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**Working Paper**

## Income tax exemption as a regional state aid in special economic zones and its impact upon development of Polish districts

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**Institute of Economic Research Working Papers**

**No. 38/2015**

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**Adam A. Ambroziak**

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## **Income tax exemption as a regional state aid in special economic zones and its impact upon development of Polish districts**

**JEL Classification:** *H25;H32; R11; R58;*

**Keywords:** *regional state aid; special economic zones; regional development; poviats in Poland; public support*

**Abstract:** Special Economic Zones (SEZs) were established to attract entrepreneurs to invest in Polish regions in order to increase their social and economic development. One of the most important incentives offered in SEZs is state aid in the form of an income tax exemption. The objective of this paper is to verify if the intensity of regional state aid granted to entrepreneurs in SEZs has had a positive impact on the social and economic development of Polish *poviats* (a poviats is an administrative district). The public aid was received by beneficiaries when they made some profits and, instead of investing, used a tax allowance to decrease their tax base. However, part of the positive outcome of economic activities envisioned in SEZs should be the development of existing businesses and the emergence of start-ups, as well as the improved attractiveness of the region and the inflow of new investors (which should be manifested by an increase in the gross value of fixed assets per entrepreneur and a decrease in the unemployment rate at poviats level). The conducted research allowed for the conclusion that regional state aid in SEZs in the form of an income tax exemption was of a relative higher importance to the poorest regions (higher share in the amount of regional state aid), while its significance was much lower in better developed areas in Poland (lower share in the amount of regional state aid). The year-to-year study showed no relation between state aid granted in SEZs and an increase in GVFA per company or a decrease in the unemployment rate. However on the basis of analysis of the cumulated value of state aid in SEZs for the whole period from 2005 to 2013, we can say that regional state aid in the form of an income tax exemption in

SEZs had a positive influence mainly in poviats located in the poorest voivodeships.

## **Introduction**

Special Economic Zones (SEZs) were established in Poland based on the Act of 1994. However it should be underlined that they consist of many subzones created under the Council of Ministers Ordinances. According to available data, they were localized in 151 towns/cities and 217 gminas (townships) at the end of 2013 (UOKiK, 2014). This means that there were 368 subzones in Poland. This was an effect of an evolution of changes in areas and borders (as new plots were either included or excluded from them).

The main goal of the SEZs was regional development, deriving from an inflow of investors and the creation of new jobs. Due to the lower level of development of certain Polish regions and their poor quality of infrastructure and labour force, a special investment incentive was offered in the form of an income tax exemption. Due to its character, it was not available to entrepreneurs in the most sensitive and risky period, i.e. during the investment process or the launching of economic activities (production) in the SEZs. It was accessible only when economic operators gained profits from their businesses.

Therefore income tax exemption in SEZs should be classified as regional state aid. From the theoretical point of view it should be mentioned that there are two polar opposite arguments on the need for regional incentives. On the one hand, regional policy undertaken by nation should assist areas (and thus the populations therein) that are deemed to be in need of assistance by virtue of their poor levels of economic performance: an inappropriate spatial structure within a particular region may adversely affect its economic performance and reduce its ability to adjust to changes (Parr, 2014, pp. 2-5). One of the main goals of regional policy is not only to increase welfare levels in the problem regions, but also to lead to efficiency gains within the national economy: utilisation of unused resources in lagging areas and reduction of congestion and other negative externalities in the relatively prosperous regions (Hansen, 1965, pp. 7-8). An OECD report stated that fostering growth, even in lagging regions, is in the interest

of national governments as it contributes to national output without hindering growth opportunities elsewhere (OECD, 2009, p. 17). Thus a particular place might require intervention from outside in response to two sets of market and government failures: (a) a place can be trapped in a vicious circle of inefficiency or social exclusion; and (b) there can appear agglomerations' effects, which are always the result of public as well as private decisions, the former consisting of the design of institutions which are tailored to places (Barca, 2009, p. XI, 18-19).

On the other hand, there are arguments against governmental interventions at the regional level. The Keynesian approach to economic policy would allow for tackling regional development problems deriving from market failure, while completely ignoring governmental failures. Thus regional policy that includes broad incentives for firms to locate in less-developed regions is flawed and doomed to failure, because these areas lack supporting infrastructure and face competitive disadvantages (Porter, 1996, pp. 88-89). It also opens up the very real possibility of competition among governments, both at the national and sub-national levels (Gray and Duning, 2002, p. 412). The degree of labour or infrastructure scarcity necessary to induce sufficient firms to move to the outlying regions would lead to a general price increase: (a) businessmen know better than any civil servant how to choose the most efficient, lowest-cost location; and (b) if they have to set up plants at other locations the loss in efficiency may be substantial (Needleman and Scott, 1964, p. 157-158, 160). It seems that this kind of instrument generates some increase in investment and directly subsidises some output. However, only when the substitution of public for private funds has been completely eliminated, the private sector contribution to investment can be increased above the without-subsidy level, and assistance can act as an incentive to attract private funds (Wren, 1996, p. 535). In the end it seems that the taxpayers' money should not be used to subsidise private firms, and that companies themselves should decide on the most efficient location for their business (Armstrong and Taylor, 1999, pp. xiii-xiv). Thus, referring to the OECD report, any interventions should be evaluated against other uses of public funds (OECD, 2009b, p. 53).

There is a great deal of research into the factors determining investors' decisions in Poland generally, as well as in special economic zones

(IBNGR, 2014). Thus in this study we do not discuss if the financial incentive in SEZs was attractive to entrepreneurs and what was its position in a ranking of the most important location factors to invest both in Poland and in SEZs. **The objective of this paper is to verify if the intensity of regional state aid granted to entrepreneurs in SEZs (counted as a ratio of a cumulated value of state aid in the form of an income tax exemption attained by entrepreneurs holding permissions to conduct economic activities in SEZs to the value of their investments in SEZs) had a positive influence on the social and economic development of poviats in Poland.**

The impact on a regional development was studied by analyzing changes in the gross value of fixed assets (GVFA) per entrepreneur and the unemployment rate in the period of 2005-2013. It is assumed that state aid in the form of an income tax exemption was granted to an entrepreneur when a company gained profit due to operating its business within the framework of special economic zones. A positive outcome of economic activities in SEZs should be accompanied by the development of existing businesses through new investments and the emergence of start-ups, as well as in an improved image and attractiveness of the region and an inflow of investors not necessarily interested in the allowances offered by SEZs (which should be manifested by an increase in GVFA per entrepreneur). A greater involvement of manufacturing and service businesses in the region should increase the demand for labour and, consequently, stimulate the labour market (which should be reflected in a drop in the unemployment rate).

## **1. Methodology of the research<sup>1</sup>**

The data relating to selected indicators of regional development (gross value of fixed assets per entrepreneur and unemployment rate at the poviats level) comes from Local Data Bank of the Central Statistical Office (GUS). Data concerning state aid derives from the Office for Competition and

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<sup>1</sup> The methodology and breakdown of poviats categories upon regional development was earlier used by the author in article entitled "Investments in special economic zones and their impact upon development of poviats in Poland" – to be published.

Consumer Protection. It should be noted that there are many forms of granting regional state aid to entrepreneurs in SEZs, however this study covers only income tax exemption granted to entrepreneurs with a SEZs valid permission. Data concerning the size of investment in SEZs comes from entrepreneurs obliged to report them to the Ministry of Economy.

Research was conducted in poviats (NUTS 4) because recent studies for voivodeships (NUTS 2) have not enabled researchers to capture the impact of selected categories of financial public assistance (Ambroziak 2014b). While other research suggests that companies in SEZs attracted workers and suppliers from the poviats in which they were based or from their neighbouring areas (Ambroziak 2009).

