominance, redefines an operation standards and business execution. As a consequence, it continues subject process very clearly and the syndrome of contemporary times touches the subjects of global village:

- in getting low efficiency of current technologies and forms of administrative analogous conditions exploitation,
- decrease of local resources capacities, and sources, and conditions for strengthening of enterprises conditions, therefore increase of difficulties in obtaining effective management, which borders set to institutional national structures, understood as the uniform systems. That is why the participants of above mentioned systems have problems in exceeding the rational barriers and growth, more difficult it is to use the economic situation and market possibilities.

If we are talking about innovative rules and forms of operation, thus such scope represents among the other things the outsourcing. However, as often we talk about uniform systems, administrative analogous conditions, the economical landscape of such type of location illustrates the individual countries areas and more precisely their institutional systems. Transborder areas, are included to such systems in the scope of membership to a specific country. Nevertheless, because of cross-border location in such system, they gain additional, special conditions, which are an advantage to create local economy. Because of such reasons, the advantageous environment features, for energizing the transborder economy by outsourcing, are going to be a subject of further consideration.

### 2. OUTSOURCING IN SURVEYS AND STATISTICS

As *Harvard Business Review Poland* states, according to surveys being executed, since four years by ArchiDoc with cooperation of Ipsos Institute, significance of outsourcing in our country is growing.

In the survey of application of scale and assessment of outsourcing services, about 200 large Polish companies are taking part, employing over 249 employees or whose turnovers overrun 200 mln PLN. Last edition of subject survey from the end of 2010, has appointed the increasing number of entities using outsourcing. It revealed that 58% of surveyed population, has decided to apply outsourcing and that more and more manage employees leasing, equates with strategy element. Surveys have also confirmed increasing knowledge of outsourcing and noted down shift of the decision making centre in granting the processes in outsourcing from the level of department management to the level of company management boards. Such change has been noted down in case of over 80% of surveyed companies (9).

The meaning of statistics, coming from subject surveys, prove a high awareness of top managements and confirms the fact that decisions about outsourcing are essential business management decision for enterprises, which so far was can not be undertaken in the corner of company as its local initiative and realization. It can not reflect to a part of organization, that is to its departments in autonomous, selective, not integrated way with the remaining part of enterprise organization and its operation processes.

Trend of awareness development and practical applications of outsourcing by Polish business entities according to ArchiDoc together with Ipsos Institute proves the efficient comeback of national interest with outsourcing after the period of its inglorious times, which were during the institutional-economical transformation, where they have entraptured with its idea. They were also invigorating the hopes, but were not proving real effectiveness. As a result, quite quickly and for a long time, they had disappointed entrepreneurs, regardless of the reason of such condition, which followed from indistinguishable reasons and being independent from them as well as (*for example: lack of experience with outsourcing and recognized concepts, lack of skills to implement the outsourcing relations, expectations for immediate, constant, improvement of condition and development of the subject using outsourcing, including elimination of his problems with management; imitation of implementation*) resulting however from the pressure of services suppliers interested in filling of their wallets with orders, which would make them dependent in long term because of lack of good economic situation in subject period (5).

### 3. INSTITUTIONAL AND INFRASTRUCTURE DIFFERENCES AS STIMULUS OF ECONOMICAL DEVELOPMENT OF TRANSBORDER AREAS

Economic capability of transborder areas is shaped by their geographical and institutional location as well as infrastructure features of social-economical systems, which the country represents, and which part it represents. (6)

If we include the neighboring of potentials separated by the border line of a country, which goes between transborder regions, then we shall consider such type of neighboring in the categories of independent potentials neighboring, shaped by neighboring, separate uniform systems.

Such type of independent potentials may be accelerated under the scope of neighbors interest with operation based on identified differences in operation possibilities. Therefore, such a neighborhood of potentials features with diversity, that is transborder potentials asymmetry, which prof. Oleński discusses as: "quantity and quality differences of economies and institutional potentials of regions, cities, enterprises or other organizations of transborder areas from different countries" and extends, that "institutional, organizational, technical-technological, social, personal economical asymmetry, have special meaning for complementarities of transborder region economies, systems and processes". (2)

Diversity aspect (asymmetry) of transborder institutional potentials covers differences in legal system philosophy, branch legal order, level of law coherence, especially in legal regulations in administrative structure of procedures, which act in the area of transborder regions. Irrespective, in practice it is represented by fiscal system, including rules, rates, tax statute, titles and availability for preferences in tax releases.

Economical asymmetry in the border areas grows however on diversified soil of neighboring countries economical development, in the scope and level of economical faculty and its regions; in the scope of conditions and level of citizens life, together with the level of social acceptance for life conditions and perspectives of their increase. Such aspect of diversification is represented in every transborder society by e.g.:

- prices: of fuel and transport costs, materials, raw materials, services;
- level of remunerations, labour costs, maintenance costs, social benefits;
- access to resources and competence, including characteristic competence and choice of rare goods as well as access to science-technology knowledge or good practices.

Aspect of transborder economical asymmetry together with institutional asymmetry are not the only sources of potential diversification of areas located around administrative borders of a country. Not of essential meaning for such phenomenon remains the zone of social and infrastructural distinctness. The first refers to differences identified in the fields of: faith, customs, culture, tolerance, multi cultural society, historical border area heritage and society.

On the transborder infrastructural diversity the following things combine: level of technological-technical development, application of manufacturing and back up technologies, including the level of automation and robotics, industrial automatics, measurement and diagnostics, IT, level of telecommunication and analytical systems together with the level of system coordination and technological integration. When it comes to transborder infrastructural asymmetry the following items also predestine: physical level of transport infrastructure and backup facilities age (that is means of transport, number and quality of roads, car parks, hotels, availability of services and service, safety monitoring system and rapid response).

Above factors, which provide the structure for individual potentials located in transborder areas, make those transborder areas a special economical zones with increased potential, which is created from individual potentials and occurring asymmetry between them. It also allows the development of transborder economy.

If we shall take into account only the fields mentioned, in which the differences of individual potentials may be located, then in such case it is allowed to claim that the wider the diversification is between the border areas, the more the level of transborder potential increases and the level of mutual economical attractiveness of the border areas also increases.

Therefore, about objective transborder potential capacities, decides finally the level of diversity between individual potentials of bordering areas. (7)

Hence, the economical dowry of bordering areas is their individual potential. The location, which is a profit of neighboring with separate potential and the scope of differences between those potentials are also the part of dowry. The weight of dowry increases as the effect of its multiplication, being the effect of neighboring potential interaction. In such way, the feature of transborder areas is their transborder potential, which is more wide and stronger from individual potentials of each areas combining the area or transborder region. The transborder potential therefore exceeds the total on individual potentials.

The essence of differences identification between neighboring potentials of transborder areas remains a serious, business, agreement for business entities. It is so because, they are capable to use such diversities for mutual interests and with profit for transborder area and citizens inhabiting such area. Such issue gets a meaning in conditions of increasing difficulties with management, in the circumstances of costs increase, economical shake-out or economical crisis, which, if not exist in wider, European or global scale, are escalating larger problems of entrepreneurs with business entities in own locations. (4)

In such situation, identification methods obtain essentials meaning for such differences, effectiveness of those methods, inerrancy of obtained results, durability of agreements and ways of their exploitation. Mutually crucial for transborder potentials exploitation and development of transborder economy, remain transborder synergy of statistical systems (3)

It means in practice, more intensive search of problem solving ways beyond current uniform system.

Appointed asymmetry areas of neighboring transborder potentials does not specify their complete list. However they visualize the spectrum of stimulators of transborder economical growth and remain in the sphere of potential capabilities, if their exploitation does not occur. Only the interest in usage of transborder capacities allows to create transborder economy. Such economy is fostered by transborder outsourcing, which for such economy becomes direct:

- emitter of transborder entrepreneurship and transborder economical growth
- factor, which reveals the synergy of transborder resources and shapes the conditions and level of society life in subject locations.

#### 4. TRANSBORDER OUTSOURCING AS A METHOD OF DEVELOPMENT SYNERGY USAGE FACTORS

The problem of outsourcing seems interesting from the point of capacities to shape the effective outsourcing management view with processes of market value creation.

The issue is the more important, because as the literature states from the early beginnings of outsourcing engagement, the key motivation of its application was and still is an operation costs reduction (1).

The matter of key motivation, to grasp the outsourcing within the time has not undergone devaluation, because on the one hand its theoretical basis and assumptions of outsourcing have shaped its mission as the reductor of operation costs, and on the other, current practice, operating in conditions of worldwide crisis, confirms the effectiveness of outsourcing applications in its function. In consideration of transbordering outsourcing, it is worth to stress the matter of organization-financing comfort, which may be used by bordering subject, entrusting his foreign partner from the border area, service of part of whole of his processes or functions. Subject comfort consist of capacity of the entrusting party to remain in current location. Thus transborder outsourcing does not have to be related with spatial transfer of activity to other location or creation of company branches abroad. Thereby, the transborder outsourcing does not create any operational costs for such type of translocation. It does not relate with office services, which means some specific work processes in practice, time units and costs. It does not cause coordination costs, control and operation of subject branches organization, which is interested to supply his business process with outsourcing.

As observation prove, the practice of foreign outsourcing application by entities locating their activity on both sides of border in transborder areas, their operation increases the transborder economy, because it stirs into action the agents, suppliers of special outsourcing service, who apply their services in the place of potential capabilities, converting them into real actions and real benefits for each side of transborder social-economical environment. Initiation of outsourcing in considered areas and services of outsourcing for economical transborder relations, generate specific financial benefits, which are spent next on operation and development of subject entities, operating in subject relations. Thereby also the transborder environment becomes a beneficiary of outsourcing application and advantages by: income from taxes, consumption of goods and services, employment increase, meaning simultaneously the increase of local tax payers number, decrease of unemployment rate and increase of life conditions of society inhabiting transborder area.



Examples of such type of cases may be the entities delivering outsourcing of transport services, with the post production wastes, i.e. in the form of scrap metal or “after production” of sediments from their transborder “manufacturers” to transborder receivers. In both separate examples, both the scrap metal as well as sediment (post production waste of sewage treatment plants) are the waste, which within the law, oblige their “producers” to execute cost consuming procedure of their development. Costs mentioned, for each of sample “waste producers” result mainly from the necessity to organize the place, store and protect the waste around the company, and next they refer to transport costs, usually specialistic and costs of waste location in adequate dump.

In the meantime, it is enough to have on the other side of border in distance accepted by economical cost calculation:

- incineration plant for sediments representing highly advanced technology and therefore being unique structure,
- scrap metal recipient,

To convert what was so far being very specialistic process and only the source of constant costs change into the source of additional incomes, simultaneously:

- reducing current internal service processes of waste management and costs of such service, next by
- re leasing the resources and measures for operation on these processes, transferring them for execution of other, important for enterprises
- satisfy the law, which obliges to methodological waste management.

Discussed cases activate transport outsourcing services suppliers, who deal with transportation of sediments, and in the second case transportation of scrap metal. In such circumstances, part of subjects are using the differences in technological and legal potential, which engages the waste as a business and via outsourcing, transfers them into key raw material for production of foreign company operating in transborder area.

In such way, transborder outsourcing opens special business possibilities to entities of those specific locations. It activate their resources and initiates extra supplies. Through outsourcing, it utilizes difference of individual potentials, working for the aim of synergy release of those resources and shape transborder economy.

Transborder outsourcing supports the cost of basic service operation decrease. It works in the function of cost reductor without simultaneous need to transfer the business to foreign location. It provides the capacity to simplify, and even to reduce the scope of work processes required by law. It initiates the entrepreneurship and economy of bordering areas by the ability to have the synergic effect on transborder resources.

Presented examples of practical applications of transborder outsourcing, illustrate the economic power of potentials asymmetry and special, creative meaning of transborder neighboring for effectiveness of outsourcing, which the outsourcing is able to generate for transborder resources effectiveness, entrepreneurship and transborder economy.

Considered examples show also the significance of highly developed technology, which represented by foreign transborder subject initiates:

- outsourcing service of immanent processes, related with key process of such subject, and
- predispositions of outsourcing to stimulate the transborder resources effectiveness and release the synergy effect of those resources.

## 5. SOME CONCLUSIONS FOR THEORY AND PRACTICE OF OUTSOURCING

Transborder areas are the zone of high economical potential for effective outsourcing applications and for shaping of transborder economies by outsourcing. Together with the increase of subject differences they increase potential possibilities of their business application by the subjects of those areas for mutual profits under the condition of transborder outsourcing application.

To the leading assets of such outsourcing, we may encounter its capacity to:

- minimize, and in special cases eliminate the costs and formalities accompanying any translocations of companies to the areas of more liberal economical conditions;
- opening of business capacities to such subjects, which peculiarity of operation prevents their transfer to other locations and therefore usage of more competitive economical conditions;
- fostering and supporting of economical growth and local competitiveness;
- setting of operation costs on accepted level by local market economic situation.

Moreover, transborder outsourcing shows the capacity to increase the adaptation predispositions of enterprises for specific economic situation, which can be found in its surrounding, and also the economical integration of transborder areas. Outsourcing creates favorable economic occasions for them and supports the capacity to obtain maximally high profits with their application.

Therefore, transborder outsourcing activates the resources and reveals the synergy effect following from their economical activity around transborder area.

Together with distance from transborder area, the intensity of analogous transborder outsourcing capacities is decreasing. Thereby the barrier of availability for transborder potential increases to the subjects, which are far from its occurrence area. The border of its availability is set by access costs and exploitation of transborder potential together with competition costs on transborder market.

Transborder outsourcing very flexibly overcomes the barriers of management of uniform system. It influences on more flexible operation of subjects being located in bordering areas and their economical safety such as for example through rationalization of service costs, change of costs into profits in case of waste sale abroad. It enhances the capacity to control the intensity of outsourcing supplier resources usage, and therefore costs born for subject service depending on economic situation for offered products to the market by business entity, which applies international transborder outsourcing.

Due to transborder outsourcing, the exploitation of transborder potential takes place, what enhances the rise and operation of transborder economy.

- 1 Greenburg E.R Canzoneri, C, *Outsourcing. The AMA Survery, AMA Research Reports, New York 1997.*
2. OLEŃSKI, J., Asymmetry Of Economic Potentials As The Foundation Of Development And Integration Of Economies In Transborder Regions s. 14, (in: Transborder Economies, Transborder Economics, Transborder Statistics, PTS 2013 Warszawa).
- 3 OLEŃSKI, J., Complementarity – Based Synergy Effect Of Transborder Statistical Cooperation Of Developed, Post-Transition And Transition Countries (w: Transborder Economies, Transborder Economics, Transborder Statistics, S.81, Pts 2013 Warszawa).
- 4 SZKIC-CZECH, E., Global Financial Recession And Identification Of Its Symptoms In Local Border Economies Through The Prism Public Statistics – Kongres PTZW.
5. SZKIC-CZECH, E., Outsourcing w procesie transformacji jako strategia kształtowania źródeł dodatkowych przychodów przedsiębiorstwa, teoria i praktyka w Produktynność i wydajność w okresie transformacji pod red. Jagas j. Wyd. Zeszyty Naukowe Uniwersytetu Opolskiego tom XII Opole 2001, s. 338.
6. SZKIC-CZECH, E.,-International Outsourcing As The Instrument Of Strengthening And Intensifying Economic Cooperation In Transborder Economies (In: Transborder Economies, Transborder Economics, Transborder Statistics, PTS 2013 Warszawa, s 68,69).
7. SZKIC-CZECH, E., Outsourcing jako instrument rozwoju transgranicznej współpracy gospodarczej (in:) „Problemy i uwarunkowania rozwoju ekonomicznego obszarów transgranicznych” część I. pn Uwarunkowania i instrumenty rozwoju transgranicznej współpracy gospodarczej, rozdział 2, praca zbiorowa pod redakcją Oleński J., Weryńska R., Wyd. PWSTE w Jarosławiu, Jarosław 2014., ISBN 978-83-63909-34-5.
8. ZORSKA, A., Outsourcing i przenoszenie usług w dobie globalizacji oraz informatyzacji , (in) Globalizacja usług, outsourcing, offshoring i shared services center, praca zbiorowa pod redakcją Szymaniak A., Wydawnictwa Akademickie i Profesjonalne, s. 200, W-wa 2008, ISBN 978-83-60807-89-7.
9. [www.hbrp.pl/news.php?id=512](http://www.hbrp.pl/news.php?id=512)).



## SYSTEM OF INDEXATION AND MONITORING OF TRANSBORDER COOPERATION AT THE NEW EASTERN BORDER OF THE EUROPEAN UNION<sup>1</sup>

### SUBSYSTEM I. THEORETICAL ACTIONS ALGORITHM

#### A) DEFINITION OF BASIC NOTIONS

**Object** of indexation and monitoring – transborder cooperation in Europe

The European meaning of Transfrontier Cooperation (TFC) is also synonymous with Cross Border Cooperation (CBC), and denotes any joint actions aimed at strengthening and deepening neighborly relations between territorial communities and authorities, which exist under the jurisdictions of two or more parties and, to this end, the formation of necessary treaties and agreements.

The European Union has designated the following aspects of renewed transfrontier co-operation, including on the new Eastern border, as strategic:

- Assisting the economic and social development of border territories;
- Conducting joint efforts to resolve important issues such as environmental protection, health issues and the fight against organized crime;
- Supporting the development of effective and secure borders, as well as combating illegal immigration;
- Facilitating people to people contacts [ see 3].

Transborder cooperation is an effective means of resolving many regional problems. But it may be only an auxiliary, complementary factor in regional development. It should be emphasized because, as practice shows, sometimes regional elites and population, especially in Eastern European border areas, form inflated expectations about the results of transborder cooperation. It is perceived as a kind of panacea for all ills, the chief and universal means for the region to exit from the crisis.

Of course, these expectations are unbounded. Transborder cooperation (TFC) can not replace internal resources of the border region, government support for its development, although when being properly organized, it certainly becomes very efficient.

<sup>1</sup> Director of the Institute for Transborder Cooperation, PhD, Associate Professor, Ambassador, Uzhgorod, Ukraine.

- **Indexation of TFC** – is a tool of political analysis of transfrontier cooperation based on index construction method [ see 4].
- **Index (from Latin indicio – I indicate) of TFC** – is an indicator (relative value, expressed in unit fractions or percents) that quantitatively characterizes dynamics of transborder cooperation as well as serves for its comparison in various regions of Europe.
- **General TFC index** – an indicator of the development level of the object in general.
- **Special index of TFC**– an indicator of the development level of specific group of object parameters
- **Single index of TFC** - is an indicator of the development level of specific (individual) object features.
- **Monitoring (from Latin monitoring - admonitory ) of TFC** – is a process of tracking the changes undergoing within the object during the specific time span.

#### B) INDEX CONSTRUCTION

**General index** is constructed on the basis of parameter indices by way of their composition and definition of average index. It is defined on a scoring scale.

**Special indices** are based on the basis of single indices by way of their composition and definition of average parameter. They are defined on a scoring scale. In relation to general indices the special indices are regarded as sub-indices.

#### Special indices of the general index are:

- Geographic and demographic environment,
- historic, political and spiritual factors,
- legal basis,
- conflict-causing factors - risks and challenges,
- infrastructural characteristics,
- interpersonal relations,
- economic cooperation,
- criminal fight,
- improvement of environment quality.

**Single indices** are constructed on the basis of quantity and quality measurements (assessments) of specific object features. They are defined on a scoring scale. Single indices are sub-indices in relation to general and private indices.

Single indices are concretized by minimal units – **indicators**.

#### Single indices of special indices are the following:

##### • Single indices “Geographic and demographic environment”

- |  |  |
|--|--|
| <p>1) Commonality and difference of geographic resources.</p> <p><i>Quality indicators:</i></p> <ul style="list-style-type: none"> <li>- geographic location,</li> <li>- climate.</li> </ul> | <p><i>Quantity indicators:</i></p> <ul style="list-style-type: none"> <li>- territorial units land area (sq. km),</li> <li>- average air temperature per year,</li> <li>- quantity of precipitation per year.</li> </ul> <p>2) Basic characteristics of population</p> |
|--|--|

#### *Quantity indicators:*

- number of inhabitants (persons),
  - out of which: urban (persons, %),
  - out of which: rural (persons, %),
  - population density (people/sq km).
- 3) Natural population fluctuation and distribution of inhabitants by age.

#### *Quantity indicators:*

- natural growth / loss (persons),
- migration growth / loss (persons),
- migration per 1,000 inhabitant,
- total growth / loss (persons),
- total growth / loss per 1,000,

- productive population (age 0-14) (persons, %),
- productive population (age 15-64) (persons, %),
- post-productive population (age over 65) (persons, %),
- ageing index.

- 4) Settlement structure by population size:

#### *Quantity indicators:*

- 1-499 inhabitants,
- 500-1,999 inhabitants,
- 2000- 49,999 inhabitants,
- over 50,000 inhabitants,
- total.

##### • Single indices of the “Historic, political and spiritual factors”:

- |  |  |
|--|--|
| <p>1) Commonality and difference in historical destiny of border areas. Were they part of one and the same state formation in the past?</p> <p><i>Quality indicators:</i></p> <ul style="list-style-type: none"> <li>- if yes, of which exactly</li> </ul> <p><i>Quantity indicators:</i></p> <ul style="list-style-type: none"> <li>- if yes, how many times</li> </ul> | <ul style="list-style-type: none"> <li>- quality of inter-national marriages</li> <li>- quality of relatives by ethnic line resident at border areas of neighboring states</li> </ul>  |
| <p>2) Commonality and difference of political systems</p> <p><i>Quality indicators:</i></p> <ul style="list-style-type: none"> <li>- comparative analysis of political systems</li> </ul>  | <p>5) Commonality and difference of languages, used by population of border areas.</p> <p><i>Quality indicators:</i></p> <ul style="list-style-type: none"> <li>- what is the language group of the languages used at border areas</li> </ul> <p><i>Quantity indicators:</i></p> <ul style="list-style-type: none"> <li>- number of persons with this or that native language</li> <li>- number of persons speaking several languages used by the population of the border area</li> </ul> |
| <p>3) Commonality and difference of geopolitical orientation</p> <p><i>Quality indicator:</i></p> <ul style="list-style-type: none"> <li>- comparative analysis of geopolitical orientations of neighboring states</li> </ul>  | <p>6) Commonality and difference of confession of border area residents.</p> <p><i>Quality indicators:</i></p> <ul style="list-style-type: none"> <li>- attitude to the system of beliefs (Christianity, Islamism etc.)</li> </ul> <p><i>Quantity indicators:</i></p> <ul style="list-style-type: none"> <li>- number of believers of this or that confession</li> <li>- number of religious buildings used by believers of this or that confession</li> </ul>                             |
| <p>4) Commonality and difference of ethnical structure</p> <p><i>Quality indicators:</i></p> <ul style="list-style-type: none"> <li>- analysis of ethnical genealogy</li> </ul> <p><i>Quantity indicators:</i></p> <ul style="list-style-type: none"> <li>- quality characteristics of ethnical groups resident at border areas</li> </ul>                               |  |

● **Single indices “Legal basis”:**

- |  |  |
|--|--|
| <p>1) Settling of political and legal status of borders. Were intergovernmental agreements on borders entered into?</p> <p><i>Quality indicators:</i></p> <ul style="list-style-type: none"> <li>- stability of political and legal status of borders</li> </ul> <p><i>Quantity indicators:</i></p> <ul style="list-style-type: none"> <li>- number of intergovernmental agreements regulating border relations</li> </ul> | <p>areas to carry out transborder activity</p> <p><i>Quality indicators:</i></p> <ul style="list-style-type: none"> <li>- level of conformity to European standards.</li> </ul>  |
| <p>2) Was border delimitation and demarcation carried out?</p> <p><i>Quality indicators:</i></p> <ul style="list-style-type: none"> <li>- available intergovernmental agreements on border delimitation and demarcation.</li> </ul>  | <p>6) Are there agreements on cooperation of border areas (administrative – territorial units)?</p> <p><i>Quality indicators:</i></p> <ul style="list-style-type: none"> <li>- if yes, define their quality.</li> </ul> <p><i>Quantity indicators:</i></p> <ul style="list-style-type: none"> <li>- if there are, how many,</li> <li>- were special intergovernmental bodies set up (for instance, bilateral committees) on transborder cooperation (in general or on specific topics).</li> </ul> |
| <p>3) Is there special intergovernmental agreement regulating simplified border crossing by people and goods?</p> <p><i>Quality indicators:</i></p> <ul style="list-style-type: none"> <li>- if yes, analysis of its quality.</li> </ul>   | <p>7) Were there special inter-governmental authorities (like bilateral commissions) on transborder cooperation set up (in general or on its particular directions)?</p> <p><i>Quality indicators:</i></p> <ul style="list-style-type: none"> <li>- if yes, analysis of their tasks.</li> </ul> <p><i>Quantity indicators:</i></p> <ul style="list-style-type: none"> <li>- if yes, define their number.</li> </ul>  |
| <p>4) Did neighboring states adopt laws regulating rights (including dual citizenship) of fellow-countrymen abroad?</p> <p><i>Quality indicators:</i></p> <ul style="list-style-type: none"> <li>- if yes, analysis of its quality.</li> </ul>   |  |
| <p>5) Level of power of state territorial authorities and local self-government bodies of border</p>   |  |

● **Single indices “Conflict causing factors – risks and challenges”**

- |   |  |
|---|--|
| <p>1) Were there wars of armed conflicts in the history of neighboring states relations?</p> <p><i>Quality indicators:</i></p> <ul style="list-style-type: none"> <li>- do neighboring states belong to zones of increase geopolitical activity?</li> </ul> <p><i>Quantity indicators:</i></p> <ul style="list-style-type: none"> <li>- if there were wars or armed conflicts, how many,</li> <li>- if wars or armed conflicts generated human losses, how many.</li> </ul> | <p>2) Characteristics of military-political relations among neighboring states. Do they belong to any political block?</p> <p><i>Quality indicators:</i></p> <ul style="list-style-type: none"> <li>- analysis of military policy of neighboring states.</li> </ul> <p>3) Level of militarization of border areas</p> <p><i>Quality indicators:</i></p> <ul style="list-style-type: none"> <li>- high, middle, low.</li> </ul> |
|---|--|

- |   |   |
|---|---|
| <p>4) Existence or absence of border disputes</p> <p><i>Quality indicators:</i></p> <ul style="list-style-type: none"> <li>- stability of border delimitation.</li> </ul> <p><i>Quantity indicators:</i></p> <ul style="list-style-type: none"> <li>- if there were disputes, define their number.</li> </ul> | <p>- if ethnic conflicts generated human losses, define how many.</p>   |
| <p>5) Existence or absence at border areas of ethnic conflicts in the past and in the present</p> <p><i>Quantity indicators:</i></p> <ul style="list-style-type: none"> <li>- if there were or there are ethnic conflicts, define how many,</li> </ul>  | <p>6) Existence or absence at border areas of conflicts on inter-confessional ground in the past and in the present</p> <p><i>Quantity indicators:</i></p> <ul style="list-style-type: none"> <li>- if conflicts on inter-confessional grounds took or take place, how many,</li> <li>- if conflicts on inter-confessional grounds generated human losses, how many.</li> </ul> |

● **Single indices “Infrastructure and organizational characteristics”**

- |   |  |
|---|--|
| <p>1) Level of development of existing border infrastructure and management</p> <p><i>Quality indicators:</i></p> <ul style="list-style-type: none"> <li>- existence of state program of border management</li> <li>- level of interaction of regions and neighboring states border authorities on management and effective functioning of the border,</li> <li>- geographic conditions for transport development - level of development of regional transportation network (rail, road, water), and road connections between border regions,</li> <li>- existence of Trans-European corridors in the cross border regions.</li> </ul> <p><i>Quantity indicators:</i></p> <ul style="list-style-type: none"> <li>- quantity of check points per 100 km of border,</li> <li>- level of their passenger and freight crossing capacity,</li> <li>- time necessary to cross the border at the check point,</li> <li>- number of staff working at the check point,</li> <li>- quantity of kilometers of roads per 100 sq.km of border area,</li> <li>- number of service objects (fuel stations, hotel, shops, restaurants) per</li> </ul> | <p>100 sq.km. of border area.</p> <p>5) Level of abuse of official position (non-ethical behavior, corruption etc.) on part of check point staff and efficiency of control authorities to take preventive measures.</p> <p><i>Quality indicators:</i></p> <ul style="list-style-type: none"> <li>- level of legal provision for fighting abuse of official position (conformity to European standards).</li> </ul> <p><i>Quantity indicators:</i></p> <ul style="list-style-type: none"> <li>- number of official appeals of citizens against staff actions,</li> <li>- number of officials from the check point staff who was held administratively and criminally liable.</li> </ul> <p>6) Level of activities to improve existing border infrastructure</p> <p><i>Quantity indicators:</i></p> <ul style="list-style-type: none"> <li>- number of border-crossing points upgraded according to mutual assessment of local requirements,</li> <li>- number of projects enhancing the accessibility of the Eastern border,</li> <li>- number of proposals for further infrastructure developments designed to improve border accessibility,</li> <li>- number of new cross border public transports created.</li> </ul> |
|---|--|

• **Single indices “Interpersonal relations”**

- 1) Intensity of personal contacts of border area residents  
*Quantity indicators:*  
- number of border area residents crossing the border per year,  
- number of crossing the border per year by border areas residents.
- 2) Characteristics of legal regimen of border crossing by border area residents  
*Quality indicators:*  
- visa free regimen,  
- visa regimen,  
- simplified visa regimen.
- 3) How legal regimen of border crossing by border area residents is functioning?  
*Quality indicators:*  
- how difficult is the procedure to prepare necessary documents to obtain visa (other document allowing crossing the border).  
*Quantity indicators:*  
- number of refusals to grant visa which are received by border area residents from consular offices  
a) in absolute terms  
b) in percentage to visa applications  
- how long does it take for the consular office to consider a visa application
- 4) Possibilities for communication of border area residents by way of mail  
*Quantity indicators:*  
- how long does it take for a piece of mail to travel from one border region to the other by:  
a) regular post,  
b) delivery service.
- 5) Possibilities for communication of border area residents by way of phone (fixed and mobile)  
*Quantity indicators:*  
- number of fixed phone subscribers (per thou inhabitants) in the border areas,  
- number of mobile phone subscribers (per thou inhabitants) in the border areas,  
- operator network mobile coverage (in % to 100% of border area).
- 6) Possibilities for communication of border area residents by way of internet  
*Quantity indicators:*  
- number of internet subscribers (per 100 inhabitants) of border regions.
- 7) Possibility for a border region to pull in TV programs broadcasted from the neighboring state  
*Quantity indicators:*  
- number of border area residents having the possibility to watch TV programs broadcasted from the neighboring country, with regular antenna,  
- number of border area residents having the possibility to watch TV programs broadcasted from the neighboring country, with satellite antenna.
- 8) Possibility for a border region to pull in radio programs broadcasted from the neighboring state  
*Quantity indicators:*  
- number of border area residents having the possibility to listen to radio programs broadcasted from the neighboring country.
- 9) Encouragement of the practice of civil partnership in strategic and project planning.  
*Quantity indicators:*  
- number of official bodies involved in partnerships agreements establishing permanent relations,  
- number of partnerships agreements establishing permanent cross-border relations.
- 10) Increasing mutual understanding of various groups of the society  
*Quantity indicators:*  
- number of citizens and NGOs involved

in cultural projects.  
- number of joint cultural / sports / environmental events promoting regional identity.

- 11) Support of know-how exchange.  
*Quantity indicators:*  
- number of agreements between border area universities, research centers on joint scientific research and development,  
- number of exchange programs for local school teachers and research associates from research and educational institutions, for local municipalities, national minority groups, youth etc.

12) Various types of joint small-scale actions.

*Quantity indicators:*  
- number of joint activities, aimed at sustaining common identity and traditions of local communities,  
- number of joint activities, aimed at support of local folk-art and handicraft,  
- number of joint activities, aimed at sport and cultural events,  
- number of joint environmental awareness campaigns and knowledge transfer events,  
- number of joint activities aimed at promotion of the practice of civil partnership in strategic and project planning.

• **Single indices “Socio-economic cooperation”**

- 1) General economic characteristics of border areas  
*Quantity indicators:*  
- gross Domestic Product (m€).  
- gross Domestic Product per capita (€).  
- % of GDP capita of the EU27 average.  
- % of national GDP.  
- GVA of industrial sector in % of GDP (total m€, total %).  
- GVA of agricultural sector in % of GDP (total, total %)  
- GVA of services sector in % of GDP ((total, total %).
- 2) Employment.  
*Quantity indicators:*  
- quality of normative-legal acts regulating use of foreign workforce  
*Quantity indicators:*  
- employment rate (%).  
- unemployment rate (%).  
- total registered number of employees (thousand persons).  
- employees in industry (total - thous. persons,%).
- 3) SMEs.  
*Quantity indicators:*  
- quality of normative-legal acts regulating activity of small and mid-size business (taxation, customs duties etc.)  
*Quantity indicators:*  
- number of SME at territorial units.  
- number of SME per 1000 inhabitants.
- 4) Infrastructure basis for business  
*Quantity indicators:*  
- number of business innovations  
- number of trade and logistical centers  
- number of business incubators  
- number of business parks.

5) Border trade

*Quality indicators:*

- Quality of normative – legal acts regulating border trade (taxation, customs duties etc.)
- Level of local authorities support (available preferential regimen for economic activities in the region)

*Quantity indicators:*

- amount of border trade (€).

6) Investments

*Quality indicators:*

- Quality of normative – legal acts regulating investment activity (taxation, customs duties etc.)
- Level of local authorities support (available preferential regimen for investment activities in the region)

*Quantity indicators:*

- amount of investments per period (€).

7) Joint ventures

*Quality indicators:*

- quality of normative - legal acts regulating investment activity of joint ventures (taxation, customs duties etc.)
- level of local authorities support (available preferential regimen for joint ventures in the region)

*Quantity indicators:*

- number of joint ventures
- output of products produced at those enterprises

8) Joint use of natural resources (oil, gas, water, timber, fish etc.)

*Quality indicators:*

- are there intergovernmental (interregional) agreements on joint use of

natural resources

*Quantity indicators:*

- number of companies active in joint exploitation of natural resources
- amount of product output produced by these companies

9) Tourism

*Quality indicators:*

- level of use of benefits of border areas rich in natural and cultural values aimed at increase of visitors quantity

*Quantity indicators:*

- number of tourist objects
- ranging tourist objects by level of service
- if there is an opportunity for tourists to stay throughout the year
- number of arrived tourists (persons)
- number of overnights
- number of overnights per one tourist arrived
- number of tourism infrastructure objects (hiking and bicycle trails, ski trails etc.)
- number of multilanguage tourist publications, informational brochures, web sites, signs and info boards
- number of tourist festivals
- number of educational institutions active in tourist staff training (hotel management, national cuisine etc.)

10) Shadow economy and corruption

*Quality indicators:*

- factors generating shadow economy and corruption

*Quantity indicators:*

- share of shadow economy in the general structure of border regions economy
- number of citizens held criminally liable for corruption (per 100 thou citizens)

• **Single indices “Combating criminal”**

1) Illegal migration

*Quality indicators:*

- factors promoting illegal migration
- quality of legal normative acts which secure prevention of illegal migration, in particular, intergovernmental agreements on extradition
- level of interaction of law enforcement authorities of neighboring countries on preventing illegal migration

*Quantity indicators:*

- expert assessment of number of persons crossing the border illegally per year
- number of persons kept in custody when crossing the border illegally
- number of persons kept in custody when crossing the border illegally and kept in temporary facilities
- number of persons extradicted per year

2) Smuggling

*Quality indicators:*

- factors contributing to smuggling
- quality of normative-legal acts against smuggling
- level of interaction of law enforcement authorities of neighboring countries on anti smuggling

*Quantity indicators:*

- expert assessment of cost of goods imported (exported) by smuggling per year
- cost of goods seized while being imported (exported) by smuggling per year
- number of joint operations of law enforcement agencies (in particular, border agencies) to prevent smuggling of goods when importing (exporting)
- number of persons hold criminally liable for attempt of smuggling goods when importing (exporting) per year

• **Single indices «Enhance environmental quality»**

1) Improvement of environmental protection, sustainable use and management of natural resources

*Quality indicators:*

- improving the management of natural resources, including natural park and forest management
- protection of landscape, biodiversity and eco-system protection
- promoting sustainable use of natural resources
- improvement of water quality and protection of water resources
- joint planning activities and possibly pilot projects on consolidation of eroded river banks
- development of technologies for rehabilitation of ecosystems for further mine exploitation

- joint planning activities in the field of environmental protection and management
- improving transborder energy interconnections as appropriate
- promotion of measures to increase energy efficiency and energy savings
- establishment of infrastructure and experimental network for renewable energy production (wind, biomass and geo-thermal sources)
- improvement of air quality
- joint recycling initiatives
- planning and design of effective waste collection and processing systems
- planning and design for effective treatment of wastewater including alternative ways
- survey and planning of site cleanups
- small scale actions of communities and civil organizations aiming at enhancing responsibility, knowledge increase and awareness raising to environmental and nature protection issues

*Quantity indicators:*

- number of intergovernmental (interregional) agreements of environment protection
- number of projects with a direct positive impact on ecosystems and natural resources
- number of tools/methods/model solutions developed/tested to protect or enhance environment
- number of joint planning activities
- number of operating networks about environment

2) Reduction of risks of damages to natural environment

*Quality indicators:*

- harmonizing activities in the field of flood prevention (creation and/or harmonising of flood forecast system, establishment of water catchment area level monitoring systems for this purpose, joint development of staff, structures and strategies)
- setting up joint early warning systems for fire, avalanches, or other natural disasters incidents
- strategic and technical planning and establishment of joint monitoring systems on environmental (air, water, soil) pollutions
- increasing awareness and knowledge and developing skills to develop local and regional strategies to prevent and mitigate the impact of global climate change and to adapt to the local impacts of those changes, in the form of joint training programmes and workshops.

*Quantity indicators:*

- number of intergovernmental (interregional) agreements on preventing emergencies or participation of parties in emergency response
- number of institutions (authorities or professional associations) involved in cross-border emergency systems
- number of trainings for professionals of emergency
- number of networks designed ready to be operational

**SUBSYSTEM II. PRACTICAL IMPLEMENTATION OF MIS**

**A) Set up of the m\Monitoring Committee (MC)**

The MC is set up according to the EU standards [see. 5] to carry out observation and control over MIS. Depending on the territorial scale its composition may be different, but in any way they include representatives of state authorities and local self – government bodies, as well as civil society institutions.

**B) Set up of regional working groups and editorial committee**

Regional Working Groups (RWGs) and the editorial board (EB) solve the main practical tasks of the SIM.

RWGs are set up according to main lines of SIM from representatives of state agencies, local governments and civil society institutions of transborder regions, but experts also play important role there. Number of RWGs depends on the scale of the tasks. The EB is composed of representatives of all regional working groups.

**C) SIM stages**

The Monitoring Committee, specialized Working Groups and the Editorial Board as SIM authorities carry out their work in several stages.

**Stage one – collection of information and data.**

Information can be *primary and secondary*.

*Secondary* information includes:

- statistical data on transborder processes;
- data from reports of various departments of central and local authorities about regional development
- survey of experts on various aspects of cross-border cooperation;
- texts of legal documents regulating cross-border activity and regional processes, and so on.

For *primary* data seminars on various aspects of cross-border cooperation should be conducted. Results of sociological polling are very important. Recommendations of *public consultations* could be applied. The results of the discussion of transborder cooperation on the *website* should be analyzed as well.

**Stage two – analysis of received information and data.**

At this stage information and data are generalized and systematized, and their archiving is carried out.

**Stage three – reporting**

This stage foresees compilation of the gathered data and their submission in the form of reports.

**Stage four – assessment – indexation of results**

According to the EU practice three types of assessment – indexation are carried out:

- 1) Preliminary (*ex-ante*) – for assessing the starting position in transborder cooperation development: how it influences the status of target groups and contributes to improvement of the general situation in border regions?

- 2) Intermediate(*ex-mid*) – should answer the question whether transborder cooperation develops the right way, whether its management is efficient?
- 3) Final (*ex-post*) – is carried out once a specific period of transborder cooperation development is completed and therefore is aimed at assessment of its long-term influence on the status of target groups and border regions in general.

At this stage comparative assessment of results and forecasted indicators is carried out.

#### **Stage five – identification of results**

At this stage definition of positive (pluses) and negative (minus) sides of transborder cooperation development is carried out in one or several regions of Europe.

#### **Stage six – definition of reasons of pluses and minuses of transborder cooperation**

The task of this very important stage is to carry out a deep analysis of transborder cooperation process, develop sources of its positive and negative genesis.

#### **Stage seven – definition of way to optimize transborder cooperation**

At this stage a search for, metaphorically speaking, required medicines for transborder cooperation takes place, in other words, of political, organizational, material, financial and other means to increase efficiency of transborder cooperation.

#### **Stage eight – political conclusions**

At this stage the previously made conclusions as to: a) neutralization or at least minimization of existing as well as preventing emergence of new negative sides of transborder cooperation, and b) maximal encouraging of positive sides acquire a form of *political recommendations* to the subjects a various management levels in the form of a *speech*.

#### **Stage nine – presentation of the Report**

The presentation takes place by means of presenting the content of the SIM results to representatives of state authorities, local self–governance, civil society institutions, and wide public. Forms of speeches may vary according to the need (extended publication, brochures with maps, web site report etc.).

#### **REFERENCES**

1. Транскордонне співробітництво як альтернатива новій «залізній завісі» та конфліктам. – Ужгород: Карпати, 2007.
2. European Outline Convention on Trans-Frontier Cooperation Between Territorial Communities or Authorities from Madrid, 21.05.1980. – Brussels, 1981.
3. Trans-European Cooperation between Territorial Authorities. New challenges and future steps necessary to improve cooperation. - Brussels, 2005.
4. KennethD.Bailey.QuantitativeMethodology. – 21stCenturySociology. Volume 1. SAGE Publication, ThousandOaks – London – NewDelhi, 2007.
5. Social Diagnosis 2007. Edited by JanuszChapinski, Tomasz Panek. Warsaw, 2008.



JÓZEF OLEŃSKI

*Lazarski University Warsaw  
The Bronislaw Markiewicz State Higher School of  
Technology and Economics in Jaroslaw  
(Poland)*

## COMPLEMENTARITY – BASED SYNERGY EFFECT OF TRANSBORDER STATISTICAL COOPERATION OF DEVELOPED, POST-TRANSITION AND TRANSITION COUNTRIES

### 1. TRANSITION AS A STATISTICAL CATEGORY

The term “*transition*” was introduced primarily by politicians and international political organizations for labeling the complex of political, social and economic changes in the countries included after the II World War to the sphere of communisms, after the collapse of communist system and economy by the end of 80<sup>th</sup>. The processes of those changes were initiated by governments and controlled by governments. The countries that have started the processes of transition from communist political system to the system based on democratic procedures and from centrally planned economies to market - driven, more open economies, were named by UN and other international organizations, by the term “countries in transition” or “transition countries”.

In some countries in transition important role in defining strategies of transition was played by so called “advisors” or “experts” designated by international organizations and by some developed countries. The advises of those “experts” were mainly oriented on the “transplantation” of laws, institutions practices of developed market economies or direct implementing of recommendations of international organizations. Those strategies occurred rather ineffective and in some cases have led to long lasting structural disproportions in economies.

Main road of transition is leading from state controlled operational control of social, economic and political life to political system regulated by laws which obey international principles of democracy and to the market – driven economy.

The processes of transition occurred to be much longer than it has been expected. Principal directions of these changes are following:

- From state controlled, centrally planned economy to market driven economy,
- From domination of state – owned sector of economy to private businesses by the privatization of enterprises,
- From closed, partly autarchic economy to mode open economy by adoption of the WTO rules in foreign trade,

- Integration of national banking system with global financial system following the recommendations of IMF and other international financial institutions

Specificity of the processes of transition in all spheres: political, social and economic, is their full institutionalization. The institutionalization of processes of transition was the consequence of political character of transition, i.e.:

- Political initiative of transition and the strategies of transition in political, social and economic spheres based on political doctrines.
- Self - limitation of active role of governments in control and management of state - owned businesses, social and political organization; the state limits its direct involvement in management.
- Self – limitation of the role of governments as the regulators of markets; replacing direct management by indirect control by laws, standards, and regulatory institutions.
- Changes of ownership of enterprises and real estate, including land. Process of privatization organized and controlled by governments on the basis of political criteria and laws.
- Active role of governments in developing and maintenance of infrastructures; public – private partnership in developing and managing the infrastructures (energy, transport, social infrastructures, information infrastructure)
- Active role of governments in protecting social, economic and political equilibrium according to political doctrines “professed” by politicians.
- Growing role of NGO’s that are taking the functions previously performed by governments.
- Growing role of international and supranational organizations and companies, with special reference to international and supranational financial institutions.

The consequence of political and institutional character of transition processes should be the growing role of official statistics in decision making of governments in the countries of transition. However in most of the countries in transition official statistical systems were adjusted to the needs of centrally planned economies that only partly produced the data necessary for regulating transitional processes. National statistical offices in the countries of transition were expected to support governments by providing relevant data useful for decision making and for monitoring of the processes of transition. For that reason transition has become also the statistical category, i.e. the concept which semantic field contains statistical requirements of governments, NGO’s, businesses and international organizations involved in the processes of transition.

### 2. SOCIAL AND ECONOMIC DISEQUILIBRIA IN THE PROCESSES OF TRANSITION

As it was mentioned above, the transition is the complex of processes initiated by politicians on the basis of selected political doctrines. The relevance and “quality” of those political, social and economic doctrines to political, social and economic specificity of particular *countries in transition* is crucial for strategy, costs and effectiveness of transition.

In all countries of transition the pace of elaborating and implementing new regulations in political, social and economic spheres were – as a rule – more rapid then the adaptability of existing social and economic subjects. Those “adaptability gaps” gave generated many local disequilibria and shock. For social

and economies of countries in transition most significant were the disequilibria and shocks in following areas:

- Government budgets, processes of planning and executing the budgets on central and regional level.
- Inflation caused by administrative decisions (e.g. cutting government subsidies to selected goods and services).
- Labor market: unemployment, underemployment, shadow labor market, underpaid work,
- Tax system: deep qualitative change of the tax system
- Social services, introducing market rules in the accessing to social services supplied in the past as the public good, i.a.:
  - Education,
  - Health,
  - Culture,
  - Recreation and sports.
- Infrastructures, introducing market rules in the accessing to selected segment of infrastructure that were accessible as a semi-public good, e.g.:
  - Roads and railways infrastructure
  - Information infrastructure
  - Infrastructure of social services: education, health, culture, recreation etc.
- Safety and security
  - Commercialization of selected safety and security services

Official statistics is obliged to monitor the disequilibria and shocks caused by “adaptability gaps” on local, regional and national scale, as well as to observe and monitor the consequences of those shocks for specific classes of social and economic subjects (individuals, businesses).

### 3. ROLE OF OFFICIAL STATISTICS IN THE PROCESS OF TRANSITION

The experiences of post – transition countries from early phases of transition have shown that official statistics might and should take more active part in the processes of transition if statistical literacy of decision makers were relevant to the needs of transition and if the priorities of transformation of statistics were better balanced between:

- (1) the implementation of international statistical standards in national statistical system and the integration of national statistics with global statistical system,
- (2) active monitoring of transitional processes, adjusted to the specificities of social and economic situations of countries.

The governments expected from official statistics to adopt national statistical systems to international standards and to the recommendations of foreign experts. Function (2) of official statistics – information basis of transition processes and decisions – was of secondary importance.

It seems that the role of national official statistics in the process of transition was often underrated by governments and politicians. Statistical literacy of some politicians animating the processes of transition was based on their knowledge of official statistics from the system of centrally planned economies (MPS,

reporting system from state-owned enterprises, information standards based on methodology of central planning). The initiatives of statisticians, the proposal of new forms of using statistics as the information infrastructure and information support of laws initiating and regulating the processes of transition, were of secondary importance in decision making processes, especially in early phases of transition, in which most important structural and institutional changes were introduced (accelerated privatization, changes of economic and social functions of governments, changes of public finances and financial sector of economy etc.).

Main tasks of official statistics as active information supporter and advisor of governments are:

- Re-orienting of functions of existing statistical capacity from statistical monitoring of state owned enterprises and other institutions to statistical monitoring of social and economic processes, i.a. the processes of accelerated qualitative changes in economy and society.
- Elaborating new standard concepts and definitions, relevant statistical indicators, classifications and nomenclatures, adopted to statistical monitoring of new “transitional” phenomena and processes and to monitoring of accelerated social and economic phenomena and processes.
- Developing the system of *anticipated* informing of governments on social and economic shocks and disequilibria (middle term forecast).
- Developing the alert system on social and economic shocks and disintegration caused by changes of institutional frameworks and functions of governments (short term monitoring and forecast).
- Active monitoring of the processes of transition, identification and analysis of cause – effect relations of decisions of governments, objective evaluation and forecasts of effects of those processes.
- Measuring economic and social costs of transition processes, with special reference to the costs of wasting or partial use of existing social and economic resources of countries (e.g. excessive unemployment, closing modern plants because of their short term financial problems, privatization “by force” etc.).

These functions of official statistics are of particular importance in early phases of transition, but they have not lost their importance also in post – transition countries. Modern statistical systems in post – transition countries should continue producing social and economic knowledge more oriented on monitoring the processes and their changes then taking “statistical snapshots”.

### 4. STRATEGY OF TRANSITION OF STATISTICS IN THE LIGHT OF EXPERIENCES OF POST – TRANSITION COUNTRIES

The transformation of national statistical systems in the countries that have started the process of transition in early 90<sup>th</sup> was realized on two parallel layers:

- (1) Replacing existing statistical standards, mainly MPS-based, by international standards and recommendations of UN, OECD and EU, producing relevant data for international organizations;
- (2) Developing specific indicators, concepts and definitions, classifications and surveys meeting potential information requirements of main classes of national users: governments, organizations of businesses, trade unions and social organizations.

Analyzing the experiences of post – transition countries, after the start of transition (around 90<sup>th</sup>) two main approaches of implementing international standards and recommendations were adopted:

- (a) “transplantation approach” - replacing of existing standards by international standards,
- (b) “gateway approach” – developing gateways (e.g. correspondence tables between classifications, algorithms for recalculating indicators driven from existing surveys to standard indicators).

The gateway approach was more often adopted in first phase of transition. Direct implementation of international standards was the approach used for new surveys and for monitoring of new phenomena of market – driven, more open economy.

From the beginning of transition by the end of 80<sup>th</sup> official statisticians in transition countries have received help from the part of the statisticians of developed market economies. Most common approach proposed by donors was the “transplantation” of best practices of developed market economies to statistics of countries that have started difficult processes of transformation of economy. This approach occurred to be effective for new surveys and for statistics of new social and economic phenomena that did not exist in centrally planned economies.

However from the perspective of post – transition countries the “transplantation approach” was not sufficient and sometimes it was ineffective. The problem was of strategic nature. The objective of transformation of statistics should not be the transplantation of excellent and efficient statistical systems and surveys of one country to other country e.g. implanting statistical system of Luxembourg to Estonia, statistics of Norway to Moldova, French statistics to Poland etc. The strategic objective of transformation of statistics in transition countries should have been the *anticipating adopting* of national statistical systems to the *potential* needs of users who are active stakeholders of transition processes: governments, organizations of entrepreneurs, trade unions, political and social organizations.

From the perspective of post – transition countries it seems that the most effective approach of transformation of statistics is *creative adoption* of best practices of developed countries by adjusting those practices to social, cultural, economic and technological (IT) specificities of particular countries in transition. Statistical experience and expertise of post-transition countries is unique and is of special use for the countries in earlier phases of transition.

