

## TYOLOGY OF TRANSBORDER ECONOMIES AND THE NEED OF TRANSBORDER STATISTICS IN GLOBALIZED WORLD

Józef Oleński<sup>1</sup>

### ABSTRACT

*The concept of transborder economy as special type of socio-economic systems in globalized world is defined. The differences between factors of development of national economies, regional economies and transborder economies are discussed: institutional, political, social, cultural and organizational differences of socio-economic phenomena and processes realized on the territories of different neighbouring national economies. The criteria of identification and delimitation of transborder economies are formulated. On this basis the typology of transborder economies (TE) is proposed. The following types of transborder economies are defined: (a) markets-based TE, (b) infrastructure-driven TE, (c) TE based on institutional complementarity, (d) TE based on common environmental resources, (e) TE based on socio-economic complementarity and substitution.*

*Basic factors of development of transborder economies are analyzed, with special reference to the differences of potentials as basic stimuli of economic cooperation in transborder regions.*

*Need of developing integrated information system of statistical information for transborder economies is stressed. Main challenges and difficulties of producing integrated, comparable statistical information describing and monitoring transborder processes and resources are discussed. The cooperation of official statistical agencies operating in transborder areas is the prerequisite of effective economic and social policy and the foundation of activities of businesses in transborder economies. Transborder statistics should be considered as the specific domain of official statistics in globalized economy.*

---

<sup>1</sup> Lazarski University, Warsaw, Poland, E-mail: j.olenski@onet.pl.

## 1. Functions of political borders between national economies in globalized environment

*Globalization* is the complex of phenomena of interrelation and multi-dimensional impacts of political, social, economic, technological and informational processes in global environment not limited by *political borders* of states. *Political borders* are defined not only in geographic space, but also in political, social, economic, cultural, institutional, ecological and informational space.

The globalization is based on modern information and telecommunication technologies, technologies of transportation and the technologies of production and dissemination of energy and media of energy. The globalization processes are strictly related with the participation of individuals, businesses and governments in global information, transportation and energy systems and processes. Social, political and economic subjects are the stakeholders of global economic and social processes and systems. The stakeholders are becoming more and more dependent on those processes and systems.

The interrelations between particular political subjects (countries, governments, public administration, political organizations), social subjects (NGO's, cultural and social organizations), economic subjects (businesses, consumers, producers), and global systems of interchange of information, transportation and energy are not reciprocally balanced in globalized world in this sense that most of countries, governments, businesses are dependent on global systems production and distributions of information, energy and transportation services, but those systems are not dependent on particular countries and subjects. The only exceptions are most powerful countries that are able to influence and control the activities of organizations and subjects managing global networks of finances, information, energy, trade and transportation processes. Other countries do not have the power and instruments for effective control of global processes, even on their own territories.

In globalized economy the countries, societies, national economies and regions are fuzzy systems. Main features of fuzziness of those systems are following:

- (a) The borders are delimitating geographic space of countries as political systems, i.e. the borders are delimitating and separating geographic spaces of functioning of national laws and procedures regulating political, social and economic activities, and the spaces on which political institutions (governments) are executing the laws;
- (b) In globalized world many social, economic, ecological processes and informational are crossing political borders of countries and are operating

on territories of many countries, especially extensively the cross-border penetration of those processes is taking place on the territories of neighbouring countries;

- (c) The delimitation of geographic space of national economies and national social systems needs to take into account the activities of national subjects of *our* country on the territories of neighbouring countries and the activities of foreign subjects - residents of neighbouring countries, on the territory of *our* country;
- (d) Analyses, evaluation of social and economic situation and decisions of governments and businesses should take into account the impact of subjects and processes of *our* country on neighbouring countries and *vice versa* the impact of processes and subjects of neighbouring countries on *our* national economy and society.

The fuzziness of borderlines delimitating countries and national economies in globalized world, in globalized economy and the intensity of social and economic processes in transborder areas needs new theoretical foundations in economic sciences, especially in macroeconomics as well as in regional economics. Basic theoretical approached in macroeconomics and in microeconomics were based on the category of *national economy* as the reference system for other economic categories. For example, analyses of economic growth and development are based on the SNA (system of *national accounts*), in which precise identification and delimitation of the system of national economy is the kernel of all other concepts, theorems and criteria of evaluation.

The approach to economies based on and limited to the SNA and the categories of the system of national accounts is not sufficient in globalized economy. One of important task of economic theory is the development of theoretical foundations of transborder economy as special discipline in economic sciences and the need of methods of monitoring and analyses of social and economic phenomena and processes in transborder economies.

