

**SELECTED ASPECTS OF FUNCTIONING  
OF POLAND IN THE EUROPEAN UNION  
THE BALANCE OF TEN YEARS OF MEMBERSHIP**

EDITED BY  
GRAŻYNA WOJTKOWSKA-ŁODEJ  
HENRYK BĄK



WARSAW SCHOOL OF ECONOMICS PRESS  
WARSAW 2015

**The publication is the result of statutory research “Poland in the European Union. The Balance of Ten Years of Membership in the EU” funded by the Ministry of Science and Higher Education and conducted by a team of researchers from the Institute of Foreign Trade Policy and European Studies, Jean Monnet Chair of European Integration and the Department of Economics II in Collegium of World Economy of Warsaw School of Economics.**

**Reviewer**

Bogusław Pietrzak

**English translation**

Kamila Grzesiak

Katarzyna Negacz

© Copyright by Warsaw School of Economics, Warsaw 2015

All rights reserved. Any copying, reprinting or distribution of a part or the whole of this publication without the prior permission of the publisher is forbidden.

First Edition

**ISBN 978-83-7378-968-5**

**Warsaw School of Economics Press**

162 Niepodległości Ave., 02-554 Warsaw, Poland

tel. +48 22 564 94 77, 22 564 95 46

[www.wydawnictwo.sgh.waw.pl](http://www.wydawnictwo.sgh.waw.pl)

e-mail: [wydawnictwo@sgh.waw.pl](mailto:wydawnictwo@sgh.waw.pl)

**Cover design and production**

Monika Trypuz

**DTP**

Gemma

**Print and binding**

QUICK-DRUK s.c.

tel. +48 42 639 52 92

e-mail: [quick@druk.pdi.pl](mailto:quick@druk.pdi.pl)

Order 22/II/15

# Contents

Preface .....	7
---------------	---

## PART I GENERAL PROBLEMS OF FUNCTIONING OF EUROPEAN UNION. LESSONS FOR POLAND

<i>Małgorzata Znoykowicz-Wierzbicka</i> Evolution of the EU Member States' Economic Policy Coordination – Lessons for Poland .....	13
<i>Henryk Bąk</i> Selected Problems of the Euro Zone Functioning. Lessons for Poland .....	39
<i>Zenon Marciniak</i> Unconventional Monetary Policy .....	61
<i>Tomasz Dołęgowski</i> Poland in the European Union. Dilemmas and Visions of Competitiveness .....	105

## PART II SELECTED ASPECTS OF FUNCTIONING OF POLAND IN THE EUROPEAN UNION

<i>Alina Szypulewska-Porczyńska</i> Development of Poland's Foreign Trade after Its Accession to the European Union .....	119
<i>Alicja Ryszkiewicz</i> The Importance of Structural Funds and Cohesion Fund of the European Union for the Development of Polish Economy .....	141
<i>Elżbieta Kawecka-Wyrzykowska</i> The Importance of Support from the EU Budget for Polish Agriculture and Rural Areas .....	177

<i>Grażyna Wojtkowska-Łodej</i> Poland's Energy Security after the Accession to the European Union .....	197
<i>Włodzimierz Januszkiewicz</i> Balance of Ten Years of the EU Common Transport Policy in Terms of Advantages and Disadvantages to Poland .....	217
<i>Paweł Lesiak</i> The Importance of Polish Road and Rail Freight Transport Operators in the International EU Transport Market since 2004 .....	229
<i>Adam A. Ambroziak</i> The Effects of Granting State Aid in Special Economic Zones after Poland's Accession to the European Union .....	245
<i>Ewelina Szczech-Pietkiewicz</i> Changes in the Competitiveness of Selected Polish Cities since 2004. The Attempt of Assessment of the Impact of the European Integration on Urban Development in Poland .....	267

*Adam A. Ambroziak*

## **The Effects of Granting State Aid in Special Economic Zones after Poland's Accession to the European Union**

### **Introduction**

Period of functioning of special economic zones in Poland (SEZ) after 10 years of membership in the European Union allows one to draw some conclusions about both the need, effectiveness and the results of public interventions in the form of tax breaks for businesses that invest in these areas. Of the sixteen originally created SEZ, still remain fourteen. It is worth paying attention to some very important details of their operation. Firstly, they are managed by the so-called zone companies which find investors and help them to meet most of the administrative requirements. However, they do not limit their offer to individual voivodeships, but rather follow the preferences of investors seeking to locate themselves in larger urban and industrial agglomerations [Ambroziak, 2009]. As a result, there are several hundred so-called sub-zones of special economic zones scattered throughout the country. Secondly, all the conditions for authorisation to operate in the zone are identical throughout the country. Thirdly, the size of the support provided, which is a derivative of a permissible regional aid, is determined by the location of an investment and the classification of a voivodeship and not, for example by a place of the headquarters of the company managing the zone. Consequently, one decided to analyse the results of functioning of the SEZ at the level of voivodeships, which will allow to better and more accurately associate the possible effects of the size and intensity of acceptable support regulated by EU legislation.

The aim of this study is to evaluate the effects of granting state aid in special economic zones (SEZ) at the level of voivodeships after the Polish accession to the European Union. It's about capturing both the direct effects of the zones in the form of new investments and employment of staff, as well as an assessment of the possible directions of their influence on the socio-economic situation of the regions.

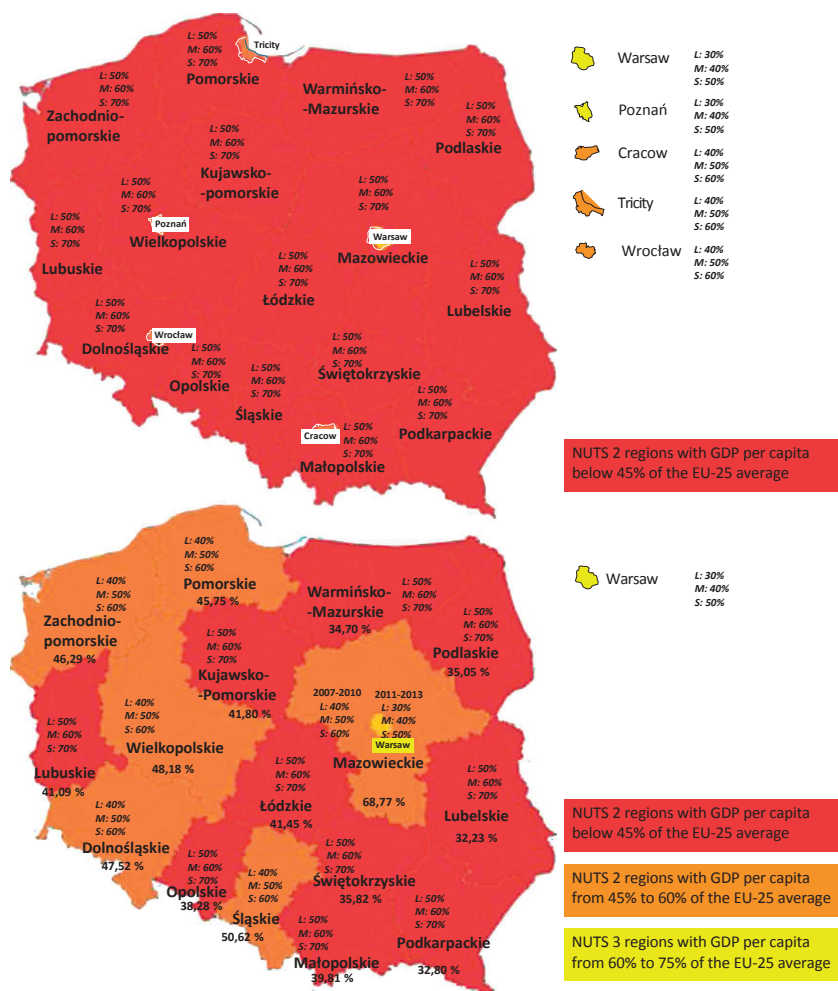
## 1. The Concept of Regional Aid in Special Economic Zones in Poland

