



Ambroziak, A. A. (2016). Income Tax Exemption as a Regional State Aid in Special Economic Zones and Its Impact upon Development of Polish Districts. *Oeconomia Copernicana*, 7(2), 245-267. DOI: <http://dx.doi.org/10.12775/OeC.2016.015>

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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; 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 regional state aid granted to entrepreneurs in SEZs has had a positive impact on the social and economic development of Polish poviats. The conducted research allowed for the conclusion that regional state aid in SEZs in the form of an income tax exemption was of a relatively higher importance to the poorest regions, while its significance was much lower in better developed areas in Poland. Moreover 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*

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Date of submission: April 26, 2015; date of acceptance: January 9, 2016

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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.

Introduction

There are many types of geographically delimited areas offering certain incentives to businesses physically located within the zone (World Bank, 1998, p. 2). First zones were established with external trade in mind (free trade zones and export processing zones – EPZs) and aimed at the improvement of conditions for warehousing, storage and distribution facilities for trade, transshipment, and export-oriented operations. EPZs are usually custom-free and export-oriented manufacturing areas, offering preferential incentives and streamlined administration, and equipped with better infrastructure and cheap utilities (Amirahmadi & Wu, 1995, p. 829; Engman *et al.*, 2007, pp. 16-18; Angko, 2014, pp. 3-4; Lonarkar, 2014, p. 18). In many countries the zones are key policy instruments that attract foreign direct investment (FDI), boost exports, generate employment and very much needed foreign exchange (Jenkins & Arce, 2016, p. 400). The choice of the location of EPZs depends on geographical and strategic considerations: vicinity of the coast for easy access to the sea, availability of labour force, as well as specificities of a particular country (Ikeyi, 1998, p. 223). Host countries, especially developing ones, are often not ready to face the rigor of global competition, and EPZs, which are free from regulations, taxes, and tariffs are perceived as a second-best solution (Dowla, 1997, p. 561). Therefore, EPZs represent a traditional model used widely throughout the developing world for many decades. However, one should be very cautious in classifying free trade zones, because the original concept has evolved over time and has acquired a different meaning in different contexts (Wong & Chu, 1984, p. 1).

Some studies seek answers as to why the EPZs became attractive to governments in developing countries (Amirahmadi & Wu, 1995), what is the relationships between zone's performance and certain economic, political, and social variables (Yuan & Eden, 1992) and what were welfare implications of an expansion of the EPZs (Beladi & Marjit, 1992; Devereux & Chen, 1995; Schweinberger, 2003a). Moreover, a substantial concern was raised in many papers with regard to how governments may improve investment climate to attract foreign participation (Victor, 1988, p. 662) and why the identical institutional or export incentives offered in EPZs yield consequences that vary considerably by region or in time (Schrank, 2005, p. 43). A separate group of studies concerned the relationship between the benefits and costs of establishing EPZs and the overall trading regime of

the host country and the development of efficient domestic industry (Warr, 1989). We should also bear in mind studies which found that, while the benefits brought by the EPZs can be considerable, they do not always live up to expectations and can create new sets of problems for the government (Fitting, 1982, p. 732).

The next group of business areas with some governmental interventions includes special economic zones. We can observe an extensive development and an increase in the number of special economic zones since the 1980s. Although some of them include EPZs, normally they are established to attract and absorb foreign direct investment, to serve as 'pressure valves' to alleviate large-scale unemployment, especially youth unemployment; to support wider economic reform strategy, and to act as experimental laboratories for the application of new policies and approaches (Stoltenberg, 1984, p. 639; Crane, 1994, p. 72; Farole & Akinici, 2011, pp. 3-4; Chen & Jameson, 2012, pp. 208-209). Some authors observed that in selected countries, e.g. China, economic policies pursued in special economic zones followed those characteristic of most capitalist countries (Nishitateno, 1983, p. 176; Wang & Bradbury, 1986, p. 308). For less developed countries, SEZs can be a catalyst of structural transformation and a shift of labour and economic activity from low-productivity agriculture to labour-intensive manufacturing (Willmore, 1996; Bräutigam & Tang, 2014, p. 78) and/or from a planned to a market economy (Litwack & Qian, 1998, p. 118; Ge, 1999, p. 1267).

As regards governmental tools within SEZs, some authors discussed static state interventions in SEZs, while others analysed dynamic, strategic state interventions in SEZ-led economic growth, taking into account the need for a government to quickly respond to changes in broader economy by focusing on evolutionary objectives, incentives and facilities offered (Aggarwal, 2012, p. 873).

