

The ex-post evaluation of the EU Cohesion Policy Programmes 2004-2006 on Polish regions: the impact on regional income and employment.

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Summary

In this paper we study the impact of European Cohesion Policy Programmes on regional income and employment in Poland. We find that these programmes will hardly affect economic performance of the most developed Polish voivodships, while the regions with medium and low level of per capita income may improve their economic performance. However, despite the positive short-run effects the least developed areas may become the net losers of the process of European integration in the long-run.

Keywords: Economic integration, infrastructures, regional policy, EU Cohesion Policy

JEL Classification Numbers: F15, H54, R11, R12, R58

1. Introduction

‘ ... the Community shall aim at reducing disparities between the levels of development of the various regions and the backwardness of the least favoured regions ... ’

Treaty Establishing the European Community, 1958

The concern for Europe’s disadvantaged regions is one of the main goals of the European Union and the EU spends about one-third of its budget on these regions. Although the need to promote balanced development by reducing the gap between the different regions and helping the most backward to catch up was recognized already in the preamble to the Treaty of Rome, until the end of the 1970s the task of helping less favoured regions was a matter of national authorities in particular member states rather than of the European Community.¹

¹ Although the first of today existing structural funds – the European Social Fund (ESF) was created in 1960 to help unemployed and disadvantaged people to return to work, it has not received its regional dimension until 1971. In 1962, when it was agreed to create the Common Agricultural Policy (CAP), the European Agricultural Guidance and Guarantee Fund (EAGGF) was set up and continues to this day to support and stimulate agricultural production in the EU. In 1964 it was split into a Guidance and a Guarantee Section and it is the Guidance Section which contributes to spending on the structural reform of agriculture and promotes

The situation changed radically in view of the possible regional adjustment problems created by the Southern enlargement and the implementation of the Single Market program. Hence, in 1986 the Single European Act introduced the concept of economic and social cohesion laying the foundations for the supranational EU regional policy that complements national policies. Furthermore, a new Title, on "Economic and social cohesion" was added to the Treaty. Since then, the Community has to support the cohesion effort by the action it takes through the Structural Funds and related instruments. Finally, a further financial instrument – the Cohesion Fund was created in 1993 to provide assistance to those member states that fear that they would not be able to meet the additional competitive pressures resulting from the European Economic and Monetary Union (EMU).²

The European cohesion problem can be characterized as significant disparities in per capita income and in employment that exist between the member states as well as between regions within these states. The cohesion problem got much harder when the new member states joined the EU in two subsequent waves of the Eastern enlargement in 2004 and 2007, since their per capita incomes are far below the old EU-15 average. Moreover, significant regional income disparities exist also within the new EU member countries. Particularly, in Poland, strong development asymmetries follow the West-East line and date back to the times of the Partitions. Therefore, the main goal of this study is to assess the impact of European Cohesion Policy (ECP) programmes in Poland, in terms of output and employment both at the national and regional level.

new forms of rural development. Then, after the accession of the United Kingdom, Ireland and Denmark in 1973, the European Regional Development Fund (ERDF) was established in 1975. Initially, it served to assist the declining industrial regions in the United Kingdom and compensate for the small return the UK received from the CAP. However, its budget was minor until the 1980s when three poor Southern countries: Greece, Spain and Portugal joined the EU. The ERDF finances infrastructure, job creating investments, local development projects and provides aid for small firms. Finally, the Financial Instrument for Fisheries Guidance (FIFG) was created in 1993 to modernize the EU fleet, safeguard certain marine areas and improve the structures for processing and marketing of fish in the EU.

² For historical reasons, most EU regional spending has been channeled through five funds: four Structural Funds and the Cohesion Fund. The four Structural Funds are: the European Regional Development Fund (ERDF), the European Social Fund (ESF), the Financial Instrument for Fisheries Guidance (FIFG) and the Guidance Section of the European Agricultural Guidance and Guarantee Fund (EAGGF). Although the Cohesion Fund is not strictly classified as one of the Structural Funds, it is closely related to them. All these funds are subsumed in an overall strategy aimed at fighting unemployment and stimulation growth in poor regions. While the Structural Funds can be spent in any qualified EU region, the Cohesion Fund, directly funds individual environment and transport projects only in cohesion countries.