## 5. IDP TRIANGLE

As it was stressed above, the transition is a process of dynamic political, social and economic changes that should be accompanied and – if possible - anticipated by parallel transformation of official statistics.

The usefulness of expertise of post-transition countries is based on learning by doing mistakes as well as by successes achieved. These experiences refer to:

- practical understanding of political, social and economic specificity of countries in pre-transition period and understanding of impact of this specificity on “SWOT” of transition
- practical knowledge of specific potential statistical needs of stakeholders of transition processes,
- practical experience in transforming the NSS’s as a whole and re-designing of particular domains of statistics, especially implementing new surveys for monitoring new phenomena and processes,
- evaluation of adopted strategies and methods of transformation of surveys: mistakes done and successes achieved,

- understanding the complementarity of statistical experiences of developed, post-transition and transition countries and the need of partnership in collaboration of official statisticians,
- understanding the role of international standards and concrete strategies of their implementing in different phases of transition (gateway approach, “transplantation”, adoption to national information environment of official statistics).

Official statisticians in post-transition countries should have practical expertise, what are the prerequisites of transforming existing surveys and introducing new surveys, how to program, plan and conduct those processes, what are the SWOT’s of transition and new capacity building of statistics.

It seems that most effective statistical capacity building is achieved by the collaboration of official statisticians of international organizations, developed knowledge - based economies, post-transition economies and transition economies in a triangle IDP. The **IDP triangle** creates strong synergy effect based on complementarity of experiences of all three types of partners supporting statistics in transition.

International organizations have the coordinating capacity and standards harmonizing official statistics on global scale. Developed market economies have elaborated best practices for official statistical systems of *economies after transition*. Statisticians of post - transition have the experience in strategies, approaches and tools of adjustment statistics to the needs of transition processes and to international standards. Post-transition countries have the expertise of adoption of general standards to specific national needs and possibilities and to embedding the surveys in specific national statistical environments of countries in transition. Specific expertise refers to the adopting and use of statistics for monitoring crises and shocks in the process of transition.

Cooperation in IDP triangle is generating strong positive effect of synergy of transfer of theoretical knowledge, international standards, best practices of statistical “systems of destination” and practical experiences in the field of strategies, tools and techniques of transforming statistics in the process of transition of economy and society.

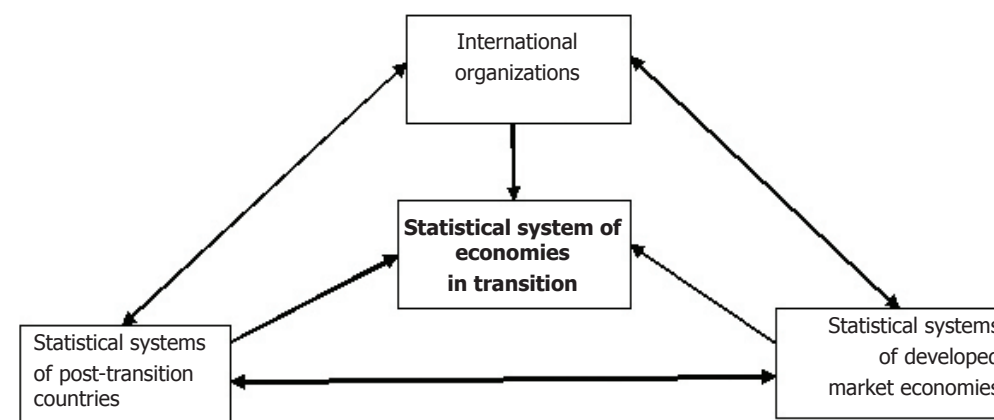


Figure. 1. IDP triangle

## 6. “BEST PRACTICE” IN THE LIGHT OF TRANSITION OF STATISTICS

The concept of “best practice” in official statistics is used in rather narrow sense: practical experience of official statistical institute (national or international) that has been proven to be most efficient is some areas of statistical activities: laws, organization, methodology, information technology, cooperation with stakeholders of statistics, measuring and analyzing specific social or economic phenomena and processes.

It seems that in the light of experience of transition countries the concept of “best practice” should be extended. In developed, stabilized economies the progress in statistics is a continuous process of step by step improvements of existing surveys, upgrading the resources and modernization of technologies. In transition countries the transition is complex, deep, qualitative and quantitative reconstruction of national statistical system as a whole. His reconstruction must be done as soon as possible, however during all the processes of transformation the *statistical production must go*. Statistical offices are obliged to continue regular production of data and are expected to supply urgently many other data.

For countries in transition best practices recommended for implementing cannot be limited to best experience of single countries. “Best practice” for countries in transition is rather the concatenation of practices taken from both: international statistical organizations, statistical offices of developed economies and statistical offices of post – transition countries. The concatenation of selected best practices of all three stakeholders of the IDP triangle should be adjusted to the specificity of concrete country in transition, orchestrating all layers of statistical system. The concatenation of orchestrated practices from IDP triangle members is a process of:

- Selecting relevant and pertinent international standards (UN, OECD, EU),
- Adoption of international standards to social and economic specificity of transition,
- Selection of adaptable national methodology of developed and post – transition countries,
- Adoption of methodology to the specificity of the country in transition,
- Embedment of national methodology in national statistical environment:
  - Laws
  - Organization
  - Metadata
  - Information technology
  - Social environment
  - Statistical literacy of respondents and users
- Implementation of the practice into national statistical system: education, training of statisticians and other stakeholders, introducing organizational changes,
- Evaluation of process of realization of modernized surveys,

Strategy of transforming statistics by transplantation of “best practices” is possible only if all layers of best practice of one country are fully compatible with the statistical system and its environment of other country. Otherwise “best practices” should be adapted to the specificity of statistical environment and of the capacities and needs of all stakeholders of statistical systems.

## 7. RESTRUCTURING OF OFFICIAL STATISTICS IN THE PROCESS OF TRANSITION

In centrally planned economies the areas of statistics not used directly for central planning and management of state – owned enterprises and for central government budget, were underdeveloped. In the process of transition those areas should have been given respective priority. Those are i.a. following subject – matter areas:

- Non – registered and shadow economy (labor, production, trade),
- SME (small and medium enterprises),
- Non – profit sector of economy,
- Infrastructural statistics – users aspect,
- Regional and local statistics,
- Urban statistics (agglomerations, metropolises),
- Social statistics – users aspect,
- Conditions of life of population (polarization, poverty, exclusion etc.),
- Migrations,
- Social services - consumers’ aspect,
- Human capital – creation and use,
- Social capital – functions in society and economy,
- Economic and social impact of more open economy,
- Statistical monitoring of economic shocks,
- Trans - boarder statistics.

In social statistics transition countries have unique opportunity to develop integrated systems of measuring and analyzing quality of life and its dynamics e.g. on the basis of the LFS - driven surveys of labor and conditions of life, creating common statistical infrastructure and frames for statistics of human capital and social capital.

Integral part of transition of statistics should be also the optimization of information sources, replacing statistical questionnaires from statistical units by ICT – based use of administrative records developed in pre-transition period: tax and social security registers.

In transition countries those areas of statistics had to be developed from scratch or were deeply re-designed and re-engineered. The usefulness of practical experiences of post – transition countries, not only best practices but also lessons learned from mistakes, can hardly be overrated. Statisticians from developed and post – transition countries should not hesitate to share their experiences (successes and reverses) with their colleagues from the countries less advanced in transition processes.

## 8. TRANSBORDER INFORMATION INFRASTRUCTURE – NEW CHALLENGE OF OFFICIAL STATISTICS IN INTEGRATED MARKET ECONOMY

Important attribute of political and economic transition is the change of social and economic functions of political borders. Political borders between countries in large part of the world have played in statistics the function of geographic delimitation of national economies. Political borders separated different political, legal, social, economic and monetary systems. Global system of statistics was based on the concept of national economies.

Political changes accelerated by integration processes and transition processes in many regions of the world have created new situation for official statistics. Basic statistical entity of global statistical system – national economy – became fuzzy. Moreover, some sectors of national economy are operating on international and global scale, e.g. banking and finances, transport, communication and information sector (mass media), research and development etc. The fuzziness of national economy as the statistical category has the impact on the system of national accounts. Basic subcategories of the SNA have to be estimated using rather weak frames and relatively small samples. The estimates of GDP and related categories are based to large extent on conventions, less on precise algorithms and on complete source data. In transition countries the precise estimation of statistical aggregates is more difficult because of dynamic changes of information environment of statistics generating gaps and holes in reliable information sources.

Specific information needs of users representing regional governments and entrepreneurs were generated by dynamic social and economic processes that are taking place in transborder regions. In small scale national economies statistics of processes is also of interest of central governments.

The dynamics of transborder processes extremely high along the borders between different economic systems. The “differences of potentials” between neighboring regions are stimulating and accelerating the activity and cooperation between enterprises. In case of good political relations between countries the cooperation of local governments along the border is also stimulating economic and social cooperation. Statistical identification and measuring of “differences of potentials” in transborder regions may help the governments to supporting positive phenomena of transborder cooperation as well as to eliminate or reduce negative social and economic processes.

Main statistical indicators characterizing the “differences of potentials” are the indexes or variables characterizing the differences in:

- Prices of comparable goods and services,
- Wages and salaries,
- Access to labor markets,
- Laws regulating labor markets,
- Supply of goods and services,
- Access to social services (health, education),
- Laws regulating economic activity (taxes, social insurance, reliability of financial system, risks of economic activity etc.),
- Ecological laws and practices,
- Safety and security of economic activity (laws, transparency, anti-corruption measures
- Quality of infrastructure (transport, energy, social infrastructure),
- Access to the markets of other interior regions (e.g. to single markets, to free trade zones),
- Policy in the field of non-registered economic activity and shadow economy.

The experiences of Polish statistics (Regional Statistical Office of Rzeszow and the Center of Transborder Statistics in Krosno) have elaborated specific methods of delimitation of transborder areas, methodology of monitoring and evaluating the differences of potentials and synthetic indicators of transborder cooperation. Those methods were tested and implemented in cooperation with regional statistical services of Slovakia, Ukraine, Belarus and Russian Federation (Kaliningrad region) in the transborder region along east, south and north boarder of Poland with cooperating countries. The results of those analyses have proven that transborder statistics is of high importance for monitoring and explanation of economic and social processes on regional level.

It seems that in recent time of liberalization of international trade, of more free transfer of goods, services and free migration of people, of international infrastructural projects, the transborder statistics should become standards segment of official statistics. It may help governments to identify and evaluate different forms of transborder cooperation, to program and plan joint actions and projects in for optimizing transborder infrastructure, establishing proper rules of competition stimulating the development on both sides of boarders. The Center of Transborder Statistics of the Regional Statistical Office in Rzeszow is preparing the project of monitoring external Easter border of the European Union “From Barents’ Sea to Black Sea”. Preliminary interest in joining this project has expresses most of the statistical services of the countries. It seems that this project would be good verification of statistical identification, monitoring and analysis of transborder processes of developed economies, post-transition countries and the countries in different advancement of transition processes in society, economy and in official statistics.

## 10. CONCLUSIONS

1. Concatenation of best practices (*expertise and experiences*) of international organizations (*coordination and standardization*), developed countries (*methodology, organization, technology*) and post – transition countries (*strategies, practical methods and tools of transformation of statistical systems and surveys, cooperation with stakeholders*) is the complex of best practices for transformation of statistics in transition countries.
2. Synergy effect of concatenation of best practices for transition countries is achieved thanks to the complementarity of statistical experiences of international organizations, developed countries and post – transition countries.
3. “Transplantation” of best practices of one country to official statistics of countries in transition could be recommended only if statistical environments (laws, functions of governments, information infrastructure, IT) of both countries are compatible.
4. Creative adoption of best practices using concatenated experiences of international organizations, developed countries and transition countries seems to be pragmatic and effective approach of transformation of official statistics for transition countries.

IRINA BURLACU

Maastricht University  
(Belgium)

### THREE-LAYERED POLICY FILTER IN FREE MOVEMENT FOR WORK AND WELFARE - A CONCEPTUAL FRAMEWORK OF THE EU SOCIAL SECURITY COORDINATION, NATIONAL SOCIAL SECURITY AND TAXES ON THE WELFARE OF FRONTIER WORKERS<sup>1</sup>

#### 1. INTRODUCTION

Labour mobility raises new challenges to both, the welfare state and individuals. Welfare states prioritize differently their policy objectives in line with their pressing population needs. This complicates the coordination efforts, as each state has different designs of social security systems. On the other hand, when 'mobile' individuals become subjects to two or more tax and social security systems due to their current or previous place of work, they are exposed to different legislations and conditions of benefits and taxes.

This paper focuses on a particular group of mobile earners that is frontier workers, as they interact daily, weekly and monthly with two fiscal and social security systems. We examine the country cases of Luxembourg and Belgium due to their long tradition of cross-border cooperation and similarities in social security systems.

This Chapter is essentially organized as follows. We start with Section 2 where the term of frontier work and cross-border regions is introduced, along with explanation of country selection. Section 3 contains a list of actors (academia, cross-border organizations, etc.) that investigate the topic of frontier work from different aspects. The Section 4 contains a conceptual framework developed as a result of interaction of more legislative and social policy layers. It aims to discuss about the interplay between the EU supranational law, welfare state and national tax law, considering them key actors involved in defining the welfare of frontier workers and mobile workers in general and a prerequisite to free movement for work (policy framework).

Labour and equality law is central to the functioning of society and economy, the labour law regulates individual's employment relationship and employment rights, as well as the labour market and the relation between the State, employers and employees, and their representatives (Barnard & Peers, 2014). The EU

<sup>1</sup> This article is a result of work carried out in the PhD thesis of Irina Burlacu, titled "Challenges and perspectives of free movement for work: the impact of the differential tax-benefit systems on the welfare of frontier workers (the case of Luxembourg and Belgium)", supervised by Professor Cathal O'Donoghue. This project (number 1096501) was supported by the Fonds National de la Recherche, Luxembourg. Corresponding and main author: Irina Burlacu, Maastricht Graduate School of Governance, Maastricht University, P.O. Box 616, 6200 MD Maastricht, the Netherlands, Email: irina.burlacu@maastrichtuniversity.nl  
I would like to express my gratitude to Professor Cathal O'Donoghue who guided me throughout the process which lead to developing this framework. Special thanks to Professor Hildegard Schneider for thorough revision and comments on structural and legal content of this paper. Also, the contribution of Dr. Anne Pieter van der Mei, social security lawyer is highly appreciated, as well as Dr. Marjon Weerepas, tax law expert, Faculty of Law of Maastricht University.

supranational law in social security refers to the Regulation (EC) 883/2004 and is in charge of promoting free movement for work. As such, it was established as a mechanism of coordination among the social security administrations of the European Union Member States. Hence, when a mobile earner moves to another country for work, the Regulation (EC) 883/2004 insures the transportability of child, pension or other types of benefits to the country of work. The cases of infringement or abuse of social benefits are solved by the national or European Court of Justice, thus the individual is a subject of EU law in the first place. Yet, the specificities on the amount, length and other conditions of benefit is defined by national law and here comes into play the second key policy instrument, the national social security law. Throughout the thesis, the welfare state concept defines and represents it. However, it is acknowledged the fact that social security systems and personal income taxes vary greatly due to different culture of organisation and historical path dependency (Schokkaert & Van Parijs, 2003). Inevitably, this affects the mobile earners to the extent to which they are subjects of more than one tax in social security system. Studies show the dissatisfaction of frontier workers (AEBR, 2010) due to such differences and the need for examination of how much the difference among the fiscal and social security compartments of the member states affect mobile earners emerges.

In trying to examine the overarching research question on whether the welfare states follow the same welfare objectives for their residents as they do for their frontier workers, firstly was important to understand the "equality of treatment"<sup>2</sup> principle. Although it originates from legal realm, the equality of treatment question has high social policy relevance. According to this principle, the 'mobile earners', or those individuals who work in more EU countries throughout their career are subjects to the relevant country of employment and thus can enjoy the same benefits as nationals. In order to identify how equally one individual is treated over the other in terms of their social and fiscal entitlements and obligations, the legal specialists apply rules from national laws and 'match' the national laws of the country of employment and residence with the European Union law or vice versa. Extensive works in this area exists (Craig & De Burca, 2011; Pennings, 2011; Verschuere, (2012) and these show high level of complexity that lawyers deal with in trying to meet the requirements of the national law in the country of residence, the country of employment and the EU coordination law.

Illustrative cases are: Case C-85/96, *Sala* [1998]<sup>3</sup>; Case C 36/96, *Gilly* [1998]<sup>4</sup>; Case C-258/04, *Ioannidis* [2005]<sup>5</sup>; Case C-212/05, *Hartmann* [2007]<sup>6</sup>;

Case C527/06, *Renneberg* [2008]<sup>7</sup>; or other cases as Case C-184/99, *Grzelczyk* [2001]<sup>8</sup>; Case C-224/98, *D'Hoop*, [2002]<sup>9</sup>; Case C-209/03, *Bidar*, [2004]<sup>10</sup>.

- 2 Regulation (EC) 883/2004 (Article 4 states: "Unless otherwise provided for by this Regulation, persons to whom this Regulation applies shall enjoy the same benefits and be subject to the same obligations under the legislation of any Member State as the nationals thereof").
- 3 Spanish citizen in Germany, discrimination on nationality base, refusal to grant child raising allowances on behalf of the Bavarian authorities.
- 4 Bilateral convention for the avoidance of double taxation for frontier workers.
- 5 On nationals of a Member State who are seeking employment in another Member State fall within the scope of Union law.
- 6 On national of a Member State who worked within one Member State, but had transferred his/her residence to another Member State is to be considered a frontier worker within the meaning of Regulation No 1612/68. Therefore, he/she cannot be excluded from access to the social advantages to which nationals of the Member State of origin are entitled.
- 7 On the favourable of the tax regimes of the Member States involved in cross-border work.
- 8 Decision on behalf of Belgian social security administration to stop the payment of social assistance benefits claims (*Rudy Grzelczyk vs. Centre public d'aide sociale d'Ottignies-Louvain-la-Neuve*).
- 9 Belgian student who completed high school in France and who was rejected for unemployment benefits because living in another Member State.
- 10 French national, entered on the territory of the UK for family reasons, who after a while started a course in economics at the University College London. While Mr Bidar received assistance with respect to tuition fees, his application for financial assistance to cover his maintenance costs, in the form of a student loan, was fused on the ground that he was not settled in the UK. He brought proceedings against that refusal.

Yet, the equality of treatment of mobile earners is not solely a legal question it is also strongly embedded in social policy realm (Sainsbury, 2006). Regardless of employment status, individuals can face various life-cycle risks (e.g. unemployment or poverty). Shaw (1998) argues that the current model of citizenship in the EU is in a vicious circle since it is not able to provide solidarity amongst its citizens, due to strong financial solidarity between nationals of a host Member State. The aim is to compare how frontier and domestic workers face life events such as unemployment, child birth or retirement.

It is argued that the original design of the welfare state, where the citizens who lived and worked in the same country are entitled to social benefits does not hold in the case of mobile earners and/or frontier workers, because they operate in different countries and their income is not related to their place of residence. Since, the EU Regulation on social coordination covers mobile earners 'social entitlements, it is imperative to approach the national welfare state and European supranational law as a whole. Moreover, it is important to emphasize that tax laws are not related neither to EU or national law.

## 2. CROSS-BORDER WORK MOBILITY

In this section, the concept of frontier workers amongst other types of mobile earners, along with some particularities of Cross-border Regions in the European Union and the reasoning in our country case selection: Luxembourg and Belgium is introduced.

The term "frontier worker" has been selected due to a clear definition provided by the European Parliament (1997). In many studies (Nerb et al., 2009; Distler & Essers, 2011), cross-border and frontier workers are used as synonyms, however, in some parts a 'cross-border worker' overlaps with the concept of a migrant worker (e.g. Vonk, 2012). To avoid confusion, the definition of the European Parliament (1997) is used, according to which a frontier worker is someone who "is engaged in a remunerative activity of a Member State in which he or she does not reside"<sup>11</sup>, "who normally returns daily, or at least once a week in the residence country."<sup>12</sup> If a cross-border worker can decide to remain in the country of employment, as a migrant worker, this is never the case for frontier workers.

At the level EU level, the terms of 'cross-border worker' or 'frontier worker' are used as synonyms Yet, to avoid any semantic misunderstanding between and 'cross-border worker' as someone who return daily to the country of residence, in this study the concept of 'frontier worker' has been chosen as the most adequate concept to describe our target group.

In the 'age of migration' (Castles, 2009), the mobility of labour force across the world is steadily gaining new forms. Frontier workers present a new form of labour mobility (King, 2002). Table 2 contrasts various types of mobile earners and frontier workers single out due to its particularity of daily interaction with two different fiscal and social security systems.

As Table 2 illustrates, labour mobility encompasses a broad spectrum of social science fields, such as Migration studies, Sociology of migration and Social policy that investigate mobile earners from more prisms. It can range from subjects such as national identity, assimilation theories to social rights and benefits.

<sup>11</sup> International Organization of Migration, Art. 2 of the International Convention of the Protection of the rights of all migrants and workers and members of their families, 1990.

<sup>12</sup> Definition of frontier worker from the Art.1 of the Model Provision of a Bilateral Social Security Agreement, Council of Europe, 1994.

**Table 1. Migrant worker as a subject of sociology, social policy, migration studies**

Discipline	Sociology of Migration	Social Policy	Migration Studies/theories
Migrant worker typology	a) Middle man minority model Ethnic entrepreneur model Ethnic niche model Ethnic enclave economy	Migrants Cross-border workers Cross-border shoppers Seasonal workers	d) Highly skilled Returning migrants Temporary/seasonal workers Irregular migrants e New typology of European migrants
Key concept	Trans-nationalism, globalization, ethnicity, national identity, immigrant community; Citizenship (Political; civil; social; post-national; denationalized; transnational)	b) welfare solidarity; social security coordination; portability of social benefits; harmonization; welfare migration; social rights; inclusion/exclusion; citizenship; benefit entitlements;	c) Migration policy regimes; legal status of the worker; ethnic fractionalization; assimilation theory

Sources: <sup>a</sup>Schmitter Heisler B., (2008); <sup>b</sup>Kvist J. (2004), <sup>c</sup>Sainsbury D. (2006);<sup>d</sup>Castles S. (2009), <sup>e</sup> King R. (2002).

Approximately 780.000 out of 10 million of mobile earners are frontier workers (Bonin et al., 2008). Nerb et al. (2009) identified the following countries where frontier earners work the most:

- Switzerland (206.000 individuals)
- Luxembourg (127.000)
- Germany (86.000)
- Netherlands (58.000)
- Austria (48.000)
- Belgium (39.000)

The countries from which frontier workers commute the most are:

- France (284.000)
- Germany (117.000)
- Belgium (78.000)

In total these comprise about 60% of all out- commuters in the EU. Other countries of origin are also important, but undocumented: Estonia, Belgium, Slovakia and Slovenia. Similarly, undocumented important destination countries are: Finland and Ireland and the small principalities of Monaco, Liechtenstein and Andorra (AEBR, 2010).

The researched target group in this thesis is not necessarily deal with, what in classical terms of social policy would be a target group of social assistance schemes. These are individuals who seek to maximize their personal income, considering the geographical position they are in (Pierrard, 2008). Nor are frontier

workers a large ‘policy target group’, presenting a less urgent inclusion policy problem or a significant mass of voters. Nonetheless, the issues that frontier worker in the European Union face is an illustrative example of the consequences between the differences in system organization and their interaction.

The areas in which frontier workers operate their daily activities are called Cross-Border Region (hereafter, CBR) and these are counted to be more than 70 regions throughout Europe (Table 1, Chapter 1). A series of studies are carried out in this field (Matthai, 2004; Perkmann, 2007; Pierrard, 2008; Hall, 2008; Weerepas & Pennings, 2006) on the following CBRs: Euregio Liege-Maastricht-Aachen (Belgium-Netherlands-Germany); Saar-Lor-Lux (Luxembourg-Germany-France), Frankfurt/Oder-Slubice (Germany-Poland); Saarland-Lorraine (Germany-France); Tyrol Euro-region (Austria-Italy); Øresund Region around the Sound (Sweden and Denmark); the twin region Uusimaa-Harjumaa (Finland-Estonia); Vienna-Bratislava (Austria-Slovak Republic); Geneva-(Switzerland-France).

Cross-Border Regions have important implications for the national and local administrations and economy. For example, in the French Parliamentary Mission on transfrontalier policy reports: “Nous comptons pres de 3.000 km de frontier. 16 regions, 28 departements sont frontaliers, 10 million de francais resident a proximite” (Blanc, Keller & Schmidt, 2010). Initiatives in the field of cross-border co-operation were supported by the European Commission with approximately 700 million of Euros per year, complemented by a similar amount by the European nation states (Perkman, 2003). A good example of institutional multidimensionality is the region where this dissertation is written. Only within the Dutch-German cross-border EUREGIO, 130 Dutch and German municipalities, towns, and administrative districts work together across the border various projects. EUREGIO has spent more than 45 years building and reinforcing cross-border structures. Its neighbouring region Saar-Lor-Lux (SLLR) includes France, Germany, Luxembourg and Belgium, similarly has a vibrant institutional and labour market life. In Benelux area, the statistics of cross-border workers indicate (Belgian FPS Social Affairs, 2010):

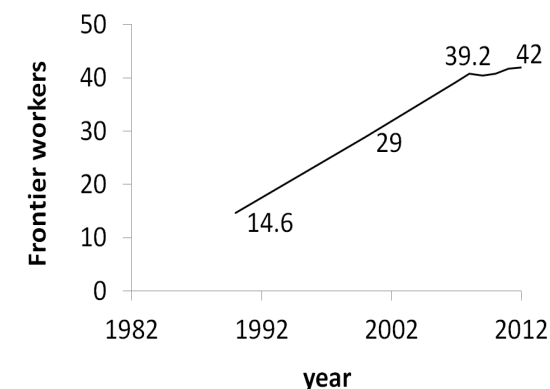
- ± 31,400 Belgian citizens work in the Netherlands;
- ± 7,300 Dutch citizens work in Belgium;
- ± 32,600 Belgian citizens work in Luxembourg;
- ± 450 Luxembourg citizens work in Belgium;

Between 1988 and 2004, cross-border employment increased by an annual average of almost 10% (Eurofound, 2009).

### Country cases

Luxembourg and Belgium were selected due to their relevance to the current study; Luxembourg is the receiving country with the highest number cross-border workers, while Belgium has the highest rate of cross-border sending countries, (Bonin et al., 2008). The Luxembourgian labour market is formed of almost 40% of German, Belgian and French cross-border workers, with Belgium currently presenting one of the major forces of labour in Luxembourg.

In terms of occupations at the higher end of the social hierarchy, directors, senior managers and salaried workers within the liberal and scientific professions are particularly well represented among Belgian cross-border workers (18.8%), compared with German cross-border workers (12.1%) and French workers (9.1%). Over the past 10 years, Figure 1 shows an increase in the Belgian commuters to Luxembourg.



**Figure 1.** Belgian frontier workers in Luxembourg, (thousands)

Source: *Official Statistics of Grand Duchy of Luxembourg, (2012).*

Some European countries removed border barriers and allowed free circulation of persons and services, before the European Economic Community was founded (Treaty of Rome, 1957). Based on bi-lateral economic agreements, countries such as Belgium-Luxembourg (UEBL, 1921); and later Belgium-Netherlands-Luxembourg (Benelux, 1944), signed amongst the first agreements to eliminate economic frontiers and develop strong labour markets. These were the first European countries to share a common currency and later on, a high fluctuation of job migration, (Nerb et al., 2009) with a long cross-border cooperation and respect for mutual agreements. A long tradition of institutional favourable cooperation is characteristic to Belgium and Luxembourg. Within the cross-border workers arrangements the largest trade union in Luxembourg, the Confederation of Christian Trade Unions (LCGB) reached a cooperation agreement in 1985 with the Belgian General Christian Trade Union (ACV/CSC).

Lastly, but not least, characterized by relatively similar social security systems organization. Luxembourg and Belgium present an interesting case to investigate when it comes to sharing and respecting mutual agreements with respect to the freedom of movement of workers. It is also a case of “sovereignty comparative advantages of small states” (OECD concept), where a power balance needs to be found in implementation of similar agreements<sup>13</sup>.

When country cases have different institutional organization of social security systems (e.g. the Spanish and French example from Chapter 1) the differences can reside in objectives and principles of the functioning of the system. However, here two countries with comparable settings and more similar welfare objectives to test the coordination effects are chosen.

Generally, Belgium and Luxembourg are classified as Conservative-Corporatist welfare regimes although some authors place both cases in the hybrid group between Scandinavian and Continental (Hartmann-Hirsch & Ametepe, 2011). Since we carry out benefit calculations, similar to Ferrera (1996) we consider both countries to belong to the same regime. The Luxembourgian-Belgian cooperation takes an important place in bi-lateral agreements and cross-border conjuncture of both countries, illustrates one of the recent discussions on Belgian and Luxembourgian cross-border cooperation and rights of workers, the

<sup>13</sup> The agreements of social security coordination between Luxembourg and Belgium are signed by the Prime-Minister of Luxembourg and the Mayor of Wallonian municipality.



place where social security lawyers, academia and high ranked policy stakeholders gathered to tackle the problems that frontier workers face.<sup>14</sup>

### 3. FREE MOVEMENT FOR WORK AND ASSESSMENT

Free movement for work is at the core of policy discourses and is on the EU agenda for more than 50 years. Freedom of movement is considered by more than 60% of the EU's population as the highest achievement of the European Union since its foundation. Using discourse analysis of Belgian and Dutch policy makers and politicians, Hupe & van Duren (2010) challenge the one-to-one relationship between reform and better performances, by examining the type of discourse. They demonstrate that an essential characteristic of reform in these two comparable welfare states the discourses can fundamentally help shaping reform results. Hupe & van Duren (2010) point out that the recommendations in public policy (includes social) are rarely based on empirical evaluations.

Various types of sources that generate studies on frontier or cross-border work are identified.

#### A. International level

Cross-border or frontier work is seen most of the time specific to an area, thus statistics and reports at international level are rather concentrated around general labour migration statistics.

- International Labour Organization<sup>15</sup> (ILO) is probably one of the most known and among oldest entities at the international level that regards human rights, focusing on specific type of migrants, such as migrant workers and their families. A strong dimension of it includes social rights of migrants. ILO informs us for example that currently only 20% of world's population has adequate social security coverage and more than a half lack any type of coverage.
- International Social Security Association<sup>16</sup> (ISSA) is related to ILO and is the world's leading international organization for social security institutions, government departments and agencies. It collects worldwide data social benefits rules.
- International Organization for Migration<sup>17</sup> (IOM) has a long history in statistics collection, reporting and analysis on world migration that deals with various dimensions of migration phenomena. It aims to assist with operational management with migration, amongst which also with social security rights of migrants all over the world. The World Migration Reports<sup>18</sup> are a particularly useful source that informs us about migration trends and challenges, including global labour migration.
- Organization for Economic Co-operation and Development<sup>19</sup> (OECD) is another important institution that deals with statistics on migration. It provides data on stocks and flows of immigrants and labour market outcomes in OECD countries.
- More specific organizations that deal with cross-border issues (e.g. taxes, pension, etc.) are large auditing and accounting companies, such as: KMPG or Ernst & Young. These are scarcely reported throughout the thesis, as these do not embody public services or usually restricted statistics accessible to wider public.

14 "Colloque Belgo – Luxembourgeois: La libre circulation des travailleurs et des citoyens", by Catholic University of Leuven, the University of Luxembourg and the Network of Experts on Free Movement of Workers, the University of Nijmegen. More information: <https://www.uclouvain.be/460552.html>.

15 International Labour Organization: <http://www.ilo.org/global/about-the-ilo/mission-and-objectives/lang--en/index.htm>.

16 International Social Security Association: <http://www.issa.int/>.

17 International Organization for Migration: <https://www.iom.int/cms/en/sites/iom/home/about-iom-1/mission.html>.

18 Ibidem: [http://publications.iom.int/bookstore/index.php?main\\_page=index&cPath=37](http://publications.iom.int/bookstore/index.php?main_page=index&cPath=37).

19 Organisation for Economic Co-operation and Development: <http://www.oecd.org/migration/>.

#### B. European level

This subsection introduces the reader into the general EU institutional framework that provides with studies and statistics on free movement for work.

- The European Council and the European Parliament are two main legislators in the field of labour migration and social security. However, the European Commission stands out as an important agent of hosting and implementing the legislation and policy documents in this area. Its' two Directorates General: DG Employment, Social Affairs and Inclusion<sup>20</sup> and DG Justice, Home Affairs and Citizens Rights<sup>21</sup> are key policy actors in social security coordination and free movement for work. The first provides information services to EU citizens on questions related to job mobility to another Member State, on one hand. DG Employment, Social Affairs and Inclusion and finances scientific and policy consultancies in the area of labour mobility, on the other hand. In this sense, the online Journal on Free Movement for Work<sup>22</sup> is launched since 2010 to present the view of the academia and policy makers on (mostly legal) issues related to free movement for work. The network of experts organized by this DG organizes Annual Conferences on Free Movement for Work to offer a platform of scientific communication between academia and policy makers and to synthesize the progress and difficulties encountered in this area by the European Commission.

Furthermore, the European Commission initiated very important research projects in the area of cross-border work and financially supported a series of tenders (e.g. Bonin et al., (2008); Nerb et al., (2009)). These present statistics segregated by gender, occupation and other parameters of frontier workers in the European Union. The latter study summarized on 41 cross-border regions using following methodologies: desk reviews, online survey, expert interviews (440 labour market experts) and partially available statistics. "Social security coordination"<sup>23</sup> unit is in place to clarify the application of the EU law in the field of social benefits. DG Justice<sup>24</sup> as well deals with informing the citizens on their rights, also extending this arena with electoral rights, and dealing with complaints and petitions.

- Under the guidance of the Committee of Regions, the European Grouping of Territorial Cooperation (EGTC) was established as a legal instrument to strengthen and support cross-border, transnational and regional cooperation between its members, strengthening the economic and social coherence through the implementation of a common development strategy. Annually they provide with Monitoring reports for the Committee of the Regions, where the performance of 45 regions of the European Union is discussed. Other programs such as: INTERREG mainly provides funding for interregional cooperation across Europe, but also it holds a valuable database on good practice on cross-border cooperation.

Another active and massive programme that supports cross-border cooperation at EU external borders is the INTERACT. Areas of expertise: Programme management, Communication, Financial management and Knowledge Management and Capitalisation. Informative brochures and practical at-hand consulting are provided by the Contact Points.

20 European Commission: <http://ec.europa.eu/social/home.jsp?langId=en>.

21 Ibidem: [http://ec.europa.eu/justice/index\\_en.htm](http://ec.europa.eu/justice/index_en.htm).

22 Ibidem: <http://ec.europa.eu/social/main.jsp?catId=475&langId=en&furtherPubs=yes>.

23 Ibidem: <http://ec.europa.eu/social/main.jsp?langId=en&catId=849>.

24 Ibidem: [http://ec.europa.eu/justice/citizen/index\\_en.htm](http://ec.europa.eu/justice/citizen/index_en.htm).

### C. Scientific and policy networks (European) level

Here, cross-border organizations and academia are considered. Cross-border organization reports on cross-border regions problems in a particular geographic area: Organizations in this field carry a wide range of activities, such as: trainings, networking and information, advising and legal consulting, tasks forces. Although most of reports in this area focus on cross-border regions cooperation and economic strengthening, many aspects are discussed at individual level as well.

- AEBR, the Association of European Border Regions is a solid resource in cross-border activities and challenges at individual level. A 3 to 4 multilingual reports are provided annually to interested stakeholders on the AEBR activities throughout the year, among other works are: AEBR (2012).
- MOT, Mission Opérationnelle Transfrontalière<sup>25</sup> (France) is a rich resource center on cross-border work cooperation and economic development. Although focused on French cross-border territories, which hold the majority of frontier earners in the European Union, MOT is a good example of bridging policy analysis with practice<sup>26</sup>. An illustrative report characteristic to this Cross-border area belongs to Blanc, Keller & Schmid, (2010).
- EuroInstitute<sup>27</sup> is a Franco-German organization that aims at improving cross-border cooperation through training and consulting in various public policy areas. Transfrontier Euro-Institute Network (TEIN)<sup>28</sup> brings together 12 partners from nine border regions in France, Germany, Switzerland, Austria, Italy, Slovenia, Poland, Czech Republic, Denmark, Belgium, Spain, the French Caribbean, the UK and Ireland.
- University environment (few examples). One of the most illustrative examples of network of experts lead by academic is the former tRESS<sup>29</sup> or EC-funded network of independent experts in the fields of EU free movement of workers (FMW) and social security coordination (SSC), currently called FreSSco. This network is coordinated by Ghent University and Etheia. Another example is the Centre for Migration Law<sup>30</sup> (University of Nijmegen) that with the support of the European Commission managed the European Network on Free Movement of Workers within the European Union; one of the activities of this Network is the annual production of a European report on the implementation of EU free movement law in the Member States. The Maastricht Centre for Citizenship, Migration and Development<sup>31</sup> (MACIMIDE) of the Maastricht University is a research platform in the fields of migration, mobility, citizenship, development and family life.
- Regional centers and organization (with focus on Luxembourg and Belgium). A special interest of this research group concerns the cross-border mobility in the Benelux countries and Germany, thus a rich source of information on frontier work is the Benelux organization<sup>32</sup> (see also Benelux Official Journal<sup>33</sup>). Euregio<sup>34</sup> is another important regional information source on frontier work in Germany and Netherlands.

Luxembourg plays an important role in frontier work research in Luxembourg and not only. The Metrolux team at the Centre for Population, Poverty and Public Policy Studies (CEPS/INSTEAD) in Luxembourg studies the mechanisms of regional integration of cross-border

25 Mission of Transfrontier Operations (MOT): <http://www.espaces-transfrontaliers.org/en/>  
26 Ibidem: [http://www.espaces-transfrontaliers.org/fileadmin/user\\_upload/documents/Documents\\_MOT/Cahiers/Cahiers\\_de\\_la\\_MOT\\_9\\_EN.pdf](http://www.espaces-transfrontaliers.org/fileadmin/user_upload/documents/Documents_MOT/Cahiers/Cahiers_de_la_MOT_9_EN.pdf)  
27 Euro Institute: <http://www.euroinstitut.org/wFranzoesisch/1-Qui-sommes-nous/in-english.php>  
28 Transfrontier Euro Institute Network: <http://www.transfrontier.eu/>  
29 Training and Reporting on European Social Security: <http://www.tress-network.org/>  
30 Center for Migration Law, Nijmegen University: <http://www.ru.nl/law/cmr/projects/fmow-1/>  
31 MACIMIDE, Maastricht University: <https://macimide.maastrichtuniversity.nl/>  
32 BeNeLux <http://www.benelux.int/nl/>  
33 BeNeLux Official Journal: <http://www.benelux.int/nl/publicaties/publicaties-overzicht/benelux-publicatieblad>  
34 Euregio: <http://www.euregio.eu/nl/over-euregio/geschiedenis>

metropolitan centres, both in economic and political terms. The research examines (1) the modalities of the economic development of these cross-border regions within the global system, (2) the cooperation and modes of governments implemented by various public and private actors in order to manage spatial development and coordinate their actions and (3) the role and importance of national borders within these processes. Multiple studies are carried out by the team, of which: Decoville, Durand, Sohn & Walther, (2012); Walther & Dautel (2010); Sohn, Reitel & Walther, (2009).

- Guides to mobile earners or frontier workers on applicable social security law and tax law in a cross-border situation. The first toolkit for mobile earners are the official reports and studies presented by the European Commission, under the EU Social Security Coordination section<sup>35</sup>, where video, audio and written extensive material is presented to the reader to guide through the EU legislation on health care, pension and other dimensions that regard the life of a frontier worker. Other useful and comprehensive guides are presented by Vandenbrande (Ed.), (2006); Essers & Distler (2011) where for more types of workers (posted workers, pensioners abroad, migrant workers, cross-border workers) social security and tax law guidance is provided for various areas: sickness, occupational benefits, unemployment or child related benefits.

Following key research topics are crystallized:

- Reports and analysis on welfare and migration: One of the most recent and illustrative works are of Guild, Carrera & Eisele (Eds.), (2013) who raise the topic question of access to social benefits of EU migrants. Raymer et al., (2011) present an Integrated Modelling of European Migration model and argue that international migration data are currently collected by individual countries, fact which can create problems when trying to understand and predict populations' movements between the countries. Although, using international labour migration amongst EU's countries and European Free Trade Association example, this is dimension remains valid for cross-border work as well. Nowrasteh & Cole (2013) look at the US example. Burgoon, Koster & Egmond (2012) affirm that immigration directly influences the politics of inequality in complex ways a country. Against the common view in political economy that immigration might be bad news for redistribution in a country, the authors hypothesize and find arguments that occupational rather than national exposure to immigrants can have different, even opposite implications for support for redistribution. A series of analysis refers to welfare distribution and world location from a spatial perspective, the work of Puga (2002) is suggestive.
- The mobility of people is discussed both, in sociological paradigms and in Sociology of Migration. Sociology theorists mainly investigate migrants' relation with the receiving country ("assimilation"), emphasizing the process of immigrant incorporation<sup>36</sup>. In sociological paradigms, the migrant is seen as a "modern stranger" (Woods, 1934; Simmel, 1977), who tries to join a group from outside and who is accepted to a group as a member, but who nevertheless remains detached from it, usually performing low-skilled work. Increasingly, this image is replaced by refugees kept in closely scrutinized asylums, or illegal immigrants. Moreover, migrant workers can be suspected of representing the threats of crime and terrorism ("Paradigm of suspicion", see Shamir, 2005)<sup>37</sup>. Despite above attributed features of migrant workers in sociology, "the connections between

35 European Commission: <http://ec.europa.eu/social/main.jsp?catId=866&langId=en&furtherPubs=yes>.

36 See Annex, Table 2.

37 The conceptual link between immigration and social vices such as crime, disease, and moral contamination has gripped the public mind long before the present era and continually shapes immigration policies and border-control measures. Mobility is perceived as a suspicious activity especially when it relates to those without property (Shamir, 2005).

division of labour and stranger-relations, received little attention in the classical literature. Other topics are focused on: a) solidarity of welfare state, whether migrants are a burden for the welfare (Engelen, 2003; Mau & Burkhardt, 2009); b) how are social benefits coordinated across the European Union; issues of harmonization, social integration, welfare migration; c) social rights of migrants; topics as: migration policies, benefits eligibility conditional to nationality and residence. Little attention was devoted to social policy in analysis of economic migration. Sainsbury (2006) critiques welfare state literature that has largely ignored the situation of immigrants, - considering them as a burden to welfare state; additionally, the international migration literature under theorized welfare state variations.

#### D. *Bilateral, trilateral and multilateral level:*

In Annex 1 of Chapter 1, almost 80 European Cross-border Regions are listed. Further on, few cross-border regions are presented.

- Netherlands – Germany, Euregio<sup>38</sup>
- Belgium-Netherlands-Luxembourg<sup>39</sup>, BeNeLux
- South of the Province Limburg (Netherlands), Province of Limburg (Belgium), Province of Liège (Belgium) and Aachen (Germany) Region the German-speaking Community (Belgium),<sup>40</sup> Euregio Meuse-Rhine.

These register different levels of decision making involved (e.g. central authorities in Benelux case versus local and central authorities in the case of Euregio).

The above presented list of sources shows a wide range of actors (European Commission, Committee of Regions, cross-border organizations, networks of experts, policy analysts, social security and tax lawyers) are interested and provide expertise in the field of frontier or cross-border worker in the European Union, both at the EU and country level. Yet, a large gap in the literature that addresses the cross-border mobility at the individual level is identified. Namely, due to restricted data and exchange between countries on social security and fiscal records, an important segment of micro-data in this area is missing, which we try to compensate by providing analysis using hypothetical data. General statistics segregated by socio-economic indicators are useful and informative for descriptive statistics, however if one aims for more specific policy recommendation more detailed data is needed.

#### 4. “THREE-LAYERED POLICY FILTER” FRAMEWORK

**Section 2.4** lies at the core of explaining the functionality of the tax-benefit model for frontier workers. It proposes the concept of a three-layered policy filter to summarize as close as possible the complexity that lays in the interaction between social security coordination law, national social security law and tax law.

38 Euregio: <http://www.euregio.eu/nl/over-euregio/geschiedenis>.

39 Benelux organization: <http://www.benelux.int/nl/>.

40 Euregio: <http://www.euregio-mr.com/de>.

#### 2.4.1. *National social security law*

The focus of this section is to familiarize the reader with the role of legislation of national social security laws. As technical as it looks, this section is important as the starting point of the income calculations for mobile or frontier workers' welfare is the national social security law.

National laws consist of legal documentation usually drafted by the ministries of social protection and approved by the parliamentary bodies. These reflect the adequate conditions (e.g. amount, length, eligibility) and numerical values on benefits that are to be granted to the citizens of a state, depending on their employment and other related criteria status (Walker, 2005). These numerical conditions can be found in most details in the methodology Chapter 4, under the title of ‘Policy components’. It is at national level that objectives of a welfare system are defined. At EU level, most of the regulation in the area of social policy refers to EU labour and equality law (Barnard & Peers, 2014). In the view of the authors, it is with labour and equality law that the European social model is formed, despite its rather vague concept. The equality of treatment question discussed throughout the thesis originates from this particular domain.

The national legislation is not developed separately from the international arena. Common international standards existed in the area of social security to try deal with the entitlements and rights of migrants. Therefore, national social security law is of interest to frontier earners to extent to which these incorporate laws from two countries, the country of employment and of residence. Furthermore, social security agreements are used as an example to show how social security administrations interacted through national social security law to protect mobile earners.

#### *International context*

The history of international social security treaties goes back to the beginning of XX-th century, when each of the member countries has signed a plethora of international social security agreements presented in Table 4 (Annexes)

A Social Security Agreement (SSA) is a treaty which coordinates the social security schemes of two or more countries to ensure the portability of social security entitlements (ILO, 2010). It has the objective to protect the social rights of migrants. At the basis of bilateral agreements, lies the principle of reciprocity, where each party shares the costs and benefits on a reasonable equal basis.

Let us pass through a brief historical overview depicted in the Annex 1. Directly, after the I-st World War in 1919 the International Labour Organization (thereafter, ILO) was founded and straight after the II-nd World War, the Council of Europe (thereafter, CoE) was set up, (1949). These two key institutions ratified and series of international legislations that shaped all European states' national law in social security.

After Second World War, the first regulatory instruments were launched in the area of social protection of migrants in Europe, namely: The European Interim Agreement on Social Security Schemes Relating to Old Age (1953), Invalidity and Survivors and European Interim Agreement on Social Security other than Schemes for Old Age, Invalidity and Survivors (1953). These provided for nationals of any one of the Parties to be entitled to receive the benefit of the laws and regulations of any other Party, under the same conditions as if person were a national of the latter, providing that certain conditions of residence are fulfilled.

The European Code of Social Security (1964)<sup>41</sup>, (CoE) is one of the first attempts to harmonize social security in Europe, aimed at establishing a series of minimum standards in social security that hosting countries need to provide for their migrant workers, focused on the living standards of those who had survived the destruction and turmoil of the II-nd World War. More details on international legislation can be found in Table 4.

41 Council of Europe: [http://www.coe.int/t/dg3/socialpolicies/source/socialsecurity/shortguide\\_en.pdf](http://www.coe.int/t/dg3/socialpolicies/source/socialsecurity/shortguide_en.pdf).

## *EU context*

The overarching legislative documents that were launched almost at the same time with the Conventions from ILO and CoE, are the European Treaties. The year of 1957 remains memorable for the European space, it lays down the Treaty Establishing the European Economic Community Treaty or Treaty of Rome, which entered into force in 1958. It was in the Treaty of Rome that the free movement of persons was announced for the first time, in its Article 48. The free movement of persons was fully established as a fully-fledged right in 1968 through the Regulation (EEC) 1612/68, contained also in the Treaty of Maastricht 1992, Treaty of Amsterdam 1999, Treaty of Nice 2003 and latest Treaty of Lisbon 2009.

It is important to emphasize that after the Rome Treaty 1957 attempts to discuss and implement free movement for work were already stated in the Regulation (EEC) 15/1961. Yet, the regulation that lays at the foundation of the modern rule on freedom of movement for work is the Regulation (EEC) 1612/68. This has only partially been replaced at present by the Directive 2004/38/EC and the Regulation (EC) 492/2011.

The right of entry, stay and leave were initially laid down in the Directive 68/360/EEC that currently has been amended in the Directive 2004/38/EC. These clarify two important aspects: the entitlements of family members that can enjoy the same rights as the primary person has and the entitlements of the unemployed persons who wish to move to another Member State. Both entered into force to grant the right to citizens of the Union and their family members to move and reside freely within the territory of the Member States. The most recent legislative acts recently adopted in the area of free movement for work is the Directive 2014/54/EU and focuses on measures facilitating the exercise of rights conferred to workers in the context of freedom of movement for workers. It aims to remove the obstacles related to free movement, such as lack of awareness of EU rules on behalf of public and private employers and other aspects related to labour mobility.<sup>42</sup>

A series of legislative developments took place separately in the area of free movement for work and social security coordination. These happened almost simultaneously and strongly intermingle when dealing with mobile earners, their families and their social entitlements. Therefore, on the other hand, almost at the same time, as the conditions on the right on free movement for work became increasingly clear, it was acknowledged that the social entitlements are an indispensable component of mobility.

The first coordination regulation was Regulation 3 of 16 December (1958) which was one of the earliest EEC. Coordination of social security was indeed already at that time considered essential for the free movement of workers, although Pennings (2014) argue that there was also a false start from the point of view of other instruments, as preparatory work for coordination had already started some time before the establishment of the EEC. The first and the most important European legislative acts in this area is the Regulation 1408/71. This was amended few times but most recent amendment is done by the Regulation (EC) 883/2004. This legal instrument is evaluated throughout the dissertation. Its implementing Regulation is the Regulation (EC) 987/2009 that specifies to the Member States the binding rules on social entitlements of mobile earners and their families.

The Regulation (EC) 883/2004<sup>43</sup> is the newest regulation on a modernized social security, it has a broader scope than previous regulations and it serves as an important component in the EU's new strategy for jobs and growth "Europe 2020". In the view of Pennings (2009) this regulation brings real innovation in the field of equal treatment of benefits, income and facts. It has higher coverage, now covering people who are currently out of work, not yet in work or no longer working; new benefits - paternity and pre-retirement benefits, adapting to developments in social security legislation at national level. Important part of the existent legislation is the launching of the Electronic Exchange of Social

42 European Commission: <http://ec.europa.eu/social/main.jsp?langId=en&catId=89&newsId=2059&furtherNews=yes>.

43 Regulation (EC) No 987/2009: <http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:32009R0987>

Security Information (EESSI) and simpler and faster procedures; simplified different branches of insurance covered by coordination, such as unemployment benefits, family benefits, and sickness insurance; offers Temporary Affiliation Option.

Over so many decades, the Community legislation had to undergo many changes, which proves the adaptability and flexibility of the current social legislation (Barnard, 2012). The Regulation (EC) 883/2004 remains the most powerful existent tool to regulate the social security. It is important to emphasize that the Regulations and their implementing regulations are applied at the level of all Members, therefore affecting the countries at national level. Hence the interdependency between these two administrative and institutional levels: national and European is strongly interconnected.

## *Luxembourg – Belgium context*

Luxembourg and Belgium are founding members of the European Coal and Steel Community (1951), also the European Economic Community and later of the European Union. Already in 1968, when first regulation was implemented, Belgium and Luxembourg already would have arrangements between their social security institutions.