Many studies on SEZs' impact were aimed at assessing their achievements in terms of how much foreign capital they attracted and to what extent they contributed to export growth, foreign exchange earnings, and technology transfer (Wong, 1987; Taneja & Kumar, 2014; Sigler, 2014; Lee, 2015). Also new tendencies in geographical distribution (Ambroziak, 2009) and changes in economic activities within SEZs were evaluated (Palit, 2009) as well as, consequences for labour (ILO, 2014), including work quality (Parwez, 2015), results to budgets of local (Pastusiak & Jasiniak, 2015) or central authorities (Schweinberger, 2003b; Tantri, 2015), implications for the environment (Liu *et al.*, 2007), and urbanisation in the context of acquisition of land (Jenkins *et al.*, 2015).

More advanced studies deal with effects and the mechanisms of spatially targeted subsidies (Kline, 2010), SEZs impact on the local economy (Wang, 2013) and on mega-regions (Ortega *et al.*, 2015). Other studies were dedicated to the relationship between crisis period and SEZs performance (Nazarczuk, 2013) and the impact of SEZs on economic situation outside of the SEZs territory (Ciżkowicz *et al.*, 2015). Our research is a continuation of previous studies: we attempt to answer the fundamental question concerning the impact of SEZs on the social and economic development of regions in Poland.

Fourteen Special Economic Zones (SEZs) were established in Poland in the period of 1995–1997. However, it should be emphasized that they consist of many subzones created under the Council of Ministers Ordinances. According to available data, they were located in 151 towns/cities and 217 gminas (municipalities) at the end of 2013 (UOKiK, 2014). This means that there were 368 subzones in Poland in 2013. 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 in a given region.

Therefore, income tax exemption in SEZs was 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 a 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) agglomerations' effects can appear, 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 & 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 & 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 & 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 its position was 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 regional state aid granted to entrepreneurs in SEZs had a positive impact 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).

Research Methodology¹

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 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 SEZ 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, 2015), 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*

¹ 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.

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 poviats 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 (which meant differences in maximum ceilings on regional state aid – 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, 2014). 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 (Table 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 the above indicator into account, 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.

Table 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; 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; 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; 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 (28 cases); (classification: voivodeship II, poviat 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; 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; 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; cat. III.2).

Table 1 continued

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; cat. I.3);
 - II.4. poviat whose GDP *per capita* was above 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; (classification: voivodeship II, poviat 3; cat. II.4);
 - III.4. poviat whose GDP *per capita* was above 75% of the EU average located in a voivodeship whose GDP *per capita* was above 75% of the EU average; (classification: voivodeship III, poviat 4; cat. III.4).
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Explanatory note:

Numbering X.Y.: X – voivodeship category, Y – poviat category.

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

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

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

Source: own studies.

In the study, we decided to apply the 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 poviats 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 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 poviats.

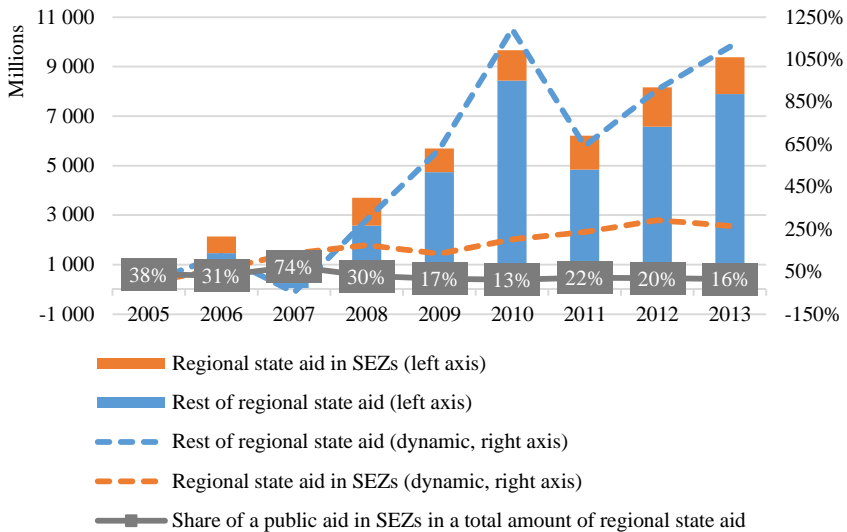
Regional State Aid in Special Economic Zones

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 permis-

sible 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; Ambroziak 2009, 2014).