In order to capture the potential impact of SEZs on selected indicators of social and economic development we conducted counterfactual impact evaluation, i.e. the comparison of achieved results with estimated outcomes which could have emerged in the absence of the intervention in the form of an income tax exemption in SEZs (European Commission 2014, Gertler et al. 2011). This method should allow for verifying the assumed causal effect between the intervention - consisting of the functioning of SEZs and attracting investors – and the effects for the poviat measured by changes in indicators of regional development. To this end, we selected an experimental (treatment) group composed of poviats with enterprises in SEZs and a control group of poviats without SEZs.

Since the study was aimed at assessing the impact on social and economic development, poviats from both groups should be statistically equivalent: a) identically respond to intervention, b) be identically influenced by external factors and interventions, c) be identical when it comes to their characteristics. The first two criteria were fully met by all poviats in Poland. SEZs might be established anywhere in Poland without any location restrictions and there were no administrative regulations, which would change the position of individual poviats. However, the third condition concerning the homogeneity of characteristics was not met by all poviats due to unequal regional development and their location in a particular voivodeship (what meant differences in maximum regional state aid intensity – the highest level was available in the least developed voivodeships). To identify the subgroups of poviats within the experimental and control groups we took into account:

- their relative regional development calculated as *GDP per capita* in relation to the EU average in 2005 (since GDP data for NUTS 4 poviats were not available, we used the data for sub-regions NUTS 3, treating them as relatively close to the real-life situation in poviats);
- relative regional development level in the voivodeship (NUTS 2) where a given poviat is located (calculated as *GDP per capita* in relation to the EU average in 2005).

To eliminate statistical differences in regional development and in admissible aid intensity in SEZs (i.e. with respect to characteristic features) we applied the matching technique. This consisted in distinguishing and comparing analyzed data from poviats in experimental and control groups based on the 3-point regional development scale. The scale was used by the European Commission in its works on the regional aid map (Guideline 2006; Ambroziak 2014a). It included the following areas:

- where *GDP per capita* was not higher than 45% of the EU average,
- where *GDP per capita* was above 45% but not higher than 60% of the EU average,
- where *GDP per capita* was above 60% but not higher than 75% of the EU average.

Finally, seven categories of poviats in Poland in each group (experimental and control) were identified (Box 1). It was also important to grasp the differences among poviats of the experimental group taking into account the average of state aid intensity in SEZs (counted as an average of the ratio of the value of state aid granted to entrepreneurs to their investments in SEZs). Taking account of the above indicator, we identified four subgroups within the experimental (treatment) group of poviats:

- where the average of state aid intensity in SEZs was not higher than 5%;
- where the average of state aid intensity in SEZs exceeded 5% but was not higher than 20%;
- where the average of state aid intensity in SEZs exceeded 20%
- where state aid was not granted in SEZs.



**Box 1.** Categories of poviats depending on the regional development of voivodeships, in which they were located

Categories of poviats reflecting their relative development and the development of voivodeships, in which they were located:

- I.1. poviat whose GDP *per capita* was not higher than 45% of the EU average located in a voivodeship whose GDP *per capita* was not higher than 45% of the EU average (191 cases); (classification: voivodeship I, poviat 1.; category: I.1. (cat. I.1.);
- I.2. poviat whose GDP *per capita* was above 45% but not higher than 60% of the EU average located in a voivodeship whose GDP *per capita* was not higher than 45% of the EU average (5 cases); (classification: voivodeship I, poviat 2.; category: I.2. (cat. I.2.);
- II.1. poviat whose GDP *per capita* was not higher than 45% of the EU average located in a voivodeship whose GDP *per capita* was above 45% but not higher than 60% of the EU average (97 cases); (classification: voivodeship II, poviat 1.; category: II.1. (cat. II.1.);
- II.2. poviat whose GDP *per capita* was above 45% but not higher than 60% of the EU average located in a voivodeship whose GDP *per capita* was above 45% but not higher than 60% of the EU average (22 cases); (classification: voivodeship II, poviat 2.; category: II.2. (cat. II.2.);
- II.3. poviat whose GDP *per capita* was above 60% but lower than 75% of the EU average located in a voivodeship whose GDP *per capita* was above 45% but not higher than 60% of the EU average (15 cases); (classification: voivodeship II, poviat 3.; category: II.3. (cat. II.3.);
- III.1. poviat whose GDP *per capita* was not higher than 45% of the EU average located in a voivodeship whose GDP *per capita* was above 60% but not higher than 75% of the EU average (25 cases); (classification: voivodeship III, poviat 1.; category: III.1. (cat. III.1.);
- III.2. poviat whose GDP *per capita* was above 45% but not higher than 60% of the EU average located in a voivodeship whose GDP *per capita* was above 60% but not higher than 75% of the EU average (15 cases); (classification: voivodeship III, poviat 2.; category: III.2. (cat. III.2.).

In addition we identified three groups of poviats which were not included in the study because they were individual cases and no comparative analysis was feasible:

- I.3. poviat whose GDP *per capita* was above 60% but not higher than 75% of the EU average located in a voivodeship whose GDP *per capita* was below 45% of the EU average; (classification: voivodeship I, poviat 3.;

category: I.3. (cat. I.3.);

- II.3. powiat whose GDP *per capita* was above 75% of the EU average located in a województwo whose GDP *per capita* was above 45% but not higher than 60% of the EU average, (classification: województwo II, powiat 3.; category: II.3. (cat. II.3.);
- III.4. powiat whose GDP *per capita* was above 75% of the EU average located in a województwo whose GDP *per capita* was above 75% of the EU average; (classification: województwo III, powiat 4.; category: III.4. (cat. III.4.).

Explanatory note:

Numbering X.Y.: X – województwo category, Y – powiat category.

Classification: I/1 - GDP *per capita* not higher than 45% of the EU average (the poorest/the least developed województwa/powiats);

Classification: II/2 - GDP *per capita* above 45% but not higher than 60% of the EU average (less developed województwa/powiats);

Classification: III/3 - GDP *per capita* above 60% but not higher than 75% of the EU average (more developed województwo (Mazowieckie) and powiats).

Source: own studies.

In the study we decided to apply the experimental difference-in-differences approach. This consists in deducting the difference in the outcome before and after the intervention in the control group from the same difference in the experimental group, in order to estimate the impact of the intervention. The method allows for ignoring (a) constant differences in the performance of powiats resulting from the level of regional development (and investment attractiveness); (b) effects of external factors, which influence them; and (c) characteristics which are irrelevant or difficult of statistical observation. It also enables one to capture the effects which emerge in relation to the intervention in the experimental group (European Commission 2012, Gertler et al. 2011). Differences in changes in the experimental group observed in comparison to the changes in the control group were interpreted as the impact of regional state aid in SEZs on the development of powiats.