The structure of this paper is as follows. In section 2 we describe the distribution of the EU funds across Polish regions. In section 3 we provide the literature review. In section 4 we present our empirical results on the impact of the Community Support Framework (CSF) 2004-2006 on regional output and employment. Section 5 concludes with the summary of main results and directions for future studies.

2. Spatial allocation of structural interventions in Poland

The main instrument for implementing the Structural Funds are the Operating Programmes drawn up and implemented on the basis of consultation and cooperation between the European Commission, national governments and local and regional authorities. In Poland these are the National Development Plan (NDP) and the CSF that contain the main assumptions about structural policy interventions between 2004 and 2006. The NDP, approved by Polish government on 14th January of 2003, outlined a social and economic development strategy for Poland in the first years of membership in the EU. It served as a basis for the CSF that determined the priorities and amount of financial means for structural interventions. The strategic objective of the NDP was “to develop the competitive economy based on the knowledge and entrepreneurship able to long-term harmonized development to ensure employment growth and improvement of social, economic and spatial cohesion with the European Union at regional and national level”. The NDP was divided into several development axes where the implementation instruments took the names of the Sectoral Operating Programmes (SOPs). These programmes were integrated in the CSF and became the subject of negotiations between the Polish government and the European Commission. As a result of these negotiations, that were concluded in July 2003, the following SOPs were launched:

- Improvement of competitiveness of the economy (designed to support enterprises and co-financed by the ERDF);
- Human resources development (co-financed by the ESF);
- Transport and maritime economy (co-financed by the ERDF);
- Restructuring and modernisation of the food sector and rural development (co-financed by the EAGGF);
- Fisheries and fish processing (co-financed by the FIFG);

- Integrated Regional Operating Programme (co-financed by both the ERDF and the ESF).

In addition to the SOPs the financial aid from the EU was channelled also via the Cohesion Fund and the Community Initiatives such as EQUAL and INTERREG II.³ Furthermore, the special Technical Assistance Operating Programme was established in order to facilitate the implementation of the Structural Funds. According to the NDP the overall cost of all activities including both public and private resources was supposed to exceed 16.7 billion euro expressed in constant 1999 prices. The EU's contribution to the SOPs would exceed 11.3 billion, interventions co-financed by the Cohesion Fund would amount to another 4.3 billion, the EQUAL initiative to 159 million and the INTERREG II to 261 million.

Given the goals of the ECP, the most interesting issue for our study is the spatial allocation of structural interventions. In Table 1 we present data on the regional distribution and the total cost of projects co-financed by the EU in the 2004-2006 programming period as of the end of January 2008.

Table 1. The absolute and relative magnitude of structural interventions in the period 2004 – 2006.

Voivodship	Accomplished projects			Cost of accomplished projects			Cost as % of GDP in 2004		Cost per capita	
	Number	%	Rank	Total cost millions PLN	%	Rank	%	Rank	PLN	Rank
Dolnośląskie	3421	4.7	11	9577.0	11.6	3	13.9	2	3415.6	1
Kujawsko-pomorskie	4710	6.5	6	4375.7	5.3	9	10.0	8	2155.6	9
Lubelskie	7415	10.2	2	3569.3	4.3	10	10.6	5	1775.6	13
Lubuskie	1409	1.9	16	1803.9	2.2	15	9.2	10	1979.0	10
Łódzkie	5723	7.8	4	4908.9	6.0	8	10.4	7	2311.9	7
Małopolskie	4231	5.8	8	5221.3	6.3	5	8.0	13	1650.8	14
Mazowieckie	10823	14.8	1	13452.7	16.3	1	7.7	15	2842.8	3
Opolskie	1988	2.7	15	1615.2	2.0	16	7.6	16	1581.6	15
Podkarpackie	2968	4.1	14	3018.6	3.7	11	8.8	12	1484.9	16
Podlaskie	4838	6.6	5	2237.2	2.7	14	10.5	6	1905.4	11
Pomorskie	4283	5.9	7	5042.1	6.1	7	10.8	4	2551.3	4
Śląskie	3862	5.3	9	9928.5	12.0	2	7.9	14	2161.9	8
Świętokrzyskie	3655	5.0	10	2280.3	2.8	13	9.7	9	1818.6	12
Warmińsko-mazurskie	3010	4.1	13	2768.6	3.4	12	12.9	3	2413.6	5
Wielkopolskie	7314	10.0	3	7535.9	9.1	4	9.0	11	2343.6	6