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).

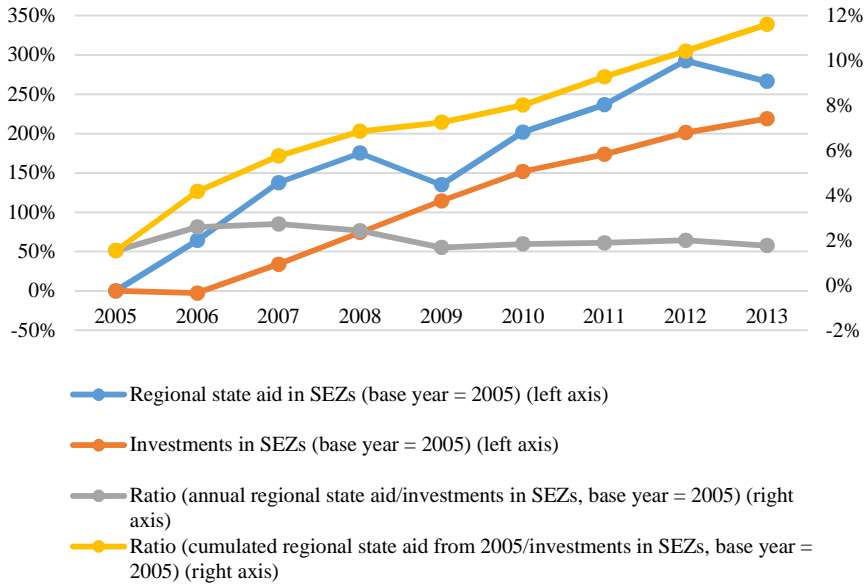
Figure 1. Changes in value, dynamic and share of regional state aid and public support in SEZs and in Poland



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

The annual value of state aid granted to companies in 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 at the end of the year increased from 26,455 mln PLN to 84,350 mln PLN (3.2 times). 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 slightly again. It is worth observing that on the basis of year-to-year analysis it can be stated that the relation of value of regional state aid to investments in SEZs reached 2.7% in 2007, then decreased to 1.7% and 1.8% in 2009 and 2010 due to economic problems in Europe, followed by a rather moderate increase in subsequent years (Figure 2).

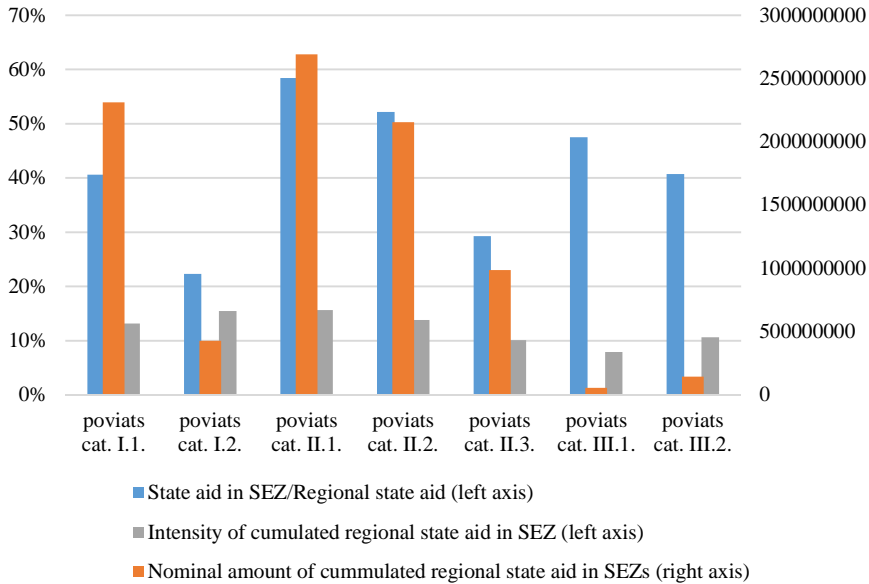
In order to evaluate the intensity of state aid in SEZs, the ratio of cumulated state aid to investments in SEZs should be analyzed for the period 2005–2013. First, the value of investments in SEZs increased due to the inflow of new entrepreneurs, as well as the expenditures of existing companies within 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. Secondly, 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, it can be observed that the 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. Firstly, all investors in SEZs are interested in benefiting from all admissible amounts of money available resulting from tax exemptions. Secondly, 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 biggest nominal amount of cumulated regional state aid in the form of an income tax exemption in SEZs in 2005-2013 was granted to entrepreneurs in poviats cat. II.1, I.1 and II.2 (c.a. 2,691 mln, 2,386 mln, and 2,156 mln PLN) and in cat. II.3 (which reached half of those amounts). 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) (Figure 3). The highest average ratio of public support in the form of an income tax exemption in SEZs to total regional state aid was observed in poviats cat. II.1 (58.4%), II.2 (52.2%) and III.1 (47.5%) 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 poviats located in all categories of voivodeships, while other sources and types of regional state aid (including more complicated to use EU funds) were more widely offered in the better developed poviats 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