This paper is the contribution to the developing of methodological approaches focused on the identification, delimitation and monitoring of transborder economies as special types of mezo-economic systems in globalized political, social and economic environment.

In transborder economics the borderline between countries is not the line of delimitation between different national economies, but the line along which are concentrated economic and social processes realized in the territory of regions of two or more national economies. The borders are the lines integrating two or more political, social and economic systems of neighbouring countries. The

differences of between those systems on the territory of transborder economy are stimulating more extensive economic and social processes.

Higher dynamics of social and economic processes in transborder regions is the effect of differences of potentials and complementarity of potentials, both social, cultural, political, economic and environmental, on relatively small geographic area. Main stimuli of dynamics of social and economic processes in transborder regions are have political and institutional character.

Economic and social policy of governments of neighbouring countries in transborder areas needs scientific theoretical, methodological, factographical and statistical basis characterizing all factors that may create and may have the influence on differences of potentials, complementarity and substitution of economies, economic and social subjects. Typology of transborder economies is the foundation of elaborating useful theoretical and methodological approaches for analysis and socio-economic policy and cooperation in transborder regions.

## 2. Transborder economy and transborder process – definitions and attributes

**Transborder economy** is a political and socio-economic system composed of concatenated sets of:

- A. transborder socio-economic and technological **processes**;
- B. transborder technical, economic, social and ecological **infrastructures**;
- C. transborder common natural and environmental **resources**;
- D. transborder **institutions**.

Ad. A. **Transborder processes**. The key category in transborder economics in the concept of *transborder process*.

*Transborder process* is an integrated economic process in which:

- specific phases of a process are realized on the geographically neighbouring territories of two or more political and administrative systems;
- stakeholders of his process are operating on neighbouring territories of different political and administrative systems.

*Transborder process* is an economic, social, technological and/or ecological process characterized by following attributes:

- 1) *transborder process* is realized within the frames of different national systems of laws, regulations and institutions of two or more countries;
- 2) the activities of transborder process are realized on the neighbouring territories of two or more countries;
- 3) *the stakeholders of transborder process* are the subjects (individuals, businesses, governments, political and social organizations) that are the residents of two or more different countries (or other political and legal systems);
- 4) the stakeholders of transborder process are establishing regular, relatively stable cooperation links;
- 5) the stakeholders of *transborder processes* are using the infrastructures linking the regions located close to the political borders (e.g. transportation and energetic infrastructure, natural resources, financial infrastructure, legal infrastructure, social infrastructure).

Most common transborder processes are:

- transborder retail trade,
- transborder wholesale trade,
- transborder labor market,
- transborder companies,
- transborder cooperation of companies,
- transborder outsourcing,
- transborder services for businesses,
- transborder services for households
- transborder services for transborder activities, e.g. telecommunication, security services, insurance services, cross-border transport of employees, banking and money transfer services, border crossing and border control services.

Ad. B. ***Transborder infrastructure*** – integrated technical, economic and social infrastructural systems that are operating and used on the geographically neighbouring territories of two or more political and administrative systems. Development and maintenance of common transborder infrastructure is related with:

- road transport infrastructure,
- railway infrastructure,
- energy production and supply infrastructure,
- telecommunication infrastructure,
- infrastructure related with security and protection against natural and technological disasters and catastrophes.

Common transborder infrastructure is developed especially in those regions along the borderlines that had been for longer time the entire internal parts of other countries.

In European region, in Africa and in some regions of Asia the processes of changing political borders have changed the space of national economies after 1<sup>st</sup> and 2<sup>nd</sup> World Wars, as well as in the 90<sup>th</sup> of XX century, during which in many countries basic structures of transportation, energy, defense infrastructures and most important layers of social and industrial infrastructure were built. Also in first decades of XX century in many regions of the world the processes of changing political borders are taking place. It is usually connected with strong political and military tensions.

The consequence of changes of political and economic borders for the infrastructure constructed in other political order is that many expensive developments are becoming useless and many constructions and systems are becoming underdeveloped.

Development of international globalized market economy and liberalization of international trade and economic cooperation, establishing of free trade zones, common markets and single markets, creates new economic situation especially in transborder areas for infrastructures of regions. Countries and regional authorities are given the opportunity of transborder optimization of all kinds of infrastructure: technological, economic, social, ecological. Main factor of optimization is the transborder effect of scale of infrastructure – building infrastructural developments for common use of all subjects and citizens of transborder region.