The bilateral agreements vary across countries despite a model arrangement having been produced by international bodies, such as the ILO or Council of Europe. One of the largely discussed is the Model of Bilateral Social Security Agreement of social security provisions for member countries (1994, Council of Europe). A Model for Tax Convention on Income and on Capital<sup>44</sup> is widely applied in the OECD countries, launched by Organization for Economic Cooperation and Development.

The negotiations of such agreements were not an easy task. Bernard (2010)<sup>45</sup> mentioned in his interview that in the 50s', the translation services were not provided to civil servants. Thus, one would need to go to another country and learn the language and the organization culture in order to understand the provisions in the agreement and then proceed to negotiations. This leads us to main critiques of these types of agreements. The reforms of these agreements were time-consuming, complex to explain and administer, and generally existed only between countries with similar system provisions, leaving migrants from most of the major labour exporting countries as Africa and Asia without protection (Walker, 2005). These later have been superseded by EEC Regulation 1408/71.

Let us further examine the particular case of bi-lateral agreement between Luxembourg and Belgium. Throughout time, Luxembourg and Belgium signed a series of social security and fiscal arrangements. The First Convention of Social Security for Frontier Workers (1951) was signed, followed by a new Convention on Social Security (1995) of frontier workers, their families, survivors and pensioners (composed by 17 Articles)<sup>46</sup>. It describes the conditions of three offered benefits: supply at birth, invalidity benefits and sickness and maternity leave (see a detailed description in Table 5). The reason of why particularly these benefits are foreseen in the Convention and how these were established remains an unanswered question. In the view of Regulation EC 987/2009, Annex I stipulates rules on bilateral agreements remaining in force. Taking this into account, it is argued that the mentioned agreements remain of relevance. However, EU Regulations are directly applicable in the Member States (Article 288 Treaty on the Functioning of the European Union) and EU law has supremacy over national law of the Member States (Craig & De Burca, 2011).

44 Organisation for Economic Co-operation and Development: [http://www.oecd.org/document/37/0,3343,en\\_2649\\_33747\\_1913957\\_1\\_1\\_1\\_1,00.html](http://www.oecd.org/document/37/0,3343,en_2649_33747_1913957_1_1_1_1,00.html)

45 Author's blog: [http://irinaburlacu.wordpress.com/2014/05/30/against-eu-against-migration-reflections-after-eu-parliamentary-elections/?preview=true&preview\\_id=438&preview\\_nonce=af27b16122&post\\_format=standard](http://irinaburlacu.wordpress.com/2014/05/30/against-eu-against-migration-reflections-after-eu-parliamentary-elections/?preview=true&preview_id=438&preview_nonce=af27b16122&post_format=standard)

46 Convention on social security for frontier workers in 1995; Convention on Allocation of childbirth benefits under the legislation of family allowances, 1963; Improved Convention in 1964; Last Convention on social security for frontier workers between Belgium and Luxembourg in 1995; The last convention is an improved of the previous one, from 1963; this due that in this period the Regulation 1408/71 was launched.

In the past, bi-lateral social security agreements were the main form by which the social entitlements of mobile earners would be defined between the country of work and the country or residence or the sending country. This has been changed when the EU law on social security coordination arise, however the agreements are still applicable in certain situations.

Meanwhile the SSAs are in place between Luxembourg and Belgium and taken over by the Regulation (EC) 883/2004, however, the SSA as such remain very important for third country nationals (as the main tool to manage the social security of migrant workers).

Instead of discussing policy criteria on how the benefit conditions are defined by the national security administrations, it would be interesting to discuss about the social security agreements as predecessors of current EU social security coordination law. The reason is that the social security agreements were the first ones to reflect the view of national welfare state or social security administration views on how mobile earners need to be treated compared to domestic earners. This will give better insight on how things developed and what needs to be addressed in our days.

#### 2.4.2. European social security coordination law

Throughout all the Treaties<sup>47</sup> one of the fundamental freedoms is free movement for work. In time, Regulation (EC) 883/2004 and the Directive 2004/38/EC became the most important legislative tools to promote free movement for work at the EU level. Free movement of workers is regulated by a set of legal instruments that derive mainly from the “social security coordination” (SSC) principle and is based on the Regulation (EC) 883/2004. This regulation is built upon the cooperation of national social security administrations and is an improved version of the Regulation 1408/71<sup>48</sup>. The latter, older regulation was often criticized as very complicated; its amendments often required lengthy negotiations, which often resulted in new exceptions and rules; and the provisions had to interpret as they were, unless the Court of Justice stated differently. The Regulation (EC) 883/2004 replaces the old regulation in order to modernize and simplify it.

Further on, a description of contexts on when the EU law is applicable over the national law and the principle of social security coordination is contained in Table 3. One of the principles that relate free movement to the welfare state is the territoriality principle discussed in Chapter 1. By this principle, the national laws support the consumption of benefits within the territorial state where they are received by residents (Mei van der, 2003; Pennings, 2011). These national laws exclude outsiders, including cross-border workers, who reside in other countries but work in Member States that are bound by such exclusive laws. Regulation (EC) 883/2004 is particularly for this reason to insure that supranational (rather than national) laws are applied.

47 Lisbon Treaty (2009), Nice Treaty (2003), Amsterdam Treaty (1999), Maastricht Treaty (1993), Rome Treaty (1958).

48 EC Regulation 1408/71 “on the application of social security schemes to employed persons and their families moving within the Community.”

**Table 2.** Rules Determining the Applicable Legislation of the Regulation (EC) 883/2004

What is the Competent State – Where is someone insured?				
Competent State Pays, but can also levy premiums or contributions?				
National Law		Reg.883/2004		
Problem: Double insurance or No Insurance at all		Solution: Single State Rule -Art.11(1)		
		Which State?		
Residence based systems	Employment based systems	Workers	Inactive	Pensioners (health care)
		Lex Loci Laboris	Lex Loci Domicilii	Lex Loci Pensionado

Source: Mei van der, (2011), “Coordination of Social Security & Unemployment benefits”, University of Maastricht; Burlacu & O’Donoghue, (2013).

When a person decides to move to another country, several questions arise. The first concerns an individual’s insurance (against unemployment, pension, and other life-cycle risks) in their country of residence. Afterward, it is decided if the individual pays social premiums in the same country where they are insured or in another country. Cross-border workers usually pay all contributions and receive family benefits in the country of work and are insured against unemployment in their country of residence. In the case of family benefits, if the family benefits are higher in the country of employment and lower in the country of residence, then they get the highest benefit. Administratively, this works as following: the Belgian earners who live in Belgium and work in Luxembourg receive the family benefits from Belgium, topped up with the difference between Luxembourgian and Belgian benefit. In the case of unemployment, the benefit is paid according to the Belgian provisions on unemployment, considering the previous income from Luxembourg.

The principle of equal treatment refers to the “nationals of an EU country and persons residing in that country without being nationals of it are equal in terms of the rights and obligations provided for by the national legislation.” The paragraph 8 of the Regulation (EC) 883/2004 stipulates that the general principle of equal treatment is of particular importance for workers who do not reside in the Member State of their employment, including frontier workers. One of the fundamental rights is the social right, referring to the right of claiming unemployment insurance as a contributor. The Regulation (EC) 883/2004 refers to maintaining the principle of equal treatment, in this case of workers, in a variety of domains within social security: unemployment, pension, family, health care, sickness, and disability. The aim of this section is to explain briefly the functioning mechanisms of social security coordination for migrant/cross-border/mobile earners in the EU. It aims to place the unemployment scheme in the general social policy framework and to describe some special attributes with respect to cross-border workers and taxation.

One of the principles that relate free movement to the welfare state is the territoriality principle, by which national laws support the consumption of benefits within the territorial state where they are received by residents (Mei, 2003; Pennings, 2011). These national laws exclude outsiders, including cross-border workers, who reside in other countries but work in Member States that are bound by such exclusive laws. Regulation (EC) 883/2004 ensures that supranational (rather than national) laws are applied. To summarize, it is argued that despite that the coordination regulation has supremacy over the national social security law; the national social security law are still very important and decisive for the income of frontier workers when calculating social benefits and taxes.

### 2.4.3. National taxation law

Uncertainties in taxation and social security-related issues are one of the major obstacles in individuals' decisions to move (Greve & Rydberg, 2003). This is because welfare states policy priorities and objectives of EU coordination law are divergent. The objective of social security coordination policy is to facilitate the free movement of citizens in the European Union, through cooperation of national administrations of social security systems. At the same time, this policy leaves large discretion to the nation states: "The rules on social security coordination do not replace national systems with a single European one. All countries are free to decide who is to be insured under their legislation, which benefits are granted and under what conditions. The EU provides common rules to protect your social security rights when moving within Europe"<sup>49</sup>. Therefore, the national welfare states promote own agenda, depending on its population's needs, while respecting EU legal provisions<sup>50</sup> on free movement for work.

Taxes are indispensable when calculating the income that an individual has to spend. Taxation instruments are applied in the case of gross market income to charge accordingly individuals with higher income, versus those whose income is lower. Also these are applied in the case of benefits. Taxes can serve as a sort of release from the burden of extra expenses that different social groups can have (e.g. child tax credit), or to provide to various groups deductions and allowances for their drop in income (e.g. end-of-year allowances for pensioners). For a comprehensive framework of welfare assessment of frontier workers, of special importance is to further trace and understand the policy framework of how taxes work in the case of frontier workers. The differences and transparency in tax systems cause dissatisfaction of frontier workers (Nerb et al., 2009). Furthermore, few cases on tax mis-arrangements for cross-border workers are reflected in (Table 6).

There are differences in treatment in taxes and benefits. For example, if in the case of family benefits, for example, the cross-border worker will be granted the benefit amount from the country of residence or employment, depending which one is the favourable, then in the case of taxes, no rules exist to guarantee most favourable of the tax regimes of the Member States involved. Social insurance contributions and taxes are very individual and particular to each situation. If the individual pays taxes in the country of employment, but lives in another country with his spouse and children, then the individual is subject of taxation in the country of residence as well (e.g. local administration, roads.. check the report of Dutch cross-border expert on mobility and what taxes it pays). Moreover, the wife is also subject of taxation in the country of residence. The way a married couple is taxed varies from country to country. In Luxembourg they are subject of splitting method, while in Belgium subjects of individual taxation. It can also happen that one of the spouses become unemployed for longer time or social assistance recipient and the other spouse remains to be a cross-border worker, then the calculation procedure changes accordingly.

If the social security administrations in the European Union are linked through the coordination Regulation (EC) 883/2004, but in the field of personal income taxation, nothing similar exists. Fiscal bilateral agreements remain as the main form of 'communication' between two or more tax authorities. A Tax Treaty (TA) has the objective to reduce double taxation, eliminate tax evasion and encourage cross-border trade efficiency<sup>51</sup>.

Thus, to start the calculations the policy rules in personal income taxation the first instance is the Luxembourg – Belgium tax agreement.<sup>52</sup> The "Convention for the Prevention of Double Taxation" (1931)

49 European Commission: <http://ec.europa.eu/social/main.jsp?langId=en&catId=850>

50 Social security coordination is founded on few main principles: a) Equality of treatment regardless of nationality; b) Legislation of only one MS applies at any one time; c) Periods of insurance acquired in different MS can be aggregated; d) Benefits can be exported.

51 McIntery M., A comparison of UN and OECD Tax Models: [http://faculty.law.wayne.edu/tad/Documents/Teaching\\_Materials/model\\_treaties.pdf](http://faculty.law.wayne.edu/tad/Documents/Teaching_Materials/model_treaties.pdf)

52 Tax Agreement, (2002).

is composed from Article (14) that generally describes various types of taxes and workers that need to be paid in one or another country. However, in trying to find the last agreement, which is a modification of the Convention from 2002, it has been identified that it contained no information about the treatment of salaries of cross border workers. No special arrangement regarding to taxation of cross border workers in the relation Belgium-Luxembourg. Fiscal law experts advised that in this case the Art. 15 OECD Model Tax Convention<sup>53</sup> needs to be applied. The policy rules on taxation on the exact tax rates and band, allowances and deductions and other tax specifications were taken directly from the national tax regimes and additional discussions were carried out with tax authorities on cross-border work rules.

No rules at the EU level regarding the definition of cross-border workers exist, the division of taxing rights between Member States or the tax rules to be applied.<sup>54</sup> The Recommendation of the European Commission 94/079/EC stipulated that cross-border workers/frontier workers should be taxed as non-resident workers. The main feature is that non-resident persons should benefit from the same tax-treatment as residents, if they obtain the major part of their total income in one Member State.<sup>55</sup> In such situations, the Member State of residence would be allowed to reduce the personal tax advantages correspondingly in order to avoid that personal allowances could be enjoyed twice.

### 5. THREE LAYERED POLICY FILTER

This filter is in place to order the place of policies involved in free movement for work, namely policies on which the welfare of mobile earners depends.

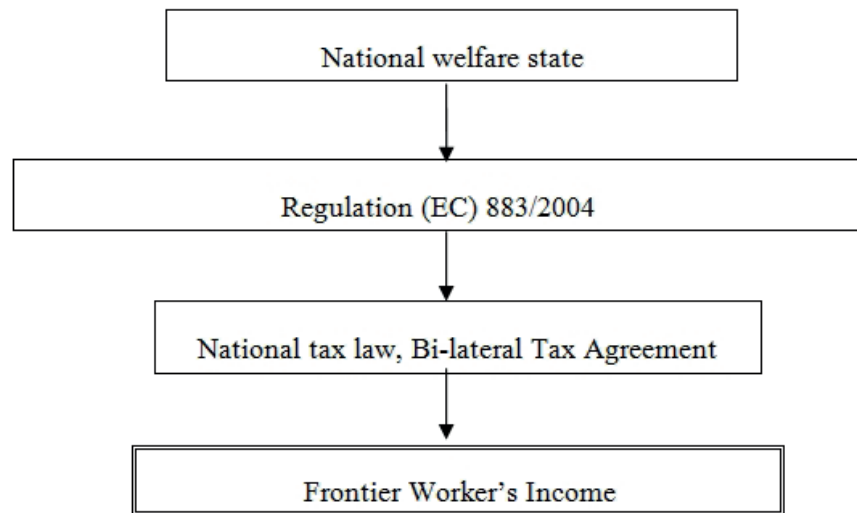
A filter is defined by the Oxford Dictionary as: "process or assess (items) in order to reject those that are unwanted". In this case, when evaluating the welfare of frontier workers, one needs to keep in mind that their income is defined or passed through three lenses that can be envisioned as a filter that takes out those components in which the policy actor is specialized.

Figure 2 attempts to graphically represent the stages through which the income of frontier workers and also of mobile earners is passing through. It relies heavily on Section 2.4 which concludes that EU law in social security coordination has supremacy over national law; yet national social security law determines in the first instance the conditions of social security benefits. Therefore, the first stage that defines the conditions on what, how and for how long the mobile earner will be granted a social benefit is secured by the national legislation. In the second instance, the amount granted by the national social security law in the country of residence and of employment is subject of EU law (Regulation (EC) 883/2004) that insures the accumulation of benefits (see 'principles of social security coordination'). Lastly, but not least, each country defines how the taxes of foreign workers are treated and based on tax agreement between each country involved, the frontier worker is taxed and is allocated allowances or credits, if available.

53 Model Tax Convention, Article 15 "Income from Employment", paragraph 1: "(...) salaries, wages and other similar remuneration derived by a resident of a Contracting State in respect of an employment shall be taxable only in that State unless the employment is exercised in the other Contracting State. If the employment is so exercised, such remuneration as is derived therefrom may be taxed in that other State". <http://www.oecd.org/tax/treaties/1914467.pdf>

54 Taxation and Custom Union: [http://ec.europa.eu/taxation\\_customs/taxation/personal\\_tax/crossborder\\_workers/index\\_en.htm](http://ec.europa.eu/taxation_customs/taxation/personal_tax/crossborder_workers/index_en.htm)

55 Taxation and Custom Union: [http://ec.europa.eu/taxation\\_customs/taxation/personal\\_tax/crossborder\\_workers/index\\_en.htm](http://ec.europa.eu/taxation_customs/taxation/personal_tax/crossborder_workers/index_en.htm)



**Figure 2.** Three-Layered Policy Filter in Free Movement for Work and Welfare

As we can observe from Figure 2, the European social model is rather dispersed when it comes to welfare representation of mobile earners. It shows that the market income is defined by national laws, but in order to further be taxed, it needs to convey to the rule of non-residents and apply only relevant legislation. The income is ‘subject’ to national tax law and along with granted benefits in the country of residence and employment is finally reaching the consumption basket of a frontier worker.

Figure 2 is in place to show the imperative role of the national legislation, despite the fact that the EU law has supremacy over it and the isolated role of tax policy, despite its crucial attribute in determining the income of mobile earners, as well as redistribution.

#### REFERENCES

- ARTS, W., & GELLISSSEN, J., (2002). Three worlds of welfare capitalism or more? A state-of-the-art report. *Journal of European Social Policy*, 12(2), pp. 137–158.
- ESPING-ANDERSEN, G., (1990). *The Three Worlds of Welfare Capitalism*. Princeton: Princeton University Press.
- AEBR, (2012). “Information services for cross-border workers in European border regions”, Association of European Border Regions: Gronau.
- BARNARD, C., (2012). *EU Employment Law*. Oxford European Union Law Library: Oxford (Fourth Edition).
- BARNARD, C., & PEERS, S., (Eds.) (2014). *European Union Law*. Oxford European Union Law Library: Oxford.
- BARR, N.A., (2012). ‘The Economics of the Welfare State’. Oxford University Press, Oxford.
- BURLACU, I., and O’DONOGHUE, C., (2013). “The Impact of Unemployment of Welfare of Mobile Workers in the European Union”, *Journal of Regions and Cohesion*, Vol. 3 (2): pp. 69-90(22).

BLANC, E., KELLER, F., SCHMID, M.T.S., (2010). “Rapport de mission: Mission confiée par Monsieur le Premier Ministre François Fillon à Etienne Blanc, député de l’Ain Fabienne Keller, sénatrice du Bas Rhin Mme Marie Thérèse Sanchez Schmid, députée européenne Parlementaires en mission auprès de M. Michel Mercier, Ministre de l’espace rural et de l’aménagement du territoire, M. Pierre Lellouche, Secrétaire d’Etat chargé des affaires européennes”, Mission Parlementaire sur la Politique Transfrontaliere.

BONIN, H. et al., (2008). ‘*Geographic Mobility in the European Union: Optimising its Social and Economic Benefits*’, European Commission DG Employment, Social Affairs and Equal Opportunities, Contract VT/2006/042.

BURGOON, KOSTER & EGMOND (2012). “Support for redistribution and the paradox of immigration”, *Journal of European Social Policy* 22 (3): 288-304.

CASTLES, S. (2009). *The Age of Migration*, UK: Palgrave Macmillan.

COUSINS M. (2005). *European Welfare States. Comparative Perspectives*. Sage publications.

CRAIG, P. and DE BURCA, G., (2011). *EU Law: Texts, Cases and Materials*. OUP Oxford: Oxford.

DECOVILLE, A., DURAND, F., SOHN, C., WALTHER, O., (2012). “Comparing cross-border metropolitan integration in Europe: Towards a functional typology”, *Journal of Borderlands Studies (accepted for publication)*.

DISTLER, K. and ESSERS, G., (2011), *Guide for European Workers*, European Trade Union Confederation (ETUC) with the financial support of the European Commission.

ENGELEN, E., (2003). ‘How to Combine Openness and Protection? Citizenship, Migration, and Welfare Regimes’, *Journal of Politics & Society* 31 (4): 503-536.

FERRERA, M., (1996). “The “Southern” Model of Welfare in Social Europe”, *Journal of European Social Policy* 6 (1): 17–37.

FLORA, P., (1986). *Growth to limits: The Western European Welfare States since World War II. Vol. 1 Sweden, Norway, Finland, Denmark. Vol. 2 Germany, United Kingdom, Ireland, Italy*, Berlin: Walter de Gruyter.

Essers, G. and Distler, K., (2011). “*Guide for Mobile European Workers*”, European Trade Union Confederation (ETUC), with the financial support of the European Commission.

GREVE, B., (2011). ‘Labour migration and labour market integration: causes and challenges’, in E. Carmel, A. Cerami and T. Papadopoulos (Eds.) *Migration and Welfare in the New Europe. Social Protection and the Challenges of Integration*, pp. 85-101, The Policy Press.

GUILD, E., CARRERA, S. & EISELE, K., (2013). *Social Benefits and Migration. A Contested Relationship and Policy Challenge in the EU*. Brussel: Centre for European Policy Studies.

HALL, P. (2008). Opportunities for democracy in cross-border regions? Lessons from the Øresund region. *Journal of the Regional Studies*, 42(3), 423–435.

HARTMANN-HIRSCH, C. and AMETEPE, S. F., (2011). *Luxembourg corporatist Scandinavian welfare system incorporation of migrants*, CEPS/INSTEAD Working Paper No. 29.

HUPE, P. and VAN DOOREN, W. (2010). “Talk as action: exploring discursive dimensions of welfare state reform”, *Zeitschrift für Public Policy, Recht und Management* 2 (S): 377-392.

KING, R., (2002). Towards a New Map of European Migration, *International Journal of Population Geography* (8). pp. 89-106.

KVIST J., (2004). ‘Does EU enlargement start a race to the bottom? Strategic interaction among EU member states in social policy’ *Journal of European Social Policy* 0958-9287; Vol 14(3): 301–318.

MATTHAI, INGRID, (2004). "Cross-border networking in the Saar-Lor-Lux Region? Risks and opportunities of regional economic policies" *International Journal of Technology Management*, 27 (5): 498 – 512.

MAU S., BURKHARDT C., (2009). 'Migration and welfare state solidarity in Western Europe', *Journal of European Social Policy*, Vol 19(3): 213–229.

MEL, VAN A. P. (2003). *Free movement of persons within the European Community: Cross-border access to public benefits*. Portland, OR: Oxford.

NERB, G., HITZELBERGER, F., WOIDICH, A., POMMER, S., HEMMER, S., AND HECZKO, P., (2009). Scientific report on the mobility of cross-border workers within the EU-27/EEA/EFTA countries, Munich: MKW Wirtschaftsforschung GmbH.

NICKLESS, J., (2002). *European Code of Social Security Short Guide*, Council of Europe Publishing: Strasbourg.

NICKLESS, J. and SIEDL H., (2004). *Coordination of social security in the Council of Europe: short guide*. Council of Europe Publishing: Strasbourg.

NOWRASTEH, A. and COLE, S., (2013). "Building a wall around the welfare state, instead of the country", *Policy Analysis 732*, Cato Institute.

PENNINGS, F. (2009). Introduction: Regulation 883/2004 - The third coordination in a row. *European Journal of Social Security*, 11, Nos. 1–2.

PENNINGS, F. (2011). *European Social Security Law*, Kluwer Law International.

PENNINGS, F. (2014). "Coordination of Social Security within the EU context (Chapter 6)", in Blanpain, R. (Ed.) "Social security and Migrant Workers", Kluwer Law International: Alphen aan de Rijn.

PERKMANN, M. (2003). Cross-Border Regions In Europe Significance And Drivers Of Regional Cross-Border Co-Operation, *Journal of European and Regional Studies* 10(2). pp. 153–171.

PIERRARD, O. (2008). 'Commuters, residents and job competition', *Journal of Regional Science and Urban Economics* (38), pp. 565-577.

PIETERS, D. and SCHOUKENS, P., (Eds.) (2009). "The Social Security Co-Ordination between the EU and Non-EU Countries", *Social Europe Series*, Volume 20, Intersentia: Antwerpen-Oxford.

PUGA, D., (2002). "European regional policies in light of recent location theories", *Journal of Economic Geography* (2): 373-406.

RAYMER, J., FORSTER, J. J., SMITH, P. W. F., BIJAK, J. and WISNIOWSKI, A., (2011). "Integrated modelling of European Migration: Background, specification and results", Paper prepared for IMEM Workshop, Chilworth, 25-27 May.

SAINSBURY, D., (2006). 'Immigrants' social rights in comparative perspective: welfare regimes, forms in immigration and immigration policy regimes', *Journal of European Social Policy*, Vol 16(3): 229–244.

SHAMIR, R., (2005). "Without Borders? Notes on Globalization as a Mobility Regime\*", *Sociological Theory* 23 (2): 197-217.

SHAW, J., (1998). "The interpretation of European Union citizenship", *61 Common Market Review Law (CMLRev)* 293.

SCHOKKAERT, E. & VAN PARIJS, P., (2003). 'Debate on Social Justice and Pension Reform : Social Justice and the Reform of Europe's Pension Systems', *Journal of European Social Policy* (08) 13:3.

SCHMITTER-HEISLER, B., (2008). The sociology of migration: From assimilation to segmented assimilation, from the American experience to the global arena. In C.B. Brettell & J. F. Hollifield (Eds.), *Migration theory: Talking across disciplines* (2nd ed., pp. 83–111). London: Routledge.

Simmel, G. (1971), 1971a. "The Stranger." Pp. 143–50 in Georg Simmel: *On Individuality and Social Forms*, D. N. Levine. Chicago, IL: University of Chicago Press.

SOHN C, REITEL B, WALTHER O. (2010), "Analyse comparée de l'intégration métropolitaine transfrontalière en Europe", *Territoire en Mouvement* 4: 62-75.

VANDENBRANDE, T. (Ed.), Coppin, L. and Hallen van der P., (2006) "Mobility in Europe", Office for Official Publications of the European Communities: Luxembourg.

VANDENBRANDE, T. et al., (2006). *Mobility in Europe, Analysis of the 2005 Eurobarometer Survey on Geographical and Labour Market Mobility*, European Foundation for the Improvement of Living and Working Conditions, Dublin.

VERSCHUEREN, H., (2012). "Changes in the EU social security coordination due to the case-law of the Court of Justice", *Pravnik*, 391-430.

VONK, G., (2012). *Cross-Border Welfare State: Immigration, social security & integration*. Social Europe: 29, Intersentia.

WALKER, R., (2005). *Social Security and Welfare: Concepts and Comparisons*, Open University Press: New York.

WALTHER O, DAUTEL V. (2010) "Intra-regional employment growth in Luxembourg (1994-2005)", *Geografiska Annaler: Series B, Human Geography* 92(1): 45-63.

WOOD, M. M. 1934. *The Stranger: A Study in Social Relationships*. New York: Columbia University Press. 1953. *Paths of Loneliness*. New York: Columbia University Press.

## LEGAL REFERENCES

### *International legislation*

Convention of Social Security for Frontier Workers, International Labour Organization, No 157, 1951

European Interim Agreement on Social Security Schemes Relating to Old Age, Council of Europe, No 11.XII, 1953

Convention on Equality of Treatment of Nationals and Non-Nationals in Social Security, International Labour Organization, C-118, No. 118, 1962

International Convention on the Protection of the Rights of All Migrant Workers and Members of Their Families, United Nations, No 39481, 1990

Model Tax Convention, Organization for Economic Development and Co-operation, 1992

Model Provisions for Bilateral Social Security Agreement, Council of Europe, SS-AC (98) 6, 1994

Convention on Social Security, Council of Europe, No. 078, 1995



### *European legislation*

- The Treaty Establishing the European Coal and Steel Community Paris 1951
- The Treaty Establishing the European Community Rome 1957
- Treaty on European Union (TEU) Maastricht, Official Journal of European Communities, No C-191/1, 29.7.92, 1992
- Treaty of Amsterdam Official Journal of European Communities, No. C-340, 29.7.92, 1997
- Treaty of Nice, Official Journal of European Communities, No C-080, P 0001 – 087, 2003
- Treaty of Lisbon Official Journal of European Union, No. C 306/01, 2009
- Regulation (EEC) No. 3/1958 of the Council 16 December [1958] Official Journal 30
- Regulation (EEC) No. 15/1961 of the Council 12 June [1961] Official Journal 1073
- Regulation (EEC) No. 1612/68 of the Council 15 October 1968 on freedom of movement for workers within the Community [1968] Official Journal 257/2
- Regulation (EEC) No. 1408/71 of the Council on the application of social security schemes to employed persons, to self-employed persons and to members of their families moving within the Community (Social Security Regulation) [1971] Official Journal L 149/2
- Regulation (EC) No. 883/2004 of the European Parliament and of the Council of 29 April 2004 on the coordination of social security systems [2004] Official Journal of the European Union L 166
- Council Regulation (EU) No. 987/2009 the European Parliament and of the Council of 16 September 2009 laying down the procedure for implementing Regulation (EC) No. 883/2004 on the coordination of social security systems [2009] Official Journal of the European Union L 284/1
- Council Regulation (EU) No. 492/2011 the European Parliament and of the Council of 5 April 2011 on freedom of movement for workers within the Union [2011] Official Journal of the European Union L 141/1
- Directive 68/360/EEC of 15 October 1968 on the abolition of restrictions on movement and residence within the Community for workers of Member States and their families [1968] Official Journal of the European Union 257/13
- Directive 2004/38/EC of the European Parliament and of the Council of 29 April 2004 on the right of citizens of the Union and their family members to move and reside freely within the territory of the Member State amending Regulation (EEC) No. 1612/68 and repealing Directives 64/221/EEC, 68/360/EEC, 72/194/EEC, 75/34/EEC, 90/364/EEC, 90/365/EEC, and 93/96/EEC [2004] Official Journal of the European Union L 158
- Directive 2014/54/EU of the European Parliament and of the Council of 16 April 2014 on measures facilitating the exercise of rights conferred on workers in the context of freedom of movement for workers [2014] Official Journal of the European Union L 128/8

### *Bi-lateral Agreements*

- Tax Agreement between Luxembourg and Belgium of 11 December No. 6072, 2002
- Commission Recommendation of 21 December 1993 94/079/EC on the taxation of certain items of income received by non-residents in a Member State other than that in which they are resident

### **List of Cases**

- Costa v E.N.E.L* [1964] C – 6-64
- Sala v Freistaat Bayern* [1998] C-85/96
- Gilly v Directeur des services fiscaux du Bas-Rhin* [1998] Case C-336/96
- Grzelczyk v Centre public d'aide sociale d'Ottignies-Louvain-la-Neuve* [2001] C-184/99
- D'Hoop v Office national de l'emploi* [2002] Case C-224/98
- Bidar v UK* [2004] Case C-209/03
- Office national de l'emploi v Ioannis Ioannidis* [2005] Case C-258/04
- Gertraud Hartmann v Freistaat Bayern* [2007] C-212/05
- R.H.H. Renneberg v Staatssecretaris van Financiën* [2008] Case C-527/06

### **Electronic references**

- DG Employment, Social Affairs and Inclusion, EU Social Security Coordination web-page <http://ec.europa.eu/social/main.jsp?langId=en&catId=850>
- Eurofound (2009) "Mobility of workers"  
<http://www.eurofound.europa.eu/areas/industrialrelations/dictionary/definitions/mobilityofworkers.htm>
- Fond National de Solidarite, (2014): <http://www.fns.lu/>
- International Labour Standards, NORMLEX  
<http://www.ilo.org/ilolex/english/subjectE.htm#s13>
- Maintenance of Social Security Rights Recommendation: [http://www.ilo.org/dyn/normlex/en/f?p=normlexpub:12100:0::no::p12100\\_instrument\\_id:312505](http://www.ilo.org/dyn/normlex/en/f?p=normlexpub:12100:0::no::p12100_instrument_id:312505)
- McIntery M., Model Tax Treaties: A comparison of UN and OECD Tax Models [http://faculty.law.wayne.edu/tad/Documents/Teaching\\_Materials/model\\_treaties.pdf](http://faculty.law.wayne.edu/tad/Documents/Teaching_Materials/model_treaties.pdf)
- Nickless, J., (2002), European Code of Social Security Short Guide , Council of Europe Publishing: Strasbourg. [http://www.coe.int/t/dg3/socialpolicies/source/socialsecurity/shortguide\\_en.pdf](http://www.coe.int/t/dg3/socialpolicies/source/socialsecurity/shortguide_en.pdf)
- Official Statistics of Grand Duchy of Luxembourg, (2012): [http://www.statistiques.public.lu/stat/TableView/tableView.aspx?ReportId=487&IF\\_Language=eng&MainTheme=2&FldrName=3&RFPath=92](http://www.statistiques.public.lu/stat/TableView/tableView.aspx?ReportId=487&IF_Language=eng&MainTheme=2&FldrName=3&RFPath=92)
- Taxation and Custom Union: [http://ec.europa.eu/taxation\\_customs/taxation/personal\\_tax/crossborder\\_workers/index\\_en.htm](http://ec.europa.eu/taxation_customs/taxation/personal_tax/crossborder_workers/index_en.htm)
- Training and Reporting on European Social Security: <http://www.tress-network.org/>
- International Labour Organization: <http://www.ilo.org/global/about-the-ilo/mission-and-objectives/lang--en/index.htm>
- International Social Security Association: <http://www.issa.int/>
- International Organization for Migration: <https://www.iom.int/cms/en/sites/iom/home/about-iom-1/mission.html>
- International Organization for Migration, World Migration Report:  
[http://publications.iom.int/bookstore/index.php?main\\_page=index&cPath=37](http://publications.iom.int/bookstore/index.php?main_page=index&cPath=37)

Organization for Economic Co-operation and Development: <http://www.oecd.org/migration/>

DG Employment, Social Affairs and Inclusion: <http://ec.europa.eu/social/home.jsp?langId=en>

DG Justice: [http://ec.europa.eu/justice/index\\_en.htm](http://ec.europa.eu/justice/index_en.htm)

DG Employment, Social Affairs and Inclusion, Network of Experts: <http://ec.europa.eu/social/main.jsp?catId=475&langId=en&furtherPubs=yes>

DG Employment, Social Affairs and Inclusion, EU Social Security Coordination: <http://ec.europa.eu/social/main.jsp?langId=en&catId=849>

1. DG Employment, Social Affairs and Inclusion, EU citizenship and Free Movement: [http://ec.europa.eu/justice/citizen/index\\_en.htm](http://ec.europa.eu/justice/citizen/index_en.htm)

2. Tranfrontier Operational Mission: <http://www.espaces-transfrontaliers.org/en/>

3. Center for Migration Law, University of Nijmegen: <http://www.ru.nl/law/cmr/projects/fmow-1/>

4. Maastricht Centre for Citizenship, Migration and Development: <https://macimide.maastrichtuniversity.nl/>

5. Institute for Cross-border Cooperation: <http://www.euroinstitut.org/wFranzoesisch/1-Qui-sommes-nous/in-english.php>

6. Transfrontier Euro-Institut Network: <http://www.transfrontier.eu/>

7. Euregio: <http://www.euregio.eu/nl/over-euregio/geschiedenis>

8. BeNeLux <http://www.benelux.int/nl/>

9. Euregio Meuse-Rhine: <http://www.euregio-mr.com/de>

10. UN Convention on Migrant Workers, but we do not deal with as it was not ratified.

[http://www.coe.int/t/dg3/socialpolicies/source/socialsecurity/shortguide\\_en.pdf](http://www.coe.int/t/dg3/socialpolicies/source/socialsecurity/shortguide_en.pdf)

The Convention focused on the living standards of those who had survived the destruction and turmoil of the II-nd World War: <http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:31968R1612&from=EN>

“Colloque Belgo – Luxembourgeois: La libre circulation des travailleurs et des citoyens”, by Catholic University of Leuven, the University of Luxembourg and the Network of Experts on Free Movement of Workers, the University of Nijmegen. More information: <https://www.uclouvain.be/460552.html>

UEBL: <http://www.mae.lu/fr/Site-MAE/Politique-etrangere-et-europeenne/Organisations-Economiques-Regionales/L-Union-economique-belgo-luxembourgeoise/L-U.E.B.L.-de-1921-a-2002>

## ANNEXES

**Table 3.** Migration and Social Security: Legal Instruments used by Council of Europe, International Labour Organization and EU institutions

Name of the organization/institutions	Name of the Instrument	Main role of the instrument	Year
International Labour Organization <sup>1</sup> (ILO) was founded			1919
International Labour Organization <sup>2</sup> Section: “With Interim Status”	Equality of Treatment (Accident Compensation) Convention, and Recommendation	Accident Compensation.	1925
International Labour Organization Section: “Outdated Instruments”	Maintenance of Migrants’ Pension Rights Convention	Refers to the establishment of an International Scheme for the Maintenance of Rights under Invalidity, Old-Age and Widows’ and Orphans’ Insurance.	1935
Council of Europe <sup>3</sup> (CoE) as the first pan-European organization was founded			1949
Treaty of Paris - European Coal and Steel Community			1951
Council of Europe	European Interim Agreement on Social Security Schemes Relating to Old Age, Invalidity and Survivors - ETS 012	Covers old-age, invalidity and survivor’s benefits It provides for nationals of any one of the Parties to be entitled to receive the benefit of the laws and regulations of any other Party, under the same conditions as if person were a national of the latter, providing that certain conditions of residence are fulfilled.	1953
Council of Europe	European Interim Agreement on Social Security other than Schemes for Old Age, Invalidity and Survivors - ETS 013	Covers sickness, maternity, unemployment, employment injury benefit, death grants and family allowance	

1 <http://www.ilo.org/ilolex/english/subjectE.htm#s13>.

2 <http://www.ilo.org/ilolex/english/subjectE.htm#s13>.

3 <http://www.ilo.org/ilolex/english/subjectE.htm#s13>.

Treaties of Rome in which established the European Economic Community (EEC)			1957
European Economic Community	Regulation (EEC) No. 3/1958 of the Council 16 December [1958] Official Journal 30	Regulations on social security for migrant workers.	1958
European Economic Community	Regulation (EEC) No. 15/1961 of the Council 12 June [1961] Official Journal 1073	Regulation that allowed migrant workers to take a job in another Member State, if, after three weeks, no nationals was available to take the job.	1961
International Labour Organization On "Social Security of migrant workers" Section: "Up-to-Date instruments"	Equality of Treatment (Social Security) Convention	Refers to the Equality of Treatment of Nationals and Non-Nationals in Social Security.	1962

**Table 4.** Migration and Social Security: Legal Instruments used by Council of Europe, International Labour Organization and EU institutions (cont.)

Name of the organization/ institutions	Name of the Instrument	Main role of the instrument	Year
Council of Europe	European Code of Social Security <sup>4</sup>	Social security was highlighted as one of the means by which to ensure an adequate standard of living for the people of Europe. The Code and Protocol recognize the desirability of harmonizing the social security systems and of establishing minimum requirements that states must satisfy. The aim is to guarantee at least a certain minimum level of social protection. If states wish to provide more than the minimum they are free to do so.	1964
European Economic Community	Regulation (EEC) No. 1612/68 of the Council 15 October 1968 on freedom of movement for workers within the Community [1968] Official Journal 257/2	Freedom of movement for workers within the Community states that 'mobility of labour within the Community must be one of the means by which the worker is guaranteed the possibility of improving his living and working conditions and promoting his social advancement'. <sup>5</sup>	1968

<sup>4</sup> [http://www.coe.int/t/dg3/socialpolicies/source/socialsecurity/shortguide\\_en.pdf](http://www.coe.int/t/dg3/socialpolicies/source/socialsecurity/shortguide_en.pdf).

<sup>5</sup> <http://www.eurofound.europa.eu/areas/industrialrelations/dictionary/definitions/mobilityofworkers.htm>.

European Economic Community	Directive 68/360/EEC of 15 October 1968 on the abolition of restrictions on movement and residence within the Community for workers of Member States and their families [1968] Official Journal of the European Union 257/13	Fixed the provisions governing freedom of movement for workers within the Community.	1968
European Economic Community	Regulation (EEC) No. 1408/71 of the Council on the application of social security schemes to employed persons, to self-employed persons and to members of their families moving within the Community (Social Security Regulation) [1971] Official Journal L 149/2	This guarantees employed workers, self-employed workers and students the same entitlements to social security provision as nationals of the host Member State. However, only provisions under statutory social protection schemes are guaranteed. These include legislation relating to sickness and maternity benefits, invalidity benefits, old age benefits, survivor's benefits, family benefits and death grants. In general, the worker is subject to the legislation of only one Member State.	1971
European Community	European Convention on Social Security, and Supplementary Agreement of the Convention	a) Equality of treatment; b) determination of applicable legislation; c) maintenance of acquired rights; d) export of benefits.	1972
International Labour Organization	Maintenance of Social Security Rights Recommendation	Recommendation concerning the Establishment of an International System for the Maintenance of Rights in Social Security. <sup>6</sup>	1983

<sup>6</sup> [http://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0:NO::P12100\\_INSTRUMENT\\_ID:312505](http://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0:NO::P12100_INSTRUMENT_ID:312505)

**Table 5.** Migration and Social Security: Legal Instruments used by Council of Europe, International Labour Organization and EU institutions (cont.)

Name of the organization/institutions	Name of the Instrument	Main role of the instrument	Year
Treaty of Maastricht– foundation of the European Union and its pillars (Treaty on European Union (TEU) Maastricht, Official Journal of European Communities, No C-191/1, 29.7.92, 1992)			1993
Council of Europe	Model of Provisions of Bilateral Social Security Agreements	European Social Security Committee prepared a model of bilateral agreement that formed a basis of agreements between signed between Council's of Europe member states. The aim was to create a link between social security systems and the rights of migrants (Niekless & Siedl, 2004).	1994
Treaty of Amsterdam (Official Journal of European Communities, No. C-340, 29.7.92, 1997)			1997
Treaty of Nice – establishment of Open Method of Coordination (OMC) (Treaty of Nice, Official Journal of European Communities, No C-080, P 0001 – 087, 2003)			2003
European Parliament, European Commission	Regulation (EC) No. 883/2004 of the European Parliament and of the Council of 29 April 2004 on the coordination of social security systems [2004] Official Journal of the European Union L 166	New legislative package, on „Modernized coordination”	2004
European Parliament, European Commission	Directive 2004/38/EC of the European Parliament and of the Council of 29 April 2004 on the right of citizens of the Union and their family members to move and reside freely within the territory of the Member State amending Regulation (EEC) No. 1612/68 and repealing Directives 64/221/EEC, 68/360/EEC, 72/194/EEC, 75/34/EEC, 90/364/EEC, 90/365/EEC, and 93/96/EEC [2004] Official Journal of the European Union L 158	Presents the conditions governing the exercise of the right of free movement and residence within the territory of the Member States by Union citizens and their family members, the right of permanent residence in the territory of the Member States for Union citizens and their family members, and the limits that can be placed on these rights. <sup>7</sup>	2004

Treaty of Lisbon (Official Journal of European Union, No. C 306/01, 2009)			2009
European Parliament, European Commission	Council Regulation (EU) No. 987/2009 the European Parliament and of the Council of 16 September 2009 laying down the procedure for implementing	Contains the implementation procedures which should ensure that benefits are granted quickly and efficiently, despite the wide range of national social security systems.	2009
European Parliament, European Commission	Council Regulation (EU) No. 492/2011 the European Parliament and of the Council of 5 April 2011 on freedom of movement for workers within the Union [2011] Official Journal of the European Union L 141/1	Contains the abolition of any discrimination based on nationality between workers of the Member States as regards employment, remuneration and other conditions of work and employment, as well as the right of such workers to move freely within the Union in order to pursue activities as employed persons subject to any limitations justified on grounds of public policy, public security or public health.	2011
European Parliament, European Commission	Directive 2014/54/EU of the European Parliament and of the Council of 16 April 2014, Official Journal of the European Union L 128/8	Contains measures facilitating the exercise of rights conferred on workers in the context of freedom of movement for workers.	2014

**Table 6.** Main Components of Social Security Agreement between Luxembourg and Belgium, (1995)

Benefit	Entitlement conditions	Amount
Sickness and maternity:	Luxembourg establishes each calendar year the percentage that the total benefits in kind provided in Luxembourg to all insured persons and members of their families residing on its territory in relation to annual expenditure, and this percentage may be adjusted according to statutory amendments to intervene; This percentage is applied to health care expenditures made during the following year by the frontier worker and his family members on Belgian territory; if the amount resulting from the transaction exceeds the amount of benefits paid by the Belgian institution Luxembourg allocates an additional amount equal to the difference between these two amounts.	Not provided

<sup>7</sup> European Migration Network: [http://emn.ie/cat\\_search\\_detail.jsp?clog=4&itemID=213&item\\_name=](http://emn.ie/cat_search_detail.jsp?clog=4&itemID=213&item_name=)



### **CROSS-BORDER COOPERATION OF UKRAINE: PROBLEMS AND PERSPECTIVES<sup>1</sup>**

At the present stage the development of socio-economic systems across all the states is impossible without territorial features, namely the functioning of regional subsystems, trends of regions and border areas development. At this level the issues of expanded reproduction are solved, the projects of socio-economic development and social needs of the population are realized, and the rate of the economy development (GDP) is the criterion for determining the level of economic development of the country as a whole. Thus, the attention paid by the researchers to the problems of developing border areas and cross-border cooperation are relevant and timely for both Russian and foreign researchers.

Many publications, essays, monographs associated with the prospects of cross-border cooperation in Ukraine and other countries do not make the problem less urgent, and most of the unsolved issues related to the functioning of integration associations, clusters, give scope for further research, which is not contradict the author's vision outlined in this article.

In the context of globalization cross-border cooperation is seen as the major direction of the integration strategy of the state and its regions, providing for the introduction of specific regulatory instruments of socio-economic processes and ensure their stability, a favorable investment climate, the formation and development of business environment in the region; as a tool for effective public administration. For example, in Ukraine, in Kharkov region (cross-border cooperation is implemented largely through the activities of the Euroregion „Slobozhanshchina”) the links with more than 50 regions around the world have been formed, as evidenced by the inter-regional coherence and protocols on cooperation. There are 221 enterprises in the region with foreign investments, preparing for the implementation of other cross-border projects. The program of cross-border cooperation of Kharkov region for 2011-2016 is a positive example. Which can be another proof of increasing the activity of management at the regional level in relation to the development of business environment?

Cross-border cooperation as a form of interstate integration through the intensified relations of border regions promotes the free movement of goods, services, capital and people. Such cooperation is particularly prevalent in Europe as European regions - cross-border regions, covering the border areas of neighboring states, which differ as a certain economic, socio-cultural, ethnic unity.

Euroregions are formed within the adjacent units of the administrative -territorial division of two or more countries through the implementation of common programs and agreements signed at the local authorities level. Today it is one of the most common forms of cross-border cooperation in the EU. First Euroregion was founded fifty years ago , in 1958, on the German-Dutch border in the center of the German city of Gronau (Eurogio-Gronau). At this time in Europe, there are over 150 regional transborder formations. The European Regional Development Fund (EFRR), which funds the programs to support European regions has been established.

<sup>1</sup> Professor, the Head of the Public Administration and Regional Economy Department S. Kuznets Kharkiv National University of Economics, Ukraine.

Invalidity:	disability benefits under Belgian law, the period during which the frontier worker referred to in Article 2 - . a) must have received the cash payment of health insurance prior to the liquidation of disability in all cases is that in which he received under Luxembourg law that incapacity for work resulting in the disability compensation or monetary illness, instead of those above, the retention of his salary. Expenses incurred, in the early award of disability compensation during the Belgian primary disability working under the Belgian law shall be borne by pension insurance institutions in Luxembourg.	Not provided
Supply of birth:	Frontier workers entitled to benefits of birth under the law of the Contracting Party where he resides irrespective of the territory of both Contracting Parties in which children are born. When the place of residence is in Belgium, the benefit of family allowances scheme Luxembourg shall, for purposes of the foregoing, the equal benefit of family allowances scheme in Belgium. 3. The birth allowances payable under the foregoing provisions shall be paid in Luxembourg by the National Fund of family benefits in Belgium, as appropriate, by the national child benefit for employees or the National Insurance Institute Social Self-employed.	Not provided

**Table 7.** Cases of tax miss-arrangements of mobile workers

<p>Cecile, 38: “In 2006, employed by a British NGO, working with the UK-based team, but based in France. British tax wrote an official letter that I could not pay income taxes in the UK, but in France. French tax (authorities) said I should pay in the UK”. (France – UK) Source: Collected by the author.</p> <p>Ronald, 67: “50% fte. in a UK university; 20% fte. in a Dutch university; How to harmonise social security? Dutch professors are civil servants, UK are not. UK professors do not. UK citizens do not pay social security if they are aged 55 and older. Dutch citizens/ academics seem to continue to pay”. (UK – Netherlands) Source: Collected by the author.</p> <p>“Cross-border commuters are taxed on both sides of the border and have to complete two tax return (Ireland-Northern Ireland)” Source: Nerb et al., (2009).</p> <p>“Too little information about that topic, tax officials are unfriendly (Poland – Slovakia)”, “The legal framework is still not well known by the workers and employers (Slovenia – Italy)” Source: Nerb et al., (2009).</p> <p>“The region in which cross-border workers have to pay taxes only in their home country extends just 10 km on both sides of the border – a ridiculously outdated small strip. This leads to high taxation and hinders cross-border mobility (Spain – France)” Source: Nerb et al., (2009).</p>
---

In Ukraine 10 European regions (“Sloboda”, “Donbass”, “Bug”, “Upper Prut”, “Carpathian Euroregion”, “Lower Danube”, etc.) have been formed, most of which are based on the collaboration and cooperation with neighboring EU countries and only 2 of them (“Slobozhanshchina” and “Donbass”) are formed on the basis of parity between Ukraine and Russia.

In order to make the cross-border cooperation within the space: Ukraine-different countries it is necessary to recognize the existence of a number of contradictions and that the factors affecting the international contemporary processes of regional integration in Ukraine can be divided into two groups. The first part includes: conflicts between countries, ideological differences, nationalism. The second group of factors is based on the existence of political, legal, economic, social and cultural differences between countries.

Public policy priorities to address these contradictions are the following:

Political and legal: strengthening of the single right space simultaneously with the close border regions, with appropriate legal framework for transborder cooperation.

Economic: strengthening of national economic space, while ensuring labor mobility, financial and synthesized capital, development of the tax and revenue base of local budgets and the introduction of new approaches to the formation of local budgets, which directly affects the development of business environment in a region; public oversight of cross-border cooperation.

Social: social development of national standards, the development of regional standards that meet the standards of quality of life, accepted in the world.

Managerial: the accumulation of synthesized (human, intellectual and social) capital of a region, followed by its distribution and redistribution; intensification of business environment development in a region.

Isolation of the above problems requires a special approach to the development of cross-border space and Euroregional development management. As managerial innovations we propose to consider the Euroregion as a small model of integration and functioning of a region should be described by projects (talking about euro- project management). In general sense model is a copy or equivalent of the studied process, object, phenomenon, showing the essential properties of an object being modeled in terms of research objectives. In a small space (size of euroregions always inferior to the size of the countries) the projects can be simulated, the consequences of their implementation and the effects of the implementation of economic, social, environmental, political, image, cultural, etc can be predicted. In case of a successful project modeling extension movement will strengthen the Euroregion. Otherwise, the built models will be unsuitable for border territories and regional development, as well as negate the integration and globalization processes. Thus, the development and implementation of projects under the small integration model will be efficient and effective both in the case of success, and in case of failure of the project, which will not have enough time to reach the national level. Analysis of the Euroregion „Slobozhanshchina” activities and its projects has led us to the statement of the following facts.

“Slobozhanshchina” Technopark is one of the most famous projects, the development of which is carried out on the border space including Kharkov other regions. The main spheres of its activity are eight directions. In the aviation and machine tool industry the main partner on the Kharkov factory hand will be “FED”. Active cooperation in the field of information and communication technologies will begin with the creation of Data Center in Kharkov. Experts in the field of biotechnology and medicine will deal with the cultivation and use of stem cells. Instrumentation Branch, as the most advanced in Kharkov, allows considering the production of tablet PCs and e-books. Work towards agribusiness will implement the project “Village of Future”. In addition, the work will be active in the field of nanotechnology, nuclear energy technology and health care, energy conservation and new energy technologies [1]. To expand the region cooperation in the field of innovation the innovative platform “Biotehnopolis” in the international financial center of Kharkiv-Belgorod are created [2].

