STATISTICS IN TRANSITION new series, Autumn 2013
Vol. 14, No. 3, pp. 399–428

PROCESSES IN TRANSBORDER AREAS – SIGNIFICANT IMPACT ON THE ECONOMIC GROWTH

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ABSTRACT

Dynamics and interdependence of socio-economic phenomena in the contemporary world require the 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. 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 (BoP) are being changed. Consequently, they should be taken into account in the calculation of Gross Domestic Product (GDP), as discussed in this article.

Key words: research system for transborder areas, improvement in GDP estimates.

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 grey or black zones. All these circumstances cause the specific behaviour of both households and businesses.

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Therefore, 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 structure, 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 support from standardized sources of information (official registers, administrative sources of data, bank registers, automatic measurement of traffic, other Big data sources), as well as creation of projects which will not only include surveys on borders, but will primarily concentrate on processes ongoing around 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 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.

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 develop a survey methodology for transborder areas in order to use the results of this survey 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.Towards coherent research system for transborder areas

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, applicable for

countries covered and not covered by liberalization of the rules of crossing the border. Taxonomic methods and spatial models are especially helpful in this kind of research system. Firstly, we ought to work out of a uniform set of variables for transborder areas in order to apply both kinds of methods. We know that the choice of variables is always a little subjective. Therefore, we shall engage to this project a team of experts from different backgrounds (business, self-government, government institution, scientists, etc.) in order to choose appropriate set of measures. A synthetic indicator can be given as a result of the first method, for example the transborder index. AHP method which is a part of spatial models is used for evaluating competitiveness of spatial units and tracking demand and supply shocks both in time and space. It also allows for detecting whether there is diffusion, exchange, interaction - whether other regions become infected or whether local changes are a response to exogenous shocks (Cierpiał-Wolan, 2011), (Cierpiał-Wolan, Wierzbiński, 2013).

Delimitation of the transborder area is the first step that should be taken, namely with preliminary delimitation based on, for example, regulations (according to which the border zone covers an area of 30 to 50 km from the border), etc. We must not forget about dynamic delimitation which means systematic analysis of socio-economic phenomena in this area and environment.

All sorts of information which we can find in statistical databases and administrative registers adjusted to transborder areas fall within the ambit of the monitoring. In this case inventory of information resources is often fruitful. 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 a survey to our needs. The next interesting path to follow is combining information from the registers and sample surveys especially in terms of budget constraints. Using non-statistical sources of information, Big Data in particular, should not be omitted. Therefore, monitoring involves continuous reporting on socio-economic phenomena in transborder areas using various kinds of sources so as to obtain profiles of a borderland.

Comprehensive surveys are the third pillar of the coherent research system for transborder areas. Based on previous and current achievements, four kinds of surveys should be conducted: questionnaire survey at the border and in the vicinity of the border, household survey, survey of unregistered economy, survey of travelling foreigners in tourist accommodation establishments. According to this plan of actions 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**.**

3. Border traffic and movement of goods and services at the European Union's external border

After Poland's accession to the Schengen zone, the part of eastern Polish border became at the same time a part of the external border of the European Union. Moreover, the growing gap in potentials between Polish and Belarusian as well as Ukrainian economies caused an increase in the scale of non-registered and illegal trade. Therefore, due to integration process and higher intensity of economic phenomena a greater demand for information concerning transborder areas appeared. In response to these, 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.

The survey of goods and services turnover in border traffic is conducted using the representative method, which allows generalization, with specified error, of the obtained results for a total number of persons who cross the surveyed border, by foreigners and the Poles. It is conducted on a sample of about 1%.

A two-stage scheme for drawing elements for a sample with determining the strata is used. First, the days (time intervals) undergoing survey are drawn, then persons are drawn out of those who cross the border. The strata are determined according to the days of the week as well as the border crossings and kind of traffic. For each of the strata one, selected at random, 12-hour interval in a quarter coinciding with a day shift of the border guard 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.