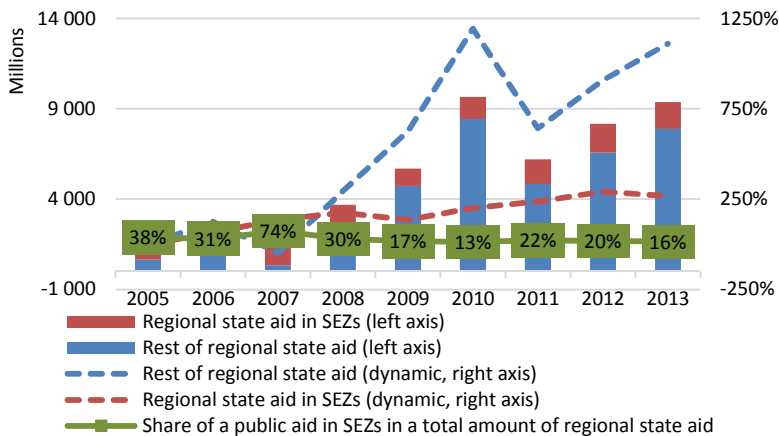
## 2. Regional state aid in special economic zones

Public aid granted in special economic zones is a type of regional state aid. The regional character of public assistance is revealed in goals and

problems which are addressed, as well as in the territorial dimension of permissible assistance. It was permitted, under the EU law, if it was granted to assist the development of the most disadvantaged regions by supporting investment and job creation. Moreover it should promote the expansion and diversification of the economic activities of enterprises in the less-favoured regions, in particular by encouraging firms to set up new establishments there (Guidelines 2006).

Regional state aid became one of the most important components of public support to entrepreneurs in Poland following its accession to the European Union. In 2005 it amounted 1,057 mln PLN, which represented about 9.1% of the total public support in Poland. In subsequent years, due to a huge inflow of EU funds and their distribution mainly to entrepreneurs in the poorest areas, the value of regional state aid increased to over 9,000 mln PLN, which constituted 54.3% of state aid in 2013 (UOKiK 2006, 2014). As regards public support in SEZs, its share in value of regional state aid has varied from 38% in 2005 through to 74% in 2007, when there was a break in the offering of EU funds, to 16% in 2013. The drop in the overall share was the result of the dramatic increase in the total value of regional state aid, not a decrease in public aid granted to SEZs (Figure 1.).

**Figure 1.** Changes in value, dynamic and share of regional state aid and public support in SEZs and in Poland.



Sources: Own calculations based on data from the Office for Competition and Consumer Protection and the Ministry of Economy.

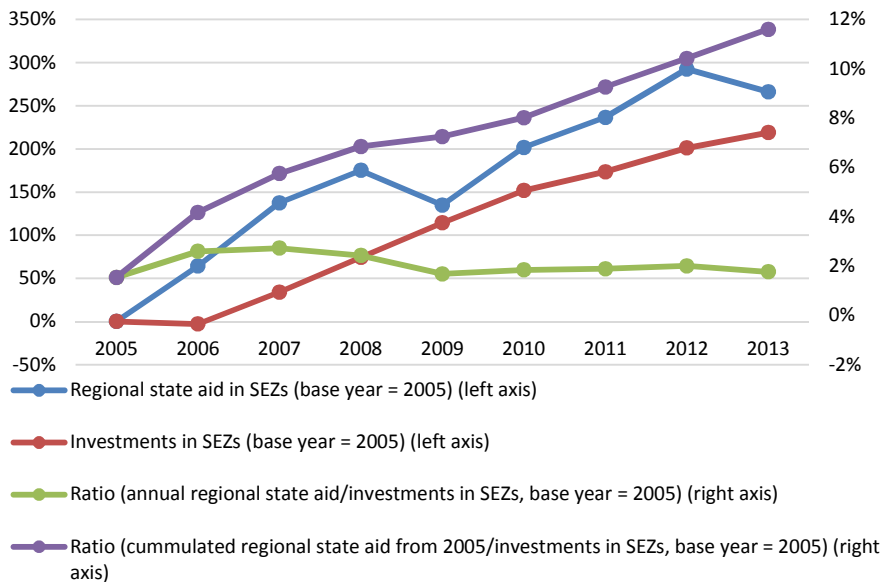
The value of state aid granted to special economic zones grew from 406 mln PLN in 2005 to 1,488 mln PLN in 2013 (3.7 times), while in that same period the value of investments in SEZs increased from 26,455 mln PLN to 84,350 mln PLN (3.2 times). Thus in analyzing the increase in value of state aid and the amount of capital invested in SEZs we can observe a strong positive correlation between them (the Pearson correlation indicator recorded a level of 0.93). However it should be noted that the increases in investment were much more stable in comparison to the changes in the value of regional state aid in the form of an income tax exemption to companies in SEZs. Both values rose in the three years after Poland's accession to the EU, while the value of public support decreased in 2009 as a result of economic crisis in the EU. In the next years, the value of public aid in SEZs grew, with the exception of 2013, when it dropped again (Figure 2.).

It is worth observing that on the basis of year-to-year analysis we can state that the relation of value of state aid to investments in SEZs reached 2.7% in 2007, then decreased in 2008 and 2009 due to economic problems in Europe, followed by a rather moderate increase in subsequent years. Nevertheless its value overall ranged between 1.5 and 2.7%.

In order to evaluate the intensity of state aid in SEZs the ratio of cumulated state aid to investments in SEZs should be analyzed for the period 2005-2013. First, the value of investments in SEZs increased due to the inflow of new entrepreneurs, as well as the expenditures of existing companies within the SEZs every year. However at the same time it was also decreased as a result of either an outflow of investors or a closure of economic activities within the SEZ permits. Second, the cumulative amount of regional state aid granted to entrepreneurs in the form of an income tax exemption in SEZs increased every year, including when annual growth in value decreased in comparison to the previous year. Finally, we can observe that a relation between the value of cumulative state aid and investments in SEZs increased on average by 1 percentage point yearly, from 1.5% in 2005 to 11.6% in 2013. This was the result of a lower dynamism of an investment inflow into SEZs in comparison to the cumulative amount of tax breaks granted to companies in SEZs. It seems that this trend is irreversible. First, all investors in SEZs are interested in benefiting from all admissible amounts of money available resulting from

tax exemptions. Second, the period of functioning of SEZs was extended twice: to 2020 and recently to 2026, which still limits the investment attractiveness of SEZs to new entrepreneurs and reduces the opportunity to benefit from tax breaks for a longer time.

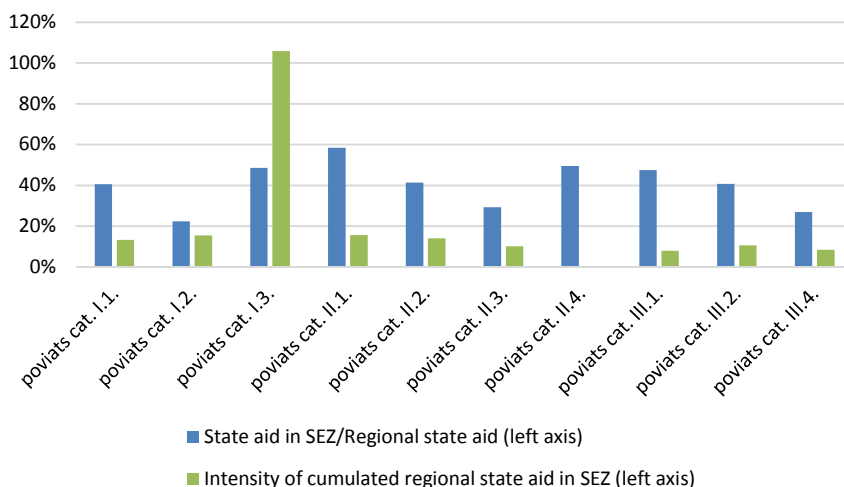
**Figure 2.** Dynamic of changes in the value and ratio of state aid and investments in SEZs.



Sources: Own calculations based on data from the Office for Competition and Consumer Protection and the Ministry of Economy.