The attractiveness of the location of each region depends on many factors, both external and internal [Ambroziak, 2014]. The present study focuses on one of them: corporate tax breaks offered to encourage businesses to locate their investments in special economic zones in Poland. This instrument is a mean of public support at the regional level within the understanding of the EU law and, therefore, after the Polish accession to the EU, it required appropriate adjustments [Ambroziak, 2003a, 2003b]. National regional aid under the EU rules may in fact be granted in the case of the so-called market failure, so in the least developed regions in order to cover the additional costs incurred in connection with an investment in the less favourable area (lower quality of human capital, poor transport infrastructure and telecommunications etc.). It is assumed that the regions in which this kind of support is offered should catch up with the more developed ones, by offering relatively greater support in the poorer and less support in the more developed areas. A new regional aid map took effect on 1 January 2007. On its basis one maintained 50% GGE level for the then poorest (with a GDP per capita below 45% of the EU average) regions: i.e. Warmińsko-Mazurskie, Podlaskie, Lubelskie, Podkarpackie, Małopolskie, Łódzkie and Opolskie. One reduced up to 40% of GGE allowable support intensity in slightly more developed regions (GDP per capita from 45% to 60% of the EU average): Wielkopolskie, Zachodniopomorskie, Pomorskie, Śląskie and Mazowieckie to 40% in 2007–2010 and to 30% in the period of 2011–2013 [Council of Ministers, 2006; Ambroziak 2006].

Due to the fact that any public intervention may distort competition, the EU regulations provide restrictions on, in addition to the eligible costs, maximum intensity of public support. The so-called regional aid map, which was introduced in Poland under the framework of pre-accession adjustments already in 2001, determines the allowable state aid intensity [Council of Ministers, 2001, 2002]. In regard to the fact, that in all NUTS 2 regions (in the voivodeships) in Poland one recorded GDP per capita below 75% of the then European Union, the map stipulated that the maximum allowable aid in all voivodeships will amount to 50% of gross grant equivalent (GGE) with the exception of five agglomerations: Trójmiasto (40%), Cracow (40%), Wrocław (40%), Warsaw (30%) and Poznań (30%) (Map 1)<sup>1</sup> (Council of Ministers 2004; Ambroziak 2006).

<sup>1</sup> In this section one indicates only the maximum levels for regional aid for large enterprises. Until the end of 2006 one could have increased them by 15 percentage points (p.p.) for SMEs in the “a” regions and by 10 p.p. in the “c” areas. In 2007–2013, for small enterprises they were increased by 20 p.p., and for the medium ones by 10 p.p.

Map 1. Map of Regional Aid in Poland in Years 2001–2006 and 2007–2013



Regional state aid for 2001-2006: left side; Regional state aid for 2007-2013: right side;  
 L – large enterprises; M – medium enterprises; S – small enterprises

Source: Own research based on [Guideline 98/C 74/06; Guideline 2006/C 54/08].

Exempt from income tax (legal persons or sole traders) is the main investment incentive offered in special economic zones in Poland. Diversification of admissible regional aid meant that in the poorest and most vulnerable voivodeships, mainly of Eastern Poland, entrepreneurs could have been granted in SEZ with tax exemptions of up to 50% of the cost of the original investment. As already mentioned, even though the rules of the zones throughout the country are identical, one limited the intensity of support under the Act on SEZ in more developed and wealthier voivodeships to respectively 40% and 30% of GGE. **Assuming that the instrument in the form of tax exemptions is an attractive tool for businesses considering location of their**

**investments in Poland, it should allow targeting more investments with new jobs in the poorest voivodeships with the highest allowable support intensity<sup>2</sup>.**

It should be noted, however, that the instrument of tax benefits in SEZ is characterised by a certain specificity of action, and the consequences for the recipient and the donor: both its attractiveness to businesses and risks relating to the effects on the side of the state, are quite limited. State's intervention occurs after the completion of the investment and employment of workers that is after the most risky period for the business and begins only with the emergence of profits (even not revenues).

## 2. Public Aid in Special Economic Zones

Shortly after the Polish accession to the EU, one evaluated the value of support provided under the act on special economic zones to 406.3 million PLN and 666.9 million PLN in 2005<sup>3</sup> and 2006 respectively (Figure 1), which accounted for an average of up to 39.9% and 34.8% of the total regional aid in Poland. It should be noted, however, that in many, especially the less developed voivodeships (Warmińsko-Mazurskie, Podkarpackie, Małopolskie) zone reliefs were almost the only one and in the case of slightly more developed ones (Dolnośląskie, Śląskie, Pomorskie, Łódzkie) a main type of available regional aid within the first 2–3 years after the accession (Figure 2). In subsequent years, the value of the financial support gradually increased with the exception of 2009, when during the economic crisis and the decline in demand for Polish goods among consumers from other member states of the EU, profits, and thus the amount of tax-exempt dropped slightly. Also the structure of regional aid changed through a substantial decrease in the amount of regional aid to the level of 17.5% of regional aid offered in Polish voivodeships. This was due to the mobilising of structural funds, especially funds from the European Regional Development Fund for entrepreneurs.

The strength and direction of these changes depend on the level of regional development of individual regions. In the case of less-developed regions one offered relatively larger and easier access to the EU funds, which resulted in a strong decrease of zone support in the total amount of regional aid. In contrast, better-developed regions reported maintaining a relatively high proportion of zone support in regional aid (for example in 2013 at the level of 40.9% in Dolnośląskie, 34.8% in Lubuskie, 31.1% in Śląskie and 29.6% in Zachodniopomorskie). Thus, **despite the fact that it**

---

<sup>2</sup> In order to easily identify the different categories of regions (low, average and better developed) one provided the figures and tables with the names of voivodeships with maximum levels of the intensity of regional aid for large enterprises in parentheses (the lower the intensity is, the better developed area is, the higher – less developed).

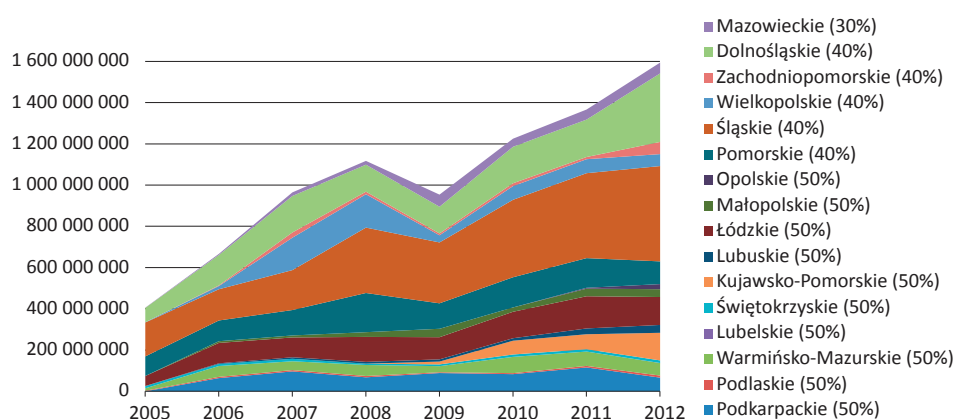
<sup>3</sup> Due to the incomplete data of low reliability for 2004, the analysis was limited to the years 2005–2013.



was statutorily intended for the poorer regions, zone support no longer constitutes a significant investment incentive compared to other available resources, while in more developed voivodeships, its share still remains significant.