The process of implementation of these projects is rather complicated, which attracts special attention to the formation of cross-border clusters. Cluster approach, along with the project approach is one of the most effective means for effective public administration. In the conventional interpretation cluster can be defined as a group of independent companies and associated institutions that: cooperate and compete,

geographically concentrated in one or in neighboring regions (cluster may cover several countries) - national, regional, cross-border; specialize in a particular field of activity, linked by special techniques and skills; traditional or innovative; institutionalized (there are clusters management units) or non-institutionalized ones.

In light of the foregoing, we summarize that the effective cross-border cooperation and the formation of good-neighborly relations will be the subject to review by the Euroregion as a small integration model, which develops and implements multidirectional projects. Implementation of projects is based on the cross-border clusters, the development of which will provide the expected economic, social, environmental and other effects.

If you go back to the Euroregion „Slobozhanshchina”, the analysis of its development has demonstrated the urgent need to address a number of problems.

The first problem is the intensification of cross-border scientific, industrial cooperation and trade by removing unnecessary border and customs barriers.

The second objective is the improvement of transport and logistics infrastructure for the effective use by the Euroregion its transit position. It assumes a reduction in cross-border congestion highway by creating a bypass transport routes, construction logistics terminals, etc.

The third task is to develop a coherent environmental policy. This work has already begun implementing of projects “Seversky Donets Basin Rehabilitation” and River Lopan Basin Rehabilitation”.

The fourth challenge is overcoming social asymmetry of borderland, that is primarily reflected on the labor market.

The fifth challenge is the creation of a regional market of information system of Euroregion „Slobozhanshchina” in order to attract investments in projects through the use of marketing tools to increase popularity and improve the image of its territory, the orientation of regional policy on the real needs of markets and their availability for Euroregion.

Common problems associated with regional integration processes that activate the business environment in the region can contribute to the following:

- a common concept of regional policy of cross-border cooperation, which provides effective legal, institutional and financial instruments and establishes local government and decentralization of public administration is necessary for integrated regional development needs;
- coordination between state authorities and local governments aimed at the implementation of the integration processes of cross-border cooperation as an instrument of territorial development and improving the quality of life;
- Enhanced cooperation with European structures on regional development and implementation of joint planning of border territories in the development of business environment of a region;
- creation of a network of regional development agencies, that ensures the coordination of problem solving of border areas;
- development of co-financing mechanism and financial support for cross-border projects through the budgetary and extra-budgetary funds;
- shift from a sectoral approach to the expansion of legal and financial constraints actions of regional authorities and local self-government in the management of border areas that will positively affect the development of business environment in the region.

Thus, with respect to cross-border cooperation it should be noted that it requires the improvements in political, legal, economic, social and cultural spheres, and the processes of formation and development of business environment in the region provide a qualitative change in management in order to enhance good-neighborly relations by establishing a mechanism for regional cross-border cooperation, combining national and regional institutions, regional markets, businesses, investors and stakeholders (the public).

1. AMOSOV, O. YU., GAVKALOVA, N. L., Transkordonne spivrobitnytstvo. Naukova dopovid' / Mistseve samovyaduvannya v Ukraini: suchasny stan ta osnovni napryamy modernizatsiyi : nauk. dop. / [redkol. : Yu. V. Kovbasyuk, K. O. Vashchenko, V. V. Tolkovanov ta in. ] ; za zah. red. d-ra nauk z derzh., upr., prof. Yu. V. Kovbasyuka. – K. : NADU, 2014. – S. 60 – 632.
2. GAVKALOVA, N. L., Transgranichnoe sotrudnichestvo mezhdU Ukrainoj i Rossiej: problemy i perspektivy / Evroazijskaja jekonomicheskaja integracija. Nauchno-analiticheskij zhurnal. – №4 (21) nojabr' 2013. – S. 114 – 121.

**MAREK CIERPIAL-WOLAN**

*Statistical Office in Rzeszów, University of Rzeszów  
(Poland)*

## **BORDER TRAFFIC AND MOVEMENT OF GOODS AND SERVICES - METHODOLOGY AND RESULTS**

### **1. INTRODUCTION**

Information on expenses incurred by foreigners in a visited country and by citizens of a given country abroad are the point of interest of banks and statistical central institutions as well as governing bodies, not only in Europe, but also around the world. These data are an important, supplementary source of information for the balance of payments and national accounts. They are also used in defining principles for regional policy and in analytical studies. Data on border traffic which are used to estimate these expenses are provided by administrative sources or collected during counting passing vehicles (by pollster or measuring devices). For this purpose also information on interbank or credit card settlements, as well as findings of questionnaire surveys (carried out at borders, places of stay during a trip, household surveys) are used. In many countries, the system for gathering data is based on sample surveys (of which including these carried out at border crossings), that is on gathering data directly from respondents. Organization and methodology of border surveys, which are conducted in countries with “open” state borders (with no border control), differ from the ones which are used for surveys conducted at the borders with compulsory control. Since the accession of Poland into Schengen zone at the end of 2007, there have been both “open” borders, which are the European Union’s internal borders, and borders where individual and vehicle traffic is controlled by respective services.

Until 1989 departures of the Poles abroad and arrivals of foreigners at our country were strictly controlled by the state, and they were on a small scale. Due to political transformation passport and visa policy has changed, what triggered off increase in individual and vehicle traffic volume at Polish borders. This caused a demand for information on border traffic phenomena to arise.

### **2. METHODOLOGY**

In request for information demands, Polish official statistics launched questionnaire surveys at the borders in the first half of the nineties. Preceded by preparatory works in 1993, foreigners’ expenses survey in Poland was carried out in the years 1994-2002. The questionnaire survey was carried out at north-eastern, eastern and western land borders, whereas maritime border was surveyed in 1998 for the first time. In the first year of the survey, only citizens of the countries adjacent to Poland who were leaving were included in the survey, and, starting from the second year of the survey, all foreigners leaving Poland were covered by the survey. In 1997, the survey was extended to cover Polish citizens returning from abroad (within the

same scope as foreigners) which enabled export and import unregistered in the SAD customs declarations (Single Administrative Document) to be compared<sup>1</sup>.

In 2000, a pre-pilot border survey on travellers' expenses (the Poles returning from abroad and foreigners leaving Poland) and border trade was conducted by Central Statistical Office as part of the cooperation with Eurostat<sup>2</sup>. In the course of preparatory works which preceded the survey, Poland was accepted as the only country out of eight examined PHARE countries where a substantive border trade was observed and Statistical Office had experience of carrying out surveys at the border. The pre-pilot survey was conducted in two stage manner with the aim of establishing the best method of collecting data, improving the design of the questionnaire, examining procedures in the field and possibilities of gaining information on border trade. The results of the survey were summed up by the EU experts, CSO representatives and customs services. Among other things, it was established that the objectives of the border survey in Poland and the survey on travellers' expenses and border trade conducted by EUROSTAT overlap to some extent and the works could have been continued<sup>3</sup>.

The purpose of the survey of goods and services turnover in border traffic is to collect information from foreigners leaving Poland and Poles returning to the country on the amount of expenses incurred on the purchase of goods and paying for services along with specifying the structure of incurred expenses, connected with the stay in Poland and abroad respectively. The survey covers turnover that is not registered in SAD customs declarations at the controlled land border crossings.

Additionally, the survey is supposed to provide information on the distance from the place of residence and the place of purchase to the border, how often the border is being crossed, purpose and duration of a stay, country of residence (in the case of foreigners) and country of stay (in the case of Poles). In the case of foreigners, the survey is also aimed at gathering information on possessing the Card of the Pole<sup>4</sup>.

The results of the survey is also be used to shape regional policy. Collected information serves, among other things, governing bodies and self-government authorities in border regions to define the principles of the development strategy.

The findings is useful in estimating import and export volume which is not registered in the clearance documents, they are also a supplement to statistical information on turnover in official foreign trade at the border sections which are surveyed.

The survey covers persons who cross the European Union's external border in Poland, that is foreigners (who permanently reside abroad) leaving Poland and the Poles (who permanently reside in Poland) returning to the country.

---

1 The SAD document is used within the EXTRASTAT system to register turnover with third countries which are not member countries of the European Union. It was originally introduced as an obligatory document in EEC countries and since 1 January 1992 is also required in Poland. Since 1 May 2004 Polish units which participate in turnover of goods with the EU countries are not required to submit the SAD document. The turnover between the EU countries is registered on the basis of the INTRASTAT declaration. The INTRASTAT system in Poland has been operating since 1 May 2004, and in the European Union since 1993.

2 For the need of this survey, the border trade was defined as non-formal transport of goods through national borders in order to resell them at a profit on the difference in prices in different countries. Source: Expenses of travellers and border trade. The final report from pre-pilot survey, EUROSTAT 2001

3 Expenses of travellers and border trade - Pre-pilot survey. Report from the third mission. 19-21 February 2001, EUROSTAT 2001.

4 Concern citizens of countries listed in the Law on the Card of the Pole of 7 September 2007, Journal of Laws of 28 September 2007, no 180, item 1280, with later amendments, i.e. Republic of Armenia, Republic of Azerbaijan, Republic of Belarus, Republic of Estonia, Georgia, Republic of Kazakhstan, Kyrgyz Republic, Republic of Lithuania, Republic of Latvia, Republic of Moldova, Russian Federation, Republic of Tajikistan, Turkmenistan, Ukraine or Republic of Uzbekistan.

The survey covers persons who cross the border overland: by cars, coaches, motorbikes, on foot and by train. Persons who cross the border on foot also include cyclists and disabled persons using wheelchairs.

Persons who cross the Polish eastern border by air are not covered by the survey of goods and services turnover in border traffic since it does not influence considerably the results of the survey in the regional context. The airports in voivodships of eastern Poland currently do not have direct connections with eastern neighbours<sup>5</sup>.

The survey covers:

- expenses incurred by foreigners in Poland and the Poles abroad on the purchase of goods as well as other expenses (of which, among other things, cover accommodation and gastronomic services). The survey investigates the volume of turnover which is not registered in the customs documents;
- the distance from the place of residence and the place of purchase to the border;
- frequency of crossing the border;
- purpose and duration of a stay,
- country of residence – in the case of foreigners, country of stay – in the case of Poles.

Moreover, foreigners are questioned about possessing the Card of the Pole.

The survey covers the assortment of goods and services which are most popular with, respectively, the Poles and foreigners who cross the border. For this reason, there is a difference in the assortment of goods and services the foreigners and Poles are questioned about.

If the volume of expenses is given by foreigners in foreign currency, it is converted into zlotys according to the average exchange rate of the National Bank of Poland at the day of the survey.

The questionnaires: Questionnaire PL and Questionnaire C, are both the basic and original source of information in surveying goods and services turnover in border traffic. The results of this survey are estimated on the basis of the results of border traffic survey and supplementary information of the Borders Guards on the border traffic, that was recorder at the days when the survey is carried out.

Data are collected by pollsters of the official statistics from respondents who are covered by the survey. The survey takes place at the border crossings selected for this purpose. Selected persons who cross the border (the Poles and foreigners) are surveyed. The questionnaires are filled in by respondents unaided, or, by pollsters during the interview.

Prior to implementation of the survey at the border, it is especially important to understand specificities of border crossings, particularly their location, as well as the nature and organization of the traffic. Subsequently, the crossings at which the survey is being conducted are selected. The knowledge of the special character of the questionnaire surveys at the border is also significant. Due to practical reasons, which are connected with the costs of the survey and technical potential, the questionnaire survey cannot be carried out throughout the whole period included in the survey. It is necessary for it to be limited to selected days, and, in practice, to time periods several hours long which coincide with the daily shifts of the Border Guards. It is therefore important during planning to set the days at which the survey should be carried out since the traffic intensity and the amount and structure of expenses is changing during the year.

The questionnaire survey is carried out in quarter periods, in selected days of a week chosen from the total number of days in a given period. In each of the quarter, the questionnaire survey in subsequent days of the week is carried out once.

---

5 Results of the pilot survey of goods and services turnover in border traffic in 2008 show that about 94% of Poles incurring expenses abroad, and about 89% of foreigners purchasing in Poland, lived at the distance of 170 km from the border, i.e. at a distance similar to the spread of Podkarpackie or Lubelskie voivodships



A two-stage scheme for drawing elements for a sample with determining the strata was used. First, the days (time intervals) undergoing survey are drawn, then persons are drawn out of those who cross the border. The strata were determined according to the days of the week as well as the border crossings and kind of traffic. For each of the stratum one, selected at random, 12-hour interval in a quarter coinciding with a day shift of the border guards (7.00-19.00) is surveyed. Drawing of a sample is the same for the Poles and foreigners.

For each of the selected shift (a unit of the first stage of drawing which participate in the survey) a sample of persons undergoing survey is selected by means of systematic sampling. In case a selected person rejects to participate in the survey, a successive person is surveyed. For individual border crossings there were sampling intervals selected, including estimated intensity of traveller's traffic at individual crossings, as well as pollster's chances for conducting an interview in at given time.

Non-representative days are not included in drawing. e.g. national and religious holidays. Drawing of weekdays in a quarter is performed by means of respective generator.

In each of the selected days, the questionnaire survey is conducted simultaneously at all border crossings covered by the survey.

The results of the survey of goods and services turnover in border traffic are produced for individual quarters, half and one-year periods.

Estimation of survey results are based on data gathered from questionnaires and information of the Border Guards on border traffic which concern respective crossings, including the way of crossing the border. These data cover the number of the Poles and foreigners who cross the border according to the crossing, direction and kind of traffic (the way of crossing the border) in a surveyed quarter and in 12-hour shifts during which the questionnaire surveys were carried out.

Data are generalized separately for the Poles and foreigners in each stratum. Results for voivodships are calculated on the basis of the results from all strata.

In the survey of goods and services turnover in border traffic, the two-stage drawing scheme with determining the strata was used. The strata were determined according to nationality (the Poles, foreigners), border crossings and kind of traffic (e.g. Korczowa, land crossing).

Let  $N_{ij(s)}$  be the actual number of people crossing the border on  $j$  day of the week of  $i$  quarter in the stratum  $s$ , and  $n_{ij(s)}$  be the surveyed number of people crossing the borders on  $j$  day of the week and  $i$  quarter in the stratum  $s$ ,  $i=1,2,\dots,4$ ,  $j=1,2,\dots,7$ . The number of people crossing the border at a given crossing is denoted as  $N_{i(s)}$  for a given type of traffic in  $i$  quarter.

The values  $N_{ij(s)}$  are not known – they are estimated using information on the number of people crossing the border in the  $s$  stratum, in  $i$  quarter and during 12-hour shift, which stands for  $j$  day of the week.

The value  $N_{ij(s)}$  is estimated following the formula:

$$N_{ij(s)} = N_{i(s)} \cdot \frac{M_{ij(s)}}{\sum_{j=1}^7 M_{ij(s)}}, \quad (1)$$

where:

$N_{i(s)}$  – for the  $s$  stratum, is the number of person crossing the border during entire  $i$  quarter (data of the Border Guard)

$M_{ij(s)}$  – is the number of persons in the stratum  $s$ , who crossed the border on the surveyed  $j$  day of the week of the  $i$  quarter, in the shift during which the survey was conducted.

By  $Z$  we denote a set of all generalization categories. Categorization features of persons crossing the border, according to which generalizations (which determine sets  $Z$ ) are performed, are the following:

- country of residence (permanent stay) – for foreigners,
- country of stay abroad – for Poles,
- purpose of visit,
- time of stay,
- distance from the place of purchase to the border,
- distance from the place of residence to the border,
- frequency of crossing the border,
- possessing the Card of the Pole – in the case of foreigners.

If  $G_{ij(s)}(z)$  is an unknown number of persons crossing the border who are included in the generalization category  $z \in Z$ ,  $g_{ij(s)}(z)$  is the number of persons not surveyed who are included in the category  $z$ , we can write:

$$\frac{G_{ij(s)}(z)}{N_{ij(s)}} = \frac{g_{ij(s)}(z)}{n_{ij(s)}}, \quad (2)$$

and thus:

$$G_{ij(s)}(z) = \frac{N_{ij(s)}}{n_{ij(s)}} \cdot g_{ij(s)}(z) = w_{ij(s)} \cdot g_{ij(s)}(z). \quad (3)$$

where:

$w_{ij(s)} = \frac{N_{ij(s)}}{n_{ij(s)}}$  – is a generalizing weight assigned to the surveyed persons covered by the stratum  $s$ , in the  $i$  quarter and  $j$  day of the week.

The number of persons crossing the border who are included in the category  $z$  is generalized using the formula:

$$L_s(z) = \sum_i \sum_j G_{ij(s)}(z). \quad (4)$$

Total number of persons  $L(z)$  crossing the border who are included in the category  $z$ , is the sum of estimates  $L_s(z)$  in the whole year, i.e.:

$$L(z) = \sum_s L_s(z). \quad (5)$$

Generalization of expenses is made for the same categories of the ones crossing the border as the number of people crossing the border, that is:

- country of residence (permanent stay) – for foreigners,
- country of stay abroad – for Poles,
- purpose of visit,
- time of stay,
- distance from the place of purchase to the border,
- distance from the place of residence to the border,
- frequency of crossing the border,
- possessing the Card of the Pole – in the case of foreigners.

If  $x_{ij(s)}(k, z)$  is the amount of expenses incurred by  $k$  respondent,  $k=1, 2, \dots, n_{ij(s)}$ , covered by the category  $z$  (e.g. expenses on tobacco products of a person possessing the Card of the Pole)), then the expenses for individual categories of persons crossing the border are generalized in accordance with the formula:

$$T_s(z) = \sum_i \sum_j G_{ij(s)}(z) \cdot \bar{x}_{ij(s)}(z), \quad (6)$$

where:

$\bar{x}_{ij(s)}(z)$  is the average amount of expenses incurred in  $i$  day of  $j$  quarter by a respondent who is falls into category  $z$ , which is described by:

$$\bar{x}_{ij(s)}(z) = \frac{\sum_{k=1}^{g_{ij(s)}(z)} x_{ij(s)}(k, z)}{g_{ij(s)}(z)}. \quad (7)$$

From here, and from formula (3) we have:

$$T_s(z) = \sum_i \sum_j w_{ij(s)} \cdot g_{ij(s)}(z) \cdot \frac{\sum_{k=1}^{g_{ij(s)}(z)} x_{ij(s)}(k, z)}{g_{ij(s)}(z)}, \quad (8)$$

thus:

$$T_s(z) = \sum_i \sum_j \sum_{k=1}^{g_{ij(s)}(z)} w_{ij(s)} \cdot x_{ij(s)}(k, z). \quad (9)$$

Total number of expenses  $T(z)$  of persons crossing the border who are covered by the surveyed category  $z$ , is the sum of estimates  $T_s(z)$ , i.e.:

$$T(z) = \sum_s T_s(z). \quad (10)$$

Due to the special character of the survey at rail crossings, it was necessary to estimate expenses at these crossings in individual way. It is assumed that after the surveys at rail crossings have been carried out during one-two quarters and regularities at a given rail crossing have been identified, a respective subsample from a neighbouring road crossing is used for estimating the results.

The method for estimating the variance of results includes changeability of values of the surveyed variables between units of the first stage of drawing. Since in one quarter only one unit of the first stage of drawing is surveyed in a given stratum, giving precision estimates of the survey results is possible only after the full year cycle of the survey is completed.

By  $X_{ij(s)}(k)$  we denote the amount of total expenses incurred by  $k$  respondent on  $j$  day of the week and  $i$  quarter in the stratum  $s$ ,  $k=1, 2, \dots, n_{ij(s)}$ .

Let

$$W_{ij(s)} = \sum_{k=1}^{n_{ij(s)}} X_{ij(s)}(k) \quad (11)$$

be the sum of total expenses of respondents on  $j$  day of the week and in  $i$  quarter in the stratum  $s$ , then:

$$\frac{W_{ij(s)}}{n_{ij(s)}} \quad (12)$$

is an estimation of an average amount of total expenses of a single respondent on  $j$  day of the week and in  $i$  quarter in the stratum  $s$ , whereas:

$$T_{ij(s)} = \frac{N_{ij(s)}}{n_{ij(s)}} \cdot W_{ij(s)} \quad (13)$$

is an estimation of amount of total expenses incurred by persons crossing the border on  $j$  day of the week and in  $i$  quarter for the stratum  $s$ .

Estimation of total amount of expenses  $T_s$  in the stratum  $s$  is the sum of estimations  $T_{ij(s)}$ , that is:

$$T_s = \sum_i \sum_j T_{ij(s)} = \sum_i \sum_j \frac{N_{ij(s)}}{n_{ij(s)}} \cdot \sum_{k=1}^{n_{ij(s)}} X_{ij(s)}(k). \quad (14)$$

Estimation of total amount of expenses  $T$  during the whole year is the sum of estimations  $T_s$ , that is:

$$T = \sum_s T_s. \quad (15)$$

Let us assume that  $N_s = \sum_i \sum_j N_{ij(s)}$  is a summary actual number of persons crossing the border in a given year in the stratum  $s$  and  $n_s = \sum_i \sum_j n_{ij(s)}$  is a summary number of persons surveyed in a given year in the stratum  $s$ .

If a sample is matched is a way that:

$$\frac{N_{ij(s)}}{n_{ij(s)}} = w_{ij(s)} \quad (16)$$

do not depend on  $i$  and  $j$ , that is if  $w_{ij(s)} = \frac{N_s}{n_s}$  then  $T_s$  is reduced to:

$$T_0 = \frac{N_s}{n_s} \cdot \sum_i \sum_j \sum_{k=1}^{n_{ij(s)}} X_{ij(s)}(k), \quad (17)$$

that is to average amount of total expenses  $\frac{1}{n_s} \sum_i \sum_j \sum_{k=1}^{n_{ij(s)}} X_{ij(s)}(k)$ , multiplied by actual number

of persons crossing the border  $N_s$  for a given stratum  $s$ .

In order to estimate the mean square error of estimators  $T_s$  and  $T_0$  for observations  $X_{ij(s)}(k)$  of total expenses of respondents on  $j$  day of a week and in  $i$  quarter, in the stratum  $s$ , we assume, following the two-way classification model, that:

$$X_{ij(s)}(k) = \mu_{ij(s)} + e_{ijk(s)}, \quad (18)$$

where  $\mu_{ij(s)}$  is an unknown expected value of total expenses incurred by a single person crossing the border on  $j$  day of a week and in  $i$  quarter for the stratum  $s$ , whereas  $e_{ijk(s)}$  are random errors of average value 0 and variance  $\sigma_s^2$ . The parameter determining total amount of total expenses of a person crossing the border in a given year in the stratum  $s$  is defined in the following way:

$$\theta_s = \sum_i \sum_j N_{ij(s)} \mu_{ij(s)}. \quad (19)$$

Let us consider the above defined (14) and (17) two estimators of the parameter  $\theta$

$$T_s = \sum_i \sum_j T_{ij(s)} = \sum_i \sum_j \frac{N_{ij(s)}}{n_{ij(s)}} \cdot \sum_{k=1}^{n_{ij(s)}} X_{ij(s)}(k), \quad (20)$$

$$T_0 = \frac{N_s}{n_s} \sum_i \sum_j \sum_{k=1}^{n_{ij(s)}} X_{ij(s)}(k). \quad (21)$$

Expected value is:

$$E(T_s) = \sum_i \sum_j \frac{N_{ij(s)}}{n_{ij(s)}} \cdot \sum_{k=1}^{n_{ij(s)}} \mu_{ij(s)} = \theta_s, \quad (22)$$

that is, if  $T_s$  is an unbiased estimator of total amount of expenses of persons crossing the border in a given year in the stratum  $s$ , whereas:

$$E(T_0) = \frac{N_s}{n_s} \sum_i \sum_j \sum_{k=1}^{n_{ij(s)}} \mu_{ij(s)} = \frac{N_s}{n_s} \sum_i \sum_j n_{ij(s)} \mu_{ij(s)}, \quad (23)$$

that is,  $T_0$  is an biased estimator  $\theta_s$ , and the bias is:

$$E(T_0) - \theta_s = \sum_i \sum_j \left( \frac{N_s \cdot n_{ij(s)}}{n_s} - N_{ij(s)} \right) \cdot \mu_{ij(s)}. \quad (24)$$

This bias is zero only if  $\mu_{ij(s)} = \mu$  is dependent on  $i$  and  $j$ , that is, when average total expenses of persons crossing the border in the stratum  $s$  are not dependent on the quarter and days of the week, or

when the sample is matched in a way that  $\frac{N_{ij(s)}}{n_{ij(s)}} = \frac{N_s}{n_s}$  are not dependent on  $i$  and  $j$ . In the latter case  $T_s = T_0$ .

Variations of estimators  $T_s$  and  $T_0$  are as follows:

$$Var(T_s) = \sum_i \sum_j \frac{N_{ij(s)}^2}{n_{ij(s)}} \cdot \sigma_s^2, \quad (25)$$

$$Var(T_0) = \frac{N_s^2}{n_s} \cdot \sigma_s^2, \quad (26)$$

where  $\sigma_s^2$  is a variation of observation  $X_{ij(s)}(k)$ .

Average square risk  $MSE(T_0)$ , as a sum of bias and variation squared has a form:

$$MSE(T_0) = \left[ \sum_i \sum_j \left( \frac{N_s \cdot n_{ij(s)}}{n_s} - N_{ij(s)} \right) \mu_{ij(s)} \right]^2 + \frac{N_s^2}{n_s} \cdot \sigma_s^2. \quad (27)$$

For individual strata, absolute errors:

$$SE_b(T_s) = \sqrt{Var(T_s)}, \quad (28)$$

$$SE_b(T_0) = \sqrt{MSE(T_0)} \quad (29)$$

and non-absolute errors:

$$SE_w(T_s) = \frac{SE_b(T_s)}{T_s} \cdot 100\%, \quad (30)$$

$$SE_w(T_0) = \frac{SE_b(T_0)}{T_0} \cdot 100\% \quad (31)$$

of estimations  $T_s$  and  $T_0$  are calculated.

The following categories of variables are used in the survey of goods and services in the border traffic: measurable, non-measurable, geographic.

**Measurable variables are:**

- number of foreigners leaving Poland (of which possessing the Card of the Pole)/Poles returning to Poland,
- duration of stay,
- amount spent on the purchase of food products (in total and according to the surveyed assortment), non-food products (it total according to the surveyed assortment), alcoholic drinks), tobacco products, and other expenses (in total and according to the surveyed kinds of services),
- distance from the place of purchase to the border,
- distance from the place of residence to the border.

These variables are included in the questionnaires without a sign after a comma.

In the case of non-measurable variables, it is possible to chose one variant out of several variants of the answer. Non-measurable variables used in the survey are:

- way of crossing the border,
- main purpose of visit in Poland/stay abroad,
- frequency of crossing the border.

Geographic variables:

- border crossing,
- voivodship,
- country of residence/country of stay abroad.

Variables occurring in the survey are recorded by the pollsters according to the exact date of the survey, individually for foreigners and the Poles. In the base additional information are also recorded, such as: the number of a questionnaire, information on the pollster (full name, card number), day of the week and quarter for which data are calculated, the symbol of local department, assigned weight.

The answers to the questions included in the questionnaires, which are received by pollster from individual respondents, serve as a basis for generalizing results from the survey. Aggregation of data is done for every question, and consecutive stages provide data for the profiles set in the guidelines for the survey.

Estimated amounts of expenses and categorization characters of persons crossing the border are given in absolute numbers in different profiles. Selected data are presented as dynamics rates and percentage proportions.

In the survey of goods and services turnover in border traffic, great number of questions concern the amount of expenses incurred on a specific purpose, namely on the purchase of the groups of goods listed in the questionnaires as well as on paying for services. Therefore, many of the concepts used in the survey describes the structure of assortment. Concepts included in the questionnaires were systematized according

to the Classification of Individual Consumption by Purpose. In order to ensure uniform interpretation of the scope of the surveyed assortment groups, a list and explanation of groups of goods and services included in the questionnaires has been developed.

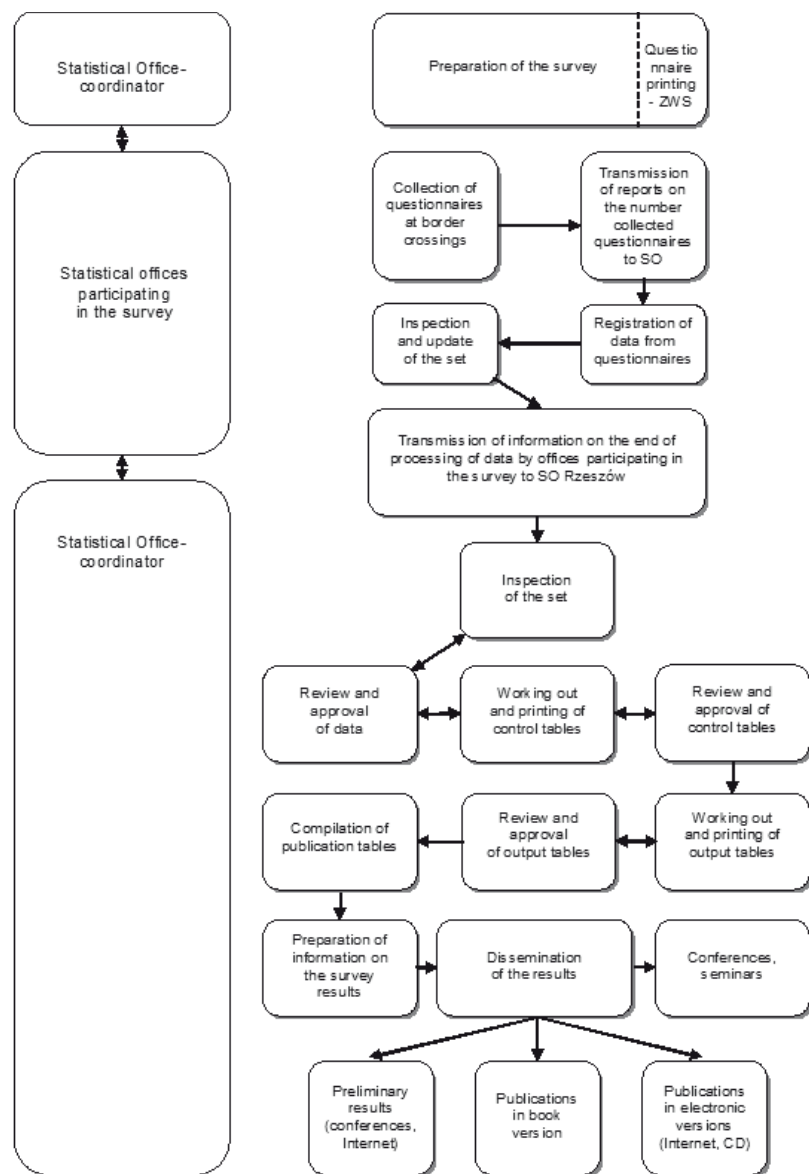


Figure 1. A diagram of the organization of the survey of goods and services turnover in border traffic

Some of the questions in the questionnaires are not linked to any specific classifications. Their forms result from the unique character of the survey, e.g. the distance from the place of residence and place of the purchase to the border, the frequency of crossing the border.

The survey of goods and services turnover in border traffic – not reported in customs documents – takes place seven times in each quarter, on days of the week randomly selected from the total number of days in the period. In each of the quarters, the questionnaire survey in subsequent days of the week takes place once. Data are collected by two pollsters per each type of the traffic (way of crossing the border). Detailed timetable of the organization of the survey, that is information processing, production of output tables, publication of results, proceeding with the data sets, is included in survey schedule. Data collected in the questionnaires are transferred to the leading unit within three working days after each questionnaire survey. Output tables are compiled within 30 working days, and the results are made public within 35 working days after the survey period.

### 3. RESULTS OF THE SURVEY

The results of the survey of goods and services turnover in border traffic are helpful in answering the following questions:

- Does the phenomena connected with border traffic influence economy and life conditions in border areas, and to what extent?
- What size is the area influenced by phenomena connected with border traffic? – An attempt to delimitate areas under influence of the border.
- What will be the influence of the entry into force of regulations on small border traffic at external land borders of the European Union in Poland?

The results of the survey are also used to shape regional policy. Information obtained in the survey are used, among other things, by government authorities and local governments in the border regions to formulate the strategy development. The results are a supplement to statistical information on the official foreign trade turnover on the surveyed sections of the border.

#### EXPENSES OF FOREIGNERS IN POLAND AND POLES ABROAD

In the fourth quarter of 2013 the external land border of the European Union on the territory of Poland was crossed by 8.3 million people (about 12.6% more than in the fourth quarter of the last year), of which 6.8 million foreigners (15.6% more) and 1.5 million Poles (0.6% more).

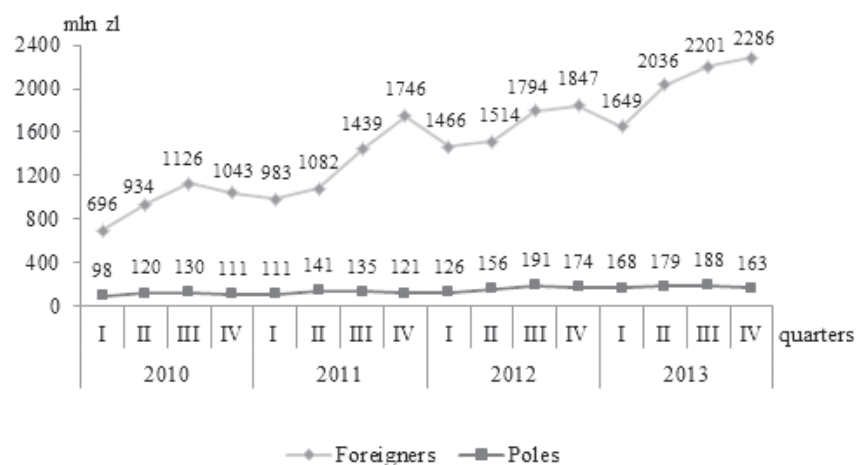
The survey conducted at the border shows that the most common purpose of arrival of foreigners to Poland was making purchases (approximately 85%), followed by transit (4%), visits, hired work and self-employment/business and tourism (all about 3%). For the Poles going abroad making purchases was also the dominant purpose (89%), followed by visits (about 6%), tourism (3%), and hired work and self-employment/business (about 1%).

The structure of foreigners crossing the border according to the visit to Poland was clearly different for the Polish-Russian border. The largest share of foreigners was travelling to make purchases, but this share was much lower than the share of the Polish-Ukrainian and Polish-Belarusian border. On the other hand, the percentage of foreigners crossing the border with Russia for tourist and transit purposes was much higher. This is reflected in the amount and structure of their expenses. Foreigners who crossed this section of the

border had several times higher average spending on services. It is also worth to note that in the case of the Polish-Russian border, the percentage of foreigners declaring their stay in Poland longer than one day was 11.2%, while on the border with Belarus – 12.1%, and Ukraine – 7.7%. The structure of Poles crossing the Polish-Ukrainian and Polish-Russian border was similar, but the percentage of travellers with the purpose of visiting the country was much higher at the Polish-Belarusian border.

The estimated value of purchased goods and services in Poland by foreigners crossing the Polish section of the external border of the European Union in 2013 amounted to 8127.7 million zł, and expenses incurred by the Poles abroad in this period amounted to 698.4 million zł. This was 23.4% and 7.8% more than in the same period of last year, respectively.

In the fourth quarter of 2013, the expenses of foreigners amounted to 2286.1 million zł, and Poles – to 163.4 million zł, and were higher than in the same period of 2012, by 23.8% and lower by 6.4%, respectively. Most expenses were incurred by foreigners crossing the border with Ukraine – 59.6%. In the case of the Polish-Belarusian border it was 32.1%, whereas on the border with Russia – 8.3%. On the other hand, most of the expenses were incurred by Poles crossing the border with Russia – 59.9% of the expenses of Poles, with Ukraine – 28.3%, and with Belarus – 11.8%. The structure of expense by sections of the border is related to the structure of the cross-border traffic.



**Figure 1.** Expenses of foreigners in Poland and Poles abroad who crossed the EU's external border on the territory of Poland

Expenses of foreigners (despite short periods of stabilization) show a clear upward trend, while expenses of Poles throughout the period considered show a strong stabilization.

Foreigners covered by the survey incurred the highest expenses for the purchase of goods. In the fourth quarter of 2013 they amounted to 2227.1 million zł. In the structure of foreign expenses it accounted for as many as 97.4%, of which non-food products accounted for 83.1%, and food products approximately 14%. Home electronics and appliances were the most popular non-food items with foreigners (20.4%), followed by parts and accessories for means of transport (17.9%), construction materials (17.9%), and clothing and footwear (9.9%), whereas meat and meat products (6.0%) were the most popular food products. For the purchase of services (mainly gastronomic services and accommodation) 59.0 million zł were spent, which accounted for 2.6% of total expenses of foreigners.

In each section of the border there were some differences in the structure of expense. The share of expenses of foreigners crossing the Polish-Ukrainian and Polish-Belarusian border on non-food products (85.9% and 85.8% respectively) was significantly higher than in the case of Polish-Russian border (52.5%). The share of foreigners' expense on food products was higher in the case of the border with Russia (35.7%) than with Ukraine (12.5%) and Belarus (12.2%). As for the share of services in foreigners' spending, it was significantly higher for the border with Russia (11.8%) than with Belarus (2.0%) and Ukraine (1.6%). Foreigners crossing the Polish-Ukrainian border spent most on construction materials (25.9%), parts and accessories for means of transport (18.1%) and household appliances and audio/video equipment (18.1%). On the other hand, the household appliances and audio/video equipment (28.5% of spending) as well as clothing and footwear (15.8%) were the most popular among the foreigners crossing the Polish-Belarusian border. Foreigners crossing the Polish-Russian border spent most on clothing and footwear (22.6%), meat and meat products (15.3%) and services (11.8%), mainly catering and accommodation.

Just as in case of foreigners, the highest expenses incurred abroad by Poles covered by the survey were for the purchase of goods. In the fourth quarter of 2013 they amounted to approximately 159.3 million zł, which accounted for 97.5% of spending of Poles. The purchase of non-food products accounted for 83.4% of total expense (most of it was on the fuel), and food products – 4.5% (most of it was on the confectionery). Alcoholic beverages had also a significant share in the expenses (7.0%), as well as tobacco products (2.6%). Poles spent 4.1 million zł on services, which represented 2.5% of all their expenses. The structure of spending of Poles crossing individual sections of the border was quite similar, except that in the case of the Polish-Ukrainian border the share of expense on food products (10.0%) was higher than in the case of the Polish-Belarusian border (2.7%) and Polish-Russian border (2.2%). Expenses on fuel (68.8%) were, on the other hand, lower than in the case of Polish-Russian border (87.4%) and the Polish-Belarusian border (87.0%).

Average expense incurred in Poland by foreigners crossing the external border of the European Union in the fourth quarter of 2013 were at the level of 685 zł. However, the average expenses incurred abroad by Poles covered by the study were 226 zł. In comparison with the same period of the previous year, average expenses of foreigners were higher by 7.1%, and expenses of Poles were lower by 6.0%.

The value of foreigners' expenses in Poland and Poles abroad is significant in comparison with the Polish foreign trade turnover. Expenses incurred for the purchase of goods in Poland by foreigners declaring Ukraine as a country of residence amounted to 4.4 billion zł in 2013, whereas expenses of Poles returning from Ukraine – 224.7 million zł. Data on exchange of goods presented by statistics of foreign trade for Poland show that exports to Ukraine amounted to 18.0 billion zł in 2013, whereas imports from Ukraine – as a country of dispatch – amounted to 7.0 billion zł.<sup>6</sup>

The value of expenses incurred by the Belarusians in Poland is also significant. In 2013, the expenses on the purchase of goods incurred in Poland by foreigners declaring Belarus as the country of residence amounted to 2.4 billion zł and expenses of Poles in Belarus – 76.3 million zł. Exports of goods from Polish to Belarus amounted to 7.7 billion zł, whereas imports from Belarus (as a country of dispatch) – 2.5 billion zł.<sup>7</sup>

Expenses on the purchase of goods incurred in Poland by foreigners declaring Russia as a country of permanent residence amounted to 855.7 mln zł in 2013, whereas expenses of Poles declaring Russia as a country of stay – 370.2 mln zł. Exports of goods from Poland to Russia amounted to 34.1 billion zł, whereas imports from Russia – as a country of dispatch – totalled to 78.5 billion zł.<sup>8</sup> Expenses on goods incurred by Russians in Poland are much lower compared to expenses on purchase of goods incurred by Belarusians and Ukrainians in Poland. The Polish exports to Russia and imports from Russia is, however,

6 Preliminary data.

7 Preliminary data.

8 Preliminary data.

much higher than in the case of Ukraine and Belarus. Therefore, the expenses on the purchase of goods incurred in Poland by foreigners declaring Russia as a country of permanent residence are small compared with exports from Poland to Russia.



**Figure 2.** Relations of expenses incurred for the purchase of goods by foreigners in Poland who declared their country of residence to the value of export sales to particular country

Presented relationships, in the case of foreigners who have declared Belarus as a country of their residence are diverse, as in the case of foreigners in Ukraine, but here it is clearly weaker diversity. In the case of foreigners in Russia minimal growth can be seen, the trend is very stable.

Expenses incurred by foreigners in Poland and Poles abroad in 2013 compared with the value of export sales and the value of import purchases of economic entities of Lubelskie, Podkarpackie, Podlaskie and Warmińsko-Mazurskie voivodships are diverse. Expenses incurred in Poland by foreigners crossing the border in Lubelskie voivodship accounted for 41.1% compared with the value of export sales of entities of Lubelskie voivodship in 2013. The analogous relationship for Podkarpackie voivodship amounted to 11.9%, Podlaskie voivodship – 19.8%, and Warmińsko-Mazurskie voivodship – 5.4%.<sup>9</sup> Expenses incurred abroad by the Poles crossing the border in Lubelskie voivodship accounted for 3.1% compared with the value of import purchases of economic entities from Lubelskie voivodship in 2013. The analogous relationship for Podkarpackie voivodship was 0.9%, Podlaskie voivodship – 0.7%, and Warmińsko-Mazurskie voivodship – 6.0%.<sup>10</sup>

It is also worth noting that the value of purchases of goods made in Poland by foreigners crossing the European Union's external border in 2013 in current prices was 11.5% compared with the value of retail sales<sup>11</sup> of the voivodships located by the European Union's external border.

#### LOCAL BORDER TRAFFIC

After Poland's accession to the European Union, Polish eastern border became the Community's external border at the same time, thereby gaining special importance. Further enhanced integration was established by Poland's accession to the Schengen zone. On the one hand, Polish citizens were given an opportunity to travel freely within the Schengen area, on the other, Poland was required to seal the eastern border. In order to facilitate traffic in the border area, an Agreement between the Government of the Republic of Poland and the Cabinet of Ministers of Ukraine on rules on local border traffic was signed on 28 March 2008. The agreement came into force on 1 July 2009. In December 2011 Poland introduced additional facilitation in crossing of the Polish-Ukrainian border for citizens of Ukraine, that is visas, in order to implement shopping tourism in Poland. Some action were also taken to facilitate crossing of the border with Belarus and Russia. In 2010, an Agreement was signed between the Government of the Republic of Poland and the Government of the Republic of Belarus on rules on local border traffic. The agreement requires ratification by the Belarusian side. On 14 December 2011 an agreement on local border traffic with Russia was signed. The agreement came into force on 27 July 2012. Local border traffic is the regular crossing of an external land border by border residents in order to stay in a border area, for example for social, cultural or substantiated economic reasons, or for family reasons, for a period not exceeding the time limit laid down in the Regulation.<sup>12</sup>

The zone of local border traffic (LBT) at the Polish-Russian border is unique in terms of its scope, it covers the area located much further than 30 or 50 km from the border. On the Russian side the whole Kaliningrad region was included into the LBT zone, whereas in Poland it comprises 7 powiats of Pomorskie voivodship (including Gdańsk, Gdynia and Sopot) and 13 powiats of Warmińsko-Mazurskie voivodship (including Olsztyn and Elbląg).<sup>13</sup>

Starting the survey of goods and services turnover in border traffic before the entry of regulation on local border traffic into force allows for assessment of the situation in the border area before and after the introduction of facilities in crossing the border and determining their impact. In the case of the Polish-Ukrainian border, an economic recovery can be seen in the border zone.

The local border traffic at the **Polish-Ukrainian** border is more important for the citizens of Ukraine than Poland, because Poles can travel and stay in Ukraine up to 90 days without a visa. In the fourth quarter of 2013, 2.2 million border crossings were reported as part of LBT, which accounted for 54.3% of crossings of the Polish-Ukrainian border by foreigners. In comparison with the previous quarter the number of border crossings within the LBT was 10.2% higher, and in comparison to the same period of 2012 – it was 29.2% higher. In the fourth quarter of 2013 the highest number of border crossings within the LBT was recorded in the land border crossing in Medyka (34.3% of all crossings within LBT), which serves also motorized traffic along with pedestrian one.

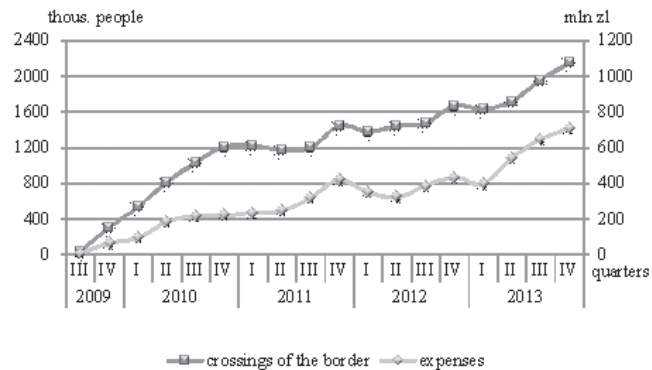
<sup>9</sup> On the basis of a report on revenues, costs, financial results and investment outlays on fixed assets F-01/I-01 (enterprise method) for 2013, the value of export sales of goods, materials, products and services of entities from Lubelskie voivodship in 2013 was 8.7 billion zlotys, from Podkarpackie voivodship – 20.6 billion zlotys, from Podlaskie voivodship – 7.9 billion zlotys, and from Warmińsko-Mazurskie voivodship – 10.8 billion zlotys.

<sup>10</sup> Ibidem. The value of import purchases of goods, materials, products and services of entities from Lubelskie voivodship in 2013 was 5.3 billion zlotys, from Podkarpackie voivodship – 13.2 billion zlotys, from Podlaskie voivodship – 5.3 billion zlotys, and from Warmińsko-Mazurskie voivodship – 6.3 billion zlotys.

<sup>11</sup> In 2012.

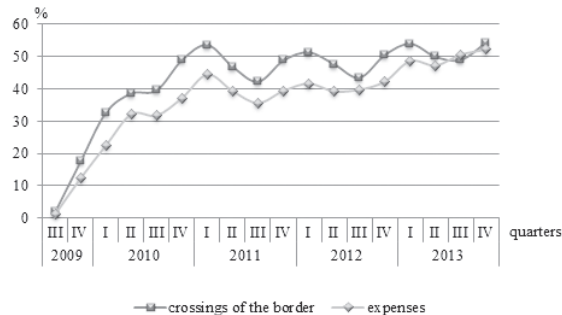
<sup>12</sup> Regulation (EC) No 1931/2006 of the European Parliament and of the Council of 20 December 2006 laying down rules on local border traffic at the external land borders of the Member States and amending the provisions of the Schengen Convention (Official Journal of the European Union L 29, 3 February 2007).

<sup>13</sup> Regulation (EU) No 1342/2011 of the European Parliament and of the Council of 13 December 2011 amending Regulation (EC) No 1931/2006 as regards the inclusion of the Kaliningrad oblast and certain Polish administrative districts in the eligible border area (Official Journal of the European Union L 347, 30 December 2011).



**Figure 3.** Local border traffic made by foreigners at the Polish-Ukrainian border

When analysing the border traffic and expenses of foreigners we can clearly see increasing trend for the fourth quarter of 2012, followed by a slight decrease and stabilization trend in the first quarter of 2013 followed by a significant increase.



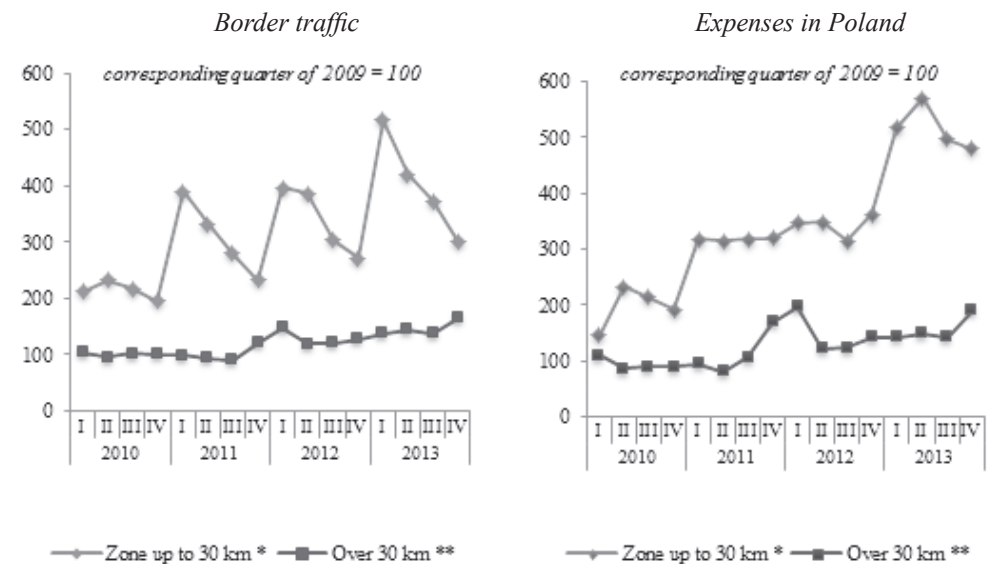
**Figure 4.** Share of local border traffic in crossings of the Polish-Ukrainian border made by foreigners and in their expenses in Poland

The share of foreigners in LBT in their expenses is slightly lower than in their crossing of the Polish-Ukrainian border where their dynamics is almost identical.

The estimated value of the expense incurred in Poland by foreigners crossing the Polish-Ukrainian border within the local border traffic in the fourth quarter of 2013 amounted to 710.3 million zł and was by 9.5% higher than in the same period of last year. These expenses represented 52.1% of total spending of foreigners crossing the Polish-Ukrainian border.

Average expense in Poland incurred by foreigners crossing the Polish-Ukrainian border within the LBT in the fourth quarter of 2013 amounted to 661 zł and were by 27.3% higher than in the same period of last year.

The analysis of the movement of people and expense in border areas before and after the introduction of border crossing facilitation shows that the introduction of legislation to facilitate the crossing of the border significantly contributed to the revival of movement in the border zone.



- \* Place of residence and moving (making purchase) at the distance up to 30 km after crossing the border (“potential” LBT).
- \*\* Place of residence and/or moving (making purchase) at the distance over 30 km after crossing the border.