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 (7 times in the quarter). Non-representative days are not included in drawing, e.g. national and religious holidays. The questionnaire survey is conducted simultaneously at all border crossings covered by the survey.

Estimation of survey results is based on data gathered from questionnaires and information of the Border Guard 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 the border sections and regions (NUTS 2 level) are calculated on the basis of the results from all strata.

The results of the this survey analysis allow us to say that the phenomena associated with the border traffic are of great importance for social-economic development of transborder areas. The greatest intensity of these phenomena occurred in areas in the strip of up to 50 kilometres 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. Analysis of the results of the survey carried out at the European Union's external border on the territory of Poland also shows some variation occurring on its particular sections, especially in the case of the Polish-Russian border.

The value of foreigners' expenses in Poland and Poles abroad was 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 zl in 2013, whereas expenses of Poles returning from Ukraine – 224.7 million zl. Data on exchange of goods presented by statistics of foreign trade for Poland showed that exports to Ukraine amounted to 18.0 billion zl in 2013, whereas imports from Ukraine – as a country of dispatch – amounted to 7.0 billion zl.

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 zl and expenses of Poles in Belarus – 76.3 million zl. Exports of goods from Polish to Belarus amounted to 7.7 billion zl, whereas imports from Belarus (as a country of dispatch) –2.5 billion zl.

Expenses on the purchase of goods incurred in Poland by foreigners declaring Russia as a country of permanent residence amounted to 855.7 million zl, whereas expenses of Poles declaring Russia as a country of stay – 370.2 million zl. Exports of goods from Poland to Russia amounted to 34.1 billion zl, whereas imports from Russia – as a country of dispatch – totalled to 78.5 billion zl. Expenses on goods incurred by the Poles in Russia and Russians in Poland were 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 was, however, 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 were small compared with exports from Poland to Russia.

Expenses incurred in Poland by foreigners crossing the border in territorial units on NUTS 2 level accounted for around 18% compared with the value of export sales of entities of these units in 2012. As to expenses incurred abroad by

Poles crossing the border in corresponding units, they accounted for 2.4% compared with the value of import purchases of entities from these units in 2012.

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 at current prices was 11.5% compared with the value of retail sales of the regions located by the European Union's external border.

The results of the survey of goods and services turnover in border traffic at the European Union's external border on the territory of Poland showed that the vast majority of people go abroad and return in one day, mainly to make purchases. The expenses structure was dominated by the resources allocated to the purchase of goods, and only a small part was spent on services.

There were differences between studied phenomena on individual sections of the border. In particular, the Polish-Russian border could 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.

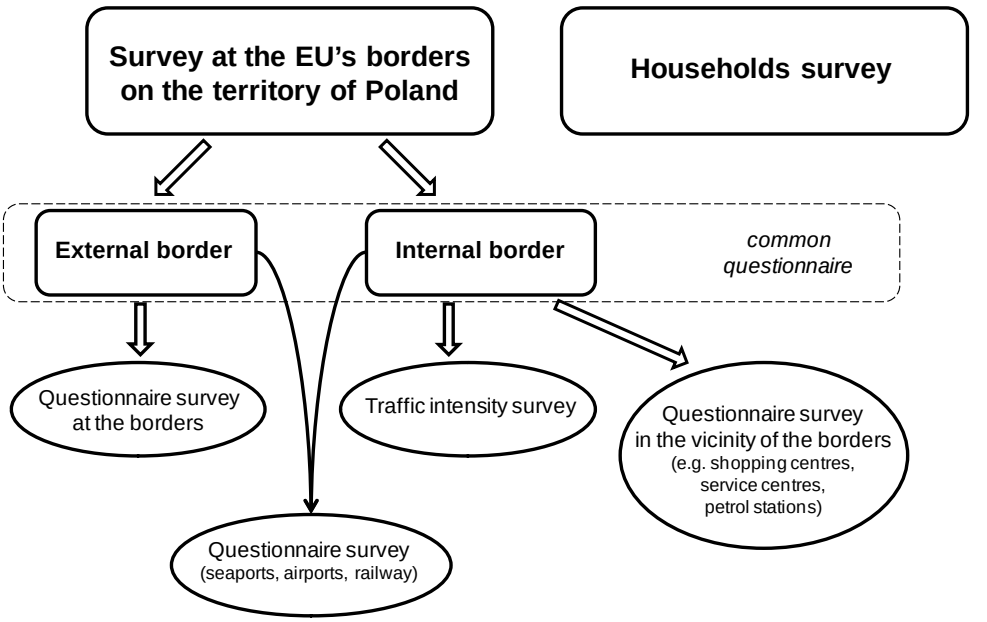
Changes in legislation relating to crossing the border, introduced by Poland or neighbouring country, were almost immediately reflected in changes in the level of border traffic intensity and border trade. The functioning of local border traffic, which has been present at the Polish-Ukrainian border 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 economic entities in this area than in areas by other sections of the border. This can, in turn, be beneficial for the development of units on the LAU level 2 that are in the border area.