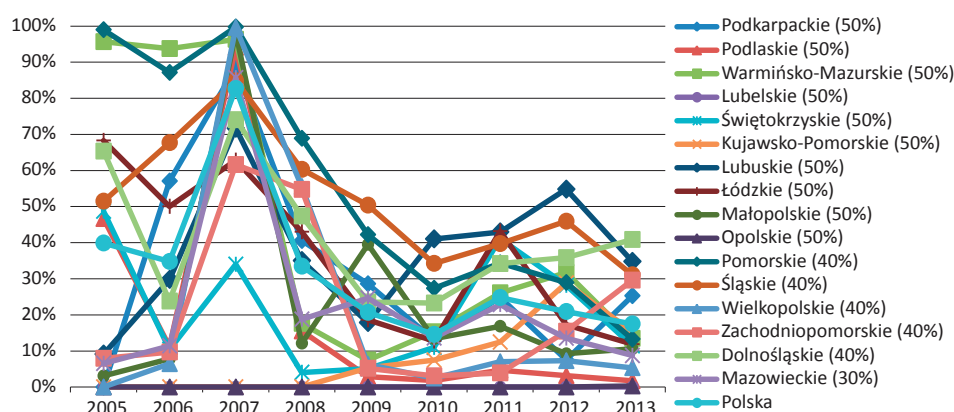
It seems that this is due to the nature of the support, which is used by businesses only after completion of the investment, while support from European funds was available very often in the form of grants already at the declaration of the project and hence more attractive for companies from poorer regions in need of support during the stage of starting or significant development of business.

**Figure 1. The Amount of State Aid to Entrepreneurs in Special Economic Zones in the Years 2005–2013**



Source: Data from Office of Competition and Consumer Protection.

**Figure 2. The Share of State Aid in Special Economic Zones in the Total Value of Regional aid in the Years 2005–2013**



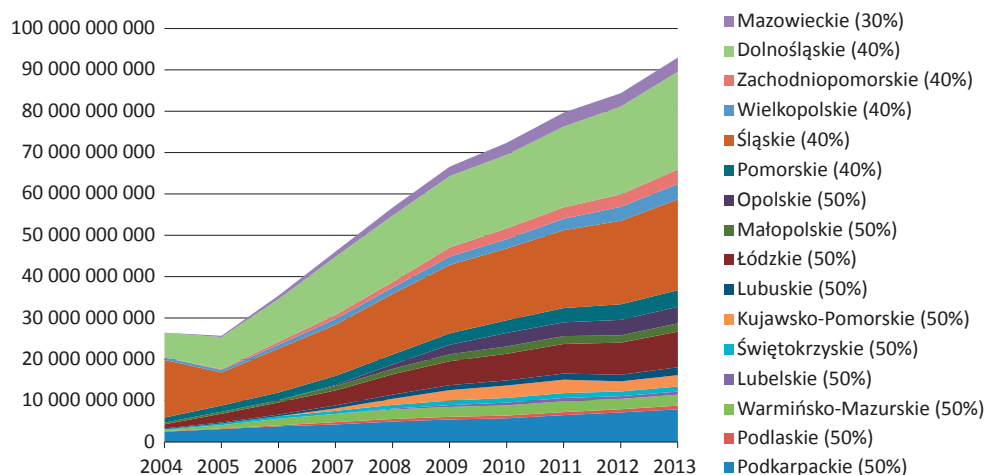
Source: Data from Office of Competition and Consumer Protection.

This observation is confirmed by the analysis of the total value of the financial assistance provided under the act on special economic zones. Since Poland's accession to the European Union one granted support in the zones in the amount of 9.8 billion PLN. The biggest funds were allocated in the following voivodeships: Śląskie (28.5%), Dolnośląskie (16.7%), Pomorskie (11.3%) and Łódzkie (10.3%), and therefore in relatively more developed regions of the country. By far the smallest share (not exceeding 1%) of the total amount of regional aid was granted in the poorest regions of the country (Opolskie, Lubelskie, Podlaskie, Świętokrzyskie). In consequence, **the aid, which was supposed to be directed at enhancing the development of the most vulnerable regions, was channelled in the largest amount (absolute value) into the richest ones.**

### 3. Investments in Special Economic Zones

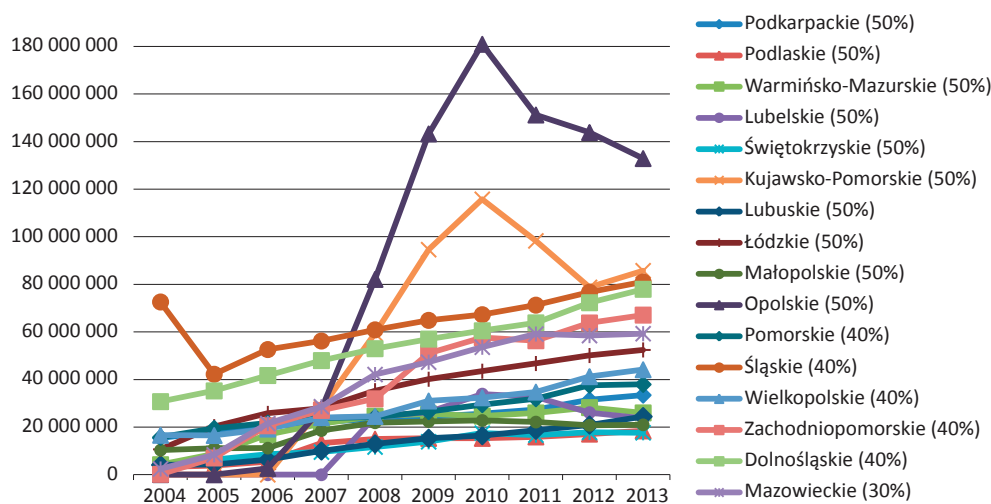
In 2004, eight years after the launch of the first zones the total value of investments made in SEZs reached nearly 26.5 billion PLN (Figure 3), which meant an average of about 24.3 million PLN for one zone project (Figure 4). Within ten years of the zones functioning dynamics of investment inflows to them changed, noting the greatest value in the years just after Poland's accession to the EU (up to 37% compared to the previous year) and significantly lower in the period of economic crisis (to 8.7% in 2010 r.) and just after it (5.9% in 2012). At the end of 2013 one witnessed an increase in the value of investments in the SEZs to the level of 93 billion PLN. It should be noted, however, that, as in the case of investments in SEZs, the value of fixed assets of enterprises in Poland has also quadrupled. As a consequence the share of investment in the zone of fixed assets has not changed significantly and remained at a relatively high level (up from 9.1% in 2004. 11.2–11.4% in 2007–2012, and 10.8% in 2013.) (Figure 5). However, during the period of years 2004–2013 not captured at the national level a significant increase in investment in SEZs in relation to the total assets of enterprises, which is rather weak impact of the investment on the overall size of the zone of capital invested in Poland. As a consequence the share of zone investments in the value of fixed assets has not changed significantly and remained at a relatively high level (increase from 9.1% in 2004 to 11.2–11.4% in 2007–2012 and 10.8% in 2013) (Figure 5). **However, during the studied years 2004–2013 one did not notice at the national level a significant increase in investments in SEZs in relation to the total assets of enterprises, which means a rather weak impact of the zone investments on the overall size of capital allocated in Poland.**