As regards regional distribution, the highest average ratio of public support in the form of an income tax exemption in SEZs to total regional state aid was observed (excluding the individual poviats classified in cat. I.3, II.4 and III.4) in poviats cat. II.1 (58.4%), III.1 (47.5%) and II.2 (41.3%) in the period of 2005-2013. The lowest level was reached by poviats cat. I.2 (22.3%) and II.3 (29.3%) (Figure 3.). **This means that regional state aid in the form of an income tax exemption in SEZs was of a relative higher importance in the least developed regions, while other sources and types of regional state aid (including more complicated to use EU funds) were more widely offered in the better developed areas in Poland.**

**Figure 3.** Average ratio of state aid in SEZs to regional state aid and average intensity of cumulative regional state aid in SEZs in selected poviats in Poland in 2005-2013.



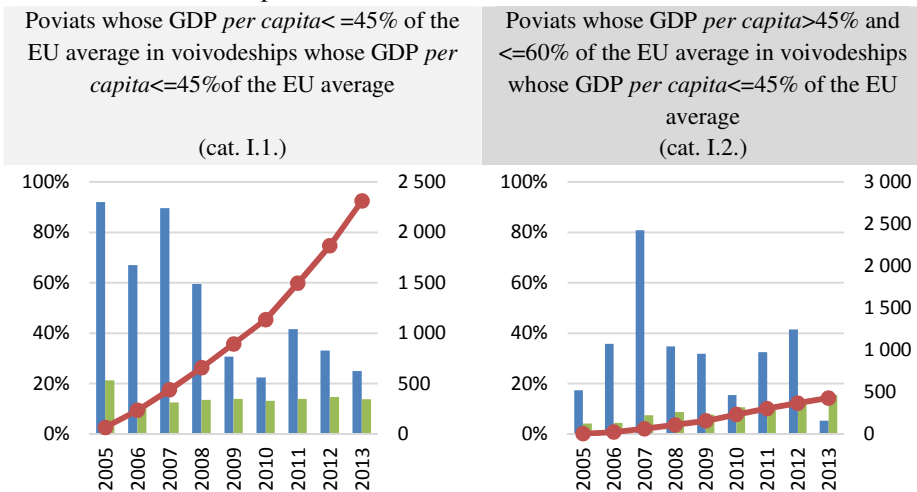
Sources: Own calculations based on data from the Office for Competition and Consumer Protection and the Ministry of Economy.

The biggest nominal amount of regional state aid in the form of an income tax exemption in SEZs was granted to entrepreneurs in poviats cat. I.1, II.1 (c.a. 2,386 mln and 2,691 mln PLN) and in cat. II.2, II.3 (which reached half of those amounts). The ratio of public support in SEZs to total regional state aid amounted to over 80% in poviats cat. I.1 in 2005-2007, and dramatically dropped to 25-40% in subsequent years. In case of the second group of poviats (cat. II.1), the share of state aid in SEZs to regional state aid lowered from the level of 60-70% to 26-38% in the period of 2005-2013. In case of poviats I.2, III.1 and III.2 one can observe that the cumulative amount of public support granted in SEZs was much lower (below 500 mln PLN), while the share of its annual value in regional state aid dramatically changed in the period 2005-2013. **This means that entrepreneurs in poviats at all levels of development, but located in a more developed voivodeship, where the share of public aid in SEZs in total regional state aid was the lowest, received regional public support mainly outside the framework of special economic zones. Probably the majority of this assistance came from EU funds, which are much more**

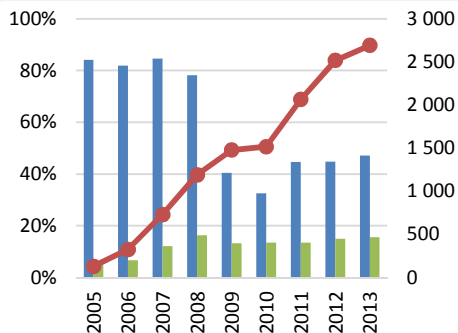
**complicated to use, but available immediately. At the same time, companies from the poorest and less developed regions got relatively much more assistance from the national budget through tax exemptions in SEZs, which however are offered after the investment period and depend on profit from sales of goods and services produced in SEZs.**

As it was stated earlier, the amount of state aid available to each entrepreneur in the SEZs depends on three factors: (a) the date of receipt of permission (if it is before 2001, then the rules concerning regional state aid intensity do not apply); (b) the investment localization according to voivodeship (different levels of an admissible intensity of regional state aid for different voivodeships); and (c) the amount of capital invested by an entrepreneur in a given SEZ. The highest average intensity (counted for each entrepreneur without considering date of receipt of permission to conduct economic activities in an SEZ) was observed in poviats cat. II.2 and II.1, I.2, and I.1, where the average intensity was estimated at the level c.a. 14-16% (Figure 4). This intensity level was much lower in poviats cat. III.2 (10.7%) and only half in the case of the other poviats cat.: II.3, III.1 and III.4.

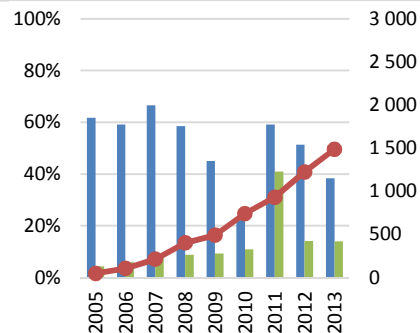
**Figure 4.** Changes in the value and ratio of state aid in SEZs to regional state aid in selected poviats in Poland in 2005-2013.



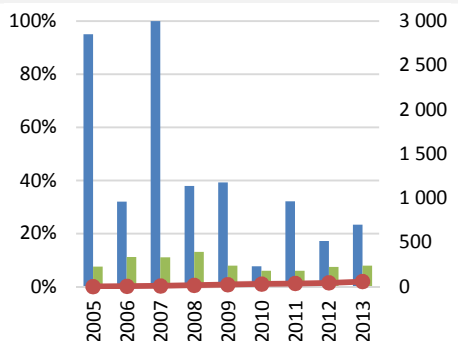
Poviats whose GDP *per capita*  $\leq 45\%$  of the EU average in voivodeships whose GDP *per capita*  $> 45\%$  and  $\leq 60\%$  of the EU average (cat. II.1.)



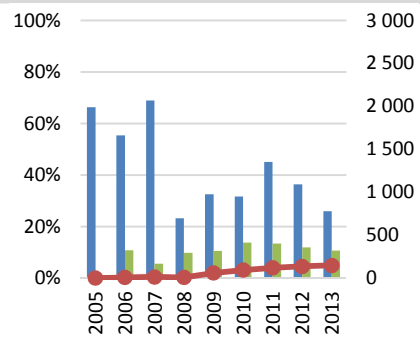
Poviats whose GDP *per capita*  $> 45\%$  and  $\leq 60\%$  of the EU average located in voivodeships whose GDP *per capita*  $> 45\%$  and  $\leq 60\%$  of the EU average (cat. II.2.)