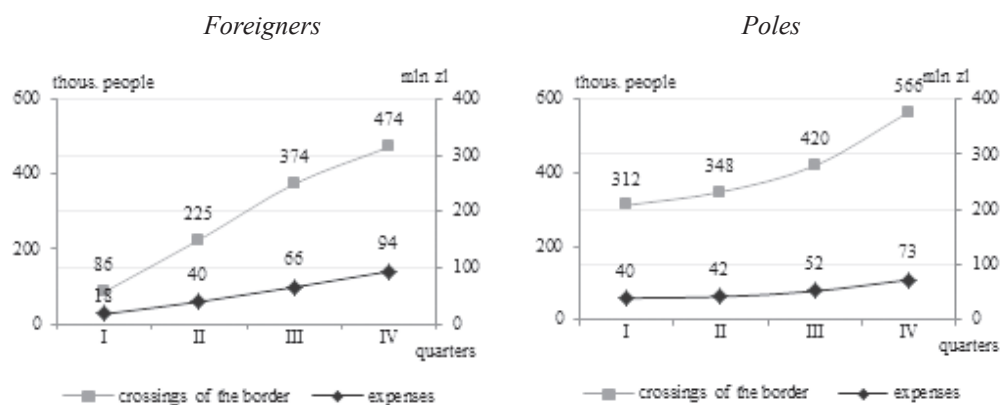
**Figure 5.** Changes in border traffic of foreigners and their expenses after introduction of facilitation in crossing the Polish-Ukrainian border on 1 July 2009

Changes in legislation relating to crossing the border, introduced by Poland or neighbouring country, are almost immediately reflected in changes in the level of border traffic intensity and border trade. The functioning of local border traffic, which has been present at the Polish-Ukrainian border since July 2009, has had a positive impact on increasing traffic and the amount of expenses made by foreigners in the Polish border area. Thus, it has positively influenced the revival of the area, as evidenced by the higher rate of increase in the number of commercial companies with foreign capital in this area than in areas by other sections of the border. This in turn can be beneficial for the development of gminas that are in the border area.

On the Polish-Russian border as part of the local border traffic in the 4th quarter of 2013, the Border Guard reported 473.5 thousand clearances of foreigners, i.e. 26.5% more than in the third quarter of 2013. As part of LBT this border was crossed by approximately 566 thousand Poles<sup>14</sup>, i.e. 35.0% more than in the previous quarter. 48.9% of the crossings of foreigners at this section of the border were made as part of LBT, while in the case of the Poles - 75.7%.

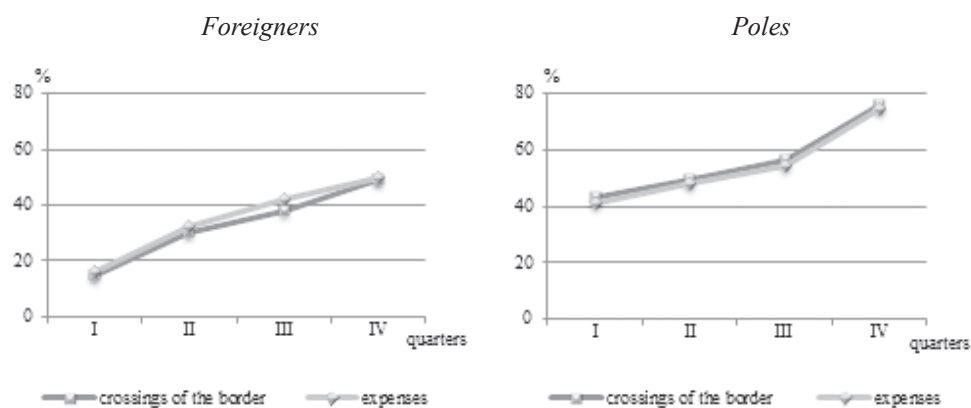
14 Preliminary data of CSO.





**Figure 6.** Local Border traffic and expenses incurred in Poland by foreigners and Poles abroad crossing the Polish-Russian border as part of LBT in 2013

The introduction of LBT zone on the border of the Polish-Russian resulted in a much larger traffic of Poles towards foreigners, while the increase in the case of foreigners is characterized by rapid growth. At the same time, expenses of both groups show an increasing trend in the case of foreigners with definitely more dynamic.



**Figure 7.** Share of local border traffic in crossings of the Polish-Russian border made by foreigners and Poles and in their expenses in Poland in 2013

Share of LBT in expenses as well as crossings shows very similar trend for both of foreigners and Poles. In the case of the Poles is clearly higher.

Estimated value of the expenses incurred in Poland by foreigners crossing the Polish-Russian border as part of LBT in the 4th quarter of 2013 amounted to 94.0 million zl, which accounted for 49.8% of the expenses of foreigners crossing this border section. These expenses were higher compared to the previous quarter by 42.8%. The value of expenses incurred abroad by the Poles crossing surveyed border section as part of LBT amounted to 73.2 million zl, which accounted for 74.7% of expenses of Poles crossing this section of the border. These expenses were higher compared to the previous quarter by 40.0%.

Average expenses incurred in Poland by a foreigner crossing the Polish-Russian border as part of LBT in the 4th quarter of 2013 amounted to 398 zl and were higher by 13.3% compared to the previous quarter. However, the average expenses incurred abroad by a Pole crossing this section of the border as part of LBT amounted to 258 zl and were 3.8% higher compared with the previous quarter.

#### **Delimitation of the border area**

Delimitation of the areas of influence of the European Union's external border was made on the basis of the results of the survey, taking into account the distance from the border of the place of residence and the place of purchase of persons crossing this border.

The survey of goods and services turnover in border traffic at the European Union's external border in the fourth quarter of 2013 shows that foreigners crossing the Polish section of the external border of the EU, similarly to Poles, were mostly residents of the towns located within 50 km from the border – 70.7% of foreigners and 64.3% of Poles, whereas 53.0% of foreigners and 41.9% of Poles lived in the zone up to 30 km from the border. 11.5% of foreigners and 5.8% of Poles crossing the external border of the European Union resided at a distance of over 100 km from the border.

Foreigners and Poles crossing the Polish section of the external border of the European Union made their purchases mostly within 50 km from the border – 71.7% of foreigners and as much as 96.6% of Poles, with 57.6% of foreigners and 92.9% Poles making purchases in the zone up to 30 km from the border. 10.7% of foreigners and 1.0% of Poles were shopping at a distance of over 100 km from the border.

The vast majority of foreigners and Poles surveyed resided in the zone of 50 km from the border: in the case of the border with Ukraine – 73.1% of foreigners and 77.6% of Poles, with Belarus – 62.7% and 72.4% respectively, and with Russia – 75.7% foreigners and 53.3% of Poles. The majority of foreigners crossing the Polish-Ukrainian and Polish-Belarusian border were the residents of the area up to 30 km from the border, 62.5% and 48.7% respectively. As regards the Polish-Russian border, most (54.4%) of the foreigners resided in the zone of 31-50 km. 62.3% of Poles crossing the Polish-Ukrainian border, 43.0% of Poles crossing the Polish-Belarusian border and 28.0% of Poles crossing the Polish-Russian border were living in the zone up to 30 km from the border.

Most foreigners covered by the survey made purchases in the zone up to 50 km from the border with Ukraine – 87.8% of those crossing this section of the border, then from the border with Russia – 60.4% and with Belarus – 41.6%. The overwhelming majority of Poles made purchases in the zone up to 50 km both from the border with Russia – 99.1%, Ukraine – 94.4 and Belarus – 92.5%. For the Polish-Ukrainian border the highest share of foreigners making purchases was recorded for the ones from the zone up to 30 km – 78.8%. In the case of the Polish-Russian border, this percentage amounted to 44.0%, and with the Polish-Belarusian border to 17.2%. On the other hand, on the border with Russia where high percentage of foreigners travelling for tourism and transit was recorded, the largest share of foreigners purchasing at the distance over 100 km was reported – 26.6%, while in the case of the border with Belarus, this rate was 11.6%, and with Ukraine – 6.6%.

It should be noted that 66.5% of expenses of foreigners in Poland and 96.8% of expenses of Poles abroad was incurred in the zone up to 50 km from the border, whereas 50.1% of expenses of foreigners and 93.1% of expenses of Poles was incurred in the zone up to 30 km. In the case of Polish-Russian border, which is characterized by dissimilarity in the purpose and distance of travel and related structure of expenses, foreigners spent 38.4% of expenses at the distance over 100 km from the border (for the Polish-Ukrainian and Polish-Belarusian border the corresponding rate was 9.6% and 10.1%).

#### 4. CONCLUSIONS

The analysis of the results of the survey carried out at the European Union's external border on the territory of Poland allows us to say that the phenomena associated with the border traffic are of great importance for social-economic development of cross-border areas. The greatest intensity of these phenomena occurs in areas in the strip of up to 50 km along the border. It is reflected by high percentage of people crossing the border who incurred expenses in this strip, as well as the fact that the inhabitants of villages located in this area were among the vast majority of people crossing the border, and the majority of expenses was incurred in this strip. There is diversity between studied phenomena on individual sections of the border. In particular, the Polish-Russian border can be seen as different one, both with regard to the purposes for which foreigners visited Poland, as well as to distance to travel, structure of expenses and the frequency of crossing the border.

Due to integration processes in Europe, statistics of cross-border areas is beginning to play an increasingly important role. It serves to promote regional development and cooperation between countries. Despite efforts of several international institutions, there still exist problems with lack of information on particular levels of aggregation as well as with low degree of data comparability, particularly relating to economic issues. As a consequence, there is still a need for identification of major research areas and discussion on important methodological aspects relating to transborder areas. The functioning of a uniform system would allow information to be used effectively.

#### REFERENCES

1. M.CIERPIAŁ-WOLAN, E., WOJNAR, J., WOJTAK - *TRANSBORDER AREAS SURVEY - SURVEY OF GOODS AND SERVICES TURNOVER IN BORDER TRAFFIC, METHODOLOGICAL BOOK*, CENTRAL STATISTICAL OFFICE, WARSAW 2009.
2. *Methodology of sample surveys in CSO, Works of the Mathematical Commission*, Statistical News Library, Central Statistical Office, Warsaw 1979.
3. *Problems of statistical surveys using survey sampling*. Statistical News Library, Central Statistical Office, Warsaw 1989.
4. *Expenses of travellers and border trade - Pre-pilot survey. Report from the third mission, 19-21 February 2001*, EUROSTAT 2001.
5. *Expenses of travellers and border trade. The final report from pre-pilot survey*, EUROSTAT 2001.
6. Regulation (EC) No 1931/2006 of the European Parliament and of the Council of 20 December 2006 laying down rules on local border traffic at the external land borders of the Member States and amending the provisions of the Schengen Convention (Official Journal L 29/3, 21/06/2003).

MAREK CIERPIAŁ-WOLAN

Statistical Office in Rzeszów, University of Rzeszów  
(Poland)

### TOWARDS COHERENT RESEARCH SYSTEM FOR TRANSBORDER AREAS

#### 1. INTRODUCTION

The process of creation of a coherent research system for transborder areas consists in three main interlocking parts: delimitation of transborder areas, monitoring of socio-economic phenomena and data sources and comprehensive survey. Obviously, they require harmonised methodology. Methodology applicable for countries covered and not covered by liberalization of the rules of crossing the border .

Based on experience connected with development of survey system for the borders and their vicinity at the EU's external border on the territory of Poland, Polish official statistics launched a pilot survey which consists of two modules. The first one comprises surveys at the EU's external and internal borders (on the territory of Poland) including Questionnaire survey at the borders and in the vicinity of the border as well as Traffic intensity survey only at the EU's internal border. Households survey constitutes the second module.

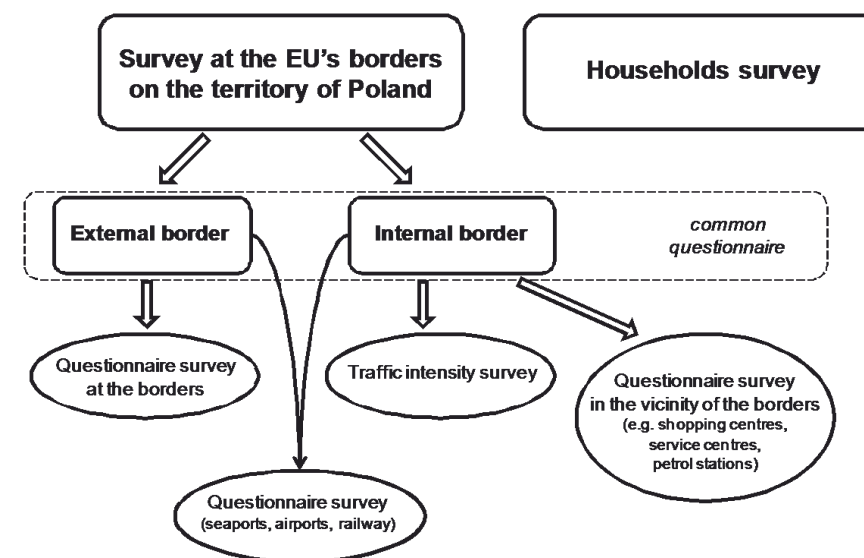


Figure 1. The structure of pilot survey

## 2. TYPOLOGY OF BORDER CROSSINGS

In order to select border crossings for observation their typology was created. In the first stage the crossings were divided by type of the border, with the following three types of crossings: land border – road, rail and river crossings; sea border – ports; air border – airports.

The land crossings were divided according to the nature (permeability) of the borders and the neighbouring country, that is the borders located at the EU's external border on the territory of Poland (which includes Polish-Russian, Polish-Belarusian and Polish-Ukrainian borders), and internal border of the EU and Poland (which includes Polish-Lithuanian, Polish-Slovak, Polish-Czech and Polish-German borders). Then, on the basis of the Border Guard data on border traffic, the profiles of border crossings were made.

After a thorough analysis, the border crossings which were selected were the ones whose share in the border traffic of persons at the Polish border with the neighbouring country was higher than 1%, and in the case of ports and airports – the share in border traffic at the sea and air border, respectively. The number of border crossings meeting the accepted criteria was 88, which accounted for 33.0% of all crossings. However, what needs to be stressed, those crossings were handling as much as 96.0% of all border traffic.

At the internal border these border crossings were grouped, with the use of Ward's method, according to particular sections of the border into subsets characterized with high internal similarity due to selected features. The following features of each crossing were considered: total volume of border traffic of persons, the proportion of foreigners among persons crossing the border, the proportion of passenger cars in border traffic of vehicles, the percentage of trucks in the border traffic of vehicles.

The adoption of the first two characteristics is, as it seems, obvious, taking into account the purpose of the survey. The share of passenger cars was also analyzed because of different nature of crossings for cars and trucks. The movement of cars dominated on vast majority of border crossings. The share of trucks in border traffic of vehicles is highly correlated with the share of passenger cars (correlation coefficient close to -1), so it was omitted in the method of grouping of border crossings.

In grouping the border crossings according to the features adopted in the framework of individual sections of the border 5 subsets were obtained (with the exception of the border with Lithuania). The results of this grouping are used to select the crossings for the survey of border traffic.

In the next step, within the groups, crossings are drawn to the survey. This helps to ensure the observation of diverse traffic of people and vehicles at the internal border. When choosing crossings for the survey geographical distances between the selected crossings, which are another element of stratification, are taken into account. It is important to draw crossings which are not centred around one location, but are spread across the border with of a given country. This is due to the varying traffic on account of the geographical location of the crossing.

## 3. THE SURVEY AT THE BORDER AND IN ITS VICINITY

a) **The border traffic survey** covers people and vehicles crossing the Polish border with the countries of the European Union at selected border crossings. It records the number of vehicles crossing the border from and to Poland and the number of people travelling in these vehicles, as well as people travelling on foot (including bicycles, wheelchairs, etc.). The survey is carried out every quarter.

The survey of border traffic at the internal border introduced the rotation of border crossings. It means that the selected crossings for a given section of the border included crossings which were surveyed in the previous year. Such an approach will ensure continuity of information on changing conditions on the crossings.

The survey of border traffic at the airports and seaports was developed separately due to its specificity and with the use of appropriate data sources (in particular reporting on air and sea transport). When selecting the crossings the possibility of obtaining relevant data on the structure of people travelling is taken into account. Due to the small share of rail crossings in border traffic it is not expected to maintain a continuous survey on these crossings. In order to discern the specificity of trips made by foreigners crossing the border by rail, temporary surveys of this kind of travellers are conducted at selected railway stations (including border localities through which trains pass).

Taking into consideration the fact that Poland borders with four the EU countries (i.e. Germany, Czech Republic, Slovakia and Lithuania) and the traffic at the sections of the border with these countries is very diverse, the total road border traffic at the EU's internal border EU on the territory of Poland is the sum of the values for individual sections of the border. Data on border traffic of Poles are estimated on the basis of information from a survey conducted in households and from counting of vehicles and people at selected border crossings. The border traffic of foreigners leaving Poland, however, is estimated using regression analysis for each of the section of the border and on the basis of data from counting of vehicles and people, as well as other available data sources.

Using the regression analysis, equations describing border traffic on particular sections were created as follows:

$$\text{where: } Y_{Co} = \begin{cases} Y_{CN} = \alpha_{N_0} + \alpha_{N_1} X_{N_1} + \dots + \alpha_{N_m} X_{N_m} + e_N \\ Y_{CC} = \alpha_{C_0} + \alpha_{C_1} X_{C_1} + \dots + \alpha_{C_m} X_{C_m} + e_C \\ Y_{CS} = \alpha_{S_0} + \alpha_{S_1} X_{S_1} + \dots + \alpha_{S_m} X_{S_m} + e_S \\ Y_{CL} = \alpha_{L_0} + \alpha_{L_1} X_{L_1} + \dots + \alpha_{L_m} X_{L_m} + e_L \end{cases} \quad (1)$$

$Y_{Co}$  – (for  $o = \{N, C, S, L\}$ ) takes the form depending on the border: with Germany  $Y_{CN}$  – the number of foreigners crossing the Polish-German border, similarly to the border with the Czech Republic ( $Y_{CC}$ ), Slovakia ( $Y_{CS}$ ) and Lithuania ( $Y_{CL}$ ),

$X_{o_m}$  – variables describing traffic at the selected section of the border,

$\alpha_{o_m}$  – coefficients of variables.

The following variables were selected to be used in the estimates:

- $Y$  – the number of foreigners crossing the EU's internal border in Poland (data for 2005-2007 available from the Border Guard),
- $X_1$  – data of the Border Guard concerning traffic intensity in 2005-2007 and data from pilot surveys on traffic of people and vehicles at the EU's internal border in Poland carried out by the CSO,

- $X_2$  – the number of foreign tourists in collective accommodation establishments (the report on the use of collective tourist accommodation establishment - as a part of the survey conducted by the CSO).

Using the first variable  $X_1$  seems obvious taking into account the purpose of the survey. The number of foreign tourists accommodated in collective accommodation establishments was used in the analysis due to the high degree of correlation between total number of crossings, which in turn allows for using the current data to characterize the changes in the structure of crossings. It should be emphasised that in the case of selecting new crossings for the survey in subsequent years, the model will be re-estimated again.

All regression models were analyzed in detail in terms of form, nature of relation between variables and properties of residuals. The models meet the established criteria and therefore guarantee high precision and accuracy of the estimated results.

The estimates of the number of foreigners by country are based on the analysis of registered countries according to on registration numbers of vehicles and pedestrians' declarations of country of origin counted on selected border crossings. In addition, information about country of origin are combined with the database on the use of collective accommodation establishments and the structure of people who responded to questionnaires conducted on trips made by foreigners to Poland. A synthetic summary of the information will be the basis to determine traffic intensity of people in particular countries.

- b) The questionnaire survey of tourist and same-day trips of foreigners on selected crossings on the EU's internal and external border on the territory of Poland** includes the questionnaire survey of foreigners (non-residents) leaving Poland in order to obtain travel information (including the expenses incurred in connection with travel to Poland, the purpose of visit, the length of stay in Poland) conducted in the vicinity of selected road crossings at the EU's internal and external borders on the territory of Poland and at seaports and airports.

Due to lack of survey frame, the survey of trips made by foreigners to Poland uses elusive population<sup>1</sup>, but owing to the fact the place of the survey is known proper representativeness of the sample is provided. This is a questionnaire survey carried out in the vicinity of selected border crossings on the EU's internal and external border on the territory of Poland, including seaports and airports, in the form of direct interviews made by interviewers. Participation in the survey is voluntary. People are surveyed using systematic sampling. In case a selected person refuses to participate in the study, the next person is surveyed. For individual border crossings sampling intervals are determined taking into account the projected volume of travellers traffic on individual crossings and the possibility of interviewer to interview at a certain time. The survey is carried out every quarter. The survey of trips made by foreigners to Poland is a sample survey.

It is important, in developing appropriate methods for estimating the border traffic, to select a proper representative sample and obtain good quality data. The survey of this phenomenon must therefore be limited to the necessary group of crossings and certain time periods (days and hours) per year, which at the same time ensure the quality of the results.

Information on the size of the total border traffic in Poland is a total compilation of statistics which includes:

- the results of estimating the border traffic at the EU's internal border on the territory of Poland on road crossings using regression analysis,
- data of the Border Guard,
- data of the Civil Aviation Authority on passenger traffic (information on domestic and international traffic, flights directions of target cities),
- structure of passengers obtained from the questionnaire survey conducted at selected airports.

<sup>1</sup> L. Kish (1991), A taxonomy of elusive populations, Journal of Official Statistics, 7, 339–347.

Because data on traffic at the internal border are generalized to relevant border crossings and sections of the border, one should calculate the values for the number of people crossing the border which correspond to different strata that were separated on account of border crossings. It is therefore necessary to define the weights for particular strata.

Let us assume that  $Y_{oi}$  is the number of people crossing a given section of the border  $o$ , where  $o = \{N, C, S, L, M, Lot\}$  ( $N$  – the Polish-German border,  $S$  – the Polish-Slovakian border,  $C$  – the Polish-Czech border,  $L$  – the Polish-Lithuanian border,  $M$  – sea border,  $Lot$  – air border) in the  $i$ -th quarter ( $i = \{1, 2, 3, 4\}$ ). Let us use  $N_{oi(s)}$  as the number of people crossing the border at a given section of the border at a given border crossing  $s$  ( $s = 1, 2, 3, \dots$ ).

Let us assume, additionally, that  $Q_{oi(s)}$  is the number of people crossing the border on account of the stratum  $s$ . The value  $Q_{oi(s)}$  is calculated by the formula:

$$Q_{oi(s)} = Y_{oi} \cdot \frac{N_{oi(s)}}{\sum_s N_{oi(s)}}. \quad (2)$$

The above formula implies that  $Y_{oi} = \sum_s Q_{oi(s)}$ .

Due to specificity of individual border sections the weights used for generalization of the results are calculated on the basis of different data for internal and external border. The basis for estimating the results on external land border is data obtained from the questionnaires and information from the Border Guard on border traffic. On the internal land border, the estimated results are based on data obtained from questionnaires and data on traffic based on counting vehicles and people which are then generalized to respective border crossings and sections of the borders. Data are generalized separately for each stratum. The results for individual sections of the borders are calculated on the basis of the results of relevant strata.

In the border survey a two-stage sampling design with separated strata was used.

Let us assume that  $N_{ij(s)}$  is a real number of people crossing borders on  $j$ -th day of the week of  $i$ -th quarter in stratum  $S$ , and  $n_{ij(s)}$  is the number of respondents crossing borders on  $j$ -th day of the week and  $i$ -th quarter in stratum  $S$ ,  $i = 1, 2, 3, 4$ ,  $j = 1, 2, \dots, 7$ .

A generalizing weight is assigned to respondents belonging to the stratum  $S$  in  $i$ -th quarter and  $j$ -th day of the week by the following formula:

$$w_{ij(s)} = \frac{N_{ij(s)}}{n_{ij(s)}}. \quad (3)$$

Let  $Z$  denote a set of all categories of generalization.

If  $G_{ij(s)}(z)$  is an unknown number of people crossing the border with the feature of the category

$z \in Z$ ,  $g_{ij(s)}(z)$  is the number of respondents with the feature of the  $Z$  category, then we can note:

$$\frac{G_{ij(s)}(z)}{N_{ij(s)}} = \frac{g_{ij(s)}(z)}{n_{ij(s)}}, \quad (4)$$

and thus:

$$G_{ij(s)}(z) = \frac{N_{ij(s)}}{n_{ij(s)}} \cdot g_{ij(s)}(z) = w_{ij(s)} \cdot g_{ij(s)}(z). \quad (5)$$

The number of people crossing the border, belonging to the surveyed  $Z$  category is generalized by the formula:

$$L_s(z) = \sum_i \sum_j G_{ij(s)}(z). \quad (6)$$

The total number of people  $L(z)$  crossing the border, belonging to the surveyed  $Z$  category, is the sum of estimates  $L_s(z)$  throughout the year, i.e.:

$$L(z) = \sum_s L_s(z). \quad (7)$$

Generalization of travel expenses incurred in Poland for the purchase of goods and services (including accommodation services, catering and transport) is carried out in the same categories of crossing the border as the number of people crossing the border.

If  $x_{ij(s)}(k, z)$  is the value of expenses incurred by  $k$ -th respondent,  $k = 1, 2, \dots, n_{ij(s)}$ , belonging to  $Z$  category, then expenses for each category of people crossing the border are generalized according to the formula:

$$T_s(z) = \sum_i \sum_j G_{ij(s)}(z) \cdot \overline{x_{ij(s)}(z)}, \quad (8)$$

where:

$\overline{x_{ij(s)}(z)}$  – denotes average value of expenses incurred in  $i$ -th day of  $j$ -th quarter by a respondent belonging to the  $Z$  category, which is described by the relation:

$$\overline{x_{ij(s)}(z)} = \frac{\sum_{k=1}^{g_{ij(s)}(z)} x_{ij(s)}(k, z)}{g_{ij(s)}(z)}. \quad (9)$$

Hence, and from condition (19) it follows that:

$$T_s(z) = \sum_i \sum_j w_{ij(s)} \cdot g_{ij(s)}(z) \cdot \frac{\sum_{k=1}^{g_{ij(s)}(z)} x_{ij(s)}(k, z)}{g_{ij(s)}(z)}, \quad (10)$$

therefore:

$$T_s(z) = \sum_i \sum_j \sum_{k=1}^{g_{ij(s)}(z)} w_{ij(s)} \cdot x_{ij(s)}(k, z). \quad (11)$$

The total value of expenses  $T(z)$  of people crossing the border, belonging to the  $Z$  category throughout a year, is the sum of estimates  $T_s(z)$ , i.e.:

$$T(z) = \sum_s T_s(z). \quad (12)$$

Let  $X_{ij(s)}(k)$  denote an amount of total expenses incurred by  $k$ -th respondent on  $j$ -th day of the week and  $i$ -th quarter in stratum  $S$ ,  $k = 1, 2, \dots, n_{ij(s)}$ .

Let:

$$W_{ij(s)} = \sum_{k=1}^{n_{ij(s)}} X_{ij(s)}(k) \quad (13)$$

be a sum of total expenses of respondents on  $j$ -th day of the week and  $i$ -th quarter in stratum  $S$ , then:

$$\frac{W_{ij(s)}}{n_{ij(s)}} \quad (14)$$

is an estimation of average amount of total expenses per respondent on  $j$ -th day of the week and  $i$ -th quarter in stratum  $S$ , whereas:

$$T_{ij(s)} = \frac{N_{ij(s)}}{n_{ij(s)}} \cdot W_{ij(s)} \quad (15)$$

is an estimation of total expenses incurred by people crossing the border on  $j$ -th day of the week and  $i$ -th quarter in stratum  $S$ .

The estimation of total amount of expenses  $T_s$  in stratum  $S$  is the sum of estimates  $T_{ij(s)}$ , i.e.:

$$T_s = \sum_i \sum_j T_{ij(s)} = \sum_i \sum_j \frac{N_{ij(s)}}{n_{ij(s)}} \cdot \sum_{k=1}^{n_{ij(s)}} X_{ij(s)}(k). \quad (16)$$

The estimation of total amount of expenses  $T$  throughout a year in the survey is the sum of estimates  $T_s$ , i.e.:

$$T = \sum_s T_s. \quad (17)$$

Let us assume that  $N_s = \sum_i \sum_j N_{ij(s)}$  is the total real number of people crossing the border in a given year in stratum  $S$  and  $n_s = \sum_i \sum_j n_{ij(s)}$  is the total number of respondents in a given year in stratum  $S$ .

If the sample is selected in a way that the weights from formula (3) do not depend on  $i$  and  $j$ , i.e. when

$$w_{ij(s)} = \frac{N_s}{n_s}, \text{ then } T_s \text{ is reduced to}$$

$$T_0 = \frac{N_s}{n_s} \cdot \sum_i \sum_j \sum_{k=1}^{n_{ij(s)}} X_{ij(s)}(k), \quad (18)$$

i. e., to an average amount of total expenses  $\frac{1}{n_s} \sum_i \sum_j \sum_{k=1}^{n_{ij(s)}} X_{ij(s)}(k)$ , multiplied by the real number

of people crossing the border  $N_s$  for a given stratum  $S$ .

The results of the pilot survey indicate that the number of arrivals of foreigners to Poland amounted to 15 779 thousand. Compared with 2007, the number of crossings made increased by more than 7%. The largest increase in traffic of foreigners leaving Poland was reported at airports (over 36%), followed by seaports (an increase of over 59%). At the eastern border the number of arrivals of foreigners, compared with the data of 2007, increased by over 15%, on the southern border - an increase of more than 5.6%, and on the western border - by almost 3%. The value of the total expenditure which were incurred by foreigners on account of the trip to Poland - after the generalization of data obtained in the pilot survey - was 6 335 825 zł. Foreigners from the EU countries spent a total of 4 038 067 zł, whereas from the non-EU countries - 2 287 758 zł.

The survey of participation of Poles in travel is a sample questionnaire survey, carried out in face-to-face interview made by interviewers. Participation in the survey is voluntary. A quarter is reference period while the survey is carried out in the month following the quarter.

The sample is drawn from a frame built on the basis of census enumeration areas base (from which census enumeration areas with zero flats are excluded) with applying a two-stage sampling by means of stratification on the first stage. Census enumeration areas or a set of census enumeration areas with the minimum of 5 dwellings are the first-stage sampling units (primary sampling units – PSU). Census enumeration areas which do not fulfil this condition are combined into a unit within the same statistical division. The second-stage sampling units are dwellings. Five dwellings are drawn from each first-stage sampling unit.

Census enumeration areas are sorted by strata, which were defined using the following criteria: 1. subregion 2. variable  $p$  – as the size of a locality. Additionally, the strata were modified for large cities.

The strata containing border areas are divided into two parts: border part and central part. A border zone consists of gminas located not further than 30 kilometres from the border or the coastline. Areas in the coastal zone without access to marine connection with foreign countries are treated as the central area. If a part of gmina is situated in a distance between 30 and 50 kilometres from the border line, it is included in the border area as well. This zone has been set along Polish border based on definition of the border area and the results of the survey of goods and services turnover in border traffic at the EU's external border in Poland.

In this way 254 strata were formed out of 191. However, due to the fact that 5 strata were so small (single gminas) that a single unit of the first degree could not be allocated to them, they were attached to strata of adjacent subregion with the same class of localities, and located in the same zone (border or non-border one). Finally, 249 strata were obtained.

The sample size (for Poland) was determined on the basis of data from National Census of Population and Housing 2011, while the basis for calculating the sample in voivodships was the number of households in gminas. The number of dwellings in a gmina is taken from the TERYT<sup>2</sup> database which is periodically updated.

In order to obtain sufficient number of questionnaires for same-day abroad trips, the sample is doubled in border zones as these areas see the highest number of same-day trips. Therefore, half of the sample is allocated to the border strata and the other half to the central strata. Within each of these strata the sample allocation is proportional to the number of dwellings in a stratum. The adopted method allows for generalization of the results at the voivodship level with division of a voivodship into border and central areas.

The following notation is assumed in the sampling:

$w$  – symbol of voivodship,

$h$  – stratum number in voivodship,

$k$  – PSU number in stratum,

$N_{wh}$  – number of PSUs in  $h$ -th stratum of  $w$ -th voivodship,

$n_{wh}$  – number of PSUs in the sample in  $h$ -th stratum of  $w$ -th voivodship,

$M_{wh}$  – number of dwellings in  $h$ -th stratum of  $w$ -th voivodship,

<sup>2</sup> National Official Register of Territorial Division of the Country

$M_{whk}$  – number of dwellings in  $k$ -th PSU of  $h$ -th stratum of  $w$ -th voivodship.

The first-stage sampling units (PSU) are drawn separately in each stratum. In a given  $h$ -th stratum of  $w$ -th voivodship (denoted by  $N_{wh}, n_{wh}, M_{wh}, M_{whk}$  respectively as  $N, n, M$  and  $M_k$ ) PSUs are sorted randomly in such a way that first each PSU is given a random number, then PSUs are sorted by increasing order of the random numbers.

In the next step a sequence of accumulated values is constructed:

$$\{S\} = \begin{cases} S_0 = 0 \\ S_k = S_{k-1} + M_k \end{cases}, \quad (19)$$

for  $k = 1, 2, \dots, N$ , hence:

$$S_N = \sum_k M_k = M, \quad (20)$$

where  $M$  – a number of dwellings in stratum.

After constructing the sequence  $\{S\}$  an interval of sampling is calculated:

$$IN = \frac{M}{n}. \quad (21)$$

Moreover, a random start number  $P_0$  is drawn from the range  $(0; IN)$ . The values  $IN$  and  $P_0$  are the real numbers.

Then a numerical sequence  $\{X_i\}$  is constructed:

$$X_i = P_0 + IN \cdot (i - 1) \quad \text{for } i \in \{1, 2, \dots, n\}. \quad (22)$$

If for some  $i \in \{1, 2, \dots, n\}$  the following inequality is satisfied:

$$S_{k-1} < X_i < S_k, \quad (23)$$

then  $k$ -th PSU is added to the sample.

Samplings in each strata are carried out in the same way.

Sampling of dwellings is carried out in each PSU which has been drawn to the sample. From each PSU 5 dwellings are drawn.

The following information is available for a given PSU - the address, the PSU number, the number of dwellings in PSU, i.e.  $M_{whk}$ .

Dwellings are drawn using simple random sampling without replacement, i.e. 5 integers are selected without repetition from the set  $[1; M_{whk}]$ .

The procedure of sampling dwellings is the same in all PSUs selected for the sample.

Selected dwellings are sorted sequentially according to: PSU, census enumeration areas (if PSU consists of 2 or more census enumeration areas), the dwelling number in a census enumeration area.

The generalization of the results of the survey include:

- probabilities of selecting households,
- level of the completeness of the survey by class of locality,
- structure of household's population by current demographic data.

Accordingly the following weights for each household are calculated:

- $w1g$  – sampling weight,
- $w2g$  – adjusted weight calculated by taking into account the level of the completeness of the survey by class of locality,
- $wg$  – weight calculated by taking into account structure of household's population.

The weight  $w1g$  for households results from the established sampling scheme. The weight is reciprocal of probability of selection of a household which surveyed household lives in. For the household which belongs to  $h$ -th stratum and  $k$ -th PSU:

$$w1g_{hk} = \frac{1}{\pi_{hk}}, \quad (24)$$

whereas

$$\pi_{hk} = \frac{n_h \cdot M_{hk}}{M_h} \cdot \frac{m}{M_{hk}} = \frac{n_h \cdot m}{M_h} = \frac{m_h}{M_h}, \quad (25)$$

where:

$n_h$  – number of PSU to be selected from stratum  $h$ ,

$m$  – number of dwellings selected from one PSU,

$m_h$  – number of dwellings to be selected from stratum  $h$

$M_h$  – number of dwellings in  $h$ -th stratum,

$M_{hk}$  – number of dwellings in  $k$ -th PSU of  $h$ -th stratum.

Therefore, for all dwellings which belong do stratum  $h$  the following weight is assigned:

$$w1g_h = \frac{M_h}{m_h}. \quad (26)$$

The weight  $w/g$  is then adjusted if the interviewer was unable to contact the selected dwellings, if there is a lack of information because the respondents refused to participate in the survey, if there was temporary absence of persons of household and the like. This weight is adjusted in six classes of locality  $p$  separately because there is a relation between a class of locality and the level of the completeness of the survey.

Therefore, the rate  $R_p$  of the completeness of the survey is calculated:

$$R_p = R1_p \cdot R2_p \quad (27)$$

where:

$R1_p$  – rate of making contact with dwellings in class  $p$ ,

$R2_p$  – rate of responses in class  $p$ .

The first rate relates to dwellings and it is a quotient of the number of dwellings in which households reside and with whom contact was made by the interviewer to the number of actually existing dwellings. Dwellings closed down, transformed into non-residential facilities or wrong addresses are not taken into account in calculating this rate.

The latter rate concerns households and indicates a fraction of households which were interviewed. Weights  $w/g$  are used for estimating rates  $R1_p$  and  $R2_p$ .

Because each stratum belongs to one class of locality, the weight  $w/g$  for households from stratum  $h$  of class  $p$  is adjusted as follows:

$$w2g_h = \frac{w1g_h}{R_p} \quad (28)$$

In this way adjusted weights  $w2g$  on account of non-responses are obtained.

The next step is to calculate weights  $wg$  taking weight  $w2g$  as a basis. The weights are calculated using demographic data from other sources. As additional variables information about number of households is used according to six size classes, i.e. 1-person, 2-person, 3-person, 4-person, 5-person and 6 or more person in the division of urban and rural areas. The values of these variables come from NSP 2011.

The following calibration method was used. For each of 12 categories of households (1-person households, 2-person households, ..., 6 or more persons households in urban and rural areas) the values are calculated:

$$M_j = \frac{G_j}{\hat{g}_j} \quad (29)$$

where:

$G_j$  – number of households of  $j$ -th category in population (i.e. according to NSP 2011),

$\hat{g}_j$  – number of households of  $j$ -th category estimated on the basis of the sample.

Finally, for a household which belongs to  $h$ -th stratum and  $j$ -th category:

$$wg_{hj} = w2g_h \cdot M_j \quad (30)$$

As the number of the surveyed households is a small subset of the population of all households in Poland, the data on the number of abroad trips made by Poles were also obtained on the basis of data derived from: the results of the survey carried out at road crossings at the EU's internal border on the territory of Poland; data of the Civil Aviation Authority on the number of passengers checked-in to foreign airports, data of the Central Statistical Office reports on the volume of traffic of passengers on ships, data of the Border Guard.

The traffic on road crossings at the internal border was estimated using regression analysis. The model included the variables:

- Y - the number of Poles returning home through the EU's internal border on the territory of Poland (available data of the Border Guard for the years 2003-2007),
- X - data on the volume of traffic on selected crossings.

The outcome of the analyzes were four equations describing the movement of Poles at selected sections of the border. As in the case of estimating the movement of foreigners, the estimated structural parameters of the models are statistically significant. Moreover, these models were analyzed in terms of the relationships between variables and properties of residuals. The value of the assessment of the F test significance for all equations was much lower than the assumed level of significance of 0.05. The models meet the basic assumptions of the method of least squares, which provide the basis for their practical use.

According to the results of the pilot survey, in conjunction with the trips completed in the first quarter of 2013, Poles spent 4232.5 million zł, of which 59% were spent during foreign trips. On average, the cost of one short-term domestic trip was 228 zł, a long-term domestic trip - 695 zł, and a foreign trip - 2170 zł.

## 5. THE SPECIFICITY OF TRANSBORDER RESEARCH

Questionnaire surveys conducted at the border are unique. This is a very important issue, which has a large impact on the organization of the survey, as well as to the limit in the selection of survey methods.

It is not easy to acquire a respondent in border surveys as the travellers who are surveyed are usually in a hurry. At the EU's internal border it is even more difficult to acquire respondents due to free movement of vehicles and persons after abolition of border controls. For that reason many vehicles do not stop in the vicinity of the border crossing but goes to points distant from the border. In the case of some crossings at the EU's internal border, particularly those characterized by a high share of local border traffic, only foreigners residing in the border area stop in the vicinity of the crossing. They stop to make purchases and it is difficult to capture persons arriving for other purposes (with at least one overnight stay). Hence, it is important to choose and constantly verify places for the survey.

Another issue concerning the conduct of the border surveys is the risk associated with the occurrence of a dangerous situation for interviewers, especially in the late hours of the day and night. Therefore, it is important to cooperate with the Police, the Border Guard and to reduce surveys at these times to a minimum.

An important problem arising in carrying out the surveys of border traffic of vehicles and people and trips made by foreigners to Poland is all kinds of difficulties in obtaining information on the number of persons in vehicles and the country from which the vehicle comes, as well as obtaining responses from foreigners leaving Poland.



### **5.1. "RANDOM ROUTE" TECHNIQUE FOR COLLECTING QUESTIONNAIRES**

The analysis of the data obtained from border surveys conducted so far by the official statistics shows that border traffic is generated by a small group of vehicles, which implies that the probability of selecting a household whose members travel abroad is small. In other words, the population of people who travel abroad is a small subset of the population of all households in the border area. The survey of trips made by Poles introduced a modified technique of collecting questionnaires, maintaining at the same time the principles of a representative selection of households for the survey. In case the interviewer fails to make an interview during the first visit in the selected flat, he/she is obliged to retry the contact. If, despite retried attempts, a household cannot be contacted or if the selected household was taking part in travelling, the "random route" technique is applied to collect questionnaires. According to this technique, when it is impossible to conduct the interview the interviewer goes to the next apartment to make an interview in accordance with the appropriate algorithm for the selection of subsequent flats, visiting a maximum of 8 apartments. The number of maximum searches has been determined on the basis of the number of vehicles crossing the border and the number of households in border powiats. In the case of households not taking part in travelling, the interviewer writes down the relevant characteristics of the visited household and moves to another flat. If the interviewer finds the flat which is taking part in travelling, he determines the number of households taking part in travelling, but if it was one household, he conduct an interview with it. In case of more than one household he shall draws just one of them according to the following principles - the household whose householder was the last to celebrate his birthday is selected for the survey. Then, he moves to the next starting point. Conversely, when a household which is taking part in travelling is found, the interviewer conduct a survey in the last (eighth) step and proceeds to the next starting point.

### **5.2. CALIBRATION OF WEIGHTS DUE TO GENERALIZED RESULTS OF ESTIMATIONS OF BORDER TRAFFIC OF POLES**

In households surveys of trips usually modifications of parameters are required. In this case the calibration of weights was made using estimated data on trips of Poles and individual data obtained from the household survey.

Based on the data obtained from the pilot survey, three categories of households were separated on account of the length of stay of Poles abroad:

- households with only same-day trips,
- households with only one or more overnight stays (multi-day trips),
- households with same-day and multi-day trips.

For each of them the number of completed trips was assigned. In the next stage, the estimation of the number of trips taking into account the foreign trips of Poles was made. The calculations consisted of:

- for households that participated in the trips with just one or more overnight stays the total number of trips was estimated depending on the number of trips from a given household along with the use of the structure of weights assigned to these households,
- for households that had both foreign same-day and multi-day trips the estimation method was similar, i.e. the total number of trips was estimated depending on the number of trips from a given household, along with the use of the structure of weights assigned to these households,
- for households that had only same-day trips a different procedure was assigned. In this case, the households were divided according to the country visited. These households were assigned the number of trips that should be executed in them to a particular country, then the total number of trips was estimated depending on the number of trips from a given household, along with the use of the structure of weights assigned to these households.

In this way new weights for households that participated in foreign trips were calculated. For the remaining households the weights were reduced proportionately.

### **5.3. METHOD FOR ESTIMATING FOR ALL COUNTRIES OF THE WORLD THE TRIPS MADE BY FOREIGNERS TO POLAND AND THEIR EXPENSES**

In order to estimate the results of the trips made by foreigners (non-residents) to Poland and their expenses the following data are used additionally: data on the use of tourist accommodation establishments, data of the Border Guard on border crossings made by foreigners broken down by country of origin, and data on crossings of the EU's internal border on the territory of Poland based on information obtained in the survey of border traffic and from airports and seaports. The sources of data listed above contain information about the trips made by foreigners to Poland from approximately 193 countries around the world.

In the first step all countries of the world were divided into 19 categories due to different specificities of average expenditure, the type and length of stay, purpose of visit, the distance from Poland, etc. Among these categories the countries bordering Poland were separated individually. Other European countries were divided into 4 groups (Eastern Europe, Southern Europe, Western Europe, and Northern Europe), Africa - into two groups (North Africa and South Africa), Asia - into two groups (Middle East Asia and Far East Asia), America divided into 3 groups (North America, Central America and South America) and Australia and Oceania. In some cases the calculations are performed on the combined categories due to the specific topic (e.g. the calculation of the average expenditure for same-day visitors).

In the next step a comparison of the number of trips for each country on the basis of the border guard is made. These values are then adjusted on the basis of the report which contains information on the number of foreigners using collective accommodation establishments.

The next step was to calculate the number of overnight stays of tourists from different countries. The principle was to calculate the average length of stay (number of nights per single trip) for each group of countries. The analysis of the data showed that in several categories the number of nights per trip significantly differs from those in other categories. This was due to the small number of registered questionnaires in a given category, or extreme cases registered (few tourists staying in Poland for a long time).

Total expenditure for the country is the product of the average expenditure for the category in which a given country is located and the estimated number of trips for this country.

### **5.4. ADDITIONAL SOURCES OF DATA**

The method of generalizing the results uses additional data sources apart from data obtained directly from the count at the border and conducted questionnaire survey. These sources are used as follows:

- Border Guard data are used when estimating the overall traffic at the EU's internal border on the territory of Poland. The relevant time series of the volume of total crossings, as well as the number of vehicles crossing the border are used in the econometric model which is prepared. In addition, these data are used in the process of estimating the number of trips on account of the country of residence of foreigners visiting Poland,

- data on the use of tourist accommodation establishments - the data used in the estimation of the overall traffic in relevant sections of the border. The corresponding time series are included in the econometric models as additional explanatory variables. Furthermore, the information from accommodation establishments are taken into account in estimating the number of trips made by foreigners to Poland as well as in estimating the number of overnight stays,

- data on air transport - data of the Civil Aviation Authority and the Central Statistical Office reports. These data are used to estimate the number of trips made by foreigners and Poles travelling by air,
- data on sea transport - data of the CSO reporting; they are used to estimate the number of trips made by foreigners and Poles travelling by sea,
- data on railway transport - data used to estimate the number of trips made by foreigners and Poles travelling by rail,
- data of travel agencies - data collected on the basis of a specially developed questionnaire. The information contained in the questionnaire are used to estimate expenses incurred for the purchase of travel packages with tour operators,
- EUROSTAT data for non-typical countries (countries of low tourist traffic with Poland).

## 6. PRELIMINARY RESULTS OF THE SURVEYS

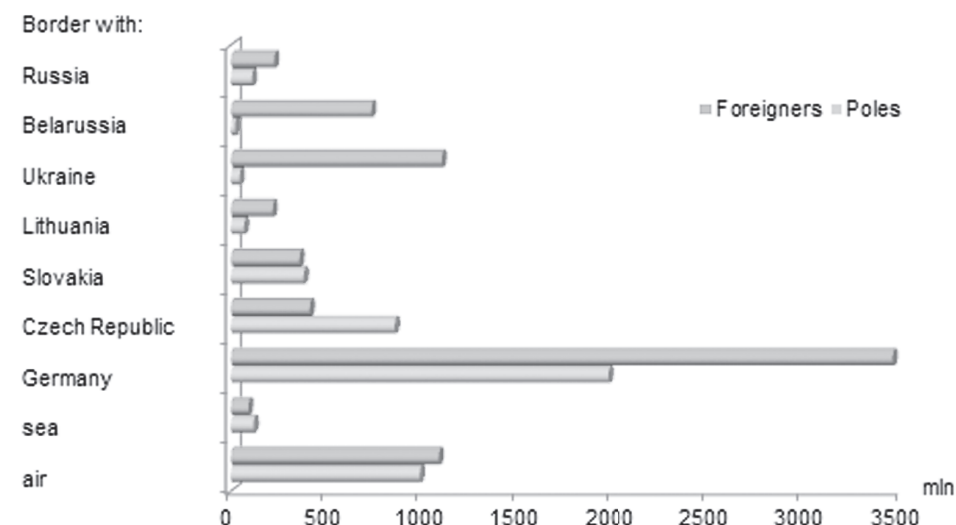
### *Expenses of foreigners in Poland and of Poles abroad*

In the first quarter of 2014, the estimated value of goods and services purchased in Poland by foreigners (non-residents) was about 7.7 billion zł, while the expenses incurred abroad by Polish citizens residents (residents) amounted to 4.6 billion zł.

Out of total expenses of foreigners, 57.9% was made by persons crossing the EU's internal land border in Poland, 26.8% - the EU's external land border, 14.1% air border and 1.2% air border. In the case of expenses incurred abroad by Polish citizens the analogous structure was as follows: 71.8%, 4.0%, 21.6% and 2.6%.

The highest expenses in Poland, taking into account the Polish land border, were incurred by foreigners crossing the border with Germany (53.1% of total expenses of foreigners crossing the Polish land border in the first quarter of 2014), followed by the border with Ukraine (16.9%), Belarus (11.3%).

In the case of the Polish citizens, at the land border, the highest expenses were incurred by the ones crossing the border with Germany (57.0% of total expenses of Poles crossing the Polish land border in the first quarter of 2014), followed by the Czech Republic (24.7%), Slovakia (11.0%).

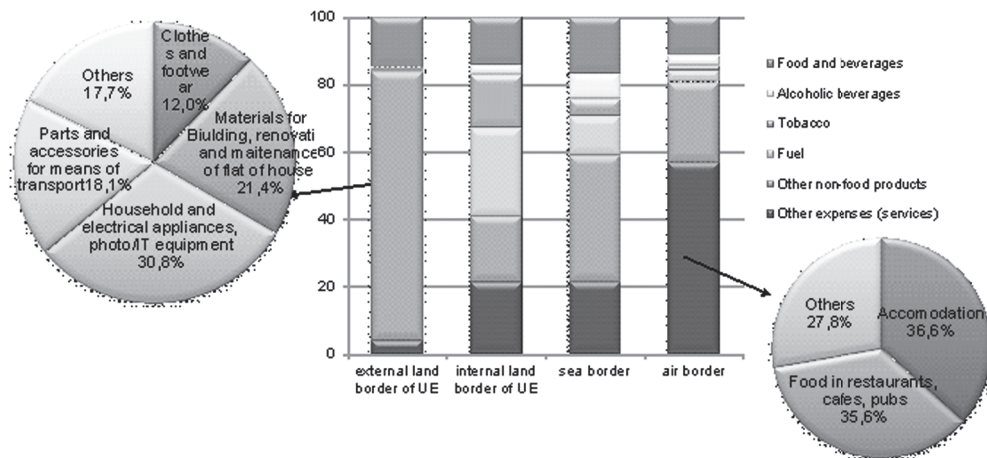


**Figure 1.** Expenses of foreigners in Poland and Poles abroad in the 1st quarter of 2014

The estimated value of goods and services purchased in Poland by foreigners crossing the Polish section of the European Union's external border in the first quarter of 2014 stood at approx. 2.1 billion zł, whereas expenses incurred abroad by Polish residents crossing this section of the border was 181.2 million zł. These amounts were higher than in the corresponding period of 2013 by 24.9% and 7.6%, respectively. Compared with the previous quarter the expenses of foreigners were lower by 9.9%, while of Poles higher by 10.9%.

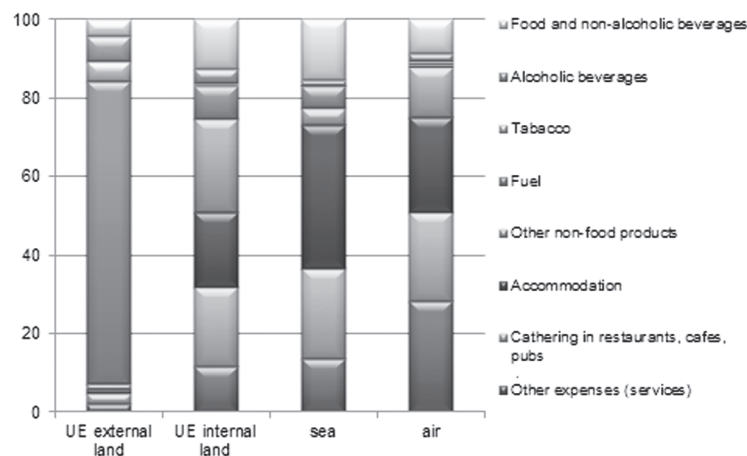
In the first quarter of 2014 foreigners crossing the Polish-Ukrainian border incurred in Poland expenses by 19.3% lower than in the previous quarter, while Poles crossing the same border incurred expenses higher by 2.2%. In relation to the same period of 2013, the expenses of foreigners were higher by 34.2%, while of Poles - lower by 11.2%. As for the Polish-Belarusian border, the expenses of foreigners compared to the previous quarter were lower by 0.2% and of Poles higher by 16.7%. In relation to the first quarter of 2013, expenses of foreigners were higher by 2.3% and of Poles by 16.7%. In the case of the border with Russia there was an increase of expenses of both foreigners and Poles, compared to the previous quarter, by 20.3% and 13.9%, respectively, whereas compared to the same period of the last year - by 100.5% (twofold increase) and 16.2%, respectively.