**Figure 3. The Value of Investments in Special Economic Zones in Poland by Voivodeships**



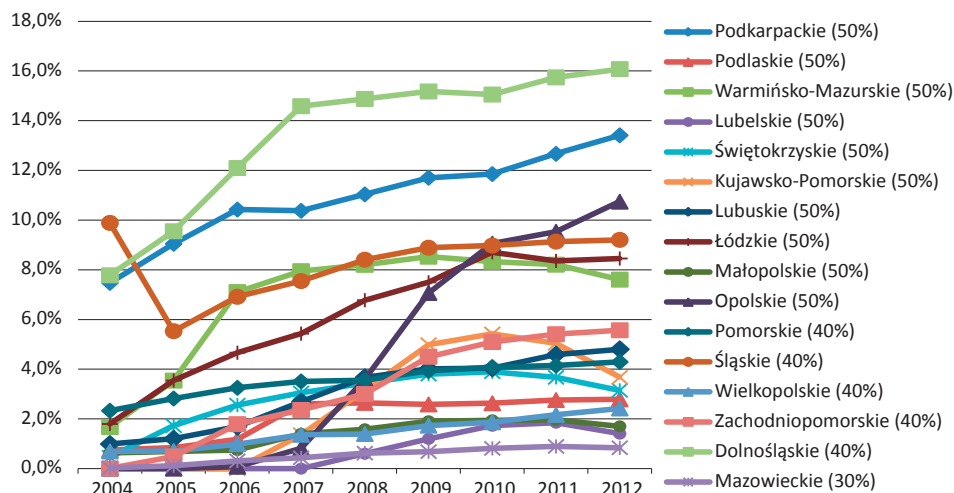
Source: Data from Ministry of Economy.

**Figure 4. The Value of Investments in Special Economic Zones in Relation to the Number of Valid Permits**



Source: Data from Ministry of Economy.

**Figure 5. The Share of Investments in Special Economic Zones in Poland in the Total Value of Fixed Assets of Entrepreneurs**



Source: Data from Ministry of Economy and Local Data Bank of CSO.

The situation at the regional level is much more diverse. Since Poland's accession to the EU one has observed a substantial increase in the importance of a few, relatively richest voivodeships in the zone investments. These are mainly Śląskie and Dolnośląskie, where one located almost half of all investments in the SEZs at the end of 2013. Next comes Podkarpackie (with the first well developing SEZ in Mielec [Domański, Gwosdz, 2005; Dziemianowicz, Szlachta, Hausner, 2000] and Łódzkie, which, although having significantly weaker results (shares amount to respectively 9.3% and 8.5%) characterise by boosting zone investments. **In case of other voivodeships, especially the poorest, their share in the total value in zone investments is small.**

In order to capture the relative effects of zones' functioning one compared the value of the investment to the number of valid permits in a given year. This allowed for an assessment of the relative value of individual investments and capturing directions of placement of larger investment projects and, consequently, maybe more capital than labour-intensive. It turns out that also in this comparison dominate richer Polish regions, although the magnitude of the investments in relation to the number of permits also increased in two slightly poorer voivodeships (but not the weakest ones): Kujawsko-Pomorskie and Opolskie. But this is due to a small number of projects and individual investments in these regions and not to radically improvement of their attractiveness. Similar trends can be observed in the dynamics of investments in the zones: **richer regions attract investments much faster, while the poorer much slower.**

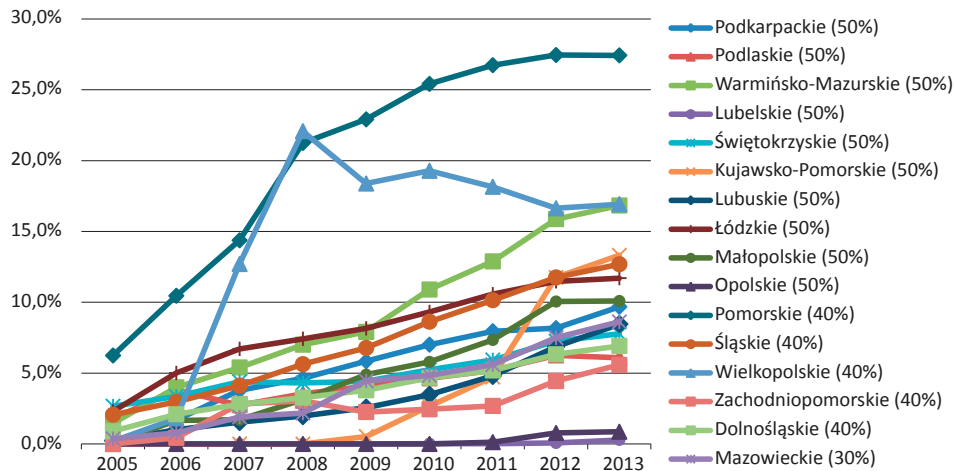
The share of zone investments in the value of fixed assets of enterprises at the level of voivodeships may be a proof of their impact on regional development. The greatest value of the ratio of investments made in special economic zones to the value of fixed assets was recorded in 2004 for two fairly well-developed voivodeships of Śląskie and Dolnośląskie (respectively 7.8% and 9.9%) and Podkarpackie (7.5%). The proportion of zone investments in the value of assets of companies in mentioned regions increased during the studied period to levels of 9.2%, 16.1% and 13.4% in 2012<sup>4</sup>. This group was joined by slightly less developed areas: Opolskie with 10.7%, Łódzkie with 8.5% and Warmińsko-Mazurskie – 7.6%, although for the least developed regions still zone investments are not significant in relation to the fixed assets of companies operating there. It can therefore be concluded **that the size of the zone investments, the dynamics of their inflow and the power of the potential impact on the economic development of regions depend on the location: the more developed the region, the greater investment in the zones and the less developed, the less investments.** The exception to this rule is Podkarpackie, on whose territory businesses quite successfully operate within the Mielecka special economic zone since 1995.

Public aid in the form of tax exemptions for entrepreneurs is the expense of attracting zone investments. Generally speaking, the relation of the cumulative value of the assistance provided under the SEZ Act in the years 2005–2013 to the size of the investments at the end of the studies period amounted to approximately 10% (Figure 6). One should pay attention to the territorial distribution of the value of this relationship at the level of voivodeships. In 2004 the highest level has been recorded in the relatively more developed regions of Pomorskie (6.2%), Łódzkie (2.3%) and Śląskie (2.1%). In subsequent years, the structure of the group of voivodeships has gradually changed so that in 2013 the above-average support accumulated in the years 2005 to 2013 in relation to the value of the completed investments was granted in areas of more developed voivodeships: Pomorskie (27.4%), Wielkopolskie (16.9%), Kujawsko-Pomorskie (13.3%), Śląskie (12.7%) and Łódzkie (11.7%), but also in less developed: Warmińsko-Mazurskie (16.8%) and Małopolskie (10.1%), in which single investors received significant tax credits. And therefore **attracting investors to the richer regions than to the weaker voivodeships was generally more costly for the state budget. Furthermore, taking into account the fact that decidedly more investments appeared in these first group, as well as having regard to the nature of the assistance in the form of tax reliefs in the SEZs, it can be concluded that the economic effects of the zonal companies in richer voivodeships are relatively much better than in poorer.**

---

<sup>4</sup> No Central Statistical Office of Poland data about the gross value of fixed assets of enterprises for 2013, access: 31.07.2014.