³ During the 1989-93 and 1994-1999 periods there were many Community Initiatives aimed at specific groups and targets, but for the 2000-2006 period they were reduced to four: LEADER + aimed at rural development, INTERREG II aimed at promoting cross-border, transnational and interregional cooperation, URBAN aimed at economic and social regeneration of cities and urban neighbourhoods, and EQUAL aimed at transnational cooperation to combat all kinds of discrimination and inequalities in the labour market. The Community Initiatives were eliminated after 2006.

Zachodniopomorskie	3388	4.6	12	5212.9	6.3	6	13.9	1	3126.0	2
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Source: authors' own calculations based on the SIMIK database.

It turns out that the richest Mazowieckie voivodship is at the same time the largest recipient of aid when measured both in terms of the number of projects accomplished and in terms of their costs. On the other extreme we observe the middle-income Lubuskie and Opolskie voivodships with the smallest number of accomplished projects and the lowest costs. The total number of projects and their costs can not be regarded, however, as good indicators of regional absorption capacity because voivodships differ in terms of their size. Therefore, to be able to make the comparison we relate the costs of projects to GDP and population.

Now, the Zachodniopomorskie and Dolnośląskie voivodships that have relatively high per capita incomes open the list. The Mazowieckie voivodship still ranks high when we look at the cost of accomplished projects per capita. Generally, the revised rankings support the conclusion that more developed areas have also higher absorption capacity and receive more aid. The intuition would, therefore, suggest that the greatest impact of the ECP should be expected in the voivodships where the value of structural interventions is the highest when related to regional GDP and population. At the same time, however, the effects of regional policy may vary according to the type of structural spending. Namely, the programmes that lead to an increase of different production factors will have uneven impact on regional output and employment. Therefore, their final outcome is not clear and requires a formal quantitative evaluation that is presented further in the paper. However, before showing our empirical results in the next section we first review the previous literature related to our study.

3. Review of previous empirical studies

The empirical literature on the evaluation of the impact of the ECP in the EU-15 member states is enormous and summarizing it in detail is beyond the scope of this paper. However, the literature on the new EU member states is still much less abundant, although it is growing fast. The majority of the empirical studies are devoted to evaluating the aggregate impact of the ECP at the country level, but very few focus on the regional dimension of this policy and study its impact at the NUTS2-level regions. The recent examples of studies that focus on Poland include Bradley et al. [2002, 2004, 2006 and 2007], Bukowski et al. [2008], Nowicki et al. [2003], Kaczor [2006], Kaczor and Socha [2008], Radziwiłł

[2008], Rokicki and Socha [2008]. However, only few of them consider the impact of the ECP on the economic development at the regional level and evaluate explicitly the impact of the CSF 2004-2006.

The results of the aforementioned studies are hardly comparable as they employ very different research methodologies. The majority of them are based on the computable general equilibrium (CGE) model.⁴ The study by Bradley et al. [2006] is a regional adaptation of the HERMIN model, while the study by Radziwiłł [2008] applies the conditional correlation analysis. Finally, Rokicki and Socha [2008] discuss the possible effects of Poland's accession to the European Union (EU) on the economic development of the Polish eastern border regions using the approach based on estimating the regional production function. None of the aforementioned studies, however, shows the effects of various regional policy measures on regional output and employment. The notable exception is the study by Rokicki and Socha [2008], yet it concentrates on the eastern border regions only.