The volume of the border traffic and the presence of border trade are affected by different endo- and exogenous factors, especially relationships between prices of goods on both sides of the border, supply-side deficiencies in the internal market of a given country and the possibility of crossing the border. The way they evolve will determinate the development of border trade, which is one of the forms of border cooperation, conducive to its development as well as strengthening and improving the living conditions of the inhabitants of border regions.

4. Comprehensive survey

In order to obtain information from both the survey of foreigners' trips to Poland and Pole's participation in trips, a pilot survey "The integration of statistical surveys of travel tourism for the needs of tourism statistics, national accounts and balance of payments" has been launched.

The survey consists of two parts - the survey at the border and in its vicinity and the household survey of participation of Poles in travel.



4.1. 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 drawn 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.

4.2. 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:

$$Y_{Co} = \begin{cases} Y_{CN} = \alpha_{N_0} + \alpha_{N_1} X_{N_1} + ... + \alpha_{N_m} X_{N_m} + e_N \\ Y_{CC} = \alpha_{C_0} + \alpha_{C_1} X_{C_1} + ... + \alpha_{C_m} X_{C_m} + e_C \\ Y_{CS} = \alpha_{S_0} + \alpha_{S_1} X_{S_1} + ... + \alpha_{S_m} X_{S_m} + e_S \\ Y_{CL} = \alpha_{L_0} + \alpha_{L_1} X_{L_1} + ... + \alpha_{L_m} X_{L_m} + e_L \end{cases} \quad (1)$$

where:

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,

α_{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[1], 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

[1] L. Kish (1991), A taxonomy of elusive populations, Journal of Official Statistics, 7, 339–347.

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.

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 ($s = 1,2,3,...$).

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:

$$Q_{oi(s)} = Y_{oi} \cdot \frac{N_{oi(s)}}{\sum_{s} N_{oi(s)}}. \tag{2}$$

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, $i = 1,2,3,4,\ j = 1,2,...,7$.

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:

$$w_{ij(s)} = \frac{N_{ij(s)}}{n_{ij(s)}}. \tag{3}$$

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:

$$\frac{G_{ij(s)}(z)}{N_{ij(s)}} = \frac{g_{ij(s)}(z)}{n_{ij(s)}}, \tag{4}$$

and thus:

$$G_{ij(s)}(z) = \frac{N_{ij(s)}}{n_{ij(s)}} \cdot g_{ij(s)}(z) = w_{ij(s)} \cdot g_{ij(s)}(z). \tag{5}$$

The number of people crossing the border, belonging to the surveyed z category is generalized by the formula:

$$L_s(z) = \sum_i \sum_j G_{ij(s)}(z). \tag{6}$$

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.:

$$L(z) = \sum_{s} L_s(z). \tag{7}$$

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, $k = 1,2,...,n_{ij(s)}$, belonging to z category, then expenses for each category of people crossing the border are generalized according to the formula:

$$T_s(z) = \sum_{i}\sum_{j} G_{ij(s)}(z) \cdot \overline{x_{ij(s)}(z)}, \tag{8}$$