**Figure 6. Intensity of State Aid in Special Economic Zones in Poland in Relation to the Value of Investments in the Voivodeships in the Years 2005–2013**

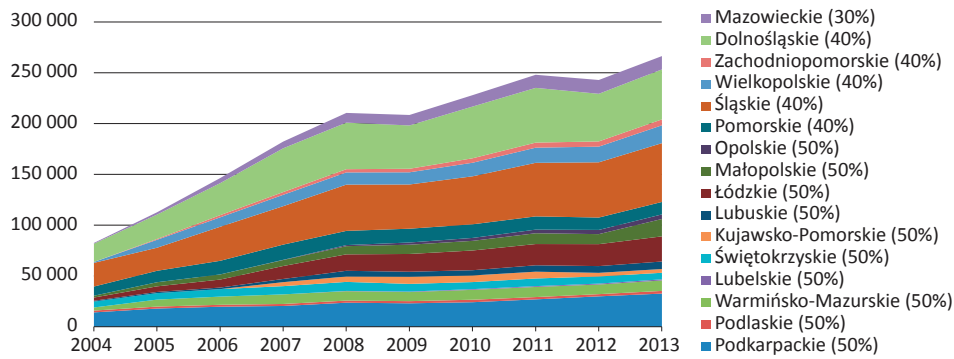


Source: Data from Ministry of Economy and Office of Competition and Consumer Protection.

#### 4. Employment in Special Economic Zones

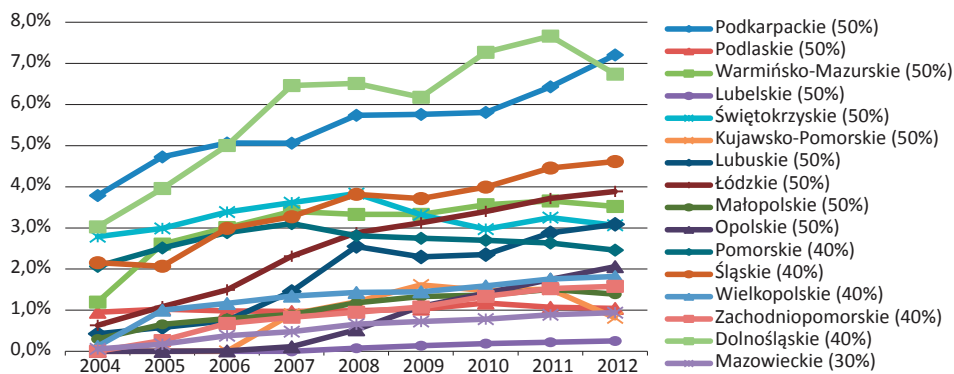
One of the objectives of both the statutory appointment of special economic zones [Act, 1994], as well as national regional aid offered under the SEZ is to create jobs. At the end of 2004 one created in zones more than 82.5 thousand jobs, which accounted for about 4.8% of employed in Poland (Figures 6 and 7). On average, one employed about 76 people in a single zone investment (Figure 8). As in the case of value of investments, in the first two years after Poland's accession to the EU, one has noticed a significant increase in employment in the zones within the limits of 25–29% annually. The following years were a period of crisis and lack of economic confidence, which resulted in fluctuations in the number of jobs including the sharp decline in 2009 and 2012 below the level of the previous year. Finally, total employment in SEZs in Poland rose to nearly 266.5 thousand in 2013, so nearly three times compared to the initial level in 2004, while the value of the zone investments has quadrupled in the same period. Number of jobs per one valid permit has only doubled to 151 in 2013. Moreover, the share of jobs in the zones in the total number of employed across the country has not changed dramatically and, despite fluctuations did not exceed 6%, to reach only 5% 2013 (so only 0.2 percentage points above the rate in 2004). Thus, the number of jobs offered in zones grew at the same rate as the total number of employed across the country, which indicates a weak impact of zones on the creation of new jobs at the national level.

**Figure 7. The Number of Jobs in Special Economic Zones by Regions**



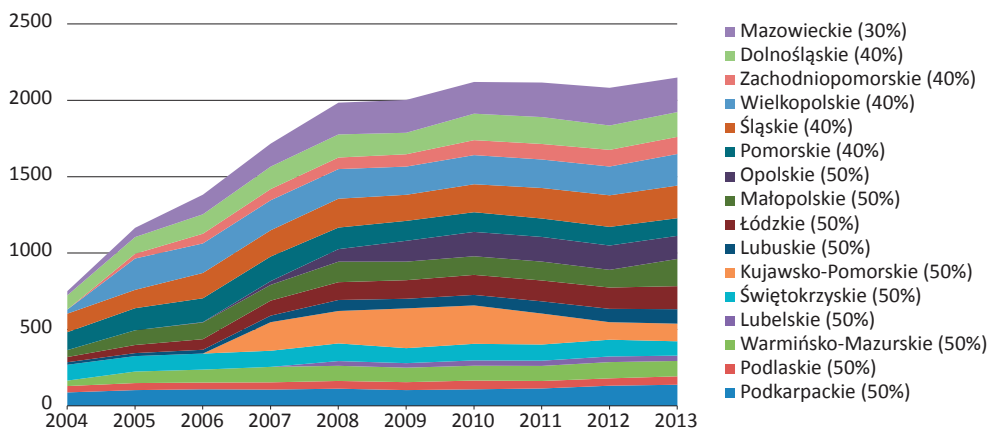
Source: Data from Ministry of Economy.

**Figure 8. The Number of Jobs in Special Economic Zones in Poland in Relation to the Number of Employed in Voivodeships**



Source: Data from Ministry of Economy and Local Data Bank of CSO.

**Figure 9. Number of Jobs in Special Economic Zones in Poland in Relation to the Number of Active Permits**



Source: Data from Ministry of Economy.

The situation at the level of voivodeships, as in the case of value of investments, was quite diverse. In 2004 one recorded the largest number of jobs in the zones of the more developed voivodeships of Śląskie (23.2 thousand) and Dolnośląskie (17.9 thousand), but also Podkarpackie (14.2 thousand). Their almost 70% share in the number of zone jobs was primarily due to the fact that in these three regions, first zones were already created in 1995 and 1997. In the following years after the Polish accession to the EU, the number of employed in the zones significantly increased (24–26% annually) up until 2008. The highest increases were recorded in the above mentioned richest voivodeships, but also in Łódzkie, Opolskie and Małopolskie. Definitely the least successful were the zones in least developed voivodeships, which was a consequence of a small inflow of investments into SEZs in these regions. Year 2008 deserves a special attention because of the fact that in almost all voivodeships the number of jobs decreased compared to the previous year. Considering the fact that only in the following year 2009 one granted least zonal support in the form of tax exemptions, so entrepreneurs witnessed the serious problems associated with the economic crisis, therefore it can be assumed that entrepreneurs in 2008 just started preparing for the difficult economic situation and they limited the employment in SEZs preventively rather than as a result of economic problems. **The largest reductions were made in areas located in the voivodeships with the lowest number of the zonal employees, although even in more developed regions one also noticed declines in the number of employees.** This may mean that, **despite the requirement to maintain an adequate number of jobs in connection with the receipt of a regional aid, which should provide some kind of protection against dismissal of workers, zonal entrepreneurs decided to reduce labour costs by limiting employment.** It should be stressed however, that a smaller number of jobs is also a result of the total cessation of activity in the zone after the expiry or revocation of the permit. In subsequent years, entrepreneurs from the zones in richer voivodeships more quickly and effectively increased employment rate, while in poorer regions, it was sometimes even negative (in relation year to year).