One should remember that the costs of restructuring the infrastructures that may be optimized and adopted to the needs of transborder economy as one socio – economic system are as a rule very high and market-driven subjects are not interested in investing in new infrastructure. The initiative of infrastructural development of transborder areas is the competence and duty of central and local governments of neighbouring countries creating transborder economy.

Ad. C. *Transborder resources*. Development of transborder economy by liberalization of economic and social cooperation in neighbouring



regions of countries is also the opportunity of optimization and common use of national resources existing in transborder regions. The following resources should be taken into account:

- *Social resources*: use of labor resources, providing social services (education, health care, social care) for all population in transborder economy;
- *Cultural resources*: common care, development and use of cultural resources of transborder areas, with special reference to cultural monuments and institutions supporting multinational cultural activity;
- *Ecological resources*: protection and sustainable development of ecological resources creating transborder complexes (e.g. landscape resources, forests, water resources: rivers, lakes, air), coordination and control of use of natural resources by all parties of transborder region;
- *Industrial resources*: soils of minerals, industrial constructions, that may be used jointly by subjects operating in transborder economy.

The specification of resources presented above shows that the subjects operating in transborder economy may gain better conditions of economic and social development than in the border area of one country only.

However it should also be noted that in transborder economy the risk and the transactions costs of activities may be much higher for foreign subjects, as the result of differentiated institutional environment and incomplete information available for foreign subjects operating in transborder areas of other countries.

Ad. D. ***Transborder institutions***. Institutional transborder potentials are the laws, regulations, administrative procedures and organizational units: governments, other organizations authorized by the governments to realizing the functions and duties determined in laws and regulations, related to transborder systems and processes.

In transborder areas institutional regulations are decisive for creation and development of transborder economies. The harmonization of regulations and cooperation of institutions (governments, political, social and economic organizations) is the prerequisite of effective, positive use of complementarity and substitution of processes, results of asymmetries of capitals (human, social, institutional) and diversification of resources (natural, industrial, infrastructural, ecological, cultural).

### 3. Typological criteria of classification of transborder economies

Institutional interventionism and socio-economic policy in transborder regions is based on the cooperation of governments of countries and harmonization of regulations and administrative decisions. The harmonization of activities of governments is possible if and only if all parties (central and local governments) understand that transborder economy for participating national economies is the *non-zero sum game* (using the terminology of game theory). That means that the benefits thank to the cooperating and harmonizing policies on regional and local level of transborder economy will gain all parties of all countries although some of the will gain more, some will gain less.

The danger for development in the area of transborder economy is the adoption by local governments the model similar to that of the *prisoner's dilemma* (using the concept of game theory). That approach means that regional and local governments are supporting national subjects by discrimination of foreign subjects operating in transborder region. If such policy is realized, all parties will be losers.

Because of the propensity of some people working in local governments to adopting the “*prisoner's dilemma*” model instead of the “*non-zero sum game*” model it is important and useful for practical reasons to explain to local and regional politicians the specificity of different types of transborder economies. For that reason the typology of transborder economies is the methodological foundation of international harmonization of regional policy of governments of neighbouring countries.

The criteria of defining types of transborder economies are focused on identifying the factors that are integrating or disintegrating economic and social processes realized in transborder space. Main factors are following:

**A. Asymmetry of potentials and capitals** of national areas of transborder economies

- asymmetry of social, technological and economic potentials,
- asymmetry of information potential,
- asymmetry of human and social capital,
- asymmetry of institutional capital.

**B. Asymmetry of institutional regulations, laws and procedures.**

**C. Asymmetry of resources** located in the space of transborder economy on the territories of different countries.

**D. Complementarity of processes and systems** based in the space of transborder economy on the territories of different countries.



- E. *Substitution of processes and systems* based in the space of transborder economy on the territories of different countries.
- F. *Political environment* of development of international cooperation and its realization by transborder processes and systems of cooperating political, social and economic subjects – residents of neighbouring regions of countries.

On the basis of the criteria specified above it was elaborated the proposal of typology of transborder economies.

#### 4. Types of transborder economies

On the basis of case-studies of transborder economies in selected regions of the world, the following typology of transborder economies is proposed.

- A. Historical transborder economies
- B. Policy-driven transborder
- C. Resources-driven transborder economies
- D. Industrial processes-driven transborder economies
- E. Trade-driven Policy-driven transborder
- F. Markets-driven transborder economies

Ad. A. Historical transborder economies.