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, *w*hich is described by the relation:

$$\overline{x_{ij(s)}(z)} = \frac{\sum_{k=1}^{g_{ij(s)}(z)} x_{ij(s)}(k,z)}{g_{ij(s)}(z)} \ . \tag{9}$$

Hence, and from condition (19) it follows that:

$$T_s(z) = \sum_{i}\sum_{j} w_{ij(s)} \cdot g_{ij(s)}(z) \cdot \frac{\sum_{k=1}^{g_{ij(s)}(z)} x_{ij(s)}(k,z)}{g_{ij(s)}(z)}, \tag{10}$$

therefore:

$$T_s(z) = \sum_{i}\sum_{j}\sum_{k=1}^{g_{ij(s)}(z)} w_{ij(s)} \cdot x_{ij(s)}(k,z). \tag{11}$$

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.:

$$T(z) = \sum_{s} T_s(z). \tag{12}$$

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, $k = 1,2,...,n_{ij(s)}$.

Let:

$$W_{ij(s)} = \sum_{k=1}^{n_{ij(s)}} X_{ij(s)}(k) \tag{13}$$

be a sum of total expenses of respondents on *j*-th day of the week and *i*-th quarter in stratum s, then:

$$\frac{W_{ij(s)}}{n_{ij(s)}} \tag{14}$$

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:

$$T_{ij(s)} = \frac{N_{ij(s)}}{n_{ij(s)}} \cdot W_{ij(s)} \tag{15}$$

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.:

$$T_s = \sum_i \sum_j T_{ij(s)} = \sum_i \sum_j \frac{N_{ij(s)}}{n_{ij(s)}} \cdot \sum_{k=1}^{n_{ij}(s)} X_{ij(s)}(k). \tag{16}$$

The estimation of total amount of expenses T throughout a year in the survey is the sum of estimates T_s, i.e.:

$$T = \sum_s T_s. \tag{17}$$

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 $w_{ij(s)} = \frac{N_s}{n_s}$, then T_s is reduced to

$$T_0 = \frac{N_s}{n_s} \cdot \sum_i \sum_j \sum_{k=1}^{n_{ij(s)}} X_{ij(s)}(k), \tag{18}$$

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 zl. Foreigners from the EU countries spent a total of 4 038 067 zl, whereas from the non-EU countries - 2 287 758 zl.

4.3. Household survey of participation of Poles in travel

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[1] 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,

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:

$$\{S\} = \begin{cases} S_0 = 0 \\ S_k = S_{k-1} + M_k \end{cases}, \tag{19}$$

[1] National Official Register of Territorial Division of the Country.

for $k = 1,2,...,N$, hence:

$$S_N = \sum_k M_k = M, \tag{20}$$

where M – a number of dwellings in stratum.

After constructing the sequence $\{S\}$ an interval of sampling is calculated:

$$IN = \frac{M}{n}. \tag{21}$$

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:

$$X_i = P_0 + IN \cdot (i-1) \quad \text{for } i \in \{1,2,...,n\}. \tag{22}$$

If for some $i \in \{1,2,...,n\}$ the following inequality is satisfied:

$$S_{k-1} < X_i < S_k, \tag{23}$$

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:

$$w1g_{hk} = \frac{1}{\pi_{hk}}, \tag{24}$$

whereas

$$\pi_{hk} = \frac{n_h \cdot M_{hk}}{M_h} \cdot \frac{m}{M_{hk}} = \frac{n_h \cdot m}{M_h} = \frac{m_h}{M_h}, \tag{25}$$

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:

$$w1g_h = \frac{M_h}{m_h}. \tag{26}$$

The weight *wlg* 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:

$$R_p = R1_p \cdot R2_p \tag{27}$$

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 *wlg* are used for estimating rates $R1_p$ and $R2_p$.