Foreigners covered by the survey in the 1st quarter of 2014, spent 6,0 billion on the purchase of goods in Poland, which accounted for 78.3% of expenses of non-residents, and 1.7 billion zł, i.e. 21.7%, on other expenses (services). There was a large variation of this relationship between individual borders. Foreigners crossing the European Union's external land border in Poland spent 96.0% of total expenses on goods and 4.0% on services, whereas the ones crossing the EU's internal land border 78.7% and 21.3%, respectively. Similarly situation was recorded for sea border - 78, 7% and 21.3%, and air border - 43.2% and 56.8%.



**Figure 2.** Structure of expenses incurred by foreigners in Poland in the 1st quarter of 2014

Poles covered by the survey in the first quarter of 2014 spent 2.1 billion zł on the purchase goods abroad, which accounted for 45.2% of their total expenses (much less than in the case of foreigners), and 2.5 billion zł, i.e. 54.8%, on other expenses (services). Poles crossing the EU's external land border in Poland spent 94.2% of total expenses on goods and 5.8% on services, while the ones crossing the EU's internal land border 49.2% and 50.8%, respectively, and sea border - 26.9% and 73.1%, as well as air border - 25.0% and 75.0%.



**Figure 3.** Structure of expenses incurred by Poles abroad in the 1st quarter of 2014

Differences in expenses, also in terms of product structure, was observed on individual sections of the border, both among foreigners and Poles. This is due to, among other things, the manner of travelling, purposes of the trip, length of stay or cost-effectiveness of shopping abroad. For example, a significant proportion in the structure of expenses incurred in Poland by foreigners crossing the EU's internal border land was constituted by fuel (over 1/4 of their total expenses), whereas the ones crossing the EU's external land border spent only 0.7% for this purpose. Tobacco products also popular among foreigners crossing the EU's internal border (in particular in the case of Polish-German border - approx. 20%), while expenses made for this purpose by non-residents coming from outside the EU's external border were negligible. Higher expenses on alcoholic beverages were incurred by foreigners crossing the EU's internal sea, air and land border than the EU's external border in Poland.

Poles, on the other hand, who crossed the EU's external land border spent most (over three quarters) of their expenses abroad for the purchase of fuel, whereas on the EU's internal border the proportion of fuel in the structure of expenses of Poles was 8.6%. Those who were crossing the EU's external land border spent 5.2% of expenses on tobacco products, while those on the EU's internal border approx. 0.5%. There were corresponding proportions for alcoholic beverages - 6.3% and 3.8%, respectively.

Average expenses incurred in Poland by a foreigner (non-resident) in the first quarter of 2014 reached the level of 465 zł, while the average expenses incurred abroad by a Polish resident amounted to 372 zł. Undoubtedly the highest average expenses were incurred by non-residents crossing the sea and air border (several times higher than in the case of land border). Average expenses of foreigners crossing the EU's external land border in Poland were twice higher than the expenses of foreigners crossing the EU's land border. Similarly, in the case of Poles, a few times higher average expenses were reported among sea and air border crossing than land. Average expenses of Poles crossing the external land border of the EU on the territory of Poland were about 1/5 lower than crossing the internal EU land border.

#### *Purpose of the visit and the frequency of crossing the border*

The dominant purpose of the arrival of foreigners (non-residents) to Poland by external land border of the European Union was to make purchases (approximately 86%), while in the inner border of the EU this purpose accounted for approx. 59%, and a significant proportion constituted also visiting relatives or friends (almost 14%), business issues (approximately 9%) and leisure, recreation, holidays (8.5%). In the case of the air border the purpose of trade (business) constituted the largest share (approximately 37%), then visiting relatives or friends and transit (by approximately 1/5). The purpose of the arrivals of foreigners to Poland by sea were more than 1/3 for visiting relatives or friends, followed by shopping (29%), business issues (approximately 21%) and leisure, recreation, holidays (12%).

In the case of the citizens of Poland, the differentiation between external and internal border of the EU is even more apparent - trips with the purpose of making purchases accounted for approximately 89% and 26%. At the internal border, the largest percentage (approximately 38%) constituted trips of Poles related to leisure, recreation and holidays. A significant proportion was also trips to work (over 22%) and to visit relatives or friends (approximately 10%). In the case of the air border, most trips were made for the purpose of leisure, recreation, holidays and visiting relatives or friends (by approximately 1/3). In contrast, more than half of trips by sea concerned with professional issues.

In the first quarter of 2014 most surveyed foreigners declared crossing the land border of the EU on the territory of Poland several times a month (over 1/3 of border crossings by foreigners), and several times a week (more than 1/4). The EU external land border was crossed with a slightly higher frequency than the internal. Crossings of the border several times a week accounted for the largest share for the section with Ukraine (57.7%). In the case of the EU internal border, the sections with Germany and the Czech Republic were crossed by foreigners with greater frequency than with Lithuania and Slovakia.

Among the citizens of Poland participating in trips abroad (including crossing the border for one day) in the first quarter of 2014, vast majority (89.3%) constituted one day trip in the quarter, 9.2% attended 2-5 trips, and 1.5% up to 6 and more trips. Citizens of Poland with a few and more trips in the quarter on the external land border of the EU on the territory of Poland (especially Russia) accounted for a greater proportion than the internal border of the EU.

#### Local border traffic

Local border traffic greatly facilitates the regular crossing of the external EU's land border by border residents in order to stay in the zone on the other side of the border, mainly for social, cultural, family or economic reasons. The agreement on local border traffic with Ukraine entered into force on 1 July 2009<sup>3</sup>, and with Russia on 27 July 2012<sup>4</sup>. For the Polish-Ukrainian border the local border traffic (LBT) is of greater importance for Ukrainian citizens than for Polish citizens because Poles can travel and stay in Ukraine up to 90 days without a visa. On the other hand, the introduction of LBT at the border with the Kaliningrad region is important for both sides. In addition, the zone of local border traffic at the border with Russia is unique due to its area, as it goes much further than 30 or 50 km from the border.<sup>5</sup>

#### The Polish-Ukrainian border

At the Polish-Ukrainian border, as part of LBT traffic in the first quarter of 2014, there were 1.8 million clearances<sup>6</sup>, which accounted for 54.4% of this section of the border crossings by foreigners.

Compared to the previous quarter the number of crossings as part of LBT was 16.2% lower, and in comparison to the same period of 2013 - by 29.2% higher.

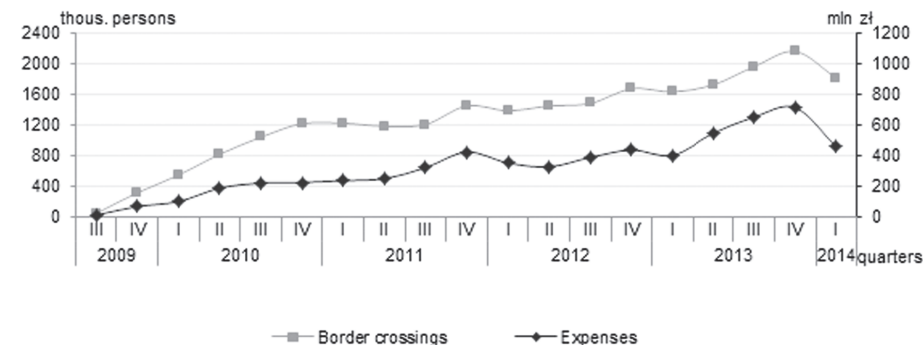


Figure 4. Local border traffic of foreigners on the Polish-Ukrainian border

An estimated value of expenses incurred by foreigners in Poland crossing the Polish-Ukrainian border as part of the local border traffic in the 1st quarter of 2014 amounted to 454.1 million zł, which accounted for 41.3% of the expenses of foreigners crossing the Polish-Ukrainian border. These expenses were 36.1% lower compared to the previous quarter and 13.9% higher than in the last year.

Average expenses incurred in Poland by a foreigner crossing the Polish-Ukrainian border as part of LBT in the 1st quarter of 2014 amounted to 503 zł while in the first quarter of 2013 - 489 zł.

#### The Polish-Russian border

On the Polish-Russian border as part of the local border traffic in the 1st quarter of 2014, the Border Guard reported 413.2 thousand clearances of foreigners, i.e. 12.7% less than in the fourth quarter of 2013. As part of LBT this border was crossed by approximately 745 thousand Poles, i.e. 31.5% more than in the previous quarter and more than double the year before. Crossings under the LBT accounted for more than half (50.8%) of this section of the border crossings by foreigners, while in the case of the Poles - approx. 95%.

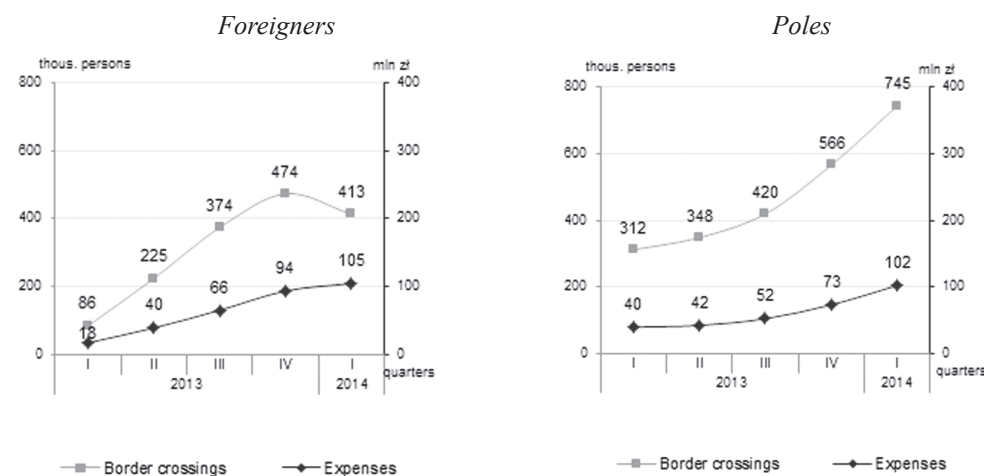


Figure 5. Local border traffic on the Polish-Russian border

3 Law of 6 March 2009 on the ratification of the Agreement between the Government of the Republic of Poland and the Cabinet of Ministers of Ukraine on rules on local border traffic, signed in Kiev on 28 March 2008, and the Protocol between the Government of the Republic of Poland and the Cabinet of Ministers of Ukraine signed in Warsaw 22 December 2008 amending the Agreement between the Government of the Republic of Poland and the Cabinet of Ministers of Ukraine on rules on local border traffic, signed in Kiev 28 March 2008 (Journal of Laws of 4 May 2009, no. 66, item 555).

4 Law of 16 March 2012 on the ratification of the Agreement between the Government of the Republic of Poland and the Government of the Russian Federation on rules on local border traffic, signed in Moscow 14 December 2011 (Journal of Laws of 10 May 2012, item 498).

5 Regulation (EC) No 1931/2006 of the European Parliament and of the Council of 20 December 2006 laying down rules on local border traffic at the external land borders of the Member States and amending the provisions of the Schengen Convention (Official Journal of the European Union L 29, 3 February 2007). Regulation (EU) No 1342/2011 of the European Parliament and of the Council of 13 December 2011 amending Regulation (EC) No 1931/2006 as regards the inclusion of the Kaliningrad oblast and certain Polish administrative districts in the eligible border area (Official Journal of the European Union L 347 of 30 December 2011).

6 Data of the Main Headquarters of Border Guard.

Estimated value of the expenses incurred in Poland by foreigners crossing the Polish-Russian border as part of LBT in the 1st quarter of 2014 amounted to 105.2 million zł, which accounted for 46.3% of the expenses of foreigners crossing this border section. These expenses were higher compared to the previous quarter by 11.9%. The value of expenses incurred abroad by the Poles crossing surveyed border section as part of LBT amounted to 102.2 million zł, which accounted for 91.6% of expenses of Poles crossing this section of the border. These expenses were higher compared to the previous quarter by 39.7% and by 157.8% in comparison to the previous year.

Average expenses incurred in Poland by a foreigner crossing the Polish-Russian border as part of LBT in the 1st quarter of 2014 amounted to 507 zł, while in the previous year 419 zł. However, the average expenses incurred abroad by a Pole crossing this section of the border as part of LBT amounted to 275 zł (previous year – 256 zł).

## SUMMARY

The unique character of transborder areas requires a great number of various surveys of socio-economic matters to be carried out. Establishing a consistent research system should include a wide spectrum of methodological system, which will be useful both in the countries covered and not covered by liberalization of the rules on requirements as to crossing the border (it will be particularly helpful in the countries with both kinds of border crossings — e.g. internal and, at the same time, external borders of the European Union). Effective functioning of such a system requires to be supported by standardized sources of information (official registers, other administrative sources of data, bank registers, automatic measurement of traffic, etc.), as well as by creation of projects which will not only include surveys on borders, but will primarily concentrate on processes ongoing around the border. The functioning of a coherent research system for cross-border areas will provide opportunity to use econometric models, as well as employ the results of analyses on micro-mezo-macroeconomic level.

Newly implemented coherent research system for transborder areas consisting of two modules, that is Households survey and surveys at the EU's external and internal borders including Questionnaire survey at the borders and in the vicinity of the border, as well as Traffic intensity survey, was successfully examined during pilot surveys. It turned out that there is a great demand for results of these surveys, not only from the Central Bank, Ministries and central offices, but also from institutions responsible for regional policy and entrepreneurs. Therefore, research objectives and objectives connected with usefulness of the surveys were achieved.

The analysis shows that there is a diversity of studied phenomena in each type and section of the border. A vast majority of surveyed people went abroad and returned in one day (with the exception of air and sea border).

Expenditure incurred by foreigners in Poland was higher than Poles abroad. Of the total expenditure of foreigners in Poland vast majority was attributable to the inhabitants of the neighbouring countries of Poland. Of this the highest amount for purchases in Poland were spent by the residents of Germany, Ukraine and Belarus.

The value of expenses on the purchase of goods by foreigners in Poland and (to a lesser extent) Poles abroad were significant in comparison with the turnover of Polish foreign trade with neighbouring countries. Due to the amount of expenses on the one hand, and the volume of exports or imports on the other, these relationships were characterized by great diversity. Highest relations related to expenses of foreigners declaring Belarus and Ukraine as the country of residence in comparison with the export of goods from Poland to these countries.

The results of the survey, both among foreigners (non-residents) as well as the citizens of Poland showed that the greatest intensity of the phenomena associated with the movement at the land border of Poland (which covered approximately 92% of all cross-border traffic) occurred in areas around the 50 km along the border. The evidence of this, among others, is a high percentage of people crossing the border who incurred expenses in this area, as well as the fact that the inhabitants of the villages located in this area constituted the vast majority of people crossing the border. It is also characteristic that in the case of the EU internal border on the territory of Poland, the intensity of these phenomena in the area of over 100 km away from the border was higher than in the case of the external border, which is related to, among others, the purposes of travelling abroad. For areas located at the external border of the European Union on Polish territory, the introduction of local border traffic was an important element facilitating crossing of the border.

## REFERENCES

- CIERPIAŁ-WOLAN, M., WOJNAR, E., WOJTAK, J., (2009). *Transborder areas survey -survey of goods and services turnover in border traffic, Methodological book*, CSO, Warsaw.
- CIERPIAŁ-WOLAN, M., WOJNAR, E., (2013). Statistical surveying of border traffic and movement of goods and services, [in:] *Trans-Border Economies - New Challenges of Regional Development in Democratic World*, Edited by Cierpiał-Wolan M., Oleński J., Wierzbień W., Jarosław, 99–108.
- KISH, L., (1991). A taxonomy of elusive populations, *Journal of Official Statistics*, No 7.
- Methodology of budget household survey (2011)*, Edited by Barlik, M., Siwiak, K., CSO, Warsaw.
- Surveys of trips made by Poles and arrivals of foreigners to Poland - Methodological book*, (2013). Edited by Cierpiał-Wolan, M., Jeznach, M., CSO, Warsaw.
- THOMPSON, S. K., (2012). *Sampling, Third Edition*, Wiley.

**MAREK CIERPIAŁ-WOLAN***Statistical Office in Rzeszów,  
University of Rzeszów  
(Poland)***ZOFIA BARBARA LIBERDA***University of Warsaw  
(Poland)***WŁADYSŁAW ŁAGODZIŃSKI***Vice-President  
Polish Statistical Association  
(Poland)*

## **INTEGRATION AND MATCHING OF SURVEY DATA AND ADMINISTRATIVE DATA FOR MONITORING AND ANALYSIS OF ECONOMIC PROCESSES IN TRANS-BORDER AREAS**

### **1. INTRODUCTION**

Regional statistics come across various data collection problems: limited data availability for areas located on both sides of the national border, lack of information on a certain level of aggregation in individual countries, low level of data comparability. Data model describing cross-border areas consists of survey data at micro level and of administrative, standardized sources of information. The survey data comes from detailed household surveys in cross-border regions, from some special surveys of persons crossing borders at particular places, as well as some surveys conducted in local enterprises. The administrative data sources are: official registers for local regions; bank registers, geo-coded data, e.g. land parcels registers, housing construction permits; other administrative sources of data, e.g. car registrations, tourist services registration; automatic measurement of traffic, etc.

It seems to be important to launch a survey system for those areas, of which a crucial part is monitoring the socio-economic phenomena and the results' linkage of this monitoring to the information analyses included in other administrative registers.

This paper presents an attempt at modeling a linkage of survey and administrative data for cross-border areas. The objective of this paper is developing a survey methodology for cross-border areas throughout integration of administrative data sources sample surveys data from the Border Guard, as well as the Labor Force Survey, the Household Budget Survey, the Survey of Goods and Services Turnover in Border Traffic and Social Diagnosis. We focus on the problem of special data sensitivity due to different nationalities of respondents as well as legal issues of confidentiality due to different national laws and border regulations.

#### **1.1. BORDER TRAFFIC REGISTER**

The system of border traffic record is one of the components of the entire system of border and visa control. In this system, the following information is collected: time of the event (crossing), country, name of a border crossing point, time of entry/exit, full name, date of birth, citizenship, type and number of a document (passport, visa, Local Border Traffic), pedestrian/vehicle (registration number, vehicle type, brand, whether the person is a driver/passenger), additional information (e.g. entry purpose, detention decision). This system is linked with other databases – the Police, Interpol, etc.

#### **1.2. LABOUR FORCE SURVEY**

The Labour Force Survey has been carried out since 1992 by the Central Statistical Office, in accordance with the methodology of the International Labor Organization, thus the comparability of the data on an international scale is assured. The main objective of the Labor Force Survey is to obtain data on the size and structure of labor resources. The results of the survey are used primarily for:

- determining the balance of the workforce divided into three basic categories of the population - employed, unemployed and economically inactive,
- analysis of changes in the economic activity of population in different socio-professional groups, and territorial sections,
- analysis of the situation on the labor market, including the assessment of scale and intensity of changes in unemployment in spatial covers,
- socio-demographic characteristics of the unemployed,
- analysis of the structure of employment by socio-demographic and professional characteristics.

The situation regarding the economic activity of members of households, i.e. working, being unemployed or economically inactive in the reference week is the objective of the survey.

The Labor Force Survey is a probability sample survey, which means that results from the survey are generalized over the whole population. The sample covers all people at the age of 15 and more, who are members of households in the sampled dwellings. The survey does not cover persons absent from the household when the actual period of absence exceeded 3 months, while the total duration of absence (actual and planned) is 12 months or longer. Since the first quarter of 2004, the survey includes foreigners who are also members of the sampled households.

The Labour Force Survey is carried out quarterly as a continuous observation, i.e. in each of the 13 weeks of the quarter, 1/13 of a quarterly sample of dwellings is surveyed. In the Podkarpackie voivodship in each quarter of 2014 survey covered 2808 dwellings.

Selection of the quarterly samples is performed according to the rotation system, which is as follows:

- the sample for each quarter consists of four elementary samples, which are divided into 13 weekly samples,
- partial rotation of elementary samples is carried out in every quarter: in a given quarter there are two elementary samples surveyed in the previous quarter, one elementary sample introduced into the survey for the first time and one sample which was not surveyed in the previous quarter and was introduced into the survey exactly a year before,
- each elementary sample is selected independently.

The survey has been carried out by interviewers of Statistical Offices in randomly sampled dwellings, and the responses to the questions should be provided by the person to whom a questionnaire is addressed. In special cases, it is allowed that another member of the household, well-informed about the professional situation of the person absent, answers the questions.

The survey is carried out in the form of paper questionnaires and LFS applications for laptops.

Two paper questionnaires are used:

- Household File for each household in a randomly sampled dwelling; these ZG files constitute a register of households during the whole survey cycle.
- Household questionnaire which is filled in on a quarterly basis for each person covered by the survey, i.e., persons 15 years-old and more present in a household or absent, if the actual period

of absence is no longer than 3 months, or persons absent for longer than 3 months but the total duration of absence (actual and planned) is no longer than 12 months.

Additional questionnaire was introduced and filled out in case the survey was not carried out (e.g. refusal, absence of inhabitants).

### **1.3. HOUSEHOLD BUDGET SURVEY**

The survey of household budgets is a voluntary survey based on the sampling method that allows for generalization of the results for the whole population of households within the margin of error. The adopting sample scheme was a two-stage one, geographically stratified, with different probabilities at the first selection stage. The sampling units for the first stage were the area survey points, and those for the second stage were dwellings.

The area survey point is a statistical area or set of areas. It is assumed that an urban area survey point should consist of at least 250 dwellings, while a rural one – 150 dwellings. In the household budget survey, the adopted model is full rotation with a monthly replacement of the sample. This means that for each month 2 dwellings per area survey point are selected, and all the households from these dwellings participate in the survey. Every selected dwelling participates in the survey in the same month of the two consecutive years, i.e. in 2012-2013 for the second subsample and 2013-2014 for the first subsample. In 2014, 160 dwellings have been selected for the monthly survey in the Podkarpackie voivodship.

The survey unit is a one-person or multi-person household. The object of the survey is primarily its budget, i.e. the amount of receipts and expenses (in cash and in kind) of all members of the surveyed household, and a quantitative consumption of selected goods and services. In addition, within the frame of the survey, information is collected on demographic and socio-economic characteristics of people within the household, as well as information on living conditions, household's equipment with durables and the subjective evaluation of the financial situation of the household.

In the household budget survey the following questionnaires are used:

- Household Statistical Sheet,
- Information on participation in the survey,
- Budget Diary,
- Additional information on the household,
- Income in kind from hired work,
- List of dwellings for the household budget survey in the area survey point,
- List of randomly selected dwellings for the household budget survey in the area survey point.

Household budget surveys are conducted by interviewers in randomly selected area survey points, while the records of expenditures and revenues of a household are carried out by the household in their "Budget Diary."

Data obtained from the survey allow for the analysis of the living conditions of the population and evaluation of the impact of various factors on the living conditions of the main population groups and their differentiation.

The household budget survey provides detailed information on:

- the demographic structure of households, i.e. the number of household members, their age, gender, education, disability and economic activity;

- the level and sources of income;
- the level and structure of expenditure as well as sources of goods and services;
- the consumption level of basic food products according to quantity, but also energetic value and nutrients;
- prices at which households purchase selected goods and services;
- households' equipment with durable goods;
- dwelling conditions;
- the subjective evaluation of the financial situation of households.

The results of household budget surveys are mainly used for the analysis of the level of living conditions and differentiation for the main socioeconomic groups of households; the analysis of the level of living conditions and differentiation for the main socioeconomic groups of households according to dynamic approach; natural consumption and poverty surveys; studying nominal and real income levels and changes observed in this area for the particular groups of households, and for the detailed surveys of the consumer market forecasts, and other economic analyses.

### **1.4. TRANSBORDER SURVEYS**

#### **✓ THE SURVEY OF GOODS AND SERVICES TURNOVER IN BORDER TRAFFIC AT THE EU'S EXTERNAL BORDER IN POLAND.**

The survey covers expenses incurred by foreigners in Poland and the Poles abroad on the purchase of goods and services, purpose and duration of stay, frequency of crossing the border, etc. The survey examines the expenditures on the purchase of goods not registered in customs documents. It is conducted on a sample of about 1%. The questionnaire survey is carried out in quarterly periods, in selected days of a week chosen from the total number of days in a given period (7 times in the quarter).

#### **✓ HOUSEHOLD SURVEY**

The surveys covers expenses incurred by Poles and residents on the purchase of goods and services, purpose and duration of stay, frequency of crossing the border, booking of the trip, use of a tour operator or travel agency, number of residents not participating in tourism for personal purposes, etc. It is conducted on a sample of about 0.14% (over 18 thousand households/13.5 million in whole country). The questionnaire survey is carried out in quarter periods.

### **1.5. SOCIAL DIAGNOSIS**

The objective of the research project is to describe conditions and quality of life of the society: its development potential and the direction of changes, threats and challenges. The project comprises many aspects associated with the situation of households and individual citizens, which can be divided into three classes: the demographic and social structure of households; the living conditions of households associated with their material status, access to healthcare services, culture, recreation, education and modern communication technologies; the subjective quality of life, lifestyle, beliefs, attitudes and behaviors of individual respondents.

Demographic and social structure of the households serve as means of stratifying the groups of households and population in order to compare the conditions and quality of life according to various social

categories, such as gender, age, level of education, place of residence, social and professional status, main source of income, civil status, type of household (created on the basis of the number of families and biological family type), and other criteria.

The measurements of living conditions of the household include: household income and their way of managing income, nutrition, material affluence of the household, including modern communication technology equipment (mobile phone, computer, Internet access), housing conditions, social benefits received by the household, education of children, participation in culture and recreation, taking advantage of healthcare services, household situation on the labor market, taking advantage of social benefits, insurance and retirement security, poverty and other aspects of social exclusion. Indicators of the quality of life and lifestyle of individual respondents included:

- general psychological well-being (including: the will to live, sense of happiness, satisfaction with life, depression),
- satisfaction with different areas and aspects of life, subjective evaluation of the material standard of living,
- various types of stress (including: stress associated with visits to public administration offices, stress associated with health condition, stress associated with parenting, financial stress, stress associated with work, ecological stress, marital stress, problems associated with taking care of older people, stress associated with traumatic events, such as assault, burglary, or arrest),
- psychosomatic symptoms (the measurement of distress treated as a general measurement of health conditions),
- strategies of coping with stress, evaluation of experience with the healthcare system, personal finances (including: personal income, insurance and retirement security),
- system of values, risk-seeking, lifestyle and individual behaviors and habits (such as smoking, excessive use of alcohol, use of drugs, or religious practices),
- civic attitudes and behaviors, social support, general evaluation of the transformation process and its influence on the lives of the respondents,
- use of modern communication technologies (computers, the Internet, and mobile phones),
- situation on the labor market and professional career, and problems of handicapped persons.

The distinction between social indicators of living conditions and the individual quality of life is more or less consistent with the distinction between the objective description of the situation (conditions) and its psychological meaning, expressed by the subjective opinion of the respondent (quality of life). This substantial distinction is generally consistent with the type of unit examined and the measurement method. For the living conditions, the examined unit is the household as a whole, and for the quality of life – its individual members. The living conditions were measured by conducting an interview with one representative of the household (a well-informed person; most often the head of the household). The quality of life, on the other hand, was measured by a self-report questionnaire addressed to all available members of the examined households who have reached the age of 16.

The sample for the survey was drawn through a two-stage stratified sampling method with different probabilities at the first selection stage. Census districts were the units of the first drawing stage, whereas households constituted the second drawing stage. National Official Register of Territorial Division of the Country - called TERYT served as a drawing statement. Before the draw, census districts were grouped according to the strata created with respect to region classes and subregions (NUTS3). In all subregions, three strata were created. The sample was divided between the strata through the allocation method proportional to the number of households in the strata. The allocation of a sample between the first and the second drawing stage resulted from an established number of second stage units (households

drawn from previously chosen first stage units – districts). Districts were drawn with the probabilities of choice proportional to the number of households in the district.

The first measurement was conducted in the year 2000, and the subsequent one – three years later. The next two projects were conducted in two-year intervals. The present report shows not only the current image of Polish society; it also allows us to monitor changes in the same households and among the same people in a period of seven years.

## 2. LEGAL AND METHODOLOGICAL ASPECTS OF LINKAGES

Central Statistical Office and the Border Guard work on introducing a joint research related to creating an inventory and merging of available sources of information on cross-border areas. The first stage of this venture would be the linkage between Border Traffic Register and a sample survey (Labor Force Survey, Household Budget Survey, Social Diagnosis)

The sets of randomly chosen households for the Labor Force Survey, Household Budget Survey, and Social Diagnosis are of homogeneous structure, that is, include an address, which consists of region's symbol, name of the region, street symbol, name of the street, household number and street number and are supplemented with a unique number, PESEL (Universal Electronic System for Registration of the Population), for every member of the household. The Border Traffic Register, which consists of a name and a surname, date of birth, nationality and passport number, will also be supplemented with the PESEL number. The PESEL number is the linkage key between sets of data. Subsequently, the Labor Force Survey and the Household Budget Survey's sets of data will be paired with the Border Traffic Register. Thus, the database of households, whose members have crossed the border, will be built. Later on, an analysis of the identified households will be conducted, taking into account the data collected during the survey interviews.

In Poland, the Personal Data Protection Act regulates its rules of processing. According to the act, data processing is only allowed when the data subject signs his/her agreement to have their personal data processed. In case the data is collected from other sources, the administrator is obliged to inform the data subject. It has to be emphasized that this obligation is not required when the data are necessary for scientific, didactic, historical, statistic or public opinion research, and the processing of such data does not violate the rights or liberties of the data subject, especially when the fulfillment of the terms related to informing such a person would involve disproportionate efforts or endanger the success of the research. Hence, the new statistical study of linking the survey and administrative data could be realized by obtaining the PESEL number from administrative sources once such study constitutes a part of the yearly program of Polish statistics.

## 3. EXPECTED RESULTS OF THE LINKAGE

Central Statistical Office is conducting works on the creation of a coherent research system of the socio-economic phenomena occurring on the cross-border area. The survey on goods and services turnover in border traffic, at the whole external European Union border within the territory of Poland, is the element of the system. The research has shown that a considerable majority of people crossing the border live within the 50-kilometers border area (about 70% of surveyed Poles), and the purchase of goods is the main cause of the border crossing (about 90%). The percentage of persons who often cross the border is also substantial (80% of persons cross the border at least few times per month). These data, in an indirect way, prove the general opinion that a group of people living in the border areas, especially the unemployed, takes advantage of the neighboring border in order to gain considerable income or at least to purchase goods for their own needs for favorable prices.



The use of the existing administrative source of the Border Guard database and its linkage to the results of a conducted sample survey (Labour Force Survey, Household Budget Survey, Social Diagnosis) will enable to supplement the information on the situation of households on the borderland territory. It will provide the knowledge on the number and frequency of border crossing of individual members of households. Moreover, it will allow for broader characteristics of people crossing the border, taking into account chosen socio-economic aspects based on data included in the Labour Force Survey questionnaire, for example: sex, age, level of education, status on the labour market, income, working experience, job search, and registration in the job agency. It will enable to verify the general belief that unregistered borderland trade can be a basic source of income. According to the standards of the Labour Force Survey, a person who often crosses the border and is engaged in unregistered trade is treated as unemployed. The verification of his or her status on the labour market can be achieved, for example, by comparing persons who answered "no" when asked the following question in the Labour Force Survey questionnaire: Did you carry out any work bringing profit or income, or did you help in family business free of charge in the surveyed week and simultaneously frequently crossed the border? The linkage of the information from the Border Traffic Register about people frequently crossing the border (and therefore with high degree of probability in engaging in an unregistered trade) to the information from the survey on unregistered work (module questionnaire Labour Force Survey) will help answer, indirectly, the question about reasons for such an activity. The comparison of those two sources of information will also help to check against the answer to the question about conducting unregistered work and its duration.

Additionally, linking the Border Traffic Register data to the information from the Household Budget Survey and the Survey of Goods and Services turnover in border traffic at the European Union's external border in Poland will broaden knowledge on the financial situation of people frequently crossing the border, especially in the scope of income and expenditures.

On the other hand, taking advantage of the Border Traffic Register database along with the Social Diagnosis results will enable for thorough description of households, taking into consideration the attitudes, state of mind, and behaviour of the people constituting the households on the borderland. It will help determine, for example, if the individuals engaged in borderland trade experience higher level of life stress or are more resourceful in life. We will obtain the answer to the question if the general psychological well-being, including the will to live, sense of happiness, satisfaction with life, or symptoms of depression, has influence on professional activity in borderland areas.

#### 4. CONCLUSIONS

The specificity of cross-border areas requires conducting numerous surveys of different kinds related to the socio-economic phenomena. The establishment and effective functioning of a coherent survey system requires for the system to be supplied by standardized sources of information (office registers, other administrative sources, bank registers, automatic motion measurement, and so on), and production of projects that will cover not only border surveys, but also concentrate on the processes taking place in the border area.

In such a context, the analysis and the linkage of data from sample surveys to available administrative registers are immensely important. First and foremost, it reduces the survey burden put on respondents, and enables to identify scattered information sources owned by many institutions. The sources of information, after being inventoried and merged, constitute a new value. This venture is of a special significance for monitoring and the analysis of the processes taking place in the cross-border area, for which it is important to develop an interdisciplinary data backs.

The statistical public survey system references the opinions and behaviours of citizens only to a small degree, and is based more on micro and macroeconomic aspects of socio-economic phenomena. Therefore, when merging administrative registers with sample surveys, it seems important to join information from surveys such as the Social Diagnosis. In the future, it may lead to a development of new indicators, distinct for border areas, which will comprehensively describe real processes taking place in those areas.

Moreover, pairing registers from different institutions can be used for dynamic delimitation and for forming a typology of households participating in the survey (where the frequency of border crossing is an important criterion). Works in this field can constitute the basis for the expansion and change in sample selection in sample surveys, for example, adoption of additional stratifying criteria.

Linking information from different sources would also create the possibility of conducting works on the verification of the quality of results acquired from conducted surveys (for example, status on the labour market, unregistered jobs, household income) in addition to the factors connected with the border influence (border trade). These activities would enable to create a unique system, within the framework of public statistics, which would provide an extensive and complex information scope on socio-economic phenomena taking place at the external European Union border within the territory of Poland.

The creation of coherent survey system for cross-border areas would, in the first place, require an inventory of sources of information of public statistics and other administrative data sources in particular countries. A detailed analysis of this information and, most importantly, minor corrections in existing surveys (modification of answers and the questionnaire, as well as new modules) can be effective. It is worth emphasizing that the introduction of new surveys is often very expensive. Therefore, what should be taken into consideration is the possibility of taking advantage of already existing sample surveys through sample and objective scope extension, so as to allow for generalization of the results for cross-border areas. A homogenous information infrastructure of cross-border areas (meta-information, databanks, methodological reports, and so on) would be the foundation of this system. Its formation should be coordinated by the public statistics.

- Border Traffic and Movement of Goods and Services at the Polish-Ukrainian Border in 2009, Central Statistical Office and Statistical Office in Rzeszów, Warsaw and Rzeszów 2010.
- CIERPIAŁ-WOLAN, M., Cross-border surveys – some methodological aspects, *Statistic in Transition new series*, Vol.9, No. 2, Warsaw 2008, pp. 361-366.
- CIERPIAŁ-WOLAN, M., The pilot survey of goods and services turnover in border traffic at the Polish-Ukrainian border – results and methodological aspects. *Public Statistics for European Integration Processes with particular reference to issues concerning transborder areas*, Library of Statistical News, Vol. 60, Warsaw 2008, pp. 131-151.
- CZAPIŃSKI, J., PANEK, T., Eds, *Social Diagnosis 2009. Poles Living Conditions and Quality of Live*, Ministry of labour and Social Policy, Warsaw 2009.
- Household Budget Surveys in 2012, Central Statistical Office in Poland, Warsaw 2013. Jenkins, S. P., Lynn, P., Jäckle, A., Sala, E., *The Feasibility of Linking Household Survey and Administrative Record Data: New Evidence for Britain*, *Int. J. Social Research Methodology*, Vol. 11, No. 1, February 2008, pp. 29–43.
- Labour Force Survey in Poland IV quarter 2009, Central Statistical Office in Poland, Warsaw 2010.
- LIBERDA, Z. B., (2009) *How Statistics Shows the Crisis? First International Conference, Quantitative Methods in Economics QME'2009*, Warsaw University of Life Sciences, Century Manufaktura Center in Lodz, June 18-20.
- LIBERDA, Z. B. and GROCHOWSKA, A., Eds., (2009). *Civilizational Competences and Regional Development in Poland*, Warsaw University Press, Warszawa, pp. 292.
- LIBERDA Z. B. and PEŃCZKOWSKI, M., (2009). *Regional Distribution of Household Income and Household Human Capital in: Civilizational competences and regional development in Poland*, pp. 105-130.

EWA SZKIC-CZECH

*University of Business in Wrocław  
(Poland)*

## **AUTOMATIC ROAD TRAFFIC MEASUREMENT – THE SYSTEM OF ECONOMIC MONITORING THE INTENSITY OF TRANSBORDER COOPERATION AND INTEGRATION<sup>1</sup>**

### **1. ECONOMIC SIGNIFICANCE OF ROAD TRANSPORT IN TRANSBORDER ECONOMIES**

Natural activity of society occupying the transborder areas causes the phenomenon of transborder traffic and road transport, which handles the processes of products, services, education, cultural, etc. exchange, resulting from attracting differences, proper for neighboring transborder societies.

As the practice proves, transborder traffic is the “escort” for financial migration and the example of Western border of Poland proves, the fact that transborder traffic was initiated by traffic, to companies located in Szczecin, as the effect of resettlement of Szczecin citizens on the old areas of DDR, where after the union of Germany, profitable conditions have appeared for the live of Polish citizens inhabiting the areas of Poland Western border.

That is why the transborder traffic is the source of border citizens and region income. It is the symptom of residents’ reaction for their live conditions change and for popping-up opportunities, to improve the living conditions. The road transport at all, and the transborder traffic in particular, reflects the existence and course of social-economic processes. Any changes in transborder, regional and national road traffic characteristics, shall signalize the changes in management trends, caused by market conditions and effects of public administration management as well as local governments management.

Economic development of societies and communities in market globalization conditions and its competition is executed in the cross-border scope and Schengen Treaty has actuated such process. Road transport handles the cooperation of transborder and global communities and the parameters of road transport allow the identification of subject cooperation features.

Provided the multiaspect character of transborder community cooperation, is the source of measurable benefits for the residents inhabiting such areas and its region, it is however also the source of negative social-economic phenomenon. Positive, as well as those negative aspects of transborder traffic are the multi dimensional source of knowledge about social-economic effects and situations of mentioned areas, what shall justify both the continuity of their observation and analysis and the engagement of measurement automatics for execution of such requirements.

Data gathering and creation of information, on their basis, as well as construction of business friendly knowledge from above scope, gains its importance in conditions of: markets globalization and competition, total economic situation and contraction on the micro and macro market arena, as well as economical union of European countries and consequences of Schengen Treaty activity, which can prove with the example of Opole region the necessity of constant traffic monitoring on the transborder roads, in order to prepare their rational planning and development [8].

<sup>1</sup> Ewa Szkic-Czech Ph.D, University of Business in Wrocław

### 1.1. *QUALITY OF STATISTICAL DATA AND THE SOURCE OF PRIME DATA*

In the scope of mentioned conditions, execution of surveys, directed on various transborder traffic characteristics gaining, results from the need of multiaspect knowledge possession, about the border areas, processes, which take place in subject areas and from necessity to support various decision making processes, which shall bring the effects for above areas. The extent of information need, is reinforced by the scope of capacities diversity of transborder areas. Of no interest for necessity of transborder traffic measurement surveys, has the fact of changing dynamics, which takes place globally and in transborder economical environments.

The strength of global competition effect, causes that economy development has reached such level, where subjects competition “for the products” has limited its effectiveness. It has initiated the era of non product competition, in which information has gained high status of valuable business resource, together with which, the significance of information quality has increased, including public statistics. As the consequence, the importance of sources of primary data, existing in the statistics production process, has increased.

For modern practitioners, who operate on competitive markets, the access to information as the information is not enough, because such, in excessive quantities (*competition of information channels*) are delivered by mass media, reinforced by the power of internet. The practitioners need the information of high quality [9], [10]. They are looking for credible information, available at real time, that means, safe for their business decision processes. Expectations of statistics users, including the economical practitioners, have determined for statistical data and information, new, increasingly higher quality standard, which has on the other hand determined absolutely new operation realities for those subjects, which prepare the statistics.

The realities, where, there is no place to continue the stereotypes, in which capacity to satisfy the “client” with traditional, ineffective methods and low quality services, including: organization of primary data resources; conduction of statistics production process, are over. It is similar with the problem of economical development of a country, economical security of country, which cannot be provided with statistics of low, thus questionable reliability. Satisfaction of information demand, in the quality which shall satisfy the practitioners, rises the need of constant social-economical phenomenon observation, and the above is the source challenges for methodologies, technology, organization and financing.

The source of the need for application of highly developed IT technologies and systematical approach to primary data source organization and support over subject organization with highly prerogative, automatic measurement systems, which keeps the record of events and processes, is the above information demand satisfaction.

## 2. *AUTOMATIC MEASUREMENT SYSTEMS IN IDENTIFICATION OF TRANSBORDER TRAFFIC CHARACTERISTICS*

Automatic Measurement Systems (AMS) are the tools of industrial IT, which are used for registration of manufacturing object parameters, appointed for monitoring, in order to execute the owners or business holders interests of subject objects. The objects being the subject of monitoring, may constitute chosen parts of technological lines, economical processes or defined events specified for the aim of observation, as the objects of statistical survey in the scope of appointed parameters.

Measurement automatics, monitors appointed objects together with their characteristic features and the results of monitoring are being recorded in real time, and the sets of individual characteristics, with various tasks of observation are prepared on a current basis. For example in lignite mine, industrial automatics records, among the other things record, production machines temperatures, daily diversification of machines operation, fact of idling gear usage in machines, machines working hours, etc. [4].

In practice, this means that measuring automatics, which monitors determined parameters of exact structures, is the supplier of technical information for subject industry, which resources aim for technical services of manufacture, among the other things for:

- rational performance of machines operation, that is for operation without any threat of overloading; failure frequency and to fast wearing;
- technical assessment of operation and machine condition;
- to predict machines operation;
- to plan preventative treatment;
- to specify the scope of repairs and renovations;
- extension of in- between renovation periods or modernization and other activities.

Observation of technical parameters of subject objects, with application of automatic measurement data systems take simultaneous participation in maintenance of economical well-balanced increase of financial resources operations of the enterprise. Therefore, technical condition of machines is illustrated by technical services demand for financial resources, necessary for preventative treatment, renovations, modernization or investments.

Characteristics specifying the quality of up-to-date performed operation, traffic of machines, are assisting the rational operation of subject machines, devices and constant technological lines in the way, which is compatible with manufacturer guidelines, so what is related with the way, which is not accelerating their typical wearing. The consequence of above is the elimination of financial expenses before: parts replacement, removal of breakdown effects or renovations being the consequence of overloading of machines, during their operation.

Characteristics of devices operation are helping to maintain the continuity of production processes, what as the effect, increases the capacity of entrepreneurs among the other things for: fulfilling deadlines for execution of contracted deliveries of products or goods; maintain and reinforce own credibility; shapes the image of company and the brand. Data from automatic measurement systems, supports the aim of planning of any costs and actions undertaken by the enterprise. They contribute to imply the technical improvement of machines, devices or human operation organization processes. They assist the minimization of resources waste, by elimination of idling gear effect or not planned stand-still of transportation, production or other lines.

If we consider in the scope of above mentioned the fact that industrial IT together with technical information delivers a “side product”, which is also a high quality economical information [4], we can for the effectiveness of economical maintenance consider the role of automated data and information generators, which are producing the parameters on their basis, as unquestionable.

Multi - directional usage of data for information and economic knowledge creation, which source is the industrial IT, justifies the practical usage of such kind of generators, regardless of the fact if such data and information derive from measurement systems of enterprise, which implements automatic measurement systems for operation of own needs of decision processes or subject data are being obtained from external automatic measurement systems. Economical information available from the technical information record, allows the economical assessment of technical structures operation, what in practice synergizes the effects, resulting from expenditures for industrial IT with the scope of its usage extension with economical aspects of objects and technical processes assessment as well as those, which are integrated and indirectly connected.

Performed analysis, entitled to claim, that ownership status towards automatic measurement systems, does not influence the data quality, which are generated by the system. Both categories are therefore separable

sets, what remains especially essential for capacity of modern organization for primary data sources for statistics production process, based on external automatic measurement systems and outsourcing, which is translocating subject data or statistical information to statistics production process.

### 2.1. INFORMATIONAL FEATURES OF AUTOMATIC MEASUREMENT FOR ROAD TRANSPORT

Observation methodologies, similarly as methods and tools (systems) of effects monitoring, are the subject of individual choice. However common criteria exist, which must be fulfilled simultaneously, to achieve the final aim among each possibility of choice in subject scope, in satisfactory way for each beneficiary.

For such basic criteria, we have to encounter: assessment of effectiveness level in aiming at assumed target of observation with the aid of and via assistance of surveys methodology and methods and tools being in available catalogue of the measurement capacities set; deadline in which applied methods and applied tools are ready to deliver primary and effect information data from the survey; costs of survey aim execution, which has to be born for its execution in the way, which would satisfy quality requirements and availability of expected, by economy and management practitioners.

If we analyze the problem of automatic measurement systems usability for statistics production process on the basis of automatic measurement systems of road traffic, then the direction of subject analysis shall focus on road traffic parameters, which specify its characteristic properties for multi aspect purpose of application, because of the information, which media are the parameters, and their recorders, depositaries and generators for the AMS.

There are numerous parameters of road system [1], [3]. For analysis carried, their information usefulness for statistics production system can be revealed and confirmed on the basis of few, randomly chosen parameters, as the representatives of considered utility and for example: road traffic density parameter, vehicles flow parameter, average speed parameter, time of travel parameter and the parameter of vehicle weight.

The parameter of road traffic density is determined by metrology, as the product of total time spend by all vehicles around the measurement, to general surface of subject area [2]. In practice, it means that in specified period of time, we must register the speed of individual vehicles crossing the measurement point, to obtain information about the road density level. In the language of information users, the level of traffic density is the information about traveling comfort on a given road or its lack. Therefore the information, on the basis of which we may establish the probability of time for arrival to the target and undertake the decision about the change of route or the transportation mean. For those, who travel in business trips or for example for rescue teams, these are essential information, both in the mean of time for arrival as the transport costs.

The analysis of the subject shall not be restricted to appointed above groups of users. Each travelling regardless of the traveling target and ownership status, and the tax payee and tourist – escort of added value especially, in equal degrees, are the representatives of analogous law for traveling comfort. Thus, national services, as the public services are obliged to fulfill the needs of citizens and take care about country interest, they must search efficient methods to perform its function in the way, it is being expected by their beneficiaries.

In case of country, providing the comfort of transport on the roads is clear with creation of conditions for economical development of transborder areas as well of whole country, therefore it is the manifestation of the level of care for the country interests and living conditions of its citizens, not only in the transborder areas. Such circumstance, stresses the social significance of road traffic density parameter, in particular, its

information value for direct user of roads as well as for road sponsor or services of road traffic organization. For those who are responsible for road traffic organization, information about traffic density on the road is a signal and necessity to undertake the actions, which are integrally related with necessity of specified costs generation, that is expending the public finances.

Depending on subject parameter, it may be the signal about the necessity of e.g. road development or on the other hand information about its renovation planning, information for appointing of road works in the periods of the smallest road traffic or the information about necessity of by-pass roads organization. The density parameter is articulated by metrologists in different units. As it is stated by professor J. Gajda, e.g. in PCU unit (passenger car unit), taking into consideration diversified space, which is taken by the vehicles on the road. Expression of density of traffic in such unit, requires clarification of vehicles, according to length criteria. Then it may be additionally known, what types of vehicles have the biggest contribution in road traffic density [2]. On the basis of above information, it is possible to determine the character (*touristic, mercantile*) of road traffic, which is essential for example for development of local, transborder entrepreneurship.

If we shall focus on the information character of another road traffic parameter, so called vehicles flow parameter, we must say that such parameter delivers the information about vehicles number, which have crossed a given measurement point in the unit of time. As professor J. Gajda states, for the multi lane traffic road, that total flow of vehicles is the amount of partial flows. Record of vehicle flow, inform in such situation, about the road usage degree together with variability of such usage in the period of observation.

The degree of road usage may also be illustrated by the road lane occupation, which in own measurement includes, the time period in which the vehicle was under the measurement sensor. If we consider the time, it is dependent from the vehicle length and its speed as well as the scope of observation of measurement device, the information about vehicle road lane occupation is extended to the type of given vehicle, compatible with established vehicles classification [2].

Analyzed parameter of road traffic, shows the practitioners the usage of road lanes in chosen for analysis time periods, and the above allows them for balanced management of roads, that is planning their usage as well as any development. Such parameter may be also the negation for intuition initiatives of roads development and the argument to avoid such type of investments and to direct the public financial resources on projects located in other sphere of public life.

Average speed is another measurement parameter. It means the average arithmetical speed of all vehicles, crossing the measurement point in a given time period. It is the parameter of high variability. Its value is different also in relation to rural and urban roads [2]. Information value, of such index, is directly important for managing services of e.g. safety of road traffic, roads reconstruction and development planning services and for road infrastructure as crossroads, flyovers, pedestrian bridges, vertical and horizontal signs. It is also the information for local petrol stations, fast food restaurants, exit slip roads, hostels, motels, car service stations and car parks. The parameter of average speed is strictly related with other parameters, such as time of travelling, understood as the product of total distance driven by the vehicle, in the measurement area and average speed at a given time. The value of such parameter and especially hesitation of its magnitude, allow to forecast the changeability of traveling time in perspective of few hours. If we will distinct from the measurement resources, the magnitude of such parameter on a given day and seasons, it is possible to obtain the information about traveling time in characteristic seasons of the year, days of the week, including Sundays and holiday [2].

Weighting of vehicles is another parameter, which is characteristic for road transport. It allows the observation of cargo flow in the time and level of vehicles overload and automatic charges collection. The information about the pressure force of the vehicle axis in the aspect of limits established, allows to determine the light and heavy vehicles number in road traffic – problems important for transborder traffic

observation as well as for roads exploitation control. Metrology makes also the parameters of effective usage of road network available, which correlate with vehicles classification (*according to length, total weight, number of axis, function: cars, buses, trucks*), allow to establish not only the vehicles flow but also percentage participation of individual vehicle types in subject flow [2].

Observation of individual lanes of roads by automatic measurement systems in the scope of considered parameters in separated vehicle types, creates the set of dedicated information, not only for road industry. Capacity to establish the parameters for individual lanes in separate classification of vehicles, allows to establish among the other things the: directions of increased transport in a given group of vehicles; dominant groups of transport means on monitored section of the road; scale of cargo flow; time of traveling, etc. [2]. Such set of information is already represented by the group of economical and management information, dedicated for road industry, however being also in the sphere of other branches of management. The issue important intrinsically, however considered in the context of transborder traffic knowledge creation, seems essential because of its scope, of road transport characteristic features.