After nine years from accession, the share of individual voivodeships in the total number of jobs created by companies from SEZs changed slightly. Still zones located in Śląskie (21.7%), Dolnośląskie (18.5%), Podkarpackie (12.3%) and Łódzkie (9.3%) have the most share (more than half in 2013) in the total number of employees. This ranking coincides with their classification on the basis of their participation in the zone investments. As a result one can conclude that **zones develop most rapidly in these relatively wealthier regions, while in far poorer regions of the country, the results of zones measured by investments and jobs are definitely weaker.**

Relation of number of jobs in plants located in special economic zones to the total number of employees in the voivodeship would help to identify the relative importance



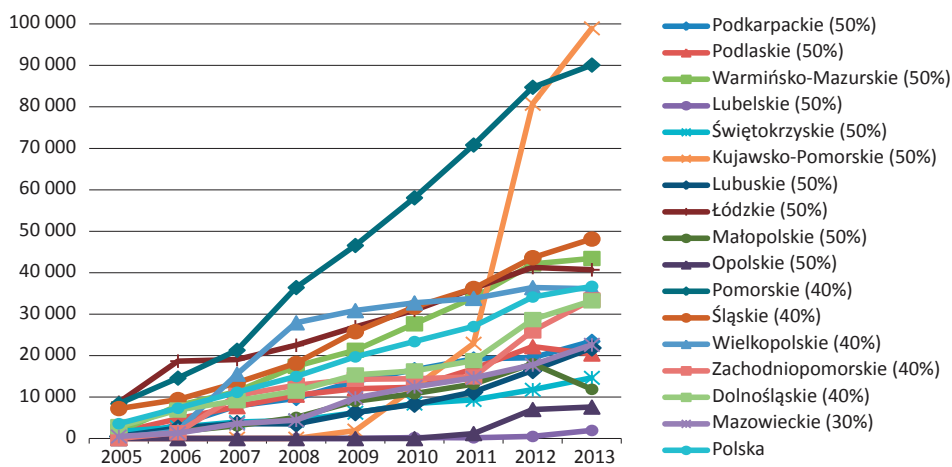
of zones for the local labour market. In the year of Poland's accession to the EU one noticed the largest proportion of jobs in special economic zones in relation to employment in the region in the following voivodeships: Podkarpackie (3.8%), Dolnośląskie (3.0%) and Świętokrzyskie (2.8%). In other cases it was extremely low and with the exception of Pomorskie and Śląskie, it did not exceed 2%. In the mentioned voivodeships the SEZs existed for a long time, hence the higher intensity of employment in the firms located in the zones. In subsequent years, the number of jobs created by companies in SEZs in relation to the total employment grew in the first two mentioned voivodeships in 2013 respectively to the levels of 7.2% and 6.7%. This group was joined, though with far lower values, by Śląskie (4.6%) and Łódzkie (3.9%). As for the poorest voivodeships, they are again ranked in the last positions. **This means, therefore, that the special economic zones had a relatively greater impact on the labour market in the more developed regions of the country, while it was weaker in poorer ones.**

The size of employment in terms of a valid zone permits allows to evaluate the performance of investment projects from the point of view of the objective of increasing employment in areas of need. Also in this case the highest level of employment for the investment has been noticed in relatively more developed regions of Dolnośląskie and Śląskie, Wielkopolskie and Mazowieckie (though in the latter case it is due to the increased employment in several individual companies). Relatively high employment per single permit has been achieved in the zones located in the wealthier voivodeships: Łódzkie, Kujawsko-Pomorskie and Małopolskie. In contrast, **zones in the poorest voivodeships showed no significant relation of employment and valid permits.**

Smaller employment, both in absolute terms and per one investment project, in the weaker regions with at the same time relatively small investments resulted in a fairly significant variation between voivodeships in terms of state's budget costs of jobs creation in the SEZs. Taking into account the cumulative value of the assistance granted so far in the zones in the form of tax exemptions in the Years 2005–2013 and employment in companies located in SEZ at the end of 2013, one can conclude that the most expensive for the budget was to create jobs in zones located in the Kujawsko-Pomorskie (98.9 thousand PLN) and Pomorskie (90.1 thousand PLN). Creation of jobs in voivodeships of Śląskie (48.1 thousand PLN) and Łódzkie (40.1 thousand PLN) cost the budget less than half of it. One reported relation between employment and the aid granted on the average national level (between 30 and 40 thousand PLN) in the most developed voivodeships: Dolnośląskie, Wielkopolskie, Zachodniopomorskie. In the less developed voivodeships the cost of job creation was not so high and fluctuated around 20 thousand PLN except for the Warmińsko-Mazurskie (43.4 thousand PLN), for which the amount of the aid granted is determined by a support for one, large investor. So more aid expressed by the number of people employed was

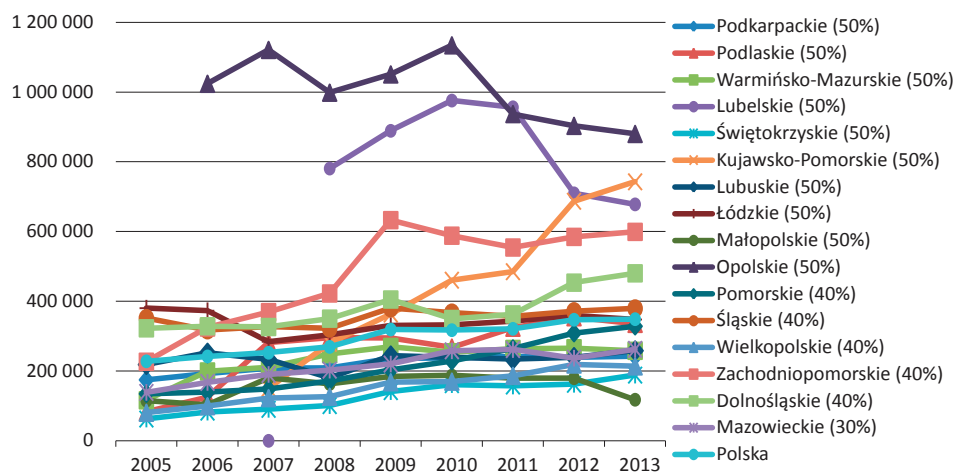
granted in prosperous voivodeships, while this support was supposed to be targeted to less developed voivodeships. This means that, in principle, **the cost to the state budget of creating jobs (calculated as the value of the aid in the relation to the number of people employed in the zones) was higher in relatively more developed voivodeships, and significantly lower in less developed ones.**

**Figure 10. Size of State Aid Granted to Entrepreneurs in Poland in Relation to the Value of Investments in Special Economic Zones**



Source: Data from Ministry of Economy and Office of Competition and Consumer Protection.

It should be stressed that this is not the state aid, but the investments made by entrepreneurs that create jobs. Comparing the value of the investments to the employment in the zones one can capture the relative cost for entrepreneurs and pre-assess the project in terms of capital and labour intensity. At the beginning of the studied period the value of investments calculated per one job amounted to an average of 230 thousand PLN. Far the most capital-intensive investments emerged in the relatively most developed voivodeships, i.e. Śląskie (351.7 thousand PLN), Dolnośląskie (322.7 thousand PLN), but also in just a little less developed than them, Łódzkie (380 thousand PLN) (see Figure 11). In subsequent years, the value of created jobs calculated as the value of investments per one employee increased in richer regions much faster than it did in the poorer ones. Opolskie and Lubelskie are exceptions to this rule, where the investment of individual entrepreneurs significantly changed the overall picture. In consequence, it can be concluded that the **better developed voivodeships acquired more capital-intensive investments (high ratio of investments' value per one job), while in the less developed regions appeared smaller investments (in relation to the employed people), which may be a proof of a larger labour intensity of implemented projects.**

**Figure 11. Value of Investments in Relation to Jobs Created in Special Economic Zones in Poland in Years 2004–2013**

Source: Data from Ministry of Economy.

## 5. Convergence of Effects of SEZs

The current EU regional policy and national policy of regional aid within it, preferred to support the poorest regions in order to achieve their convergence with more developed ones. Similar goals were to be implemented through public aid in the form of tax reliefs in special economic zones. Its maximum size was depended on the level of regional development of the voivodeship.