**Historical transborder economy** is the cross-border social and economic region that was developing for relatively long time within the borders of one political system (state, federation or confederation), and in some point of time was divided between two or more neighbouring states because of political changes of borderlines. The parts of such region were incorporated by different political systems (states) and are now functioning in different environments of legal, administrative and economic specificity of those countries.

Creation of historical transborder economies are observed all over the world as the consequence of historical processes of political changes and rising and territorial changing of states. In some periods of time those processes were very extensive, e.g. processes of colonization of continents by few European states that started by the end of Middle Ages. Recently in the European region the processes of creating transborder economies that were in the past entire parts of larger states took place after the wars in XX century (first and second world wars), mainly in Central and Easter Europe).

Similar processes also took place in the beginning of transition in the 90th (creation of independent states on the territories of Yugoslavia and Soviet Union). In numerous places new political borders were cutting economic historically developed regions on the basis of ethnic criteria or more often – as the result of voluntary decision of politicians of more powerful countries.

For decades the regions of historical transborder economies were – as a rule – peripheral for national economies. Integration and liberalization processes in the European Union and in other parts of the world by the end of XX century have created new opportunities of social and economic development of those regions. Numerous transborder regions of that type received powerful stimuli of development thanks to traditional structure and level of development of economies from one part, and from the other – using positively institutional asymmetries between countries.

The prerequisite of development of historical transborder economies is the harmonization of institutional regulation and proper political cooperation on all levels of the regions (local, regional and central governments).

Examples of that type of transborder economies can be pointed out in Central Europe, e.g. Polish-Ukrainian transborder region, Slovakian-Ukrainian transborder region, Austrian-Hungarian-Slovakian transborder area. Also that type of transborder economies is developing in numerous places of the borders of the states – members of the CIS (Community of Independent States of the former Soviet Union).

#### Ad. B. Policy-driven transborder economies

**Policy-driven transborder economies** are the cross-border regions created by political agreements of governments of neighbouring countries. The objective of establishing policy-driven transborder economy is peaceful coexistence and cooperation of local societies living in the border area of countries. Policy-driven transborder economies and political and - to some extent - ideological projects of international cooperation.

“Classic” examples of policy-driven transborder economies in Europe are so –called *Euroregions*. The idea of Euroregions was originally initiated by European politicians who – erroneously – thought that all conflicts in Europe (including wars) were caused by tensions between ethnic or religious groups living along borderlines of national countries. The institutions of the European Economic Community in early 60th decided to institutionalize and to support - also financially – the establishing of international regional cooperation of local

governments and businesses in regions that seem to be the potential places of ethnic conflicts.

Financial and political support from the budget of EEC was met – no wonder – with great interest of local governments and communities of peripheral regions of many European countries. In many regions were organized active forms of cooperation of governments, social organizations and businesses. Institutional support in Euroregions was focused on transborder cooperation of cultural, scientific and social organizations, and local governments.

It should be stressed that the delimitation of geographic space of Euroregions is the political decision of central and regional governments of interested countries. Economic prerequisites of region are of secondary importance.

The Euroregions as the institutionalized form of transborder cooperation occurred to be successful. It was adopted also in other regions. Now, after more than 5 decades of experience of Euroregional cooperation the Euroregions are sustainable form of transborder cooperation in all domains of economic and social life of neighbouring regions in all parts of Europe.

#### Ad. C. Resources-driven transborder economies

In many regions the natural, economic and social resources are located close to political borders or are crossing political borders. For example the soils of industrial resources, the natural resources that are of value for tourism, recreation, cultural resources, especially cultural and historical monuments.

Processes of liberalization of trade and international economic cooperation have created the possibilities of may be jointly used or protected more effectively by neighbouring regions of different countries. Those resources should be treated as common value. Harmonization of joint use and protection of the transborder resources is the prerequisite of sustainable development of resource-driven transborder economy. Local and national governments should understand that in longer perspective the exploitation of the resources should be subordinated to common benefit of all regions.

The development of resource-driven transborder economy is based on harmonization of use and protection of common resources, and the competition of businesses operating in those areas. The absolute priority should be given to sustainable development and protection of common resources. Excessive exploitation and wasting of common resources means the losses for the transborder region as a whole (e.g. polluting of common water soils – lakes, rivers, bays – by businesses of one country hoping that the costs of pollution will

we paid by other regions). Short term economic egoism of businesses of one country soon will waste the potentials of development of the transborder region as a whole.