If we shall extend the functionality of automatic measurement systems discussed with monitoring of registration plates feature, the number of people in the vehicle, etc., the spectrum of such systems information, increases and becomes even more attractive for statistics production process, simultaneously useful for many different consumers of statistical information, describing social-economical phenomenon and their trends in border zones.

Taking everything together, information character of measurement parameters data of road traffic, generated by AMS, which record the features of each vehicle crossing the measurement point, regardless of the season, time of day and weather conditions, has its application in: planning of cargo and human transportation in the sense of time and route; road traffic safety management; monitoring of traffic including transborder areas and characteristic of its breakdown, as well as participation of road traffic in environment contamination, that is air (*by counting of vehicles in division into their class, weight, and length, as well as existence of trailers, number of axis, loading on the axis*); automatic toll collection for usage of the road infrastructure; analysis and evaluation of road traffic density magnitude at all and in individual types of vehicles, resulting from their classification established [2].

## **2.2. DATA QUALITY GENERATED BY AUTOMATIC MEASUREMENT SYSTEMS**

Monitoring of road structures performed by AMS, depends from measurement point affection on the objects being in the area of measurement zone. The practice however proves both: the capacity of measurement systems installation in any location, thanks to what, for example on the roads we may encounter speed measurement systems, weighting of crossing vehicles or temperature measurement systems, as well as widely spread availability of measurement systems of national manufacturing and their price competitiveness against foreign manufacturers offers in subject scope.

The factors, which determine the quality of primary data recorded and generated by AMS of road traffic, shall be considered from few dimensions, because of multiaspect usability of measurement data and quality standards of such data, which respond to demand of modern practitioners of management. It shall be done from the following dimensions: period of time for primary data obtaining, cost of primary data obtaining, completeness of primary data obtained, human factor interference on primary data, access to measurement data and its universal application.

**2.2.1. Period of time for primary data obtaining perspective** focuses on the cycle of observation, that means on the period of time, which is necessary to perform the road traffic on roads covered with the survey. Thus AMS, installed in the place of observation, monitors whole spectrum of objects features, which are the subject of survey in continuous and simultaneous way. They perform the measurement of

each vehicle crossing the measurement point, recording its results of observation in real time. The essence of such feature if particular, provide continuity of observation and continuity of data set updating, what in practice means that course of observation: through all time of the year, that is 24 h of all days during the calendar year (*including Sunday, holiday, bank holidays*); regardless of weather conditions, day time or (*day, night*); beyond the limitations, resulting from the employment law, is the same.

In practice it means the record of measured features of objects, regardless of identified by law, working hours, and therefore, regardless of all limitations of working code, which limit and condition the capacity of employee to work. All features of road transport AMS functionality, seem to be very important for records of various data, about road traffic objects, which are processed in real time. Unquestioned advantage of such records is the recording and gathering of data on the level of almost 100% completeness, decreased with the margin surveying mistake of each observation feature. High credibility of measurement data is in practice allowed by advanced efficiency, precision and continuity of operation and reliable operation of AMS.

Values of primary data records, created via AMS turns out to be very valuable for processes of statistics production, because subject records, due to continuous observation, offer the Public Statistic Department primary measurement data: from any time periods given for a primary data base, guarantying their comparable features of current statistical information with historical periods of time; are in the highest level of survey completeness, difficult to achieve by statistical surveys executed by traditional methods, that is via human resources (*statistical surveyors*). However to any of statistics prepared for a given period of time, on the basis of measurement data, generated by automatic system, records of such data, guarantee high credibility of information, obtained by continuity of performed surveys, high (almost 100%) level of obtained survey completeness and analogous result of registered observations, due to quality of parameters determining subject credibility and not available in traditional practice of statistical surveys. It allow also to prepare statistics at a given content related fields (*e.g. according to l or "n" features*"), therefore they give preferential treatment of any change observations, exploitation of trends, fulfilling in subject scope statistical needs and any various users of statistics.

Useful electronic primary records character for measurement data statistics production, generated by industrial automatic systems, confirms unbeatable advantage of such systems towards traditional practice, also because of more wide in resources and quality set of data from the one, which is in the operation for public statistics, sequential performance of statistical observations with surveyors system. As a consequence the method has only time data, in which the statistical survey has been performed, what in practice means, that in between the surveys, the primary data are not obtained, remaining unrecorded, due to past time. As a consequence their shortage prevents presentation of road events with the statistical numbers, for a given periods.

Therefore, the longer time intervals between sequential observations, the less data for statistics production and in analogy less information about structures and road traffic. Thus, smaller information precision and knowledge about monitored effects. In such condition, it is more difficult to have precise analysis of road transport traffic, performed from the perspective of various statistics users. As a result, lack of precision of statistical information, decreases the level of its practical usability, which decreases the lower, if we shall consider still too long period from data recording to publication of statistical survey results, which are necessary for statistics practitioners. In conditions of such practice, statistical information appears on the information market very late, in relation to modern entrepreneurship practitioner, that its importance is no longer crucial, because it is not taking place in his current decision taking processes and is not decreasing his business choice risk.

**2.2.2. The costs perspective**, of primary measurement data gathering in the road transport, in the time periods necessary for modern, simultaneous and diversified statistical information users, remain an important problem, also for the practice of production processes, which satisfy with the reliability of statistics. Activity and functioning of public statistics is financed from the country budget. The country, who represents essential deficit, is limiting expenses, also on statistical surveys.

Issue of increasing expectations towards statistical information in the context of insufficient resources for statutory activity, becomes even more serious problem, which forces the implementation of highly advanced and highly legal (*and not only other, new*) methods of data obtaining for the process of statistics production and their transmission to such process. Subject case, refers to primary data sources organization system, based on measurement technology and input data [10], [11], for process of statistics creation.

Outsourcing, mentioned above, using electronic technologies of data transfer and work outsourcing, delivering statistical compounds, proves that AMS of **road traffic** must not be the property of public statistical services, to deliver authoritative input data for statistics production process.

Access to such data is currently limited only to exclusive access for the system owners. Bottleneck of current practice, may be restored by system, access entitlements extension to data for various users, including the process of statistics production, what in reality is possible to execute by delegation of ownership status towards the measurement data on the level of province governors, breaking by such action, branch monopoly and spread of ownership rights in subject scope.

The essence, of subject solution, allows to rationalize usage of public resources, spent on creation of such kind of data sources, which characterize road transport in transborder provinces, as well as on transborder roads of country regions. As a matter of fact, we are talking about activation of rational coordination of expenditures on the aims previously mentioned and elimination of barriers in access to data, which are produced on spread and distinct ownership of automatic measurement systems, assembled automatically on roads (*speed cameras, temperature, etc.*).

The model of one administrator, the owner of province measurement infrastructure would be empowered to: guarantee simultaneous access of local bureaus and public institutions to primary data set, on the basis of which the above subjects perform the assessment of conditions “is”, plan their actions and forecast financial requirements; lead to condition, according to which, institutions, public bureaus, research institutes and other users of statistical information would operate on analogous data, concerning specified type of effects, providing: the analysis, assessment of conditions “is”, extrapolation of trends and projects “should be” – comparable and mutual, interministerial communication, what for efficiency of expectation areas management, citizens needs and various branch clients as well as for creation of required directions of changes in common conditions of existing limitations has for the society and economy non-trivial meaning.

Therefore considering of AMS of road transport by the sense of cost perspective, refers to two groups of costs: one-time direct costs of measurement system assembly, with the use of which, electronic data bases will appear about on road traffic, which are not going to be multiplied in various institutions and costs of public services actions, possible to be rationalized, with only the fact of such institutions operation on analogous statistical values, combined with common information code.

And thus, for example, automatic measurement system in the scope of roads, shall assist centrally formulated macroprojects and decision processes: of health services; police, insurance companies, motorization companies, road services and many, which are not listed [9]. The essence of socially required effects enhancement, remains the key question, from the point of social interest view. Since, in individual assessment of solution, designs and decisions of individual decision making centres, may reveal essential social benefits.

However such practice don't have to confirm the benefits, because of negative influence of other decisions, which are undertaken by separate decision centers and made on the basis of totally different information resources, of non comparable mutual quality of information code. The result of such type of influence are the mutations of individual solutions, initially profitable, and in practice, resulting with disappointment and beneficiaries disapproval.

AMS require only one-time expenses, related with direct assembly of specified measurement system type, that mean resources, which are capable to become a mean beyond the set of statistics department. If, in particular case, they were to be the investments different to budget unit than public statistics, in such case bearing the cost becomes more rational and socially justified, because public finances expended one time, for organization of above source of data are able to:

- satisfy via centrally administered institution, requirements of two or larger number of public beneficiaries in the scope of access for primary data from a given area of observation;
- give preferential treatment to various institutions operation on the basis of analogous data and compatible information;
- counteract the existence of interministerial discrepancies of breakdowns, lists and analysis, occurring on the basis of mutual separable disciplinary sets of data, created according with various assumptions and separate philosophies and on various type of software, and financed only for own service and needs of the institution.

In that way, AMS on the example of dedicated only to road transport surveys, are able:

- a) to influence on rationalization of public expenditures related with separate data base sets occurrence, which are produced in institutions with mutual lack of knowledge, of such institutions focused on own tasks. The above institutions miss the opportunity to find out what sets of data are produced and what is their multiplexing in the records, of analogous data in individual institutions;
- b) to be a source of income for centrally administered (owner) of road transport AMS.

AMS of road transport engages small financial budgets for maintenance of constant measurement operation systems, limiting only to periodical servicing and conservation expenses made for such systems. They have the capacity to influence on limitation and even reduction of fixed costs of public statistics in position of employee expenses together with incomes, which for the years are born for payments made on human work, related with obtaining of data by local employees, so called the statistical surveyors.

**2.2.3. The perspective of data completion** can not be omitted while considering the usefulness of AMS of road transport for statistics production process, because completeness of any survey, authorizes the credibility of statistics. In practice the completeness of surveys is the source of statistical information production process cost. Hence, the matter of AMS usability for statistics production can not be considered without the issue of costs for obtaining subject surveys completeness in the scope of measurement systems above.

Complete surveys are measured by percentage participation of objects number, taking part in statistical survey, that is those giving their replies for the questions included in the questionnaire form, to the number of subjects established as the value of representative statistical quantity.

Non-alternative to above category of completeness refer also to each of the questions separately. In practice the above mean that high level of survey completion, is obtained only when the largest number of subjects will take part in it and simultaneously is going to reply for all questionnaire questions/interview

in the way compatible with survey methodology that is in the way, which is going to cause necessity of elimination of provided answer/answers. In the face of above, measurement objects, which are omitted in the survey or tested in incomplete way in relation to the features list, which are the subject of survey, similarly as the objects of the survey (people, homes), which will reject participation in the survey and those, who are not taking part in it, but will reply only for some questions, chosen by themselves – are causing the decrease of survey completeness level around the statistical number of participants, established as representative for each survey.

Illustrating the theory with example, if even 100% of survey test quantity is going to take part in the survey, but shall reply only for one question from the survey list, then the questions, which are with no answer represent zero completeness, and the one, for which the reply was stated by all respondents legitimates with 100% completeness. Subsequently, it is not possible, to recognize that 100% of people is going to take part in the survey, the survey results legitimate with 100% completeness, because above example proves that all respondents have replied for only one question in representative way, however the statistical survey has not delivered the data, in the scope of remaining questions. Thus it has not provided data, despite costs born for survey organization, no primary data were obtained in process of statistics preparation, which were to specify the matters surveyed with other questions.

Considering above, the questions, which the respondents from hypothetical example have not replied, are at all the dominant percentage of subject survey scope, then it points the particular meaning of completeness issue of survey for the quality of result information and as a consequence confirms the key conditions of statistics reliability with the level of survey completeness. In analogy the issue is in case of measurement objects in road traffic. Failure to register all transport means passing the road, mistakes in allocation of vehicle to specified type of their assumed classification or failure to obtain full list of features covered with survey causes that for the low level of survey completeness, those not registered and objects and features of objects will have an impact as well as not registered features of registered vehicles.

Consequently, each time when the discussion in current reality of statistics production process about completeness of the survey, as many times the quality is being considered, that is the information level and statistics reliability. The problem of completeness increase, would not be solved even by increase of statistical sample, however undoubtedly it is the way of increasing the information scope of statistics. Nevertheless it has none method with lack of protection mechanisms for the surveys against their low completeness, what has been argued by above sample.

Therefore the analysis of method for primary data obtaining usefulness for the process of statistics production must be accompanied with predispositions to consider such methods for support of survey completeness level increase. What is more, because of the same reason, the analysis of road transport AMS usability to statistics production process must cover the issue of their influence on the level of survey completeness. AMS are making the record of each transport object crossing the measurement position [7]. They are recording each feature of such object covered with the survey list, programmed for monitoring in the capacities of assembled measurement system.

Therefore, participation of automatic measurement systems of road transport, in shaping the surveys completeness and reliability of statistics is unquestionable and of impressive characteristics, all the more, because it is not available with traditional methods used in the process of statistics production. If we shall add, that such type of completeness level is guaranteed continuously, in the scope of individual cost of measurement system assembly, thus the strong feature of AMS is not only its single cost of assembly, delivering maximal completeness, but also the fact that it eliminates the need of investments made to perform the survey in increased statistical sample for the aim of increasing the statistical information scope.

The information character of statistics shall increase the capacity of measurement data analyst by establishing longer period of its measurement data observation, which he shall import from measurement

system record without performing additional surveys, because the systems in constant way, automatically are recording each vehicle and all its features. Effectiveness of road transport AMS in the scope of survey completeness creation and reliability of statistics shall be clashed with current statistical surveys practice.

In order to obtain high completeness in currently applied practice in the scope of survey sample, that is to *obtain complete set of all object features from the number of survey sample* it is necessary to bear specific costs, including the costs increased with written up value of statistical sample. Increase of costs, mentioned above, results for example from the need: of access to increased number of objects (*sometimes even several times*), investments made both on motivation of area statistical surveyor as well as in motivation of target group of respondents, to increase the number of participation in statistical survey, to attract them to participate in another series in order to obtain the information value of the survey and to compare the statistics from different periods of their creation.

In analogy, if on a given section of a road the road traffic magnitude is being done, the completeness of survey depends from motivation, qualifications and skills of surveyor in recording the objects and its features resulting from the scope of survey, recording the time of road objects observation time, etc. The longer the observation has to take place in the scope of increased sample, the more the costs of survey are increasing, also with: employee costs, social and security.

If in the methodology of sample survey, 24 hour observations were appointed, the costs of survey will increase with the costs of additional surveyors employment, which conditions 24 hour continuity of performed survey and training from survey methodology made for newly hired employees, but also with the costs of essential equipment for such surveyors, for the execution of works in the region. In each case of surveyor work on the hard shoulder of the roads, the risk for the employer increases related with accident during the work.

Additional costs of work also appear related with performance of works in region, which apart from previously mentioned emerge from, e.g. need to mark the surveyor working clothes, what shall increase his safety in work on the hard shoulder of the road and its implementation during the night hours. Even if above costs would be born, we cannot eliminate the threat of insufficient precision in observation and recording. Subject threat results from obstacles in work during the night hours, during hard weather conditions (rain, storms, sandstorms, etc.), which from its nature are not an advantage for observation efficiency performed by a human being. The scope of costs for obtaining the completeness of survey do not limit to the one, mentioned above. To subject group also the following costs are included: costs of surveyor operation in the region (transport and telephone costs), costs of supervision and regional quality control of surveyors work, etc.

Achieving high survey completeness is undoubtedly an essential cost of statistics production process, which grows with each increase of survey sample in current model of primary data obtaining. It however can not be downplayed, because in such case, the misinterpretation of statistic production would take place. Although, each increase of surveying sample, documents the aspiration to increase the real condition specification precision, and in case of road transport surveys, even satisfaction of subject costs, does not guarantee the expected data completeness, because beyond the physical capacity of human being remains simultaneously calculation of vehicles on each lane of the road, classification of vehicles into proper category, establishment of traveling speed, vehicle weight or to include specified features of registration plate together with record of specific vehicle features in the scope of road survey.

If we pay the attention on the fact that statistics production is financed from the country budget, the issue: of statistic production costs rationalization with simultaneous obtained increased completeness of surveys and increased level of reliability of statistics, together with breaking the cost barriers in order to increase the surveying sample, establishes additional importance in relation to incoming surveys, as well as for capacity to continue those executed on a regular basis.

Provided that obtaining a survey sample is the aim of those who perform the surveys, maximal level of survey completeness is essential for statistical information quality for modern practitioner, in the confines of executed survey sample and obtaining of access to statistics, produced on maximal samples. Therefore, modern process of statistics production, useful for business decision taking processes and managing processes, performed on the area of competitive local market including transborder, European and global market depends from constant access to field sets of primary measurement data of objects, being under constant, and not as it is currently sequential update of sets, which have maximal number of features, with its maximally high number of representatives.

Process of statistic production from the scope of road industry, feed with AMS data, will operate always on maximal number of representatives in a given, by statistics professionals magnitude of survey sample and on maximal completeness of data for surveyed period of time.

**2.2.4. The perspective of human factor interference** in primary data, is another context of aim analysis to engage AMS for primary data obtaining for the process of statistics production and distribution, not only in the scope of road industry. Essential element of traditional model of such process, is its dependence from direct human factor interference, regardless of introduced only in January 2009 simultaneous electronization of obligatory reporting, effecting with hike increase of surveys completeness and specialization of statistical offices, being the event, which restructured public statistics, on the turning point of decade [12].

The initial phase of many statistics production process, are run by statistic surveyors operating on the area covered by survey or stationary office employees, who for the time being are entrusted the works in the character, of so called telephone-surveyors, it is the human force, which is not a professional in the subject of primary data obtaining. Intermittent of such kind of entrust and basic foundation of primary data obtaining process from statistics production on regional statistical surveyors is direct reason to focus first of all the problem consideration on this, essential for statistics production process professional group.

Each time we say about surveyors working in the region, as many times we say about numerous teams of people, full time employees of public statistics department, divided into groups working around provinces and obtaining regional source of data from assigned part of region.

In strictly specified time of survey lasting, they for example reach to responders and they perform statistical interviews; with mercantile units, in which they record the retail prices of given foodstuff and industrial products; to appointed roads including the border in order to record for example road traffic density or other border features. They obtain data in assigned types, and next they record and deliver them to the employers, statistical offices for further usage, in data control and correction process, processing into information, results preparation and distribution.

In applied practice, quality of primary data obtained by regional surveyor, remains determined among the other things: with his systematic observations, precision of performed records of observation results/ interview; reliability of interview/observation of those, who obtain primary data; number of mistakes made, resulting from typical unreliability of employee and mistakes resulting from natural tendency of humane to make mistakes, especially, if he works under the stress of time, is obliged with methodology and scope of survey for long lasting interviews/observations regarding huge and excessive number of objects in relation to regulations of labour code. If he works in difficult conditions, e.g. on the hard shoulders of the roads, at night, in adverse weather conditions, with insufficient amount of finances, which can cover the cost of reaching to responders or appointed measurement points, the direct human contact with the source of data and exact data, does matter for the quality of primary data.

Similarly as essential for subject quality are: influence of absence in work together with limited capacities of substitute organization for regional employees; fluctuation among the surveyors, the biggest

in the structure of employed in statistics production process. Additionally if we encounter the fact that statistical surveyors remain the lowest paid workers of statistical force, directly engaged in the most important and neuralgic for the final effect, initial stage of statistic production and the fact that they have the lowest defined employment status in the employment structure as well as the fact that they can not be granted the status of civil service corpus member and privileges resulting, it is easy to see the fragility of foundation, where it is effective to perform motivational functions of subject key for the statistics production process, professional group.

If organization of such phase of production does not protect input against deformation and deformed data are spread to statistics production process, the effects of such organization for key phase of statistics production processes become essential reason: of low reliability of statistics; lack of information or misinformation of statistic information users, who are undertaking various decisions on the basis of such information, essential both socially and economically; distort of any forecasts, analysis and conclusions; increase of risk in decisions undertook in each social-economic sphere; increase of any potential wasting and various resources of public, local and management practitioners sphere.

If we extend, considered interference of human in primary data from the case of regional surveyors, or telephone-surveyors, who, as it was mentioned above, are “rented” for time being, from among office workers to perform surveyor works via telephone in the scope of so called other work, essential for the employer, thus it is not difficult to spot: as employees – “office workers” they feel depreciated with execution of works for lower situated in their mental status. They are not related with effect of work, because they perform it as temporary work, thus they are not motivated internally for its execution.

The practice show the cases of missing interest in execution of above works even with additional remuneration. That is why, the problem of human interference in primary data exists, both such independent unintentional, resulting from imperfections of human as well as such human dependent interference. If we add much higher remunerations of office workers, who are “rented” for telephone surveyor is not related with remunerations decrease to the level of surveyors group and in some cases the additional remuneration shall be included for execution of work in temporary function, therefore the aspect of human interference into primary data, is very close to the problem of primary data obtaining costs increase without simultaneous protection for subject data of expected quality including completeness of surveys.

The problems of human factor influence on data and statistical information, seems even more essential in the face of public and international – criticism of European statistics reliability, e.g. Greek statistics and ruthless criticism of national statistics quality in the face of press releases, according with which, citation: *Eurostat appoints that we have 57,5 percent indebtedness and we don't have a carpet to sweep it under, ... you have heard the deputies (...) saying, that they have exchanged the President of GUS to have more than 54,9 percent... and will have as in the supermarket such... 54,99percent, because from 55 percent the stage of convalescence appears and then constitutional scissors are cutting everything”* [6].

Therefore discussion over the issue, and rather deep and outstandingly dangerous for economical safety of country and its citizens problem of human factor in statistics reliability, seems necessary and in circumstances of falling public reliability towards national statistics, is as important as immediate introduction of solutions, which prevent the effects of current practices.

Provided the change in subject scope is a priority for management practitioners, the introduction of solutions, which will eliminate negative effects of human interference on the process of production and distribution of statistic results, seems a very delayed action.

The example of road transport AMS, seems to solve subject problem on the stage of data obtaining from primary sources, their segregation, according to given classification and storage. Such scope of functionality, AMS are executing without interference of human, creating conditions to statistical services to shift human resources into other fields of work, e.g. to the area of data analysis, designing of new



surveys, etc. Subject functionality of considered systems, not only turns the human away from data source and measurement results, but also fosters the rationalization of employment for statistical services and more effective usage of employees of a given employer. It fosters in new competence profile creation of employed in production processes and statistics sharing. Functionality of AMS solves, therefore the target problem of increasing demand for statistical surveyors.

Problem, which is currently annoying and in each case of surveying samples increase, accrues even more with increase of surveying samples with 100%, 300 and more %, what is proven by traditional process of primary data obtaining for statistics production practice from 2011 and 2012. Increase of surveying sample with such serious percentage multiplexity, in reality confirms the awareness of statistics producer about current information limitations of his product and simultaneously confirms the necessity to increase statistics reliability. Considered functionality of subject systems can not be limited only to transborder areas.

On the basis of benefits identified in such regions, wider scope, the national scope of their existence shall be considered. Since from data generated by considered systems, it is possible to draw information about road transport influence on current and future social-economic situation of transborder citizens, but it is also possible to draw the information about effect of transit through border areas to other country regions, for which road transport traffic is an escort of new management aspects and their influence on quality of citizens life in non transborder regions.

Although implementation of AMS does not guarantee total separation of human from capacity to influence on reliable statistics, he does that with automatically obtained measurement data in the field of road transport. AMS installations, create the foundation for technology development, capable of transmitting subject data and statistical features to statistical systems and their processing into result statistics, omitting participation of human, on the stage of statistics production process, as well as they foster the technological development, which operates further stages of production and distribution of statistics.

Together with incorporation of AMS to new organization of primary data sources for statistical production process and centralization of local owners of subject systems obtains transparent character of primary data, and together with above capacity of effective input data control, used by public and regional institutions for preparation of activity plans; justification of financial needs, effectiveness assessment in undertook decisions and execution in the periods of their settlement for any future time period.

**2.2.5. Perspective of measurement data availability**, refers to two aspects. First of them is the electronic form of data, their automatic classification in given for AMS types of sets classification together with their assignment to time periods. Such form of data is friendly for modern user, who is widely operating with electronic transmission systems and data downloading.

Second aspect refers to simultaneous access to measurement data by many various users. Multibranch usability of data generated by AMS, makes such data an escort of operation guarantee on the same information code, with usage of subject data for any analytical aims. Such common code infiltrates into produced information, and gets across and locates in each type of analysis, regardless of the fact subject analysis are produced with various users, as branch sample studies. Key role of common information code of data, in practice, is its strength in the influence of information coherence and compatibility of branch results of analysis performed on the basis of measurement data, deriving from analogous primary data generator.

Simultaneous and multi - directional distribution of such code together with data and information causes that results of subject analysis are not in controversy and contradiction, do not infringe their reliability, the analysis is marked with virtual coherence and multi dimensional understanding, and the common code of

information provides compatibility for sample studies, regardless if the analysis is performed for the aim of own statutory requirements: police, insurance companies, health care or others. Integration force of common information data code operation synergizes the results, conclusions of analysis and also the results of multi-branch decisions and projects.

**2.2.6 The universal perspective of measurement data application** is another field, which is confirmed by road transport AMS, can not be missed in analysis and assessment of AMS usability for statistics production process. Universality mentioned, may be presented on the sample of measurement results characteristic, for the road traffic density on chosen section of road. If the system was set e.g. to measure:

- a) speed with, which on a given section of road lanes the vehicles cross;
- b) record the number of vehicles crossing the measurement point in a strict period of the day (*exact hours, minutes and dates as well as calendar days*);
- c) weight of vehicles;
- d) types of vehicles (*cars, trucks, buses, heavy trucks with trailers, etc.*).

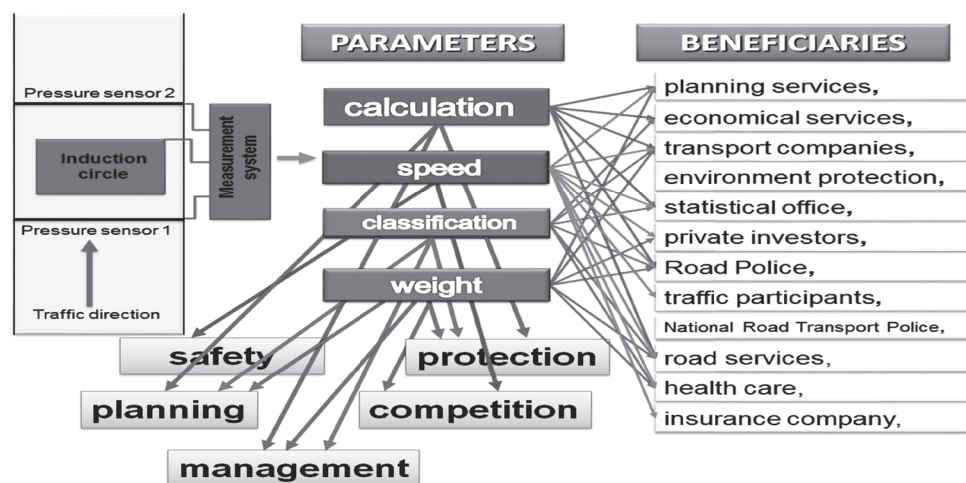
In such case result of measurements in each from four types of sample parameters of measurement, may be used individually, by users, and therefore e.g. parameter “a” can be used by: police, which on this basis will draw information about prohibited speed scale effect, next will undertake decision in the scope : increase or decrease the number of patrols to discipline the drivers; assemble additional radar devices, or maybe remove the radars into more loaded with drivers wrongdoing locations; plan the resources for preventative treatment and investments (*radars, cameras*) or shift the resources for financing of education projects; insurance companies, who will be informed about the scale of speeding effects, being the basis of insurance case occurring, who next will undertake decisions about possible reconstruction of current insurance products as well as newly designed products; health care, which in analogy to insurance companies will gain information, about the scale of speeding effects being the basis for using unplanned services of individual health care specialists, which on that basis will decide about condition profile of available medical services, neutralizing the effects of road accidents, caused with over speeding and prohibited speed; social education centers and drivers instruction centers as well as other, which are informed about density of traffic, will adopt their educational offer, rules of entitlements obtaining, methods of knowledge examination, etc., to the requirements, confirmed with dysfunction of social behavior; legislative services, which informed about the scale of socially harmful effects will undertake the law update, which will dissuade from overspeeding; statistical services for emission of statistics, contributing to individual, statutory activity of mentioned above and institutions, which were not mentioned, economical entities, planning services, economical, financial, scientific environment, etc. and statistics supporting integrated activity of subjects on the aim of their common effort synergization essential for their individual interests and general public benefits in the scale of border and national economy.

Measurement data in the scope of speed, valuable for each mentioned simultaneous and different users, reveal the areas of their common interests, shaping the possibility of mutual cooperation. Therefore, e.g. health care because of economical reasons, they are not interested with financing the road accident effects, caused by prohibited speed, similarly as insurance companies are not interested in elimination of damages instigated by too high speed. Health care and insurance companies may together execute and co-finance the projects aimed at protection of their own interests by shaping the drivers behavior, correlating own benefits with the interest of citizens and with general social interest.

Analogous analysis, which proves usefulness of measurement data for the process of statistics production, useful simultaneously within many different users, may be continued in reference to other 4 chosen on random basis parameters of road traffic, possible to be recorded and generated by road transport AMS. It would occur then, that the list of beneficiaries of such information is much more longer.

Only on the basis of information obtained on the basis of measurement data, providing very high level of roads occupation with traffic of all or chosen vehicles group or with the level of individual lanes occupation of subject road in the time unit, time of day, or year, it is possible to reveal the level of road burden. Identification of above phenomenon and its features, may be just a basis for undertaking an initiatives, solving the communication problem by road services in agreement with public finances holders. From traffic management by policeman, solving episode communication problems by organization of constant, alternative by-passes, to decisions about road development or investment in new communication solutions. Other beneficiaries of subject data may be for instance: trade analytics, hoteliers, gastronomy representatives and other.

The example of measurement system, equipped only with functions: of vehicles counting, vehicle speed identification, vehicles classification into proper groups, recording of vehicle weight, presents the list of beneficiaries of measurement data with simultaneous appointment of separate beneficiaries of data generated by individual functionalities of subject system. Drawing No. 1, specifies separately: beneficiaries of measurement data generated: function of vehicles counting, speed measurement, vehicles classification and weight of recorded vehicles; area beneficiaries as e.g.: safety, protection, planning, competition, management, which operation in practice, requires the contribution of measurement data from individual functions of discussed system.



**Figure 1.** Beneficiaries of measurement data of road transport automatic measurement system

Source: own study on the basis of sample scheme of measurement system of Metrology Department of AGH University of Science and Technology in Cracov.

Simultaneously with above, the measurement automatics is able to deliver new information, about effects, which have not occurred so far on the roads including the border areas roads. Opole Province in Poland has become convinced about that, just after the Schengen Treaty has become official document for Poland, on the basis of which border checkpoints and border crossings were eliminated. At that time the effect of border area roads burden with road transport occurred to be a surprise, and lack of measurement systems, become an effective obstacle for monitoring the effect character and undertaking preventative actions [8].

Together with elimination of customs checkpoints, customs records performance were desisted, currently essential source of data. Liquidation of borders and border checkpoints, however is not going to cause the disappearance of demand on border road traffic characteristics. It proves the advisability of belief about the need of AMS assembly, working independently and supranational, recording the features of road traffic.

### 2.3. AMS IN OBSERVATION OF ECONOMICAL COOPERATION INTENSITY AND ECONOMICAL PROCESSES

Multicriteria analytical easement of measurement data of road transport AMS does not exhaust the efficiency of AMS, in the scope of effectiveness of managerial decisions of each scale. If we extend the concept of AMS measurement data exploitation with their integrity, together with data generated by other AMS of the same domain, the easement of AMS data extends to function with economical cooperation intensity of regions observers and economical processes, determined by road transport.

If the information scope of considered measurement system associated with data of toll collection system on the roads called viaTOLL, based on wireless communication technology, from which it is easy to establish among the other things:

- number and exact belongingness of vehicles to given classification group together with domination of vehicles group on national roads;
- number and exact specification of vehicles, which emits specified extent of harmful substances to the atmosphere;
- value number of road fees, born by national carriers and foreign, executed in Poland by exact vehicles in a given period of time[20];
- domination of the heaviest from vehicles category together with number of travelled kilometers, on each of subject roads and trends in subject scope;
- character of vehicles traffic on national roads (*commercial non touristic*); domination of a given group of carriers, their origin and changes of trends in a given scope;
- national roads of the biggest traffic;

number and place of refueling points together with transactions specification made with viaTOLL card in the country and abroad, that is the magnitude of finances foreseen, for example on vehicles maintenance (*purchase of spare parts, vehicle accessories, repair services*), then the scale of economical phenomenon characteristics, proper for processes activated by road transport, extends in such a serious degree, that it allows for pilotage of economical development, also by rise of sale centres, identification of pace in subject rise and changes of their location.

Subject information resource allows to search the reasons of such types of phenomenon occurrence in various source categories. The issue is all the more serious, because the data operator, generally is focusing on the incomes obtained for driving with a specified sections of the roads. His interest is as biggest traffic density with road transport and it is only for the reason of increase of income from road fees, he is going to use information from viaTOLL, and only those, which are going to support his business interest.

In the meantime other entrepreneurs and management analysts, and other users of data from viaTOLL, from beyond General Directorate of National Roads and Motorways (GDDKiA) road traffic density will interest from totally different point of view. For them essential shall be e.g. information about dominant transport directions, intensity of transport development and location of business centres, commercial-service centers, appointing economical prospects and possibilities of competition existence or its lack, cooperation capacities. For above category of information users, essential will be the information about traffic intensity in a given time of the month, day in order to plan the date and route of own journey and estimation of time necessary for traveling.

Therefore information scope of AMS data from viaTOLL is outreaching far beyond the information needs of system owner, and such effect, once again confirms simultaneous demand of many various users for narrow specialized AMS data, who can support their key interests with the data from viaTOLL system. Especially, because from viaTOLL, it is not only possible to draw information about what types of vehicles are driving on the roads covered by fees, but also via technical parameters recorded during vehicles registration in subject system, it is possible to establish:

- the rout of journey and its length, time, date of journey of vehicles, their owners/operators, companies head offices addresses, to which the vehicles belong or private entities using viaAuto,
- number of vehicles of a given carrier, scale and direction of transport with individual types of fleet
- or finally identify the transport phenomenon with seasonal character, which causes periodically particular road burden.

ViaTOLL data may participate in the analysis of seasonal transport influence on the level of incomes not only of GDDKiA, but also for target region of the vehicle journey, what extends already beyond the GDDKiA interest, and is the domain of other subjects and institutions. ViaTOLL allows to categorize the vehicles. Specify their brand and drivers preferences in subject scope, establish the age of vehicles moving on paid roads and related with them technical characteristics of cars, according to specified criteria; observe trends in the scope of new cars, identify the units and groups of owners who invest in new transport fleets.

The above example does not exhaust the opportunities of practical usability of information additionally available from ViaTOLL system, and beyond the key target for GDDKiA business. ViaTOLL data allow to formulate the opinion: about the level of vehicle owners wealth in division into commercial and private entities; intensity of transport mean usage, influence of petrol price increase on the level of cars traffic intensity, cars ownership status, driving on national roads. They support the statutory activity, if subjects responsible for national policy of environment protection, for which information about the scale of vehicles of high fumes emission to the atmosphere is the basis to introduce projects and obligations, forcing the vehicle owners to exchange the vehicles into more demanding standards of fumes amount emission ones.

As a matter of fact, for subject group of users, this kind of information are supporting their statutory aims. Although the analysis of subject information remains useful to shape the policy and rules of environment protection, simultaneously from the same data additional phenomenon of road transport fleet removal may be observed. Listed as example possibilities of extended data usage recorded in viaTOLL only for the aim of toll collection for driving on national roads, does not exhaust nor the number of generated information from subject system in the status of additional and beyond the key target for viaTOLL owner, neither other than GDDKiA users of subject data.

They however confirm social-economical usefulness of such data, and therefore their usability for the process of public statistics production, for entrepreneurs and decision-makers operating economically in the areas of various branches.

From viaTOLL record performed only for the aim of toll collection for usage of national roads, it is possible to obtain information about: economical character, parameter market trends and local economic situation not only in transborder areas but referring to other areas of the country, as, e.g.: transit identification, its directions and national shipment routes, transport from abroad to target points in individual regions of Poland; participation of national vehicles and vehicles registered by foreign companies; number of carriers from individual countries together with establishment of vehicle class, which they operate and level of fumes emission of subject vehicle; intensity of transport contacts of specified countries with determined areas of the country and economical characteristics of subject contacts, traveling directions, specialization of vehicles and changes appearing in them, categories of carriers and countries of origin of those, who invest in transportation means as well as appoint those, who do not invest in fleet exchange at all.

If the scope of data, which is possible to be obtained from viaTOLL would refer to contract value for construction of viaTOLL system, specified with the value of 4,9 million PLN and real costs born until 2.12.2011 by GDDKiA reaching 595222091,39 PLN [17], thus the necessity of data spreading is proven, which are obtained with measurement automatics and in analogy, other kept in central electronic record registers ,by making them available simultaneously to numerous, various users, including the process of statistics production, in the way, which is not violating unit data protection.

Such necessity, results directly from the general social interest and is the obligation of the country, depending on creation of conditions and supporting of entrepreneurs management effectiveness and development of entrepreneurship as well as condition, being in direct interest of subject country. Since effectively operating enterprises, are the job vacancies of citizens, these are the tax payee of the country and rich citizen is a rich country with marginal effect of social aid beneficiaries.

If we talk about necessity to allow the usage of automatic data as well as central electronic registers, it is also because the technological capacities exist to start such support category for entrepreneurs, launched by the country and also because the information represents a status of highly appreciated economical resource and for that reason, shall be publically available, especially because automatic and electronic systems of data recording and public statistics are created from public resources, that is citizens taxes. Therefore thrifty usage of public resources, reveals another argument for separation of data administrator scope from the ownership status towards data administered and location of ownership status of such measurement data and electronic recording on the level of Province Governors or Administration and Digitization.

In analogy to above, again the lack of validity is confirmed for creation of own primary data obtaining systems of public statistics producer, at least in the scope of road transport, used only for the aim of statistics production. High, as 99,9% fees collection by viaTOLL [18] characterizes equally high precision of parameters mapping and characteristic of road transport. It, together with scope of data generated by viaTOLL integrated with road transport AMS data, which feature was a subject of separate analysis and presentation, denotes the capacity of AMS and complementary character of data generated sets systems cooperation in their deposition systems.

### 3. CONCLUSIONS

Complementary character of data sets registered by AMS and electronic register, finds their integration application in the process of statistics production, under the condition of outsourcing supply with subject data of statistics production process. For management practitioners, public administration and the citizen as payee, compatibility of data generated by various AMS and capacity of their integrity in the process of statistics production has essential, business significance.

Therefore the basic function of public statistical department has become in practice conditioned by foundation of new organization of primary data sources for the process of statistics production on outsourcing data and work outsourcing, delivering input data to such process from outside the data sets, created by AMS and central electronic registers. Maintaining the ownership status towards AMS and central electronic registers as e.g. towards the Tax Office register, National Insurance, etc, will deepen the information inefficiency of public statistics and will depreciate production of such statistics. Reliability of department statistics will become dominant and capacities of their integrated processing for the aim of managing subjects of various branches is going to be impossible.

Large number of data will be unused and unprocessed into economical information. The representative of such phenomenon is also viaTOLL system, because only from his operator depends, who, where, what type and in what scope and finally, if at all, he is going to make viaTOLL data available. It is him, who has the exclusive right for possible systematical publication of specified features of data or lack of such regularity.

The owner of data, if at all, is from time to time providing data, which he considers as interesting for people and is not dealing with satisfaction of information demand of anonymous for him users of such information, according to defined in some way scope and defined regularity. Therefore the external user either at all has no access to such kind of data or by incident has an access to information or in a highly engaged way and cost consuming, without any certainty for success undertakes the execution of surveying process, with his own force, which usually has only an incidental form and very low cognitive result.

Dynamic and for huge scale in the economic history of information technology and measurement automatics development, capable in dedicated, mass and permanent way, execute recording processes for various aims, must be a support for the process of reliable statistics production as well as public statistics conditions such capacity with openness for outsourcing usability of external data sources also in the form of statistical features. Since, the diversity of data stored in AMS and IT central registers, is much more attractive from cognitive perspective, if the data of such separate storage places will be integrated and processed under multiaspect consideration for the aim of public statistics production process. AMS, however they can not be applied for all types of statistical surveys, may support the increase of many statistics reliability to the level, which is not to be obtained by statistical surveyor system of primary data collection, nor by substitution of regional surveyors with stationary telephone surveyors.

The AMS data sets may, shall be and must be integrated not only with the aim of rationalization of public finances management, but with the aim of information capacities synergization for measurement data, also with the scope of economical cooperation monitoring scope and economical processes activated by road transport traffic. Engagement of AMS for the aim of economical information production system expressed by public statistical numbers, shall become another step of decisive reorganization of high quality statistics production, satisfactory level of its competence and reliability for all national and economically united Europe users. Subject issue is not only interesting from scientific point of view. It above all remains the urgent matter for rationalization of tax payee resources management and practical usability of statistics including the participation of public statistics in shaping the information society [5], [9], [10], [13].

## REFERENCES

- [1] DATKA, S., SUCHORZEWSKI W., TRACZ M., (1999). *Inżynieria ruchu*, WKŁ, Warsaw.
- [2] GAJDA, J., SZKIC-CZECH, E, Systemy pomiaru parametrów ruchu drogowego źródłem informacji statystycznej istotnej dla rozwoju obszarów trans granicznych , ( in) materials from GUS conference, Lublin 2008.
- [3] MAERIVOET, S., DE MOOR, B., (2006). *Traffic Flow Theory*, internet paper, Leuven (Belgia).
- [4] MIGDAŁ, W., Zasoby informacyjne informatyki przemysłowej środowiskiem rozwoju przedsiębiorczości górnictwa odkrywkowego w warunkach konkurencji rynkowej (in) mat. Konferencyjne Polskiego Kongresu Górniczego, AGH Kraków 2007 ,
- [5] OLEŃSKI, J., Przedmowa (w) Społeczeństwo informacyjne w Polsce. Informacje i opracowania statystyczne. Statisticresults for 2004- 2006, GUS 2008
- [6] Rzeczpospolita 19-20 listopada 2011, Plus Minus, Rozmowa Mazurka „Donald wie ,że otaczają go dupki”
- [7] Sprawozdanie AGH z przeprowadzonych badań na granicy Konradów - Złote Hory 2008
- [8] STRAUCHMANN, K., Skrótem przez granicę, (w:) Trybuna Opolska from 19.03.2008,
- [9] SZKIC-CZECH, E., InformativeSociety In Determination of Regress of Public Statistics (w) Zeszyty Studia i Materiały Polskiego Stowarzyszenia Zarządzania Wiedzą; IX Kongres PWSZ Ciecchocinek 2012
- [10] SZKIC-CZECH, E., Outsourcing informacji społeczno –gospodarczej uwarunkowaniem skuteczności procesów biznesowych (w)materiały V konf. naukowej pn. Efektywność źródłem bogactwa narodów, Politechnika Wroclawska i Uniwersytet Ekonomiczny we Wrocławiu; Piechowice 2012
- [11] SZKIC-CZECH, E., Outsourcing Of Data In Shaping Of Quality Of Statistic Information. (w:) materiały z międzynarodowej konferencji pn Information Management, University of Gdansk- Faculty of Management, praca zbiorowa pod red. Kubiak B.F, Korowicki A., 2009.
- [12] SZKIC-CZECH, E., *Electronic Reporting In Shaping Of Statistic Information*  
[http://www.czso.cz/sif/conference2009.nsf/i/regional\\_statistics\\_2](http://www.czso.cz/sif/conference2009.nsf/i/regional_statistics_2);International Statistical Conference; Prague, Czech Republic, 14-15 September 2009.
- [13] SZKIC-CZECH, E., Społeczność, a społeczeństwo informacyjne, ( w) Społeczeństwo informacyjne, krok naprzód, dwa kroki wstecz,. Praca zbiorowa Polskiego Towarzystwa Informatycznego i Polskiego Towarzystwa Społeczeństwa Informacyjnego, wyd. PTI OddziałGórnośląski Katowice 2008.

RÓŻA WERYŃSKA

*The Bronisław Markiewicz State  
Higher School of Technology and  
Economics in Jarosław  
(Poland)*

## INTEGRATION OF IT ENVIRONMENT AS A PREREQUISITE OF ECONOMIC COOPERATION IN TRANSBORDER ECONOMIES<sup>1</sup>

### 1. ICT FOUNDATIONS OF THE DEVELOPMENT OF COOPERATION IN TRANSBORDER ECONOMIES

Nowadays Europe is experiencing a lot of changes in different spheres of social, economic and political life. These changes are taking place in globalization and regionalism which are seemingly the opposite processes. The regionalism is considered to be a way to achieve a better competitive position in the global economy, so it is the socio-economic process formed in an isolated part of a special area, based on local culture, the specific needs and aspirations of the people and a sense of identity. So an apt is the view, that the regionalization and globalization are mainly complementary processes<sup>2</sup>.

The economic development of societies and communities in the context of globalization of markets and competition is carried out outside the borders and the Schengen Treaty, eliminating borders between countries has accelerated this process. Market integration is conducive to global management and development, integrated cooperation of border communities influences the development of local management.

Cross-border areas in this case play a key role, which are specific links connecting local and regional communities in a united Europe.

The essence and aim of cross-border cooperation is elimination of obstacles and differences that may divide these regions, resulting in bringing the border to have only administrative functions. The main condition for cross-border cooperation is to strengthen and develop relations between the neighboring communities, to cooperate in the field of economy and infrastructure and to break down social barriers in education, science, for example, foreign languages, in everyday problems solution. Due to the prevailing ethnic relations as a result of historical heritage, we have to overcome mutual animosity and prejudice among nations<sup>3</sup>.

Cross-border cooperation, is therefore, a very important component, which accelerates the actual process of integration, both in social and economic terms.

According to the definition adopted by the European Outline Convention on Transfrontier Cooperation between Territorial Communities or Authorities (European Outline on Transfrontier Cooperation between Territorial Communities and Authorities) the cross-border cooperation is „each concerted action aiming

1 Dr. Róża Weryńska, professor of IT in the High School of Technology and Economics in Jarosław.

2 T.G. Grosse: *Some aspects of economic globalization and its consequences in the Political Science*. “Political Studies” 2003, No. 4, p.122.

3 M.Greta.: *European regions and European integration*. Conclusions for Poland. Lodz 2003, p.47

to strengthen and foster the neighboring relations between communities and authorities of two or more contracting parties, as well as making agreements and approving the arrangements necessary to achieve these goals<sup>4</sup>. According to EU principles, cross-border cooperation is a neighboring cooperation in all the spheres of life between the border areas, regions, municipal authorities and other authorities in the border regions<sup>5</sup>.

Such collaboration should help to mitigate the negative effects of border existence in all areas of economic, social and cultural development and to overcome the effects of the peripheral location of the border areas, which are often neglected in terms of economic development as a result of investment asymmetry of local authorities.

The natural activity of the population living in border areas, which is the result of a multi-faceted diversity, growing out of cultural, socio-economic, legal and other differences causes the phenomenon of border traffic, which supports the exchange of goods, services, science or culture between border neighboring communities.

The cross-border traffic, which arose on the basis of local predisposition specific and the ability to meet the needs of people living in the cross-border area, stands out the distinctive characteristic of the area extent and intensity, reflects the existence and progress of specific socio-economic processes that support the economic specialization of those areas.

The complementary nature of the transborder community cooperation forming the basis of the natural values and the local potentials synergizing (including infrastructure developments, technical and technological ones, scientific, organizational and others) influences the standard of living of the inhabitants of those areas as well as the level of economic advancement of those European regions. Thus, the border traffic, irrespective of whether the rules are permitted by law or they are beyond its regulations under the, so-called, informal sector, is a sign of people’s will to improve their living conditions.

The activity of border communities is the result of differences in the living standards of the population, in the structure of needs and system solutions, in the access to goods and services on both sides of the border.

Therefore, the fundamental objective of cross-border (euro regional) policy should be the realization of interests by local and regional communities, understanding the need to solve them jointly on the principle of partnership. One should also take into consideration that it’s not easy to achieve this goal, so you should take steps to build a genuine neighborly relations and institutions that will ensure equality of partners. It is very important, because the parties often have different economic and demographic potentials, as well as political significance in international relations. On the other hand, cross-border cooperation doesn’t consist in standardizing the border areas, but in getting the effect of the „combined system”, due to which the economic potential of countries will be aligned<sup>6</sup>.

Cross-border cooperation is a complex and varied phenomenon depending on location, local traditions, the historical and socio-economic conditions. The diversity of cross-border areas may contribute to enrichment of cultures in local and regional areas, which contact with each other, and thus, as the result of joint efforts, it can cause changes in the economic structure of these areas. Long-term and fruitful cooperation usually leads to the integration of communities and economies of the border areas based on free border traffic.

4 *European Outline Convention on Transfrontier Cooperation between the European Communities and Local Authorities, established in Madrid May 21, 1980*, (Journal of Laws) Dz.U. No 61 from 1993r., pos.. 287, p. 1280.

5 M. Zieliński: *Cross-border cooperation between local authorities of EU countries*. in: Poland in the European Union - *the perspectives, conditions, opportunities and risks*. Ed. C. Mika. Torun 1997, p. 227.

6 J. Oleński: *Euroregions as a factor of European integration*. [in]: *Regional development in the transformation process*. Warsaw 1996, p.61.

Currently, this cooperation takes place at various levels, which include virtually all fields of socio-economic and political development.

It may take different organizational forms such as:

- Interpersonal cooperation (directly between the inhabitants of border areas),
- Cooperation organized on the basis of the appropriate agreements between the various social organizations, economic, cultural and political ones, between cities and communes, voivodeships, for example Euro regions<sup>7</sup>. These contacts may be established within<sup>8</sup>: technical infrastructure, border crossings development, communication systems, municipal infrastructure;
- regional and local economy as association of foreign entities, the exchange of goods and raw materials, services, information system development and mediation for economic entities (through joint chambers of commerce and industry dealing with counseling as well as with training and promotion of the region);
- social sphere, such as cultural, sport, educational, scientific and tourist exchange. From the point of view of the communities living in a cross-border region, editing of border newspapers plays an important role in collaboration as well as organizing the radio stations, cooperation of cultural centers, exchange of artistic groups;
- protection of the natural environment and landscape, cross-border protected areas are created, the corresponding declarations and decisions on air and water pollution extenuation are concluded<sup>9</sup>.
- spatial economy and spatial planning, creation of a uniform concept of spatial development of cross-border areas.

The neighborhood of areas located on both sides of the border causes that the border regions from both sides interact in a natural way and the development of positive interaction and relations between the regions in various fields are normally established, when the external factors in the form of stable and good relations between countries and a favorable economic climate at the state level occur. (Table 1).

**Table 1.** The process of intensification of cross-border interaction

Mutual relations stage	The degree of the border closure	Economic relations
Isolation	Closed	Lack (absence)
Co-existence	Partially permeable	Spontaneous trade
Collaboration	More permeable	Regular trade
Integration	Open	Cooperation

Source: K. Krok *Contemporary look at border areas in Europe [in:] New borderlines of the European Union. Cooperation or exclusion*, ed. G. Gozdelak, K. Krok, UW, Centre for European Regional and Local Studies, Warsaw 2006, p. 55.

Thus, the intensification of cross-border interaction is linked with changes in the social system, technology and nature and in the economic structure.

<sup>7</sup> Ibidem.