In order to capture changes in the degree of differentiation of the direct effects of functioning of special economic zones in different Polish voivodeships one made a comparative analysis of the volatility index (standard deviation in relation to the arithmetic mean) of selected data on the SEZs (Table 1). This made it possible to determine the dispersion of the individual values of data about the effects of actions of companies operating in the zones in division into voivodeships. In 2004 data showing both the absolute value of the investments in the zones (218%), as well as in relation to the assets of entrepreneurs (156%) and the number of licenses (149%) characterised with highest variability. As a result, the size zone aid granted and the number of jobs in the SEZs showed significant variation by voivodeship. This means that just after the accession to the EU concentration of investments in only certain voivodeships was quite high, and in some regions the zone investments were extremely low or not even present. In subsequent years one can observe declining volatility for all the analysed data. Only in 2009 the indicator showed a slight increase and

therefore during the crisis some voivodeships were affected more by changes in the value of zone investments: entrepreneurs decided to invest more in richer regions, which resulted from the reduction of the possible risk of such actions in the poorer ones, even though they had higher acceptable intensity of support.

In the period 2004–2013 (alternatively 2004–2012 or 2005–2013, depending on the availability of reliable data) one reported the greatest reduction in the rate of variation, and thus differentiation between voivodeships, for data on state aid and in the next place on investments and employment in the zones. Generally, it should be emphasized that in almost the entire studied period volatility rate received values above 60%, which indicates a very high diversity. In 2013 it has declined to the level specifying large variation (from 40% to 60%) in case of the number of jobs per a single permit (41%) and the value of investment per one person employed (56%). Thus, differentiation among provinces in employment within individual zone companies and the size of the capital invested in relation to one person employed in the SEZ decreased.

**Table 1. Volatility Index of Data Relating to the Functioning of Special Economic Zones in Poland, by Voivodeships in the Years 2004–2011 (in %)**

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Size of aid in SEZs	No data	185	130	115	131	129	127	122	126	121
Aid in relation to valid permits	No data	167	105	130	128	87	98	93	101	80
Number of active permits	93	90	90	90	89	87	85	82	82	79
Value of investments in SEZs	218	161	154	146	136	125	118	117	121	120
Share of investments value in SEZs in total value of fixed assets of entrepreneurs	149	125	114	100	84	73	70	70	75	No data
Value of investments in SEZs in relation to valid permits	156	98	84	57	59	78	87	74	68	64
Size of aid in SEZs in relation to the value of investments in SEZs	No data	124	95	96	119	104	94	85	69	65
Number of jobs in SEZs	140	113	115	111	107	101	105	105	104	101
Share of jobs in SEZs in total number of people employed	116	101	96	87	78	72	73	72	73	No data
Number of jobs per valid permit	93	79	71	55	45	48	44	42	42	41
Value of aid in SEZ per one person employed in SEZ	No data	128	100	76	92	84	80	78	76	78
Value of investments in SEZ per one person employed in SEZ	110	58	90	87	75	70	73	64	56	56

Source: Own calculations based on data from the Ministry of Economy, the Office of Competition and Consumer Protection and the Central Statistical Office of Poland.

This analysis confirms earlier observations that **there is still a significant diversity among the voivodeships both in terms of investments, public aid granted and employment in the SEZs**. This applies, above all, however, to the absolute values. By examining both the relative size of the capital invested and the number of available jobs, one can say that **gradually the impact of special economic zones on the socio-economic situation in the provinces begins to be less diversified geographically**. This does not mean, however, that still dispersion between regions is not important. It seems that currently one can only indicate some trend that due to the increasingly higher costs of economic activity in the more developed regions of the country (where SEZs were mainly created so far), investors may begin to be interested in the weaker regions, which, thanks to the European funds, are gaining attractiveness.

## 6. The Potential Impact of SEZs on the Socio-Economic Situation in the Region

Analysing the effects of functioning of special economic zones one should examine not only the direct effects of offering investment incentives like investment flows associated with the creation of jobs, but also the potential impact on the development of the region. One should, however, make a few reservations. It is impossible to separate the effects of zones from the consequences of the use of other instruments especially that after the EU accession their number and value increased significantly. In addition, the role of the zone support, as already mentioned, has consistently decreased in the considered period. It is also extremely difficult to distinguish the extent and the components of regional development that were affected by the zone investments on the level of voivodeships. Therefore, in order to approximately evaluate the effects of zones one verified the connections between investments and jobs in the zones and the selected parameters of voivodeships defining the socio-economic development.

Along with the inflow of investments to the special economic zones one would expect the increase of the value of fixed assets of enterprises in different provinces. Firstly, the new capital injected into zones directly increases their value, but also, according to the theory of the new economic geography and the concept of agglomeration of enterprises, should attract new businesses: both providers and recipients of goods and services, as well as competitors, seeking ways to reduce costs. Analysis of the correlation coefficient showed a strong relationship between the value of zone investments and the value of fixed assets of companies, although its strength strongly depends on the voivodeship (Table 2). In the case of the poorer provinces (Podlaskie,

Warmińsko-Mazurskie, Lubelskie) the correlation is slightly weaker compared to the richer regions (Dolnośląskie, Zachodniopomorskie), or those where the zones have been functioning for many years (Podkarpackie). Śląskie is a noteworthy province, due to the where lower than average correlation, which is a result of slower growth of the total value of fixed assets in the voivodeship compared to the development of zones located there.

In order to capture the possible link between the inflow of zonal investments and an increase in value of fixed assets of enterprises from a given province during a period of time one took this last data and analysed it with one year ahead (t+1) and two years ahead (t+2). On the basis of such a constructed matrix of relations one can see the strongest link between the analysed values with the ones delayed by one year in the case of almost all provinces. This may indicate the inflow of capital with a yearly delay in relation to investments in the SEZs, which is consistent with the spatial concentration of businesses theory. These observations were confirmed by the analysis of correlation of investments in special economic zones and the number of economic operators. In this case, one also observes the strongest relationship between the analysed data in the developed regions and taking into account the annual delay. The relatively weaker correlation can be captured again in the case of the poorest provinces of the country.

**Table 2. Correlation of the Value of Investments and the Number of Jobs in the Special Economic Zones with the Value of Assets of Companies, Number of Economic Operators and the Unemployment Rate**

Voivodeship	Correlation of investments in SEZs with the value of assets of entrepreneurs			Correlation of investments in SEZs with the number of entrepreneurs			Correlation of investments in SEZs with the unemployment rate			Correlation of number jobs with the unemployment rate		
	t	t+1	t+2	t	t+1	t+2	t	t+1	t+2	t	t+1	t+2
Podkarpackie (50%)	0.9901	0.9895	0.9901	0.9541	0.9709	0.9690	-0.4983	-0.2500	0.2543	-0.4983	-0.2500	0.2543
Podlaskie (50%)	0.9483	0.9583	0.9272	0.6722	0.7996	0.8020	-0.4150	0.0316	0.7284	-0.4150	0.0316	0.7284
Warmińsko-Mazurskie (50%)	0.8775	0.9381	0.9612	0.8769	0.8892	0.9086	-0.8847	-0.6991	-0.1907	-0.8847	-0.6991	-0.1907
Lubelskie (50%)	0.9048	0.9592	0.9534	0.9473	0.9258	0.9136	-0.4887	-0.1271	0.2420	-0.4887	-0.1271	0.2420
Świętokrzyskie (50%)	0.8097	0.8771	0.9151	0.7755	0.6412	0.4471	-0.8618	-0.7082	-0.3453	-0.8618	-0.7082	-0.3453
Kujawsko-Pomorskie (50%)	0.8972	0.9761	0.9757	-0.1160	-0.1863	0.0345	-0.5192	-0.0938	0.4268	-0.5192	-0.0938	0.4268
Lubuskie (50%)	0.9915	0.9542	0.9344	0.6502	0.5054	0.4982	-0.7345	-0.4754	0.0086	-0.7345	-0.4754	0.0086
Łódzkie (50%)	0.9689	0.9552	0.9422	-0.6417	-0.6110	-0.3446	-0.6191	-0.3558	0.1576	-0.6191	-0.3558	0.1576
Małopolskie (50%)	0.9537	0.9778	0.9506	0.9132	0.9576	0.9803	-0.5677	-0.1297	0.5465	-0.5677	-0.1297	0.5465