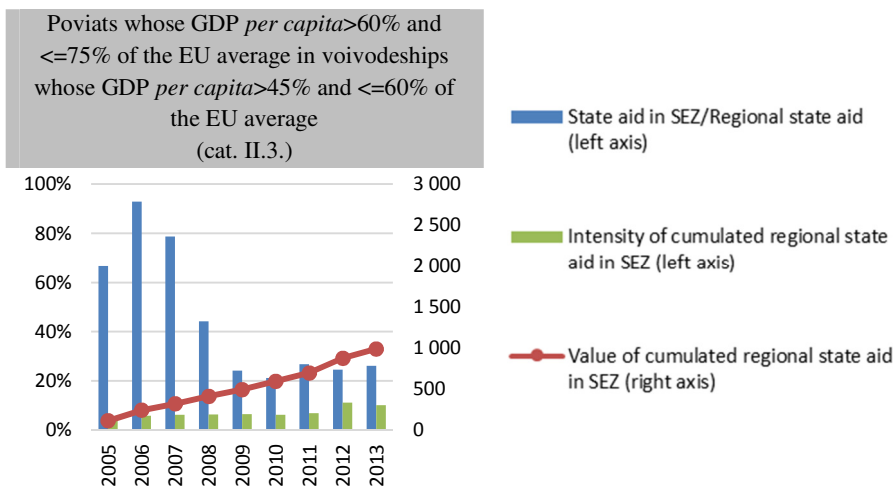
Poviats whose GDP *per capita*  $\leq 45\%$  of the EU average in voivodeships whose GDP *per capita*  $> 60\%$  and  $\leq 75\%$  of the EU average (cat. III.1.)



Poviats whose GDP *per capita*  $> 45\%$  and  $\leq 60\%$  of the EU average in voivodeships whose GDP *per capita*  $> 60\%$  and  $\leq 75\%$  of the EU average (cat. III.2.)



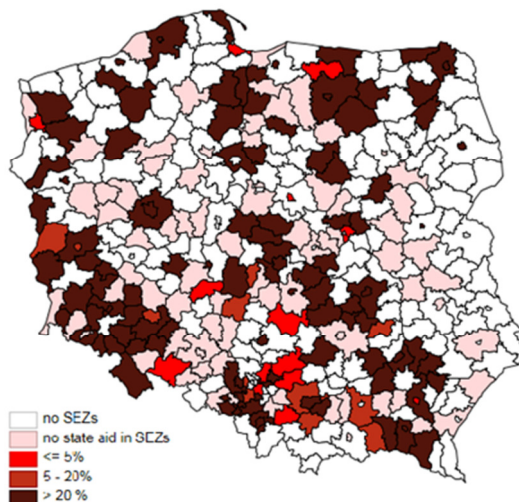




Sources: Own calculations based on data from the Office for Competition and Consumer Protection and the Ministry of Economy.

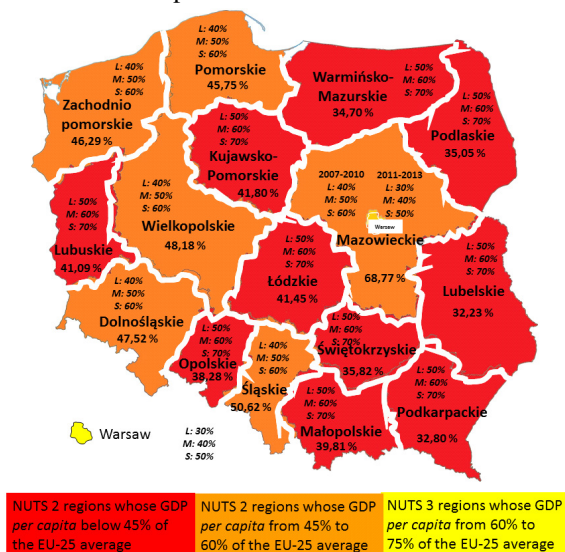
Thus the highest average intensity of state aid in the form of an income tax exemption in SEZs was recorded in poviats from the less developed and poorest voivodeships, where the ceiling on the aforementioned admissible regional state aid was the highest, while in case of the more developed voivodeships, where the ceiling on admissible regional state aid was lower, the intensity was about half. However, it should be underlined that this does not mean that ceilings on regional state aid matters in this regard. Until now there are only a few cases of companies which reached the maximum ceiling of admissible state aid in SEZs. Thus, in the case of almost all entrepreneurs, the average intensity of granted state aid in SEZs was much below the acceptable thresholds. **This means that differences in the intensities of state aid in SEZs among poviats depend on the value of investments located in SEZs. It confirms the conclusion of the previous research (Ambroziak 2015) that a relatively higher value of capital was invested in SEZs established not only in the poorest regions, but also in the slightly more developed regions of Poland (i.e. less developed, in contrast to the poorest and more developed regions) (Maps 1 and 2).**

**Map 1.** Average intensity of regional state aid in SEZs in 2005-2013.



Source: Own studies based on the Office for Competition and Consumer Protection and the Ministry of Economy.

**Map 2.** Regional State Aid Map in Poland in 2007-2013.



L – large enterprises; M – medium enterprises; S – small enterprises

Source: Own studies based on Local Data Bank of GUS, Ministry of Economy.

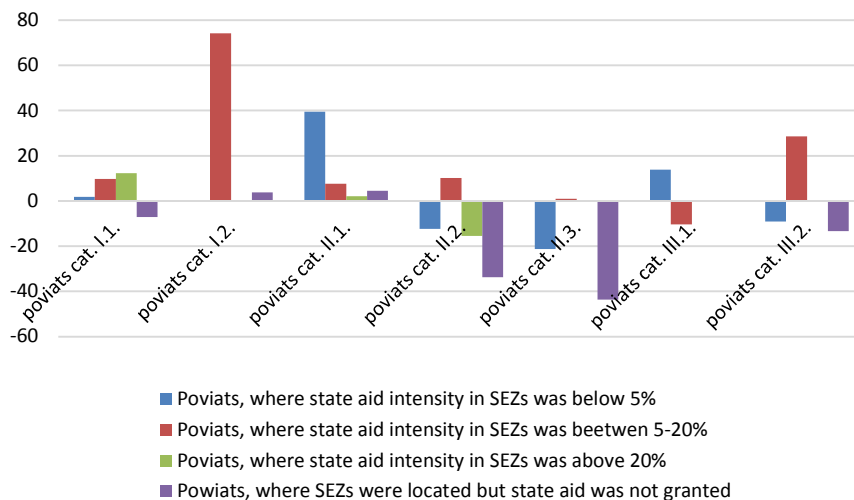
### **3. Impact of regional state aid in special economic zones upon gross value of fixed assets in companies**

As was already stated, regional state aid in special economic zones has a specific character and mechanism of receiving, and thus influencing, a region's economic and social development. Since it is granted in the form of tax exemptions from income tax, it is noticeable to entrepreneurs only after the period of investment and during the regular operation of a business in SEZs. Thus lower tax liabilities should (a) allow entrepreneurs to increase their investments; and (b) attract external capital to territories located next to SEZs (however e.g. within this same poviats). Therefore one of the measures of the impact of regional state aid granted in special economic zones upon the regional development of poviats is the change in the gross value of fixed assets (GVFA) per company, which identifies the directions and dynamics of their development. Changes in the GVFA per company result from investments not only within SEZs but also from, *inter alia*, the general situation in the country, voivodeship and poviats, the quality of economic, legal and administrative environment, infrastructure and labour. To eliminate the impact of these factors and to reflect solely the impact of regional state aid granted within the framework of SEZs on the gross value of fixed assets in companies, we divided poviats into categories reflecting the level of their regional development and that of the voivodeships in which they are located. To this end we:

- compared the ratio of average gross value of fixed assets per company in 2013 to that of 2005 in (a) poviats in the experimental group and in (b) poviats in the control group (without SEZs), broken down by levels of regional development (calculated as GDP *per capita* in relation to the EU average) and, in the case of the experimental group, also by average of the intensity of regional state aid granted in SEZs in poviats;
- compared the average year-to-year change for subsequent years between 2005-2013 of the average gross value of fixed assets per company in (a) poviats in the experimental group and (b) in poviats in the control group (without SEZs) broken down by levels of regional development (calculated as GDP *per capita* in relation to the EU average) and, in the case of the experimental group, also by the intensity of regional state aid granted in SEZs in poviats;

In the period of 2005-2013 the highest increase in gross value of fixed assets per entrepreneur in comparison to the control group (without SEZs) - was recorded in poviats cat. I.2. Taking into account the cumulative values of state aid and GVFA per company at the end of 2013, one can say that poviats with an intensity of state aid in SEZs ranging between 5-20% were the biggest contributors to this growth. However, this is only a statistical effect, because the highest annual growth was observed in 2007, 2008 and 2011 in poviats where state aid in SEZs was not granted. Only in 2012 was a noticeably faster increase in GVFA per entrepreneur observed in poviats where the intensity of state aid in SEZs ranged between 5 and 20% in comparison to the control group. Then, in 2013 the increase in GVFA per entrepreneur in poviats cat. I.2 was dramatically smaller than in poviats without SEZs.