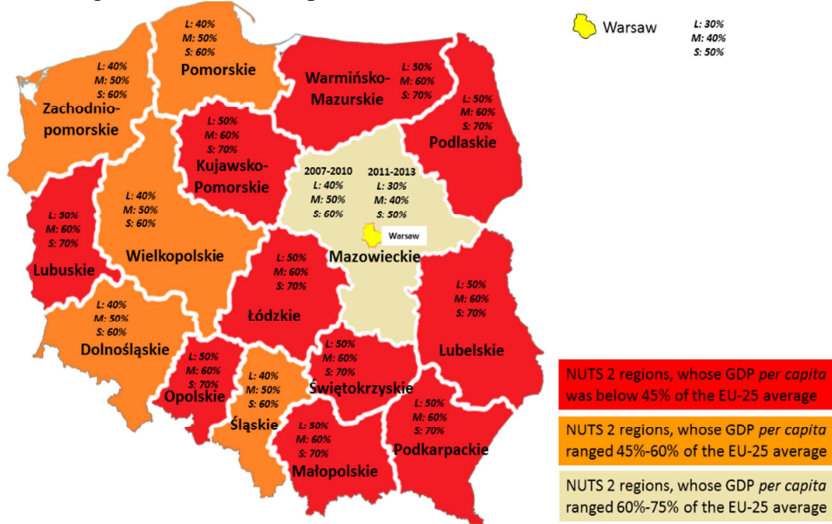


Sources: own calculations based on data from the Office for Competition and Consumer Protection and the Ministry of Economy.

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 ceilings on regional state aid for different voivodeships) (Map 1); and (c) the amount of capital invested by an entrepreneur in a given SEZ. The highest average intensity of state aid in SEZs (counted for each entrepreneur without considering date of receipt of permission to conduct economic activities in an SEZ) was observed in poviats cat. I.2 and II.1 (c.a. 15-16%) and in poviats cat. I.1 and II.2 (c.a. 13-14%) (Figure 3). This intensity level was much lower in poviats cat. III.1 and III.2 (7.9-10.7%). Thus, the highest average intensity of state aid in the form of an income tax exemption in SEZs was recorded in poviats from the least and less developed voivodeships, where the ceiling on the aforementioned admissible regional state aid was the highest or moderate, while in case of the more developed voivodeships, where the ceiling on admissible regional state aid was lower.

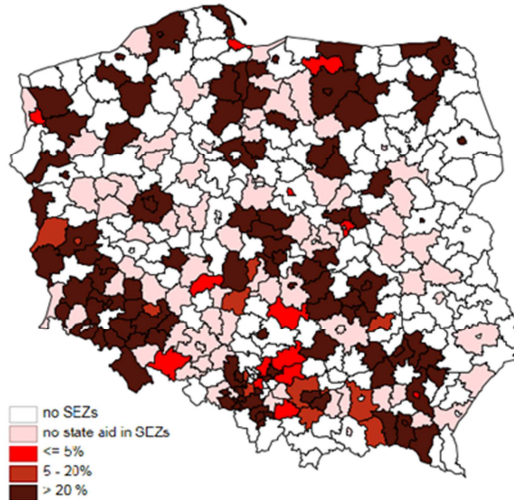
However, it should be emphasized that this does not confirm that ceilings on regional state aid matter in this regard. Until now there have been only a few cases of companies which reached the maximum ceiling of admissible state aid in SEZs. Thus, in the case of almost all entrepreneurs, the average intensity of granted state aid in SEZs was much below the acceptable thresholds at the end of 2013. The analysis of both regional state aid map in Poland with maximum ceilings on admissible public support (Figure 4) and average intensity of financial assistance in the form of tax breaks in SEZs allows to stress that both variables are not correlated. Differences in the intensities of state aid granted in SEZs among poviats were not related to the ceilings on regional state aid in voivodeships. Rather than that, it can be observed that the highest SEZs state aid intensity is in poviats from relatively more developed voivodeships with good transport infrastructure and well qualified labour force (Ambroziak, 2015) (Figure 4).