Therefore, taking into account the shortcomings of the previous studies new evidence for all Polish regions is needed. Our present study extends the previous studies in the number of ways. First, we study the effects of various regional policy measures. Second, we distinguish between the private and the public capital, infrastructure and control for differences in regional levels of technology using FDI data. Finally, we focus on the role of road network as a factor that may seriously influence regional development patterns in Poland.

In contrast to many previous studies we take the supply-side approach based on the regional production function. This approach was originally applied by de la Fuente [2002] for the Spanish regions and later it was implemented in many other studies, including those for Poland by Cieřlik and Kaniewska [2004] and more recently by Rokicki and Socha [2008]. Hence, this paper can be viewed as an extension of the previous studies in which we focus on all Polish voivodships.

⁴ Nowicki et al. [2003] assess the impact of European integration on output and employment of Polish voivodships during the 2004-2012 period taking into account the measures included in the NDP 2004-2006. Kaczor [2006] investigates the influence of National Strategic Reference Framework 2007-2013 over the 2007-2020 period. Finally, the study by Kaczor and Socha [2008] assess the combined impact of both the NDP 2004-2006 and the National Strategic Reference Framework 2007-2013.

4. Evaluation of the impact of the CSF 2004-2006 on regional output and employment in Poland

Following Rokicki and Socha [2008] we use a two-step method for calculating the economic effects of the ECP programmes. First, we estimate regional production functions to obtain elasticities for each factor of production, and then we multiply the estimated elasticities by an increase in the logarithm of the stock of each factor due to the investments programmed in the CSF to obtain their contribution to the growth of output and employment. We distinguish between direct and indirect effects of the structural interventions. A direct effect results from the change in the stock of a specific factor, while an indirect effect results from the change in employment. Hence, the increase in employment also leads to increased output so the overall effect is the sum of these two effects.

The empirical framework is based on a simultaneous estimation of the augmented Cobb-Douglas production function and the labour demand function. We allow for increasing returns, so the production function has no additional restrictions and takes a form of:

$$Y_{i,j,t} = A_{i,t}^{\theta} K_{pr,j,t}^{\alpha} K_{pu,j,t}^{\beta} P_{i,t}^{\chi} H_{i,t}^{\delta} L_{i,j,t}^{\phi} \quad (1)$$

where i denotes a region, j denotes a section and t denotes a year. The factors of production include technology (A), private capital (K_{pr}), public capital (K_{pu}), labour (L), public infrastructures (P), and human capital (H). Furthermore, it is supposed that different regions and sections of the economy should have different production factor elasticities. The estimated factor coefficients: θ , α , β , χ , δ , and ϕ measure the product elasticity with respect to the amount of each factor. For example, a 1% increase in the private capital stock would lead to α % increase of the aggregate product *ceteris paribus*.

Labour market equilibrium is determined under perfect competition and no adjustment costs assumptions. This leads to the conclusion that on equalling the marginal product of labour and real wage, the following labour demand function can be obtained:

$$\frac{\partial Y_{ijt}}{\partial L_{ijt}} = \phi A_{it}^{\theta} K_{pr,ijt}^{\alpha} K_{pu,ijt}^{\beta} P_{it}^{\chi} H_{it}^{\delta} L_{ijt}^{\phi-1} = W \quad (2)$$

Solving for L and dropping the sub-indices we obtain:

$$L^* = \left(\frac{\phi A_{it}^\theta K_{pr\ ijt}^\alpha K_{pu\ ijt}^\beta P_{it}^\chi H_{it}^\delta}{W} \right)^{1/(1-\phi)} \quad (3)$$

The model was estimated using the instrumental variables method on the panel dataset for the 1995-2007 period, 12 two-digit NACE sections and each of three groups of voivodships: the high-income (Dolnośląskie, Mazowieckie, Pomorskie, Śląskie and Wielkopolskie), the middle-income (Kujawsko-Pomorskie, Lubuskie, Łódzkie, Małopolskie, Opolskie and Zachodniopomorskie) and the low-income (Lubelskie, Podkarpackie, Świętokrzyskie and Warmińsko-Mazurskie). The data sources used in the estimation of the production function and in the calculation of changes in stocks of each production factor due to structural interventions are described in detail in Rokicki and Socha [2008]. In making our simulations we assumed no additional effects ensuing from changes in private investment and in the stock of foreign capital that served as the proxy variable for the level of technology. We run our simulations using factor elasticities obtained for each group of regions. The simulation results are shown in Table 2.