**Figure 5.** Changes in gross value of fixed assets per company in poviats with SEZs by categories, compared to poviats without SEZs, in 2005-2012 (in p.p.).



Source: Own studies, Office for Competition and Consumer Protection, Local Data Bank of GUS and the Ministry of Economy

Also a higher increase in GVFA per entrepreneur in comparison to control group was observed in the period of 2005-2013 in both poviat categories: II.1 and I.1 (from the poorest voivodeships). In case of poviats

cat. II.1, the aforementioned increase was observed in poviats where average intensity of regional state aid in SEZs was below 5%. However, the highest increase in annual change of GVFA per company was noted in 2007, and in subsequent years in poviats with a low intensity or with SEZs where state aid was not granted. It should be noted that this outcome partially resulted from the different starting levels of GVFA in the poorest and in the best developed regions: the lower the original value the higher change in GVFA per company.

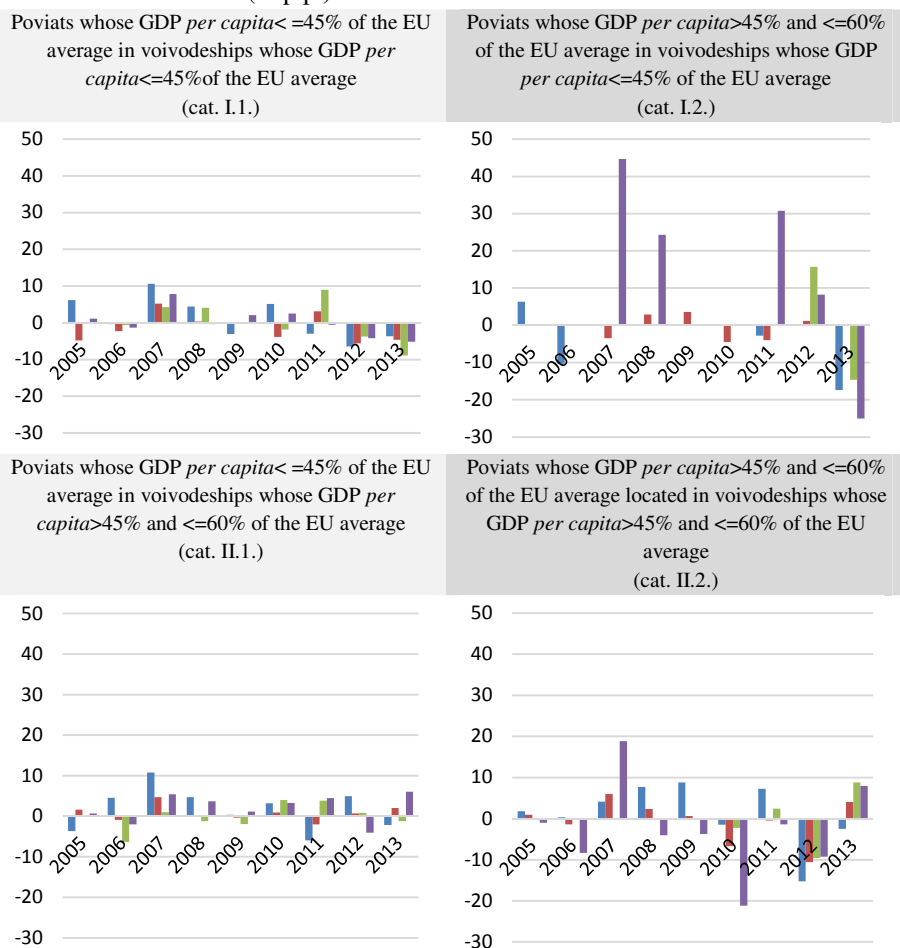
As regards poviats cat. I.1, where the average intensity of state aid in SEZs was above 5%, they recorded a higher increase in GVFA per entrepreneur in comparison to the control group in the period of 2005-2013. The highest increase in GVFA per company compared to results in the control group was noted in 2007, 2010 and 2011, thanks mainly to the poviats where state aid was granted in SEZs (with an intensity even above 20%). It is worth underscoring that although the total amount and intensity of regional state aid in SEZs grew, there was a smaller increase in GVFA per entrepreneur in comparison to the control group in 2012-2013.

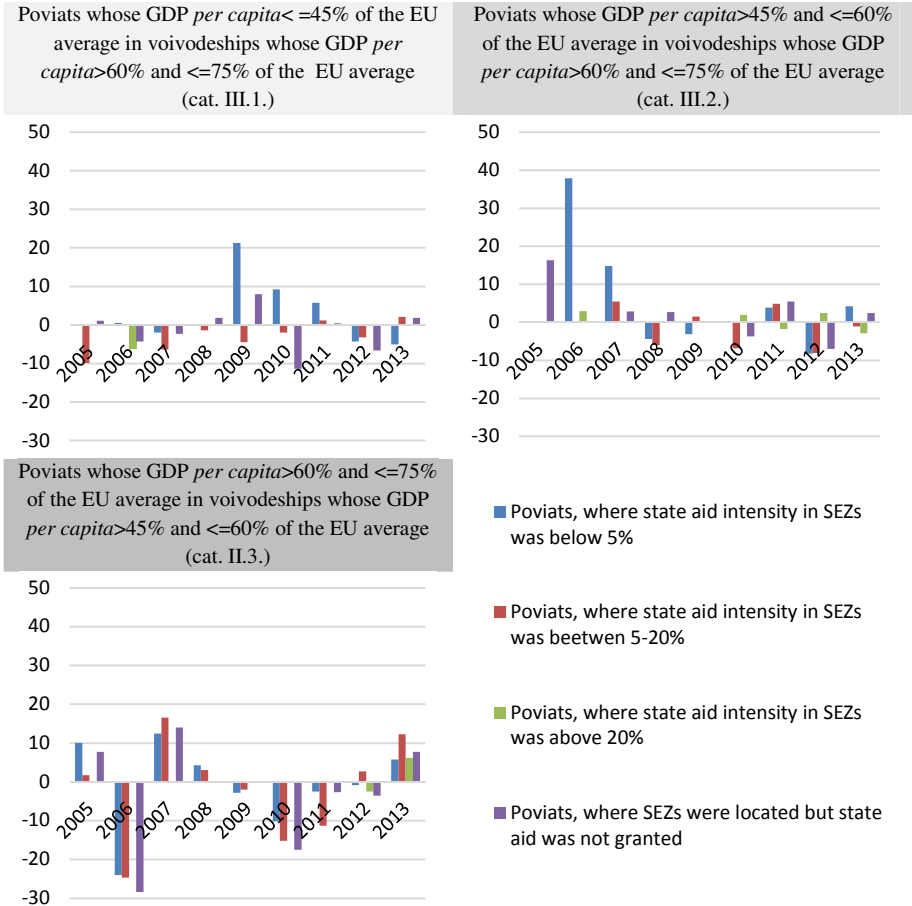
As regards poviats II.2 and II.3, located in the less developed (in contrast to the poorest and more developed) voivodeships, a smaller increase in GVFA per company in comparison to the control group without SEZs was recorded in the period of 2005-2013. During that time one can observe a high fluctuation of their position vis-à-vis poviats without SEZs. In 2007, both poviat categories recorded higher increases in GVFA per entrepreneur in comparison to the control group. The main contributors of this success were poviats where state aid intensity did not exceed 20%, moreover there were also areas where SEZs were established but no state aid was granted. In subsequent years, the annual increase of GVFA per company was lower in those poviats (regardless of the intensity of granted state aid) compared to areas without SEZs.