Because each stratum belongs to one class of locality, the weight *wlg* for households from stratum *h* of class *p* is adjusted as follows:

$$w2g_h = \frac{w1g_h}{R_p}. \tag{28}$$

In this way adjusted weighs *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:

$$M_j = \frac{G_j}{\hat{g}_j}, \tag{29}$$

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:

$$wg_{hj} = w2g_h \cdot M_j. \tag{30}$$

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 zl, of which 59% were spent during foreign trips. On average, the cost of one short-term domestic trip was 228 zl, a long-term domestic trip - 695 zl, and a foreign trip - 2170 zl.

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. Results

a) 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.

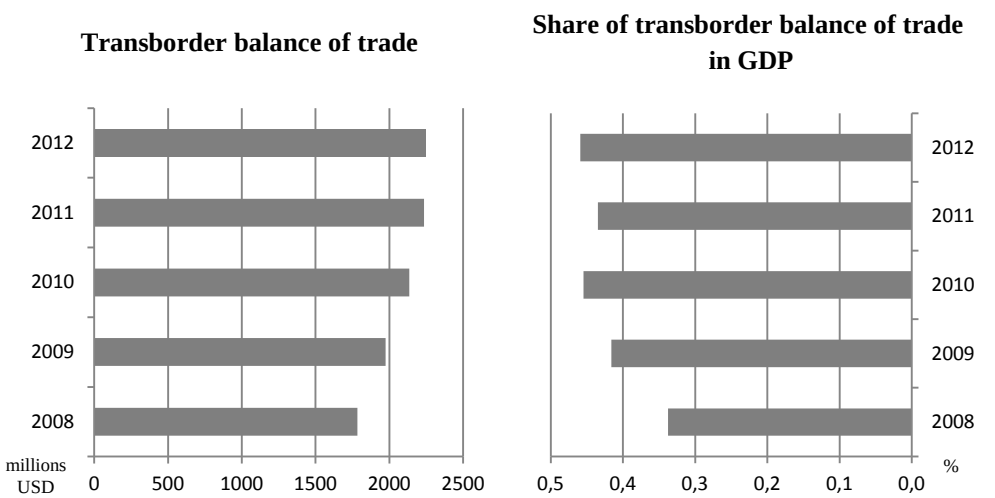


Figure 1. Transborder balance of trade and share of transborder balance of trade in GDP

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. It is also worth stressing that this share does not exceed 0.5 %.

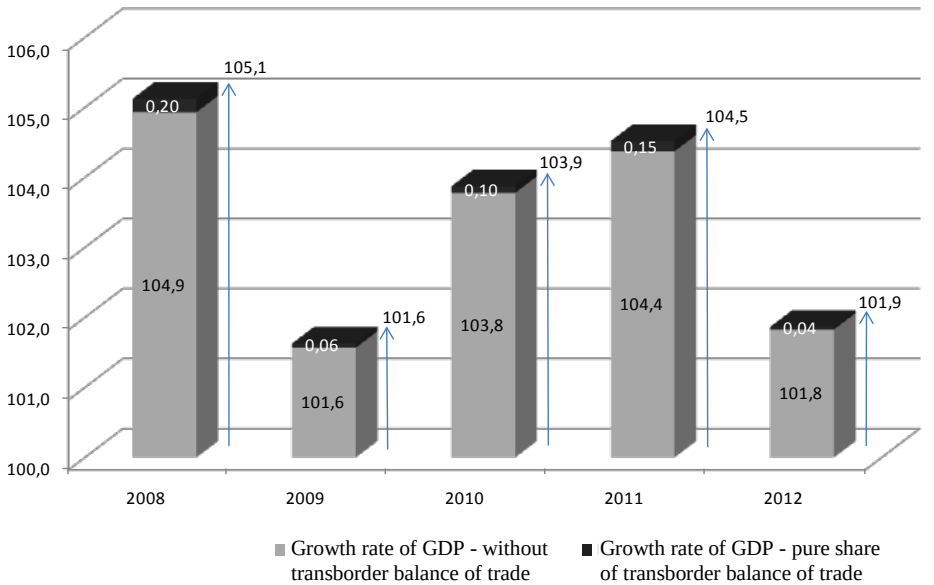


Figure 2. The rate of economic growth

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 o 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.