<sup>8</sup> R. Stemplowski, A. Zhelazo (ed.): *Polish border territories and foreign policy at the beginning of the twenty-first century*. Reports. Polish Institute of International Affairs, Warsaw 2002, p.299-300.

<sup>9</sup> A. Mierosławska, *Cross-border cooperation as a factor of regional development*. "Issues of agricultural economics," 2000, No. 6

After the enlargement of the EU, the benefits of intensification of cross-border interactions with non-member countries can take any form, becoming an instrument of prevention of marginalization process, mitigating the adverse effects of the border existence, overcoming the consequences of borderland location on the national outskirts of the states, implementation of principles of international law and economic development in the border area, reduction of regional socio-economic disparities as well as decrease of development gap in relation to more developed countries.

Summing up, the basic grounds for cross-border cooperation development are the following:

- historical, where the historical communities and ethnic groups have shared the borders of the states, but did not result in their disappearance;
- political, that cause that the cross-border cooperation is an important part of the process of political integration in the European Union countries and countries aspiring for EU membership;
- business, including the need for economic activation of border areas, which bring economic benefits, that one is the most important factor of cooperation;
- sociological (social), which aim is to overcome mutual prejudices and barriers and to strengthen formal and informal contacts.

## 2. MAIN BARRIERS OF COOPERATION IN TRANSBORDER ECONOMIES

Cross-border cooperation as well as regional and local development is a process of cause and effect, which can be compared to the successive sequence of events: causes and consequences.

These reasons are understood as prerequisites that cause transformation in the economic and social structure of the region, in the technical and technological level and in the interaction of the environment.

Any reason is a result of past events, each effect is the cause of the events that will occur in the future. For example, a high level of economic development of the region may be the result of the accelerated growth rate which occurred in the past and at the same time, it causes further investment influx, which will strengthen the region economically. This example shows a pattern, which is a kind of feedback, that consist in the fact, that in the process of regional and local development and cross-border cooperation is changing not only the region itself, but also the factors causing these changes<sup>10</sup>.

The systematization of factors and barriers concerning the cross-border cooperation is, no mean, a challenge for researchers. It is even more difficult, when cooperation takes many forms and is established in different areas, which often differ very much. There is still a tendency in the literature to single out certain kinds of barriers in cross-border cooperation.

One can distinguish the following types of barriers: **socio-economic barriers, cultural barriers and institutional barriers**<sup>11</sup>.

These barriers can be considered as a kind of conditions and opportunities, existing potentially and stimulating the development of border areas.

<sup>10</sup> W. Kosiedowski, Theoretical problems of regional development.[in:] *Managing by regional and local development*. Ed. W. Kosiedowski. Torun 2001, p. 31-36.

<sup>11</sup> A. Mierosławska, "The factors activating and inhibiting the development of cross-border cooperation", "Local self-government", 2004, No. 3.

## 2.1. SOCIO-ECONOMIC BARRIERS

Referring, therefore, to the socio-economic barriers concerning the cross-border cooperation and regional and local development, one must take into consideration the particular economic inequality measured in economic and social categories. There are only few regions which have similar socio-economic development. Most of them form a part of the regional areas clustered around the centers, which are supported by other centers, these structures reproduce, complement or support one another, especially in the areas of production, employment and trade<sup>12</sup>. Among numerous barriers of this type one can distinguish the following<sup>13</sup>:

- limited financial resources, including the budgets of local authorities of border areas,
- insufficient amount of resources for cooperation promotion,
- asymmetry of the economic and financial potentials of the regions which collaborate,
- lack of banking infrastructure for the financial accounts,
- disparities in access to programs and funds of the European Union,
- lack of investments concerning joint projects and a lack of working capital,
- defective functioning of market system,
- scarcity of investment in the regional economy,
- high unemployment,
- lack of active cooperation.

The underdeveloped private entrepreneurship, technical and technological obsolescence with poor scientific and research facilities and shortcomings in information and communication infrastructure, a lack of institutions of the, so called, business environment, as well as pathological phenomena objecting the economic transactions, are the reasons for real limitation of cross-border cooperation<sup>14</sup>.

The most important barriers in trade exchange with various difficulties during crossing the border the entrepreneurs single out the following ones: corruption, low level of security, bureaucracy and instability of law provisions<sup>15</sup>.

The differences in the level and rate of economic development and the obstacles arising from the fiscal and customs systems, from the visa requirements, queues during customs clearance and passport control cause a number of problems in cross-border cooperation, have a deterrent effect on it and make difficult to achieve the desired objectives and results.

In order to solve the emerging problems, one should strive for the cross-border economic and social cohesion by identifying common economic interests. The creation of the framework conditions for regional economic promotion and opening to the public market can help to solve these problems. The contacts between fiscal and customs administration may be also the uncomplicated activity, and improvement of border traffic would solve bureaucratic problems of border crossings.

## 2.2. CULTURAL BARRIERS

The cultural distance and the language one are another barriers to which the attention should be drawn. Although, they are the most common ones, it is difficult to overcome them and a lot of time is needed for it. In many cases it is easier and faster to overcome economic or political barriers, than cultural ones, because the population of border regions has negative stereotypes and image about their neighbors on the other side of the border, this image is often exacerbated due to lack of language knowledge, a weak flow of information and limited contacts.

The promotion of educational and cultural activities can reduce the socio-cultural distance (dissemination of musical works, works of art, literature, theater, etc.), as well as facilitating the forms of exchange between schools, the recognition of diplomas, and above all, support the flow of regional cross-border information through all available media. One should put emphasis on the dissemination of curricula and improvement in language skills, these factors are a valuable source of mutual understanding.

## 2.3. INSTITUTIONAL BARRIERS

Another obstacle in the development of cooperation are institutional barriers in the form of competence inequality of the institutions, the lack of the adequate institutional structures, or even the lack of relevant institutional structures involved in the collaboration. The reasons for such situation one can see in gaps in legal regulations at the international, national and regional levels. There is often a lack of appropriate structures to deal with cross-border cooperation. If, however, such institutions function, they are not compatible and they have different defined competencies, they function as a consultative forum and as a result, the acts of these institutions have no legal validity.

In general, the greatest problem is a lack of legal instruments (international treaties and others) allowing public authorities to cooperate directly<sup>16</sup>.

Taking actions aiming at regionalization and decentralization, as well as formation of cross-border agencies and special structures in border communities can be the solution to these problems. Building "bridges" between border communities and regional authorities may be also a significant action. It should be also considered the activity concerning granting the legal personality for cross-border institutions and recognizing the legal acts issued by these institutions. Finally, the possibility of direct exchange of information between the decentralized public authorities at the official level would be the essential one<sup>17</sup>.

It should be noted, that the above mentioned barriers retard the cross-border cooperation, they are a serious obstacle to its functions realizing.

It is difficult to assess which of these barriers are the most difficult to overcome, but it seems that the socio-cultural barriers, as mental barriers, are the most difficult to eliminate.

In fact, all the barriers are of relative character, that is, theoretically, each of them can be overcome or neutralized, and certainly reduced.

Additionally, it should be noted, that these barriers operate in an interconnected manner, which impedes the overcoming them and may require the involvement of external factors. Technical infrastructure of neighboring areas may be one of these factors.

The integrated dimension of cross-border projects in the field of technical infrastructure with the participation of local or regional authorities can be defined as improvement in the integrity of cross-border area. In the cross-border infrastructure cohesion one should single out the main points:

12 M. Greta: European regions and European integration. Conclusions for Poland. Lodz 2003, p. 47.

13 W. Kosiedowski: Theoretical problems... op.cit., p.36.

14 A. Mierosławska, "The factors activating and inhibiting the development of cross-border cooperation" "Local self-government", p. 47.

15 K. Krok, M. Smętkowski, Polish-Ukrainian cross-border cooperation, [in:] The new frontiers of the European Union - cooperation or exclusion?, ed. G. Gozdelak, K. Krok, Scientific Publishers Scholar, Warsaw 2006.

16 M. Greta: Euroregions. op.cit., p. 51.

17 S. Ciok, Polish-German borderland. Problems of cross-border cooperation. Wrocław 2004

- synchronization of investments in border crossings infrastructure, communication systems and municipal equipment as well as telecommunications networks;
- preparation of joint infrastructure projects co-financed by the European Union;
- joint lobbying of cross-border partners at national central authorities for cross-border decision or investment, which go beyond the competencies of local entities and their financial capabilities.

The expenditures on communication and transport facilitating in the border areas are clearly preferable among the infrastructure investments.

In addition to the improvement of border traffic and communication, the activities in favor of the development of modern information technology play a major role. The need for the universality of information and information technology to enable access to it, reaches not only more people, but also the companies operating in the regional and local authorities responsible for the development of regional policy.

Therefore, information management, the quality and the flow rate are the key factors of competitiveness, both in industry and services, and may also be an opportunity of comprehensive liveliness of adjacent areas, separated by national borders<sup>18</sup>.

### 3. MODERN ICT INFRASTRUCTURE AS THE STIMULATOR OF TRANSBORDER CO-OPERATION

The dynamically growing importance of knowledge processes and modern information technology in nowadays economy is a stimulus to make changes in the way of thinking, especially, in achieving the competitive advantage and the pursuit of economic and social cohesion of integrating spatial systems.

The managers today don't care about the access to information as a whole, because the media provide it in excessive amounts due to the Internet, but it goes about information of high quality. They are looking for reliable, that is, safe socio-economic information and the access to it for their decision-making processes. This kind of demand causes, that information has become today a highly respected resource, which determines the effectiveness of management decisions, and thus, the effectiveness of management in a competitive market, including the market of cross-border areas.

The efficiency of the information process is determined by the IT infrastructure, as well as the ability to use practical knowledge in modern technologies, supporting the socio-economic processes<sup>19</sup>. For example, the Internet with Broadband access and IT cross-border services are the Information Technology infrastructure in the future. It is necessary for the development of competitive, integrative and stable society, that was confirmed in the strategy „Europe 2020”<sup>20</sup>.

It is known, that IT infrastructure is the whole of hardware and software solutions, as well as organizational ones, which are a basis for the implementation and operation of computer systems advanced substantively and technologically, and supporting managing by enterprises and institutions<sup>21</sup>.

The information infrastructure (computer systems) can influence significantly in the future the effectiveness of internal initiatives to build the internal potential of border areas.

It will depend on the information model of the state, if the information infrastructure conforms to the expectations and needs.

18 W. Wójcik, Introduction to Computer Science, [in:] R. Weryńska (ed.), The global information society, Katowice, 2008, p.7-8.

19 Jozef Olenski : Economics of information. Polish Methods „Economic Publishers. Warsaw, 2003

20 European Commission-Regulation of the European Parliament and the Council on guidelines for trans European telecommunications networks in Brussels in 2011.

21 [http://pl.wikipedia.org/wiki/Infrastruktura\\_informatyczna](http://pl.wikipedia.org/wiki/Infrastruktura_informatyczna).

Effective managing by the IT infrastructure of an enterprise depends on three key elements: people, processes and technology. The methodology ITIL<sup>22</sup>, can be the one, which allows you to combine these three elements, that is, the implementation of the best practices for managing by IT infrastructure and its adjustment to the changing needs of customers.

The basis of the concept of ITIL is to define the processes that need to operate within the IT services organization. ITIL allows the modeling of both commercial organizations (eg, computer companies, software) and commercial (government agencies, etc.), regardless of company size, type of organization or the existing tools. Each process should have defined tasks and responsibilities. In December 2005, the norm ISO / IEC 20000 was officially approved, it formalizes the requirements for IT service management (was based on the British Standard BS 15000)<sup>23</sup>.

In the era of global computerization the enterprises can't be detached from the ever-changing data security standards and the quality of IT services inside and outside the company.

It is, therefore, necessary to make investments in the field of telecommunications and information technology, such as:

- expansion of IT networks in the border areas, the cross-border expansion of supra-regional information highways,
- elimination of administrative, economic and technical barriers in the field of telecommunications and information technology, resulting from border location,
- development of cross-border centers on information transfer, including universities, colleges and educational institutions, etc.
- cross-border data exchange between universities, research centers for the transmission of innovation, information and research results and information about the international market development, the opportunities to reach customers, etc.
- acquisition of data and information, the need to monitor and analyze the development and socio-economic processes in the border areas is becoming increasingly important in the context of globalization of markets and competition, economic climate and recession, prevailing in the arena of micro and macro market, in the circumstances of economic unification of Europe.

The cross-border IT environment is generally understood as a single unit of IT infrastructure elements, adjusted to the problems of border communities, resulting from the interaction and cooperation with the neighbors on the other part of the border, it can lead to overcoming the barriers concerning the cross-border cooperation and also become a factor activating the above mentioned cooperation.

For this purpose it is necessary:

- encouraging the investors to be engaged in the implementation of broadband infrastructure,
- facilitating the use of IT interoperable services to enable the functioning of these key services within border areas and to provide digital assets, which will make the conditions for the development of entrepreneurship<sup>24</sup>,
- development of cross-border e-commerce through progressive liberalization,

22 ITIL (Information Technology Infrastructure Library) – (Set of recommendations how to provide computer services).

23 <http://www.infodesign.pl/pl/dictionary-til.html-30.05.2013>.

24 European Commission-Regulation of the European Parliament and the Council on guidelines for trans European telecommunications networks in Brussels



- improving the information networks and the related to them services and procedures in the context of existing constraints,
- customer confidence increase in electronic markets with the following effective initiatives: codes of conduct,
- finding the ways to overcome various obstacles that consumers encounter in the course of cross-border disagreements, including the development of an effective and important mechanism for the protection of personal data, while ensuring the smooth flow of information, advancing development and effective functioning of electronic identification, electronic signatures, encryption and other ways to ensure safety and reliability of operations,
- implementation of technical market standards, including the standards of interoperability.

Undoubtedly, the development of infrastructure allows to develop relations between communities on both sides of the border, to carry out joint initiatives for the whole frontier region and to overcome the barriers associated with the border functioning. It is also a very important instrument for the regional stability, stimulating the creation of a platform for the regional cooperation and the sustainable regional development.

#### 4. CONCLUSIONS

The information and communication technologies (ICT) have become one of the most dynamic phenomena of a modern society, a stimulus for the development of global, regional and local economy, they give people the opportunity to use their potential (for example, they provide an opportunity for the development of the entrepreneurship). They can not prevent all the problems, but the use of a digital single market based on its fast and ultra fast Internet and the interoperable applications can certainly help in the creation of a new socio-economic infrastructure, which, in turn, will ensure the sustainable economic development of the border areas by improvement in the flow of information.

The effect of the cross-border cooperation, depends, first of all, on the potentials and competencies of the parties concluding the agreements on cooperation, as well as on positive attitude of regional and local authorities and the community itself to take initiatives outside the border territories, with the aim to develop their own region.

It can be concluded, that the competitive potential of the region, as well as of the cross-border areas depends on the local innovative environment and the possibilities of managing by knowledge which becomes a strategic mean.

Particular attention should be paid to the relationship between the rapidly changing economic environment and the development of IT cross-border environment, that enables the real-time access to specialized and integrated socio-economic information, thereby, increasing the competitiveness of cross-border areas.

#### REFERENCES

11. S. CIOK, Polish-German borderland. Problems of cross-border cooperation. Wroclaw 2004.
12. M. GRETA, European regions and European integration. Conclusions for Poland. Lodz 2003.
13. T. G. GROSSE, Some aspects of economic globalization and its consequences in Political Science. "Political Studies" 2003, No. 4.
14. K. STEP, M. SMENTKOWSKI, Polish-Ukrainian cross-border cooperation, [in:] The new frontiers of the European Union - cooperation or exclusion?, ed. G. Gozhelak K. Krok, Scientific Publishers Scholar, Warsaw 2006.
16. W. KOSIEDOWSKI, Theoretical problems of regional development.[ In]: Managing by regional and local development. Ed. W. Kosiedowski, Torun 2001.
17. A. MIEROSLAWSKA, Cross-border cooperation as a factor of regional development. "Issues of agricultural economics," 2000, No. 6.
18. A. MIEROSLAWSKA, Theoretical problems of regional development.[ In]: Managing by regional and local development. Ed. W. Kosiedowski, Torun 2001.
19. J. OLENSKI, Euroregions as a factor of European integration. [in]: Regional development in the transformation process. Warsaw 1996.
20. J. OLENSKI, The economics of information. Methods. Polish Economic Publishing House, Warsaw 2003.
21. R. STEMPLOWSKI, A. ZHELAZO (ed.), Polish border and foreign policy at the beginning of the twenty-first century. Reports. Polish Institute of International Affairs, Warsaw 2002.
22. W. WOJCIK, Introduction to Computer Science, [in:] R. Werynska (ed.), The global information society, Katowice, 2008.
23. M. ZIELINSKI, Cross-border cooperation between local authorities of EU countries. in Poland in the European Union - the perspectives, conditions, opportunities and risks. Ed. C. Mika. Torun 1997.
24. European Outline Convention on Transfrontier Cooperation between the European Communities and Local Authorities, established in Madrid, May 21, 1980 ,( Journal of Laws) Dz.U. No 61 from 1993r., pos.. 287, p. 1280.
25. European Commission-Regulation of the European Parliament and the Council on guidelines for trans-European telecommunications networks in Brussels 2011.

**JÓZEF OLEŃSKI**

*Lazarski University Warsaw  
The Bronislaw Markiewicz State  
Higher School of Technology  
and Economics in Jaroslaw (Poland)*

## STATISTICAL PARAINFORMATION PLATFORM – THE FOUNDATION OF INFORMATION TRANSPARENCY IN HETEROGENEOUS INTERNATIONAL ENVIRONMENT WITH SPECIAL REFERENCE TO TRANSBORDER ECONOMIES<sup>1</sup>

### 1. INTRODUCTION

Statistical observation, measuring, analyzing and monitoring of social, economic and ecological processes in globalized, more open, market – driven, knowledge - based economies and in information societies need methodological approaches adjusted to their specific features and attributes.

Main theses of this paper are following:

- (1) information transparency, integrity and interchange between countries is the prerequisite of political, social and economic cooperation and partnership;
- (2) national statistical offices are predestined to developing, maintenance and operational management of information systems supporting the coherence, quality control and information transparency between countries;
- (3) *international statistical parainformation platform* (ISPP) embedded in and supported by national official statistical systems of countries is optimal, most efficient, easy to implement and relatively cheap instrument of supporting information interchange and transparency in international, politically and economically heterogeneous environment.

The needs for increasing of international transparency and interchange of information and growing information requirement of cooperating subjects based in different countries are the consequence of tightening international and supranational interdependencies of economic and social processes, i.a.:

- a) On international level legal and institutional systems are decisive for economic and investment decisions of businesses and individuals; national and regional governments use the procedures of deep institutional interventionism to regulate the processes of economic cooperation;
- b) Technological and economic processes in many economic branches are realized on the territory of two or more countries;
- c) Growing number of enterprises based and registered in different countries interlinked and realizing interdependent processes of production, trade and financing with enterprises of other countries;

- d) Foreign direct investments are important factor of economic development for all countries; foreign financial investments have strong impact on financial stability of national businesses;
- e) Financial institutions constitute integrated international financial market, especially in the field of banking and insurance;
- f) International remittances and transfers play important role for economic and social stability and development of national economy and regions;
- g) Growing importance of transborder cooperation for regional development of neighboring countries;
- h) For small - scale national economies and for specific branches of economy the transborder processes may have the impact on macroeconomic situation.

Information infrastructure of the countries cooperating within the frames of the Eastern Partnership has the following specific features and attributes important -from statistical point of view – for information transparency and interchange:

- a) Particular countries have developed their own, specific information infrastructures; because of that for social and economic subjects of one country the access to information from other country is often difficult, troublesome and expensive;
- b) Terms, concepts and definitions used in governmental administrative records and systems, primary records of legal persons and entrepreneurs, are specific for each country;
- c) Concepts and definitions used in social and ecological statistics (in broad sense) are adjusted to legal and administrative specificity of particular country;
- d) National systems of official statistics are integral parts of those infrastructures;
- e) In open economy statistical concept of “national economy” is fuzzy; economic processes in national economies cannot be explained and monitored without information from other countries;
- f) National systems of official statistics have implemented or are on the way of implementing international statistical principles and standards (mainly ISI, UN and specialized organizations of the UN, EU).

Because of wide use of international statistical standards national official statistical systems are more coherent and integrated then other administrative, economic and social national information systems. Higher level of integration, coherence and compatibility of statistical systems could and should be achieved by building international platform providing access and interchanging metainformation and parainformation between national statistical systems.

### 2. BASIC CONCEPTS AND DEFINITIONS.

The definitions of terms and concepts presented below are commonly used in theory and practice of statistical systems modeling. The objective of presenting those definitions is to pay the attention on specific, in some sense new, functions of metainformation and parainformation in national official statistical information systems (NOSIS) in modern ICT environment.

Statistical metainformation is the information on statistical information realizing in the NOSIS the following functions related to statistical information and data:

- Standardization
- Identification

<sup>1</sup> Jozef Olenski, Lazarski University, Warsaw and State School of Technology and Economics, Jaroslaw.

- Consolidation
- Integration
- Interpretation
- Evaluation of data and information

Statistical parainformation is the information on statistical systems, processes and resources realizing in the NOSIS the following functions:

- Functional specification of NOSIS
  - Standardization of NOSIS
  - Documenting of NOSIS
  - Organization of NOSIS
  - Co-ordination of NOSIS
  - Retrieval of information and metainformation
  - Management of statistical resources, processes and systems
- Coherence of NOSIS's is the *isomorphism* or *equimorphism* of functions, organization and procedures of NOSIS's represented in national statistical parainformation systems. **Coherence is the category referred to the level of statistical systems, processes and resources of NOSIS's.**
  - Integrity is the *isomorphism* or *equimorphism* of relevant statistical data and information in different NOSIS. **Integrity is the category referred to the items of data, metadata, information, metainformation, paradata and parainformation.**
  - Transparency between NOSIS' is the unabridged availability and easy access to complete resources of statistical metainformation and parainformation for all stakeholders, both national and foreign. **Transparency is the category that is referred to the stakeholders of the NOSIS's.**
  - Interchange between NOSIS's is the availability, accessibility and transfer of data, information, metadata, metainformation, paradata and parainformation between NOSIS's and all stakeholders of official statistics. **Interchange is the category describing relations between different NOSIS's as well as between NOSIS's and stakeholders of official statistics.**
  - Statistical parainformation platform is the warehouse realizing the functions of collecting, statistical metainformation and parainformation from all NOSIS's, integrating, organizing those metainformation and parainformation in warehouse structures, providing the access for all stakeholders, and links between meta- and parainformation stored in the platform with relevant statistical data stored in particular NOSIS's.

It should be stressed that the terms defined above should be understood as categories relevant not only to statistical data, metadata and paradata, to statistical information, metainformation and parainformation, to statistical systems processes and resources but also to data, information, metainformation and parainformation and systems participating in statistical processes, i.e. administrative information systems and administrative records used for statistical purposes and primary records and information management systems of respondents supplying data to statistics.

### 3. INFORMATION TRANSPARENCY AND ITS ROLE IN INTERNATIONAL COOPERATION

In globalized world, in information society and in knowledge – based economy, all political, social and economic subjects are acting in the environment of large and growing information gaps. The reducing of those gaps could be achieved by implementing and maintaining metainformation and parainformation

systems oriented for the needs of specific groups of users, i.a. public administration, social and cultural organizations, political organizations and politicians, businessmen, researchers, teachers and students etc.

Providing methods and tools of quality control, accessibility and international interchange of information for specific, professional groups of users is the mission of official statistics on national, regional, international and trans – boarder scale. In modern IC environment official statistics should not only publish statistical data in the form “ready to use” by individual users, but also to create effective data retrieval systems supplying reliable, of good, verified quality, accompanied by relevant metainformation necessary for proper interpretation, understanding and use data. In modern ICT environment the metainformation platform for common use all stakeholders from the countries of partnership seems to be most effective tool for information interchange.

In the international environment of the countries cooperating within the initiative of Eastern Partnership the creating and maintenance of effective information retrieval systems enabling access to information stored in systems and resources managed by different organizations and subjects based in different countries, working in specific conditions of particular countries, is of special importance. In the community of Eastern Partnership there are collaborating numerous organizations, central, regional and local governments and subjects that are acting in different legal, cultural, social, economic, technological and environmental conditions of their own countries. Those countries have achieved different level of economic development; they have different legal systems, different competences and organization of governments, different regulations, procedures and practices of managing information.

Each country has developed its own information infrastructure. Legal regulations and practices of information production, storage and dissemination may not be compatible. Those differences are often the reason of the lack of transparency of foreign information infrastructure and often cause difficulties in the exchange of information between managers of information systems, especially official information systems. Harmonization of these rules, procedures and practices is the complex process of harmonizing the laws of information management by governments and other subjects responsible for national information infrastructures.

Official statistics is – happily and unfortunately – the only official infrastructural information system that has achieved most high level of harmonization, standardization and coherence on global scale. Thanks to that, national official statistical systems are also relatively well harmonized on international and national levels. That is why national statistical offices and their regional units seem to be predestined – better than other infrastructural information systems - to creating methods and tools of information transparency between different countries. For information transparency of the countries of Eastern Partnership high level of compatibility and transparency of NOSIS's is extremely important.

As it was mentioned above, international cooperation in all fields of social life and in economic activities is based on trust of cooperating political, social and economic subjects. This trust is determined by information transparency of all parties on national, regional, local levels as well as on information transparency of particular political, social and economic subjects. The trust between organizations and individuals is based on open interchange of reliable information. Any gaps or difficulties in availability and accessibility of reliable, relevant, pertinent, complete political, social and economic information and its interchange between social and economic subjects cause disturbances of collaboration and may lead to blocking of mutually effective cooperation.

Except typical, simple, everyday situations, those subjects need more information that they have for their permanent disposal in their own resources. They have to get easy, transparent access to information that is relevant and pertinent for their specific usage situation. Usually the subjects are creating their own information environment, however it is limited to national administrative, statistical and commercial information. Important direct source of those information are mass media and in specialized public or commercial information services (now often portals in internet).

Economic and social information in mass media and in specialized services is extremely redundant. In the situation of extreme redundancy of social and economic information the retrieval of relevant and pertinent information for specific usage situations is difficult and expensive for decisions and practical activities of subjects. It is often not possible for the users to evaluate the quality of retrieved information.

Modern ICT technologies are providing effective tools for browsing very large information files and retrieving information in different forms of numerical data, texts, pictures, as well as in multimedia forms. However ICT tools are not solving growing problems of control of quality, completeness, timeliness, comparability and pertinence of accessible information for particular users in their concrete usage situations.

The problem of control and evaluation of quality and pertinence of retrieved data is extremely important in global, international and supranational scale. For end – users that need information on other country the access to pertinent information is very difficult, sometimes not possible in due time.

Transparency and coherence of social and economic information on the level of countries is the prerequisite and of international cooperation and strengthening relations based on partnership and trust. This fact is well understood by international statistical community. Because of that, statistical services of global and regional international organizations put a lot of efforts to develop and maintain global and specific information standards and principles of information interchange within the frames of official information systems maintained or coordinated by those organizations.

Global system of official statistics coordinated by the United Nations in cooperation with regional and branch – oriented international organizations, is the largest information system of generating and disseminating information covering all areas of social, economic and ecological processes. It should be also remembered that very important function of the global system of official statistics is the elaborating and proclaiming information standards for statistical information as well as for many other administrative and economic information. Those standards refer mainly to *metainformation* (information about information) and *parainformation* (information about information resources, processes and systems) (see p. 4 below). Information availability and accessibility refers both to information describing phenomena and processes of real world as well as the *metainformation* and *parainformation*.

Common metainformation and parainformation platform seems to be most effective methodological and ICT solution for interchange of official and verifiable information between countries of the Partnership.

#### 4. TRANSBORDER STATISTICS – NEW CHALLENGE OF OFFICIAL STATISTICS IN INTEGRATED INTERNATIONAL EUROPEAN ENVIRONMENT

Important attribute of political and economic cooperation, especially in the European region, is the change of social and economic functions of political borders. Political borders between countries in large part of the world have played the function of geographic delimitation of national economies and societies. Political borders separated different political, legal, social, economic and monetary systems. Global system of statistics was based on the concept of national economies.

Political changes accelerated by democratization, integration processes and transition processes in many regions of the world have created new situation for official statistics. Basic statistical entity of global statistical system (coordinated by the UNSC) – *national economy* – became fuzzy. Moreover, some sectors of national economy are operating on international and global scale, e.g. banking and finances, transport, communication, information sector (mass media), research and development etc. The fuzziness of national economy as a statistical category has the impact on the system of national accounts and on the interpretability of basic macroeconomic statistical categories. The macroeconomic indicators of the SNA have to be estimated on the basis of data from collected within the frames of countries, while economic

and social processes are crossing the borders, and economic subjects are operating on many national markets. The estimates of GDP and related categories are based to large extent on conventions, less on precise algorithms and on complete source data. In transition countries the precise estimation of statistical aggregates is more difficult because of dynamic changes of information environment of statistics generating gaps and holes in reliable information sources.

Specific information needs of users representing regional governments and entrepreneurs were generated by dynamic social and economic processes that are taking place in transborder regions. In small scale national economies statistics the transborder processes is also of interest of central governments.

The dynamics of transborder processes extremely high along the borders between economic systems that differ much in the areas of laws, economic regulations and of the level of economic and social development (laws regulating economic activity, taxes, wages and salaries, laws on labor, social insurance, health insurance, environmental regulations, formal administrative procedures and their informal, practical implementation, like corruption and safety).

The “differences of potentials” between neighboring regions are stimulating and accelerating the activity and cooperation between enterprises. Good political relations between countries and regional governments are facilitating the cooperation of local governments along the border is also stimulating economic and social cooperation. Statistical identification and measuring of the “differences of potentials” in transborder regions may help the governments to support positive processes and phenomena of transborder cooperation as well as to eliminate or reduce negative social and economic processes.

Main statistical indicators characterizing the “differences of potentials” are the indexes or variables characterizing the differences in:

- Prices of comparable goods and services,
- Wages and salaries,
- Access to labor markets,
- Laws regulating labor markets,
- Supply of goods and services,
- Access to social services (health, education),
- Laws regulating economic activity (taxes, social insurance, reliability of financial system, risks of economic activity etc.),
- Ecological laws and practices,
- Safety and security of economic activity (laws, transparency, anti-corruption measures)
- Quality of infrastructure (transport, energy, social infrastructure),
- Access to the markets of other regions (e.g. to the EU single market, to free trade zone of the CES as a whole),
- Policy in the field of non-registered economic activity and shadow economy.

The experiences of Polish statistics (Regional Statistical Office of Rzeszow and the Center of Transborder Statistics in Krosno) have elaborated specific methods of delimitation of transborder areas, methodology of monitoring and evaluating the differences of potentials and synthetic indicators of transborder cooperation. Those methods were verified, and implemented in cooperation with regional statistical services of Slovakia, Ukraine, Belarus and Russian Federation (Kaliningrad region) in the transborder regions along east, south and north border of Poland with those countries. The results of the transborder surveys and analyses have proven that transborder statistics should be considered as the specific domain of official statistics. It was also proven high importance and usefulness of specific transborder statistics methods for monitoring and explanation of economic and social processes, especially on transnational regional level.

It seems that in progressing liberalization of international trade, more free transfer of goods, services, money (investments, remittances) and more free migration of people, growing scale of international infrastructural projects, the transborder statistics should become standards segment of official statistics.

Information produced by transborder surveys may help governments to identify and evaluate different forms of transborder cooperation, to program and plan joint actions and projects in for optimizing transborder infrastructure, establishing proper rules of competition stimulating the development on both sides of borders.

The Krosno - based Center of Transborder Statistics of the Regional Statistical Office in Rzeszow in cooperation with universities and local governments is preparing the project of monitoring and surveying the external Easter border of the European Union “*From Barents’ Sea to Black Sea*”. Preliminary interest in joining this project was expressed by most of the statistical services of the countries along this borderline. It seems that this project would be good opportunity for more extensive development of specific methods of transborder statistics and for verification of those methods in statistical practice. It is expected, that the experiences of statistical identification, monitoring and analysis of transborder processes of the countries along the borderline from Barents Sea to Black Sea, that represent highly developed economies, post-transition countries and the countries in different advancement of transition processes in society, economy and in official statistics, would contribute to the progress of official statistics on global scale.

## 5. INFORMATION COHERENCE AND TRANSPARENCY AS THE PREREQUISITE OF INTERNATIONAL TRANSBORDER COOPERATION

As it has been mentioned in the introduction, international information coherence and transparency is the prerequisite of social and economic cooperation of governments, businesses, organizations and individuals. The transparency and coherence refers to all kinds of information: legal, administrative, statistical, to all areas of life: economic, social, cultural, ecological as well as to any kinds of alert information.

Particular classes of political, social and economic subjects need different kinds of information, presented in forms and technologies, adjusted to the possibilities and specific conditions users and other stakeholders of information systems.

The governments and other organizations managing infrastructural information systems of cooperating countries of Eastern Partnership are expected by the stakeholders to develop and maintain information systems producing and providing to the users pertinent, verified, accessible information. Any information gap may cause of lack of trust, generating uncertainty and hesitations of economic and social subjects in undertaking economic and social activities, joint projects or investments in other countries, strengthening international cooperation.

Information transparency can be achieved if and only if in all collaborating countries or regions there is the reciprocal *information equilibrium* i.e. the compatible quality, availability and accessibility of information in all domains of life, in which all subjects are acting.

The reciprocal *information equilibrium* applies to all classes of infrastructural information systems, i.e.

- official juristic information and services
- organizational information on governments and institutions,
- information on administrative procedures,
- public alert information systems,
- information systems managed by public governments on central and regional level (administrative registers, tax systems, social insurance registers, registers of local and regional governments),

- information systems of businesses, especially information systems of enterprises offering services for the public and businesses (supply of energy, telecommunication, consulting firms, safety, security and insurance etc.),
- mass media and specialized public information services,
- official statistics.

Most important role in building trust thank to information transparency is played by public information systems managed by governments, official juristic and procedural information systems, mass media and official statistics.

## 6. ROLE OF OFFICIAL STATISTICS IN INFORMATION COHERENCE AND TRANSPARENCY

Official statistics, because of its special position and functions in the information infrastructure of the country, is responsible not only for providing qualitative, verified statistical information as the public good for any stakeholders. It is also responsible for supplying all metainformation needed for proper absorption and interpretation of users of information.

Official statistical agencies are (or should) developing complex *metainformation* systems and metadata warehouses supporting the realization of all functions of metadata mentioned above, i.e.

- Standardization
- Identification
- Consolidation
- Integration
- Interpretation
- Evaluation of data and information
- Documenting of methodology

Official statistical agencies are also developing (or should develop and maintain) official public parainformation and parainformation warehouses supporting the realization of the functions of the *parainformation* in the information infrastructure of the country, i.e. (as mentioned above, the functions supporting:

- Specification of official infrastructural systems
- Standardization of official information systems and resources
- Organization
- Co-ordination
- Retrieval of information and metainformation
- Management of statistical resources, processes and systems
- Documenting of information processes, systems and resources

In modern ICT environment official statistics may effectively support other official, public and administrative information systems by providing them good information standards, professionally elaborated *metadata* (classifications, nomenclatures, typologies, coding systems, registers), and professionally elaborated *paradata* (standards and tools for organizing, documenting, identifying and retrieval of systems, databases, data files, stakeholders of information processes and systems, procedures of management of information systems etc.).

Nowadays the responsibility of official statistics for information equilibrium should not be limited to official statistics only, but the duty of NOSIS as an important, specific layer of information infrastructure of the country and as the segment of international (e.g. EU, ECE) and global (e.g. UN) information system,

is to help other infrastructural information systems of countries to obeying general information standards, integrity and quality rules and requirements on national and international level. It seems that in global ICT environment and in more active international cooperation the integrating and standardizing function of information infrastructure is an important mission of official statistical agencies.

#### 7. PRACTICAL PROBLEMS OF STATISTICAL INFORMATION TRANSPARENCY IN VARIED INTERNATIONAL ENVIRONMENT OF TRANSBORDER ECONOMY

From the point of view of statistics, the NOSIS's of countries taking part in the Eastern Partnership initiative could be classified to three classes:

- a) developed market – driven economies,
- b) post-transition countries,
- c) countries in transition.

Ad (a) The NOSIS's of developed market - driven economies were developed in long lasting, slow, evolutionary process of adjustment of statistics to the changes of economic and social life, to new needs of users, to new international statistical standards introduced UN and other organizations and new ICT. International standards were elaborated with active, often leading contributions of experts from statistical agencies of developed market economies.

Ad (b) The NOSIS's of post – transition countries are the systems created on the basis of statistics of centrally planned economies. They have passed accelerated (*revolutionary*) process of deep reconstruction of legal and methodological foundations of economic statistics, rapid transition from MPS – based economic statistics to SNA standards. Main changes consisted in replacing MPS based metainformation – classifications, nomenclatures, terms and definitions, by SNA classification standards, often in their versions adopted by EU. The NOSIS's in many post-transition countries have also passed the process of reorganization of relations and cooperation between the NSI's, ministries, central banks and regional governments. Usually the ministries take more active part in statistical production processes, collecting and processing statistical questionnaires and modernizing their administrative information systems. The decentralization of production of statistics was not always accompanied by strengthening the coordinating role of central statistical institutes in the field of methodology. Because of that in some fields of statistics the excessive methodological diversification is observed. The NOSIS's of post-transition countries have also passed very deep technological changes of statistical processes. This technological reconstruction, modernization and upgrading is continued.

Ad (c) The NOSIS's of the countries - in - transition are in different phases of accelerated, dynamic changes in all fields of statistical activities: statistical laws, programs of surveys, statistical categories, metadata, organization and technology of statistical processes, statistical capacity building adjusted to dynamically changing needs and requirements of all stakeholders of statistical processes and systems. Those processes of transforming the NOSIS's are advanced in different degree, according to the strategies of transition of economies and of social life.

The models of the NOSIS's in the countries of all three classes characterized above are different. Main reasons of the differences result from the specificity of political, legal, social and economic model of particular country. For the post-transition countries (b) and countries-in-transition (c) the differences are also the result of the adopted in practice strategy of transition of official statistics from centrally planned to market driven economy. Those differences are one of the most important reasons of gaps in transparency,

coherence and compatibility of statistical systems. They also cause practical problems of accessibility and interchange of information between countries and stakeholders of statistical processes.

Practical procedures of dissemination of statistical data and metadata and of user's access are regulated by national statistical offices. In practice the laws, organization, procedures, economic conditions and practical information services offered by statistical offices are different in each country. For incidental and casual users, especially for foreign users from other countries, this situation is rather uncomfortable. In special cases it is possible in some countries to hire the *infobrokers* (firms specialized in providing information from different sources on individual request of users, on commercial basis), however the costs of information services offered by *infobrokers* are high and the quality of services is rather uncertain.

Often the institutional end – users (governments, businesses, social organizations) and the scientists, researchers and advisors need information from many countries and regions. They are looking for coherent, uniformed, interpretable, comparable data. Many of them need statistical information matched with administrative, scientific and commercial information. In such cases retrieval of complete, relevant, pertinent information from many countries and from many sources is extremely complicated for regular users, and for casual users it's a real pest.

The duty of official statistics is to develop end – user friendly information retrieval systems facilitating easy access of end – users to complete and pertinent information. International partnership of statistical agencies is the opportunity for developing statistical and related information retrieval systems on international scale.

#### 8. OFFICIAL STATISTICAL META- AND PARAINFORMATION STANDARDS AS PREREQUISITES OF INTERNATIONAL INFORMATION COHERENCE

The foundation of transparency of social, economic and ecological processes on international scale is the implementing of relevant international statistical standards by all partners. Extremely important are metainformation and parainformation standards.

The process of implementing international metainformation standards in official statistics is rather advanced and the use of them in statistical surveys is rather common. Statistical agencies that are using national classifications, nomenclatures and definitions of terms, have elaborated, are maintaining and updating the classifications, nomenclatures, code lists, glossaries of terms, correspondence tables and methodological comments to definitions of concepts, algorithms of computing indexes and derived indicators.

In transition countries as well as in post-transition countries the processes of implementing new standards and methods in official statistics are rather well documented. This documentation is helpful for external end users for retrieval and interpretation of data. However often those detailed documentation is not available for the public, on the website of statistical agency. The access to full metainformation resources, including detailed documenting of methodology, is the task of statistical agencies. This obligation was directly expressed in the UN Fundamental Principles of Official Statistics.

Official statistical and administrative information systems are very complicated and non-transparent for external users, even for regular users. Usually the retrieval of relevant data is the process of several stages of identification:

- country or region
- information system
- survey
- data base

- data file
- pertinent data
- metainformation relevant to retrieved data

The multi-level process of retrieval and access to information is realized with the help of *parainformation*. As it was mentioned above, the information on information systems, processes, resources and stakeholders is called *parainformation*<sup>2</sup>. The development of *statisticalparainformation systems* is in rather early stage of development. Methods of designing and managing parainformation have been developed by information scientists and widely adopted in librarianship and in scientific and technical information systems. It seems that statisticians should study the methods and practical experiences of librarians and adapt them creatively to the specificity of statistics.

For effective, user – friendly retrieval of statistical data there are necessary coherent metainformation standards and - what is still in the phase of research and experimental implementations – *statistical parainformation standards*. Harmonization of parainformation standards on international scale is still the future, hopefully not very distant future.

Practical information retrieval in heterogeneous information systems environment requires complex parainformation bases and metainformation bases. End – users should be given the tools for full identifying the existence of pertinent information in information systems, databases and publications. They should be navigated, how to access pertinent data, what are legal, economic administrative and technical constrains and conditions of access and use of required information. The answer to such questions shall be given by statistical parainformation bases. After getting positive answer from parainformation base, the users should be navigated to next phases of retrieval, accessing metadata base, formulating detailed queries in metadata-based retrieval language. The end - users should get final information together with all relevant metainformation.

However it would be *a wishful thinking* to expect that standards harmonizing parainformation on international scale will be commonly used in short time. Official statisticians are in the beginning of developing harmonized parainformation systems. What seems to be realistic is the designing of **common platforms for storage of structured parainformation**. The idea of such platform is presented below.

#### 9. COMMON PLATFORM OF STATISTICAL META-INFORMATION AND PARAINFORMATION – THE TOOL OF INTERNATIONAL INFORMATION TRANSPARENCY AND INTERCHANGE

In many information systems (librarianship, scientific and technical information, business information etc.) effective tools supporting transparency and interchange of information on international scale are metainformation and parainformation platforms. In librarianship and in scientific information systems the interchange of information via metainformation and parainformation platforms is rather common. However in administrative and statistical information systems those methods and experiences are known by IT researchers. Statisticians have not paid the attention to the achievements of their colleagues from libraries and scientific information management centers. It seems that main problem of rather conservative approach of statisticians to information retrieval methods and techniques is the monopolistic position of official statisticians on their segment of information market, the monopoly for production and dissemination of official statistical data man metadata. However this monopolistic position has come to the end in the field of dissemination. Dissemination of official statistical information is in hands of specialized portals, professional mass media as well as other intermediaries on information markets (national and international press agencies, *infobrokers* etc.).

<sup>2</sup> The term *parainformation* was proposed by ICT experts for information on information systems, processes, resources, and stakeholders of information systems and processes. This term is not correct etymologically, but it occurred very useful in practice.

Dissemination of statistical information and metainformation by the mass media and other intermediaries for the public, for non-professional, casual users could be accepted by statistical offices, if the mass media and intermediaries obey the rules of precise representation and interpretation of real content of statistical data. In case of dissemination of erroneous data, erroneous interpretation and incorrect presentation of statistical variables, indicators and indexes, statisticians should actively react explaining the errors (see UN Fundamental Principles of Official Statistics).

In modern ICT environment official statistical institutes have got new, exceptional opportunity of direct dissemination of statistical information to all professional users and to the public using Internet. The modern ICT enables also to define individually profiled information services for regular professional users and to provide direct information services for “VIP-users”. Those users could also be offered direct access to statistical data and metadata stored in database system or data warehouses.

Problem that needs improvement is the lack of simple, reliable, end - user friendly query languages for data and metadata retrieval. Usually each survey has its own metadata. Each database system is using specific procedures for accessing data and retrieving relevant information. On international level those problems are much more complicated. The postulate - often met in statistical ICT literature - standardization *ex ante* of all catalogues of statistical variables in the NSS, harmonization of names of variables and developing on this basis one query language for all surveys and data sets generated by surveys seems to be pure wishful thinking.

Much more realistic is the developing of *tailored metadata and paradata bases* realizing the functions of the gateways between end – users and statistical data stored and maintained in existing forms and structures. Those retrieval gateways – *metadata and paradata platforms* – are scalable according to the possibilities and need of statistical systems and end-users. They could be developed also for heterogeneous complex of many NOSIS’ in the form of common meta- and parainformation platform. The meta- and parainformation platform can also work in multilingual environment, storing metadata in many national languages and maintaining multi-linguistic correspondence tables .

The concept of the statistical common meta- and parainformation platform for retrieval and dissemination of statistical and related data is the adoption of similar platforms that are constructed in many other (but not in official statistics) information retrieval systems for multi-linguistic hypertexts. From technological point of view the parainformation platform is the data warehouse storing weak - structured information describing in harmonized form the objects of NOSIS’ and related information systems and resources. Basic metainformation and parainformation objects stored on the platform are following:

- Statistical offices (institute, office, regional and local units) and its organizational structure
- Metadata bases: classifications, nomenclatures, code lists, registers, frames, glossaries)
- Statistical surveys
- Administrative records
- Administrative data sources
- Primary records used as statistical data sources
- Statistical microdata bases
- Statistical output data bases and warehouses
- Publications containing official statistical information
- Archived statistical files
- Stakeholders of statistical processes: managers of source records, respondents, intermediaries, users (all types)

The parainformation platform should also store the descriptions of similar objects of statistical systems of ministries and other institutions realizing official statistical processes. It is recommended to store on the statistical parainformation platform not only statistical paradata but also the structured descriptions of objects belonging to other infrastructural information systems of the country, e.g. national information systems of taxes, social insurance, health insurance, registers of population, business registers, territorial registers, registers of infrastructural objects etc.

General model of structured description of objects stored in the platform is the documentation format in library or in scientific information system adapted to the specificity of each type of information system and process. It seems that the list of objects can easily be reduced to limited number of types of objects.

The parainformation platform should be opened for all interested statistical agencies that are ready to share their *parainformational descriptions* of statistical objects listed above in standardized structures and form, and – reciprocally – to get free and full access to equivalent parainformation supplied by other stakeholders of the platform, i.e. the parainformation on other official statistical and administrative systems.

The parainformation platform as the common tool for navigation in numerous national statistical information systems is simple, cheap and effectively supporting the statistical information retrieval in heterogeneous international environment. The parainformation requirements do not interfere in existing laws, procedures and structures of statistical systems of participating countries and statistical offices. Each national statistical agency may take the decision of the scope of parainformation that is willing to deliver to the platform for dissemination and interchange both on national and international level. The parainformation platform is adjusted to the specificity and constraints of heterogeneous international environment.

## 10. CONCLUSIONS

Political, social and economic cooperation between developed market economies, post-transition and transition countries of Eastern Partnership needs high level of information transparency, coherence and wide interchange of data between countries, governments, businesses, social organizations and researchers.

The mission of official statistical agencies of Eastern Partnership countries is the creating of legal, organizational, technological and informational conditions and tools of interchange of official statistical information of good quality, obeying methodological standards, accessible in simple and harmonized way by all stakeholders of statistical processes.

*Common parainformation platform* seems to be most effective way to achieve high level of information transparency between countries cooperating within the frames of Eastern Partnership.

The implementation of statistical parainformation platform for transborder regions shall benefit to more dynamic and complex cooperation on political, economic and social spheres in transborder regions of all countries.

## REFERENCES

- [1] ISI Declaration on Statistical Ethics, Amsterdam 1985.
- [2] UN Fundamental Principles of Official Statistics, Geneva 1992.
- [3] OLENSKI, J., *The citizens` right to be provided with information and the duties of democratic state in modern IT environment in a democratic state in the light of the UN fundamental principles of official statistics and the ISI declaration on statistical ethics*, ISI Special Topic Session, ISI Committee on Statistical Ethics, Proceedings of 53<sup>rd</sup> Session of the Statistical Institute, Seoul 2001.
- [4] OLENSKI, J., *The framework of standards in social statistics - with special reference to transition countries in the ECE region - non-candidates to the European Union*, Economic Commission for Europe, Statistics Division. Invited paper. Geneva, June 2001.
- [5] OLENSKI, J., *Information crises in new economy*, Proceedings of the International Interdisciplinary Conference Crises and Sustainability, Warsaw, 9 – 10 October 2004.

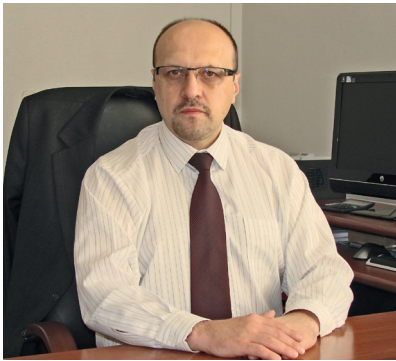




**Prof. dr. Józef Oleński (1941)** – Professor of Lazarski University in Warsaw.

In 1970-2011 – professor of Faculty of Economics of Warsaw University (1970-2011). From 1974 he worked for Polish official statistics on the position of the director of the Research Center of Statistics by the Central Statistical Office of Poland (1974-1991) and was appointed twice for the position of the president of the Central Statistical Office of Poland (1992-1995 and 2006-2011). He was also the chair of the Task Force of the Conference of European Statisticians (1990-1991) for Fundamental Principles of Official Statistics. Chairman of the United Nations Statistical Commission 1994-1995

and member of the Bureau of the Conference of European Statisticians. Member of the International Statistical Institute, including vice-president of the ISI Irving Fisher Committee. Scientific consultant of research and development projects in official statistics of the UN, the EU and World Bank. Author of over 300 scientific publications and reports. Domains of research: information science, official statistics, transborder economics and statistics.



**Mr Marek Cierpiał-Wolan** – Director of the Statistical Office in Rzeszow, Ph.D.

In 1999 he received a Ph.D. degree of economic sciences in the Warsaw School of Economics. Assistant Professor in the Department of Statistics and Econometrics at the Faculty of Economics at the University of Rzeszow. Director of the Statistical Office in Rzeszow. Author of more than 50 national and international publications including journals and monographs. Organizer and participant of many national and international scientific conferences. The President of the Polish Statistical Association – Branch in Rzeszow, Member of the Polish Economic Society, Scientific Secretary – Statistics in Transition new series, Member of the Editorial Board – Statistical News, Statistical Editor – Regional Barometer, University of Management and Administration in Zamosc. Manager and expert in international research projects.



**Mr Dawid Lasek** – Vice President of the Association of the Carpathian Euroregion Poland.

Graduate of University of Silesia, Faculty of Social Sciences, specialization: Local Governments (Individual Course of Study – European Integration – Information Society). Jagiellonian University, Faculty of Management and Social Communication, specialization: European Union Information Sources. Jagiellonian University, Faculty of Law and Administration Business and Management, Studies at the Jagiellonian University, Department of Applied Economics. In the period from 2001 to 2006 - Director of the Association of the Carpathian Euroregion Poland. At the same time Head of EU programs in the Euroregion. 2000-2002 Member of the Working

Groups and the Steering and Monitoring Committees CI INTERREG IIIA Neighbourhood Programme Poland-Belarus-Ukraine INTERREG IIIA / TACIS CBC. In the years 2006-2007 Director of Territorial Cooperation Department at the Ministry of Regional Development. Coordinator of several projects under the Swiss Cooperation Programme with the new members of the European Union. Participant of several international conferences and trade fairs at home and abroad.