A similar situation was observed in poviats cat. III.1 and III.2, located in more developed voivodeships. As regards poviats cat. III.1, in the whole period of research, with the exception of 2009-2011, the increase in GVFA per company was lower compared to poviats without SEZs. It is worth noting that this situation was observed also in poviats where the intensity of regional state aid in SEZs was above 5% and sometimes even above 20%. Referring to poviats III.2 one can observe that, in comparison to regions

without SEZs, there was a higher growth of GVFA per entrepreneur in 2005-2007 and in 2011, and lower in the other years of the period covered by the study. This concerned all types of poviats cat III.1 and III.2, both those where the intensity of regional state aid was above 5% and even 20%, and those where state aid in SEZs was not granted.

**Figure 6.** Changes (year-to-year) in the gross value of fixed assets in companies in poviats with SEZs compared to poviats without SEZs in the period 2005-2013 (in p.p.).





Source: Own studies, Office for Competition and Consumer Protection, Local Data Bank of GUS and the Ministry of Economy

**Summing up this part of the study we can state that the poorest poviats, with SEZs located in the poorest and less developed voivodeships, recorded the highest increase in GVFA per company compared to poviats without SEZs. It is worth noting that the aforementioned growth was observed in regions with a higher average intensity of state aid granted in SEZs. An increase in GVFA per entrepreneur in the less developed (but not the poorest) and more developed poviats with SEZs located in less developed voivodeships was smaller compared to poviats without SEZs.**

#### 4. Impact of regional state aid in special economic zones on the unemployment rate

Special economic zones were established in Poland in order to, *inter alia*, decrease the high level of the unemployment rate observed in the mid-1990s. Therefore in this study we wished to verify whether regional state aid in the form of an income tax exemption, which should increase the attractiveness of regions to other entrepreneurs, assisted in reaching the aforementioned goal. To this end we:

- compared the ratio of the unemployment rate in 2013 to that of 2005 in (a) poviats in the experimental group, and in (b) poviats in the control group (without SEZs), broken down by levels of regional development (calculated as GDP *per capita* in relation to the EU average) and, in case of the experimental group, also by intensity of regional state aid in SEZs;
- compared the year-to-year change in 2005-2013 of the unemployment rate in (a) poviats in the experimental group, and (b) in poviats in the control group (without SEZs), broken down by levels of regional development (calculated as GDP *per capita* in relation to the EU average) and, in the case of the experimental group, also by intensity of regional state aid in SEZs.

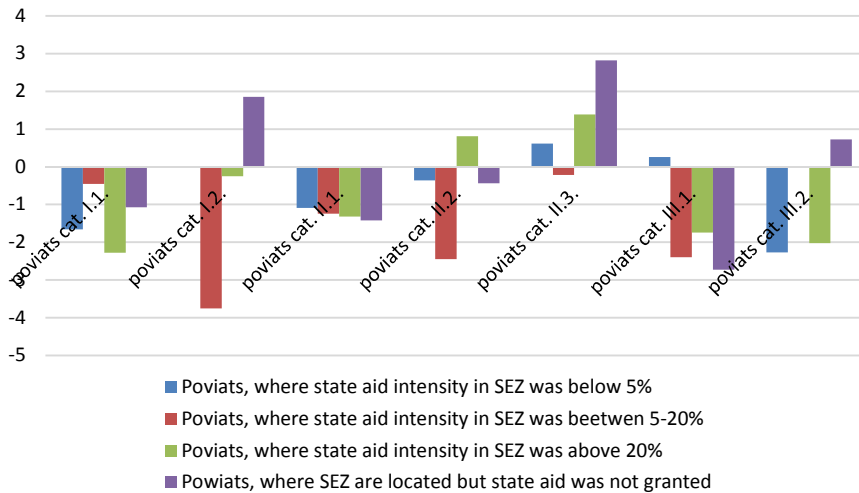
The highest reduction in unemployment compared to areas without SEZs was reported in the poorest poviats from all categories of voivodeships (cat. I.1, II.1 and III.1). The influence of poviats with SEZs on reducing the unemployment rate depended on their regional development and the intensity of state aid granted in SEZs: the poorest poviats (in terms of GDP *per capita*) with a higher intensity of state aid in SEZs were observed to achieve some reduction in their unemployment rate (Figures 7. and 8.).

In the less (in contrast to the poorest) developed poviats, cat. I.2, II.2 and III.2 from all categories of voivodeships, the total unemployment rate was also reduced much more in comparison to the control group. However it should be noted that there were regions in the experimental group which recorded worse results in comparison to those of poviats without SEZs. This concerned poviats I.2 and III.2 from the experimental group where regional state aid was not granted in SEZs, as well as poviats cat. II.2 with



an intensity of state aid granted in SEZs above 20% of investments. As regards all other regions, the only category of poviats where the control group recorded a higher reduction of unemployment rate than the experimental group was cat. II.3.

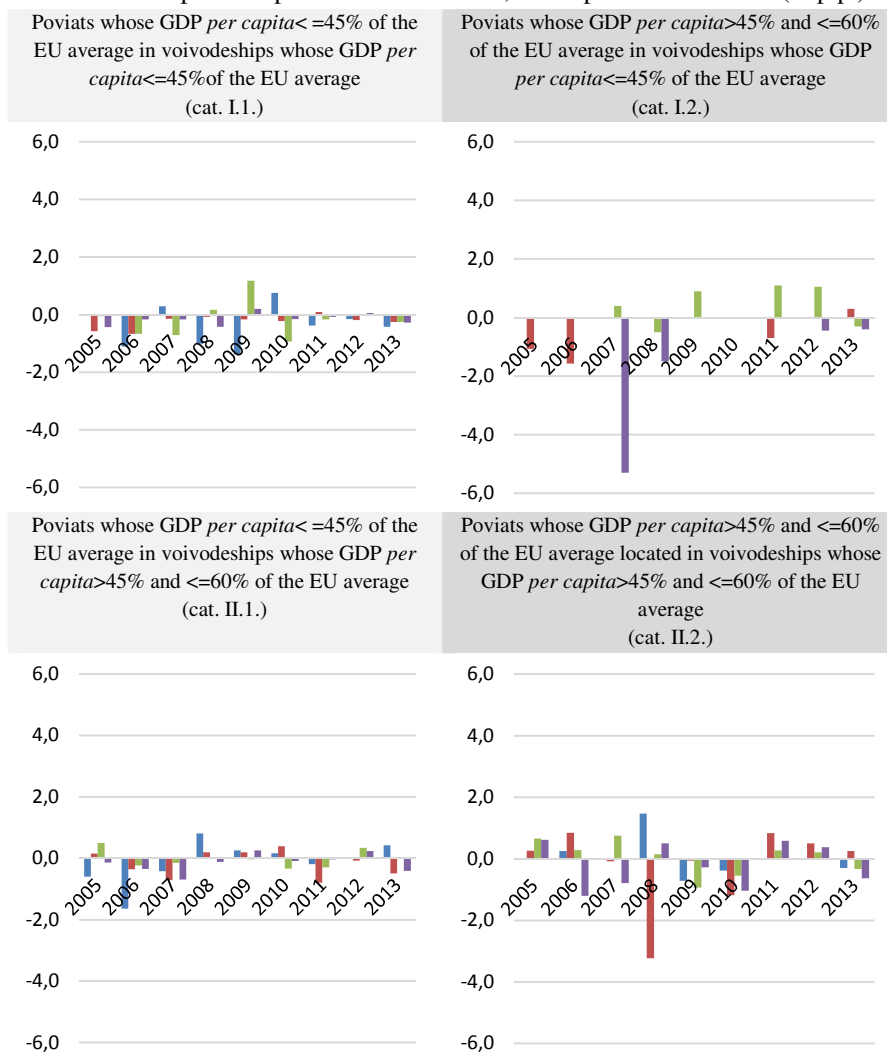
**Figure 7.** Changes in the unemployment rate in poviats with SEZs by categories, compared to poviats without SEZs, in 2005-2013 (in p.p.).