a) Entrepreneurship in border areas – selected aspects

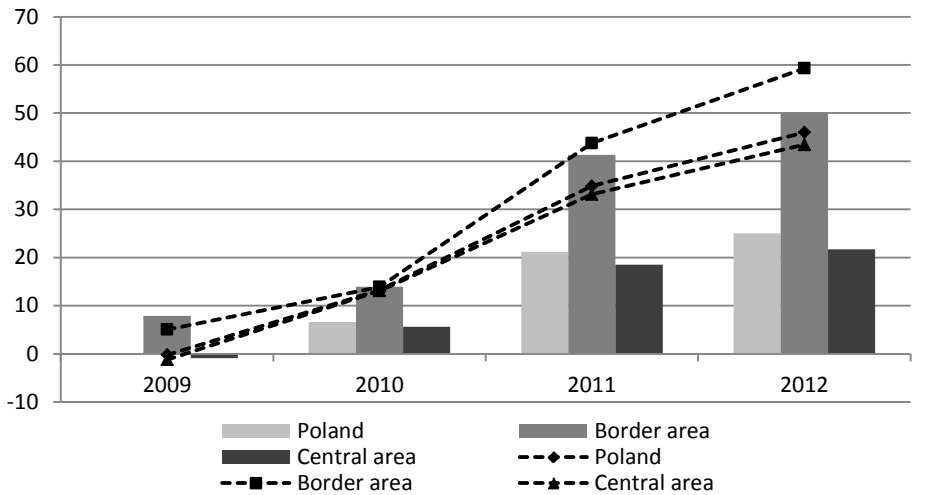


Figure 3. Dynamics of revenues from sale of products, goods and materials as well as dynamics of export

The dynamics of both revenues and export show a clear upward trend. For both these indicators the largest increase occurred in 2011. Border area throughout the whole period is characterized by higher dynamics than the national average.

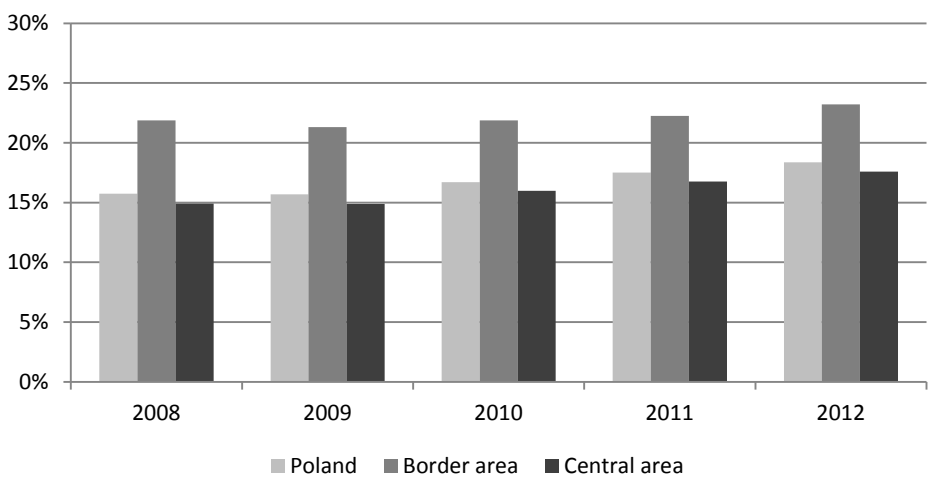


Figure 4. The share of revenues from exports of products, goods and materials in revenues from sales of products

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 23% in 2012. 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).