Voivodeship	Correlation of investments in SEZs with the value of assets of entrepreneurs			Correlation of investments in SEZs with the number of entrepreneurs			Correlation of investments in SEZs with the unemployment rate			Correlation of number jobs with the unemployment rate		
	t	t+1	t+2	t	t+1	t+2	t	t+1	t+2	t	t+1	t+2
Opolskie (50%)	0.9562	0.8998	0.7443	0.8828	0.8476	0.8109	-0.4100	-0.0936	0.3004	-0.4100	-0.0936	0.3004
Pomorskie (40%)	0.9931	0.9954	0.9897	0.9816	0.9808	0.9782	-0.6195	-0.4362	0.0449	-0.6195	-0.4362	0.0449
Śląskie (40%)	0.9009	0.8206	0.7349	0.8746	0.8856	0.8303	-0.4537	-0.0530	0.5639	-0.4537	-0.0530	0.5639
Wielkopolskie (40%)	0.9935	0.9913	0.9844	0.9836	0.9940	0.9687	-0.5614	-0.3834	0.1145	-0.5614	-0.3834	0.1145
Zachodniopomorskie (40%)	0.9934	0.9745	0.9380	0.9259	0.8862	0.7612	-0.6460	-0.4384	-0.0288	-0.6460	-0.4384	-0.0288
Dolnośląskie (40%)	0.9866	0.9934	0.9750	0.9221	0.9506	0.9450	-0.8271	-0.6417	-0.1626	-0.8271	-0.6417	-0.1626
Mazowieckie (30%)	0.9870	0.9939	0.9857	0.9599	0.9529	0.9813	-0.6494	-0.3634	0.1085	-0.6494	-0.3634	0.1085
Poland	0.9917	0.9936	0.9806	0.7035	0.7219	0.7208	-0.6423	-0.3561	0.1990	-0.6423	-0.3561	0.1990

Source: Own calculations based on data from the Ministry of Economy and the Central Statistical Office.

The second examined phenomenon, in addition to changes in the number of entrepreneurs in the provinces due to the inflow of investments, is the fluctuation in the unemployment rate. Comparison of both the size of the investments and the number of jobs in the zones with the unemployment rate in the voivodeship helped to capture negative strong and medium strong correlation in the more developed voivodeships and also negative, medium strong and weak in the case of the poorer regions. This may mean that the inflow of capital to the zones and creation of new jobs is generally accompanied by a decrease in unemployment.

## Conclusions

Summarising the analysis of the effects of supporting investments in special economic zones in Poland one can draw a few conclusions:

- the largest and most capital-intensive investments in SEZs are located in the most developed regions;
- the value of investments in zones both in absolute terms and in relation to the fixed assets of enterprises increase in a fastest way in the richest voivodeships;
- highest aid both in absolute terms and in relation to the acquired capital was granted in the relatively richer voivodeships;
- one reported the best financial results evaluated on the basis of the tax exemptions in relation to the made investments in more developed regions, although the intensity of regional aid was lower compared to poorer regions of the country;

- special economic zones had a potentially relatively greater impact on the labour market in the more developed regions of the country, while it was weaker in poorer ones;
- the growth rate of the number of jobs offered in the zones was similar to the dynamics of employment growth in Poland, which indicates a weak impact of zones on the creation of new jobs on the country level;
- the largest job reductions during the economic crisis occurred in zones located in the voivodeships with the lowest number of zone employees;
- relatively high employment per a single permit has been achieved in the zones located in the wealthier voivodeships;
- the cost of creating jobs to the state budget (calculated as the value of the aid on the number of employees in the zones) was higher in relatively more developed regions, and significantly lower in less developed ones;
- better developed voivodeships attracted more capital-intensive investments (high rate of value of investment per one job), while smaller investments in comparison to the number of jobs appeared in the less developed regions, which may indicate more labour-intensive projects implemented there.

One can conclude that there is still a significant differentiation among the voivodeships both in terms of investments, public aid granted and employment in SEZs. They developed more dynamically in wealthier regions and were more costly to the state's budget, while in the far poorer regions of the country, results of the zones measured both by investments and number of created jobs or by the granted aid, are much weaker. It seems, therefore, that three issues are clear: 1) whether the special economic zones should continue to function; 2) whether tax relief in the SEZs should be offered in all voivodeships of the country; 3) whether the support should be limited only to the acquisition of innovative investments or whether it should still be an instrument for the simple support of entrepreneurs from the public funds.

## Bibliography

- Ambroziak A.A. [2003a], *Rozwiązanie kwestii udzielania pomoc publicznej w specjalnych strefach ekonomicznych w Polsce I*, "Wspólnoty Europejskie", vol. 137, no. 2.
- Ambroziak A.A. [2003b], *Rozwiązanie kwestii udzielania pomoc publicznej w specjalnych strefach ekonomicznych w Polsce II*, "Wspólnoty Europejskie", vol. 138, no. 3.
- Ambroziak A.A. [2006], *Wpływ nowych wytycznych w sprawie krajowej pomocy regionalnej na funkcjonowanie specjalnych stref ekonomicznych w Polsce*, "Wspólnoty Europejskie", vol. 172, no. 3.



- Ambroziak A.A. [2009], *Krajowa pomoc regionalna w specjalnych strefach ekonomicznych w Polsce*, Warsaw School of Economics Press, Warsaw.
- Ambroziak A.A. [2014], *Review of the Literature on Determinants of the Locational Attractiveness of Regions*, in: *New Cohesion Policy of the European Union in Poland. How It Will Influence the Investment Attractiveness of Regions in 2014–2020*, A.A. Ambroziak (ed.), “Contributions to Economics”, Springer, Cham Heidelberg, New York, Dordrecht, London.
- Council of Ministers [2001], Ordinance of Council of Ministers of 20 February 2001 r. on establishing regional state aid (Journal of Laws, no. 28, item 306).
- Council of Ministers [2002], Ordinance of Council of Ministers of 15 October 2002 on admissibility of regional state aid to entrepreneurs (Journal of Laws, no. 186, item 1544).
- Council of Ministers [2004], Ordinance of Council of Ministers of 1 September 2004, on establishing of regional state aid map (Journal of Laws, no. 200, item 2050).
- Domański B., Gwosdz K (ed.) [2005], *Dziesięć lat doświadczeń pierwszej polskiej specjalnej strefy ekonomicznej, Mielec, 1995–2005*, IGiGP, Cracow.
- Dziemianowicz W., Hausner J., Szlachta J. [2000], *Restrukturyzacja ośrodków monokulturowych na przykładzie Mielca*, IBnGR, Gdańsk.
- Guideline 98/C 74/06 on National Regional Aid (Official Journal of the EU, C 74, 10.03.1998).
- Guideline 2006/C 54/08 on National Regional Aid For 2007–2013 (Official Journal of the EU, C 53, 4.03.2006).
- The Act of 20 October 1994 on special economic zones (Journal of Laws from 1994, no. 123, item 600).