The prerequisite of effectivity and sustainability of development of resource-driven transborder economies is the understanding by all parties – governments, businesses, social organizations – that the resources are common goods. There should be established and obeyed reasonable laws, rules and procedures of use and protection of those resources and the forms of cooperation of competing businesses. Good examples of effective cooperation of competing businesses of resource-driven transborder economies are tourist regions in mountain areas in Europe (e.g. tourist region of Alps, Tatra mountains, sea resorts in Mediterranean regions of Italy, France and Monaco, cultural and historical transborder region of Austria, Slovakia and Hungary - triangle: Vienna-Bratislava-Sopron, USA-Canada Niagara Falls region etc.).

#### Ad. D. Industrial processes-driven transborder economies

Industrial agglomerations and industrial basins located in cross-border territories are special type of transborder economies. Main factors of development of that type of transborder economy is technological cooperation of businesses – residents of other countries and common use of industrial resources needed for more effective economic activity.

Industrial transborder economies may create for businesses wide possibilities of benefitting from comparative costs effects and effects of scale, **transborder outsourcing** and joint development of facilities of research and development centers, education and training of staff, transfer of know-how and development of services for production, businesses, environment protection facilities.

The prerequisite of effective and sustainable development of industrial transborder economies is the harmonization of laws regulating economic activities of businesses operating in cross-border industrial agglomerations and basins and institutionalization of international control obeying laws and procedures protecting sustainable development and maintenance of common facilities.

#### Ad. E. Trade-driven transborder economies

Trade driven transborder economies are the economic cross-border areas in which dominating factor of cooperation is the cross-border retail or wholesale trade between subjects – residents of neighbouring regions. Main stimuli of that trade are the asymmetries of prices and transaction costs of some goods and services.

The differences of prices in closely located neighbouring areas along borderlines are caused – as a rule – not necessarily by asymmetries economic and natural conditions, but most often by asymmetries of administrative regulations, e.g. taxes, licenses for production, technological standards, regulations of prices, subsidies, administrative costs of transactions.

Trade-driven transborder economies are very dynamic economies. The development of transborder trade of goods and services is developing quickly as local retail trade, small scale exports and imports organized by individuals and small businesses. If the asymmetries of costs are sustainable, wholesale forms of transborder trade and common transborder trade companies (mainly small and medium establishments) are developed.

The effectivity of cross-border trade high and the costs of organizing the business are low. Because of that in many border areas the transborder trade-driven economies are developed.

However any changes of asymmetries, e.g. changes of tax policy, environment protection rules, limitations of exports and imports of some goods and services, may change dramatically the conditions of cross-border trade in the area.

The sustainability of trade-driven transborder economy depends on economic policy and legal regulations and administrative practices of countries.

#### Ad. F. Transborder labor markets

Transborder labor markets are developing in the regions, in which there are significant asymmetries between demand and supply of labor on relatively small geographic area.

The following factors are influencing the development of transborder labor markets:

- Differences between supply and demand of labor on different sides of the border between neighbouring regions;
- Differences between wages and salaries;
- Difference of exchange rates of local currencies in which the employees are paid on the territory of each country;
- Costs and time of commuting, costs of jobs paid by employees (e.g. accommodation, insurance, subjective evaluation of conditions of life);
- Skills and reliability of employees for employers; reliability of employers for employees;
- Development of shadow or non-registered labor market;

- Language barriers;
- Political and social acceptance of labor migrants by governments and local societies;
- Sustainability of transborder labor markets: seasonality of demand for labor, business cycle situation in the countries offering jobs for transborder labor migrants.

Transborder labor markets have significant importance for regional development of peripheral regions of larger countries. For small-scale national economies transborder labor market are of macroeconomic importance.

Transborder labor markets and trade driven transborder economies are the forms of cross-border cooperation that are dynamically developing in many crossborder areas all over the world.

## **5. Delimitation of transborder economies**

Methods and criteria of delimitation of transborder economies depend on the type of transborder economy.

Basic dimension of delimitation of transborder economies is geographic space around the borderlines of neighbouring countries. The criteria of delimitation of geographic space of transborder economies refer to spatial structure of:

- resources,
- infrastructure,
- economic processes,
- labor markets.

From the point of view of delimitation transborder economies are dynamic socio-economic systems.