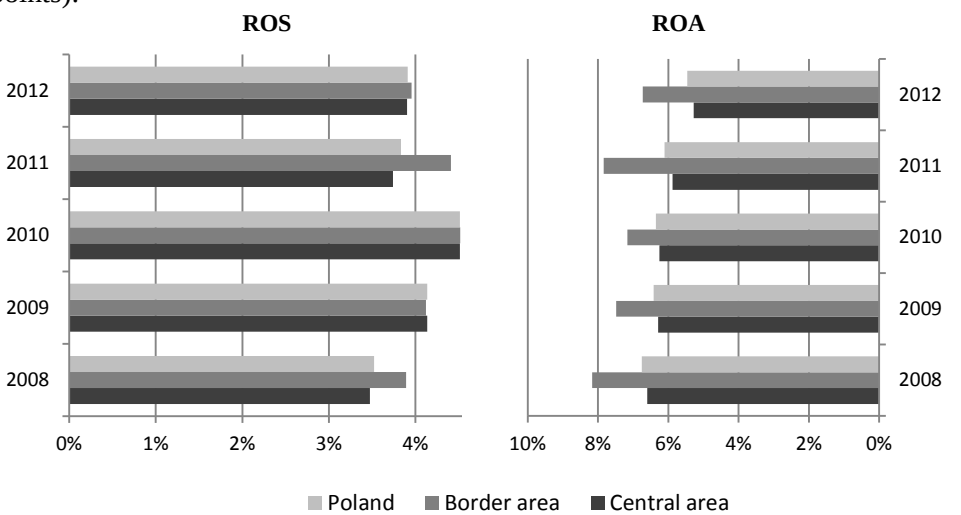


Figure 5. Return on sales rate (ROS) and return on assets rate (ROA)

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 steady increase in the rate of return on sales was recorded. In 2011 and 2012, the rate was lower than in the two previous years, but still remained above the index calculated for the country.

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, in all areas the index recorded a decrease to the lowest level in the last five years.

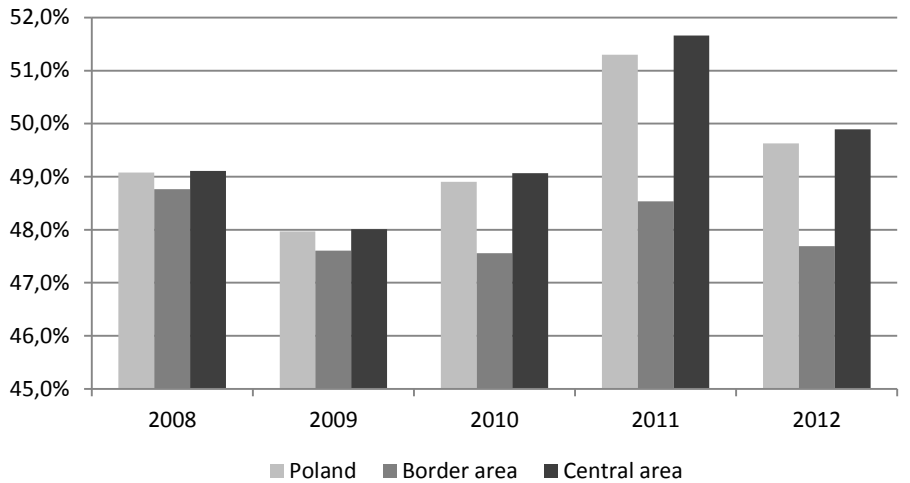


Figure 6. The debt ratio

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 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.

7. 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 and households in these areas acts as a stabilizer of socio-economic situation.

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 of the results of analyses on micro-meso-macroeconomic level. 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, having this kind of information, can create additional incentives for development of entrepreneurship. On the regional level, functioning of such system makes it possible for self-government and government institutions to lead politics to increase competitiveness of each region. As regards the question of the national level, thanks to this system we can more precisely estimate GDP, BoP to be exact. By means of coherent research system we can take common or compatible decisions on the both side of the border (e.g. common road, 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 as well as introduces and modifies surveys dedicated to transborder areas.

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