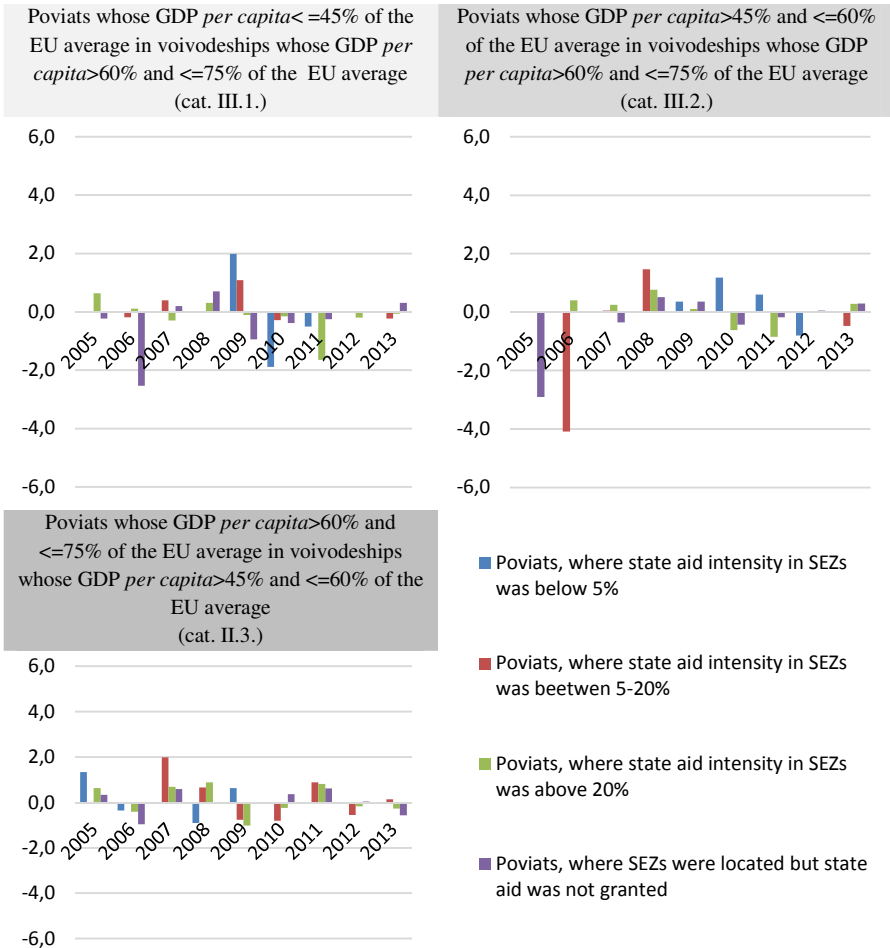


Source: Own studies, Office for Competition and Consumer Protection, Local Data Bank of GUS and the Ministry of Economy

It is worth noting that by analyzing the year-to-year situation of all the above-mentioned poviats it can be observed that there was no common pattern or relation between the intensity of regional state aid granted in the form of an income tax exemption to entrepreneurs in SEZs and a reduction of the unemployment rate. This means that the intensity of state aid in SEZs did not matter in this regard on a yearly basis. In all poviat categories under study, despite a higher intensity of regional state aid in SEZs was recorded (with the exception of cat. I.1, II.1 and III.1), there were years when the reduction in the unemployment rate was higher in poviats without SEZs.

**Figure 8.** Changes (year-to-year) in the unemployment rate in poviats with SEZs compared to poviats without SEZs, in the period 2005-2012 (in p.p.).





Source: Own studies, Office for Competition and Consumer Protection, Local Data Bank of GUS and the Ministry of Economy

**On this basis we can say that the highest and most unambiguous reductions in the unemployment rate were recorded in the poorest and less developed poviats, where the intensity of granted state aid could have a much more significant indirect impact on the labour market. These poviats were from all types of voivodeships, which suggests that the ceilings on regional state aid intensities established in EU law have not had any impact yet. Partially this was the result of the higher level of basic unemployment rates in the poorest and less developed poviats.**

**As regards the intensity of state aid in SEZs, it cannot be excluded that a future increase in state aid and a smaller inflow of investments to SEZs could lead to a decrease in the importance of the relation between intensity of state aid granted in SEZs and a reduction in the unemployment rate.**

### **Conclusions**

On the basis of the research into the relation between intensity of state aid in the form of a tax exemption granted to entrepreneurs in special economic zones and the regional development of Polish poviats, we can make some general conclusions:

- public support in SEZs was of a relatively higher importance in the least developed regions, while other sources of regional state aid were more widely offered in the better developed areas in Poland;
- differences in the intensities of state aid granted in SEZs among poviats depend on the value of investments located in SEZs and are not related to the ceilings of maximum admissible regional state aid in voivodeships established in EU law;
- the poorest poviats with SEZs located in the poorest and less developed voivodeships recorded the highest increase in the gross value of fixed assets per company compared to poviats without SEZs;
- there is a link between changes in the GVFA per entrepreneur, the intensity of state aid granted in SEZs, and the level of regional development of poviats: a higher average intensity of state aid was granted in poviats with lower regional development, and a higher increase in GVFA per company was observed compared to poviats without SEZs;
- the highest and most unambiguous reduction of the unemployment rate was recorded in the poorest and less developed poviats with the highest intensity of granted state aid in SEZs;
- the ceilings on regional state aid intensities established in EU law did not have any impact on changes in the gross value of fixed assets per company or the unemployment rate in the period 2005-2013; however, it cannot be excluded that a future increase in the value of state aid in form of an income tax exemptions in SEZs and a smaller inflow of

investments into SEZs will lead to a decrease in positive relations between intensity of state aid granted in SEZs and (a) reduction of the unemployment rate; (b) increases in GVFA per entrepreneur.

Summing up, we can observe that the intensity of regional state aid granted to entrepreneurs in SEZs had a positive influence on the social and economic development of the poorest and sometimes less developed poviats in Poland, while the more developed poviats with SEZs did not record better or much better results compared to poviats without SEZs. It seems that the lack of certainty concerning the future of SEZs in Poland can stop the inflow of new investments, thus reducing the positive impacts of special economic zones vis-à-vis the value of state aid granted to existing investors in SEZs. This proves the common and well-known statement that one governmental intervention (i.e. setting up of special economic zones in 1994) leads to the next intervention: the closure or extension of SEZs' activities.

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