## **6. Integrated transborder information infrastructure and official statistical system as the prerequisite of development of transborder economies**

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:

- 1) Prices of comparable goods and services,
- 2) Wages and salaries,
- 3) Access to labor markets,
- 4) Laws regulating labor markets,
- 5) Supply of goods and services,
- 6) Access to social services (health, education),
- 7) Laws regulating economic activity (taxes, social insurance, reliability of financial system, risks of economic activity etc.),
- 8) Ecological laws and practices,
- 9) Safety and security of economic activity (laws, transparency, anti-corruption measures
- 10) Quality of infrastructure (transport, energy, social infrastructure),
- 11) Access to the markets of other regions (e.g. to the EU single market, to free trade zone of the CES as a whole),
- 12) Policy in the field of non-registered economic activity and shadow economy.

For example, the experiences of Polish statistics (Regional Statistical Office of Rzeszow and the Center of Transborder Statistics) 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 boarder 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 all sides of political borders of countries<sup>2</sup>.

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

---

<sup>2</sup> For example in Poland 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 expresses 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.

identification, delimitation and measuring transborder phenomena and processes. Building transborder statistical data bases is strongly recommended.

Transborder economy is new object for official statistics. of statistical monitoring. Transborder phenomena and processes need complex statistical description.

Users are governments, social organizations, businesses, scientific organizations. They need first of all comparable data on related processes on the other side of the borders.

Cooperation of statistical regional agencies and access to administrative records and big data. Harmonization of statistical programs.

Bringing to comparability the data produced by national statistical systems. Detailed data on localities, small area statistics using administrative records and big data.

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 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) 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>3</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 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.

---

<sup>3</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.

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).

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 multilinguistic 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:

- 1) Statistical offices (institute, office, regional and local units) and its organizational structure.
- 2) Metadata bases: classifications, nomenclatures, code lists, registers, frames, glossaries).
- 3) Statistical surveys.
- 4) Administrative records.
- 5) Administrative data sources.
- 6) Primary records used as statistical data sources.
- 7) Statistical microdata bases.
- 8) Statistical output data bases and warehouses.
- 9) Publications containing official statistical information.
- 10) Archived statistical files.

11) 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 metadata 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.

## 7. Conclusions

From the considerations above the following conclusions for official statistics shall be drawn:

1) Transborder economies are specific economic systems in globalized, institutionalized world.

- 2) 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.
- 3) Transborder statistics should be developed as a specific domain of official statistics.
- 4) Concatenation of best practices (*expertize 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.
- 5) 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.
- 6) “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.
- 7) 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.
- 8) *Common parainformation platform* seems to be most effective way to achieve high level of information transparency of transborder economies.
- 9) 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

Becker, G., *Human Capital: A theoretical and empirical analysis with special reference to Education*. The University of Chicago Press, 1994.

- Bresser, R., Millonig, K., Institutional capital competitive advantage in the light of neoinstitutionalism in organization theory, in: Schmalenbach Business Review, Vol. 55, July 2003, pp. 220–241.
- Hallsmith, G., Lietaer, B., Intentional Cities, Intentional Economies, Ch. 3. Creating New Capital, [www.neweconomictheory.org](http://www.neweconomictheory.org).
- Hansen, W., *Education, Income and Human Capital*. 1970.
- Khakee, A., *Assessing institutional capital building in local agenda 21 process in Goeteborg*, Planning in Theory and Practice, 2002, Vol. 3, No 1, pp. 53–68, Routhage Ed.
- Lasek, D., Cierpial-Wolan, M., Oleński, J. (ed.), *Foundations of transborder economics and statistics*, Publ. Association of the Carpathian Euroregion, Rzeszow 2014.
- North, D., *Institutions, Institutional Change, and Economic Performance*, Cambridge University Press, Cambridge, 1990.
- Oliver, C. Sustainable competitive advantage: Combining institutional and resource-based views. Strategic Management Journal, 1997, Vol. 18, pp. 697–713.
- Oleński, J., *Infrastruktura informacyjna państwa w globalnej gospodarce*, Publ. Nowy Dziennik, Warszawa 2006.
- Oleński, J. *Ekonomika informacji – podstawy*, PWE, Warszawa 2000.
- Paldom, M., *Social capital: one or more ? Definitions and measuring*. Journal of Economic Surveys, Vol. 14, No. 5, Blackwell Publ., 2000.
- Platje, J. Institutional capital as a factor of sustainable development, The importance of institutional equilibrium, Baltic Journal on Sustainability, (2008), Vol. 14, No<sup>o</sup>2, pp. 144–150.
- Romer, P., Human capital and growth: theory and evidence, NBER Working Paper No. 3173, November 1989, NBER Program(s), [www.nber.org](http://www.nber.org).