Figure 4. Regional State Aid Map in Poland in 2007–2013



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

Source: own studies based on Guidelines 2006.

Figure 5. 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.

Impact of Regional State Aid in Special Economic Zones Upon Gross Value of Fixed Assets in Companies

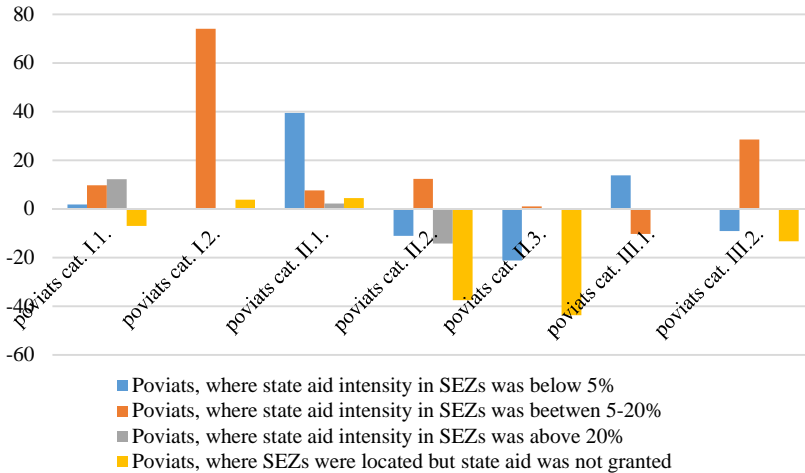
As it was already stated, regional state aid in special economic zones has a specific character and mechanism of receiving, and thus influencing, a region's economic and social development. Since it is granted in the form of tax exemptions from income tax, it is noticeable to entrepreneurs only after 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.

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 (Figure 6). 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. 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. 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%. 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.

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. The only exception of that was a slightly high increase in GVFA per company in the poviats where state aid intensity ranged between 5-20% compared to areas without SEZs. A similar situation was observed in poviats cat. III.1 and III.2, located in more developed voivodeships. with the exception of poviats where the intensity of regional state aid in SEZs respectively was below 5% and ranged between 5-20%.

Figure 6. 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.

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 biggest 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 less developed (but not the poorest) and more developed poviats with SEZs located in less developed voivodeships was smaller compared to poviats without SEZs.

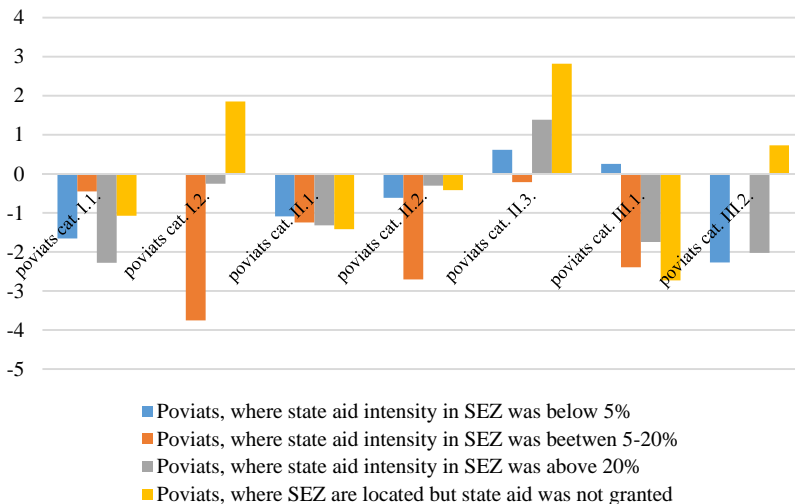
Impact of Regional State Aid in Special Economic Zones on the Unemployment Rate

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 have 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.

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, II.2 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 (Figure 7). In the less (in contrast to the poorest) developed poviats, cat. I.2 and III.2 from all the least and more developed 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 regards all other regions, the only category of poviats where the control group recorded a bigger 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.

On this basis, we can say that the biggest 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 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 the value of regional state aid in SEZ 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

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. 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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