Table 2. The impact of the CSF 2004-2006 on regional output and employment.

Voivodship	Δ output %	Δ employment %	Δ employment units
Dolnośląskie	0.04	0.10	679
Kujawsko-pomorskie	5.20	1.48	6275
Lubelskie	2.24	1.01	3596
Lubuskie	6.81	1.92	3811
Łódzkie	5.89	1.66	8925
Małopolskie	5.00	1.45	9929
Mazowieckie	0.03	0.08	1357
Opolskie	6.21	1.74	3345
Podkarpackie	2.21	1.04	4027
Podlaskie	2.17	0.97	1964
Pomorskie	0.04	0.09	432
Śląskie	0.04	0.10	1115
Świętokrzyskie	2.56	1.20	2669
Warmińsko-mazurskie	2.31	1.07	2792
Wielkopolskie	0.03	0.07	567
Zachodniopomorskie	5.16	1.52	5029

Source: authors' own calculations.

These results reveal important differences between particular regions. It seems that the voivodships from the middle-income group tend to be most favoured by the structural policy programmes. In all of them output increases more than 5%, however, employment increases slightly more than 1%. Still, this is much more than in other Polish regions. As a matter of fact, the increase in employment in the poor regions hardly exceeds 1%, while the production rises by more than 2%. Furthermore, the most developed regions experience no substantial improvement neither in terms of employment nor output.

It is worth noting that total employment in the entire economy increases only by 56512 persons. This number is much lower compared to forecasts obtained in the previous studies based on the HERMIN model, especially Bradley et al. [2007] according to whom the ECP programmes should create up to 300 thousands of new jobs in the whole economy. At the same time, the results of present study suggest that the increase of employment would be much smaller which is in line with survey evidence. Therefore, we believe our results to be more realistic.

5. Concluding remarks

The aim of this paper was to assess the impact of the CSF 2004-2006 on regional output and employment in Poland. We found that the ECP programmes will hardly affect economic performance of the most developed Polish voivodships, at least directly, while the regions with medium and low level of per capita income may increase their economic growth. However, it is necessary to emphasize that our simulation results are valid in short term only and have been obtained under unrealistic assumption that all projects are accomplished in the same year.⁵ Therefore, future studies should take into account the long term impact of structural policies and allow for crowding-out and crowding-in effects of public spending on private investment or capital depreciation.

Even though the CSF 2004-2006 seems to have a positive impact on production and employment in the least developed areas in the short-run, they may eventually become the net losers of the process of European integration in the long-run. In particular, the investment in interregional transport infrastructure may further reinforce the spatial concentration of economic activity, observed over the recent years. Moreover, it has been

⁵ Once we want to show an annual increase in production and employment we should split our results between 5 years (according to the n+2 rule the commitments for 2004–2006 should be spent till the end of 2008). This was, however, not possible since our data from SIMIK did not include information on the end date of each project.

demonstrated that the least developed Polish regions act as an economic periphery and are not very attractive to foreign investors.⁶ This limits the scope for foreign capital inflows, international knowledge transfers and positive spillovers in the disadvantages Eastern regions. With the distribution of multinational firms skewed towards the developed Western regions the existing regional disparities may grow even further.

Therefore, per capita income of the most developed areas will probably continue to diverge from country's average because of ongoing agglomeration processes. Some of the medium-income regions may have a chance to catch up with the high-income regions due to the structural interventions. However, the poor eastern border regions will probably remain lagging behind in terms of their economic development.

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