Evaluation of rural development programs after Poland's accession to EU: regional CGE approach

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Abstract

The paper evaluates effectiveness and efficiency of various measures of Rural Development Plan and Sectoral Operational Program for Agriculture 2004-2006[1] implemented in Poland after 2004 accession to the UE. The main method used was a regional computable general equilibrium (CGE) model called RegPol covering 16 Polish NUTS 2 regions and 15 sectors of the Polish economy. The paper proofs that among the most efficient measures are those granted in form of investment subsidies (e.g. investments in agricultural farms, support for processing companies, support for rural infrastructure, etc.) and among least efficient measures were those granted in form of direct income transfers (e.g. early retirement) and in form of land subsidies (support for less favored areas, or LFA). Based on the survey method the study also reveals an unfavorable situation where the most efficient measures in rural programs are the most difficult to absorb hence less popular among beneficiaries, while those least efficient are easy and thus more popular, especially in less developed regions. At the end largest support was granted to predominantly rural and predominantly agricultural regions, which however, were not very efficient. However, some cohesion effect had been achieved.

Key words: rural development policy, regional computable general equilibrium model, Poland

JEL
R13, O1, H43, Q1

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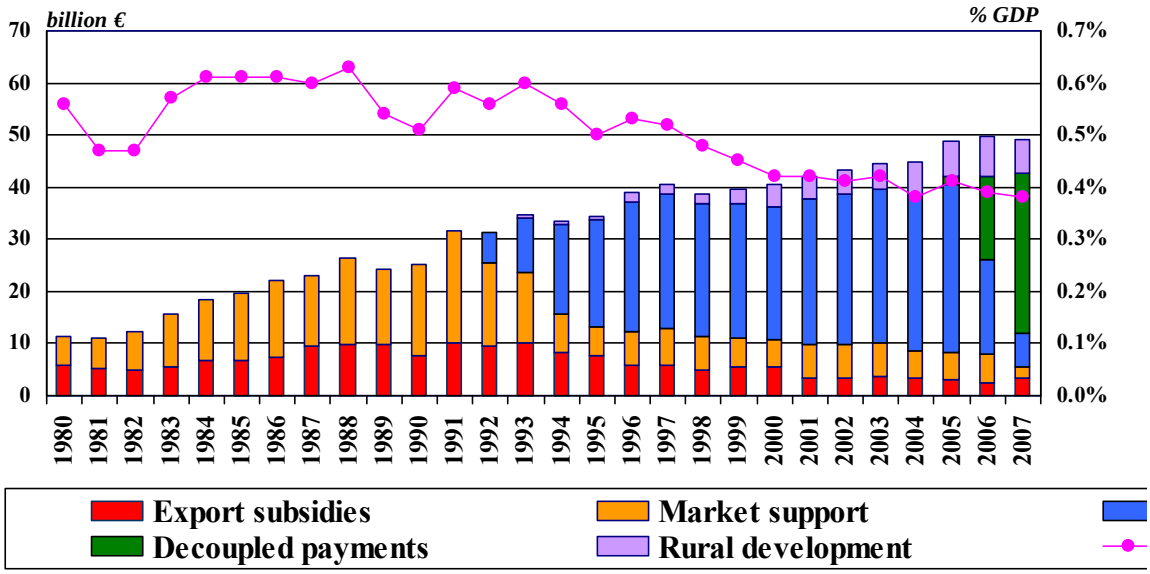
[1] Although the programs were granted for the years 2004-2006 the funds were actually being spent till the end of 2008, according to EC rule n+2 (spending allowed up to 2 years beyond the official program time).

1. Introduction

Poland joined Common Agricultural Policy (CAP) in a quite specific moment (in 2004) when greater emphasis was put on rural development than ever before (Figure 1). Funding for rural areas development fluctuated greatly in the structure of CAP budget throughout the years; in the beginning of the 1980s it constituted a very marginal part of expenditure as compared to pillar one (direct payments to agriculture). Agenda 2000 attached yet greater significance to rural development within CAP which was strengthened further as a result of the 2003 Luxembourg reform. Currently, rural development is a well-defined second pillar of CAP and has been supported so far in Poland by two types of programmes: Rural Development Program (RDP) and agricultural Sectoral Operational Program for Agriculture (SOP).

Figure 1 Evolution in financing of the Common Agricultural Policy



Source: (Plewa, 2008)

First budgetary period for rural development programs after Poland's accession to EU was in 2004-2006. Although Poland used pre-accession funds (e.g. PHARE, ISPA, and SAPARD) their scale and organisation of spending was different than before, so we do not discuss them here. Thus, basing on actual payments effected in the framework of those two post-accession programmes, the author assesses economic effectiveness and efficiency of rural development policy instruments in the initial period after joining the EU and draws conclusions for the current Rural Development Program 2007-2013 (RDP), because the majority of measures are repeated from the previous programs and gathered in this one RDP.

2. Methodology

The main research tool applied in this study is a static multi-sectoral and multi-regional computational general equilibrium model intended for a small open economy, such as Poland. It is composed of a system of over 50,000 nonlinear equations which, filled in with the data of the Polish Central Statistical Office (GUS) mirror approximately the operation of the Polish economy. The model is based on the neoclassical theory of the economy: it assumes a perfect competition, equilibrium at all markets apart from the labour market (unemployment occurs) and the foreign trade market. The consumption function takes the form of the Cobb-Douglas function and the production function is the function of the Constant Elasticity of Substitution (CES). RegPOL covers all regional economy sectors divided into 15 sections according to the Polish Classification of Economic Activities (compatible with NACE Rev.1.1) and the trade flows between voivodeships estimated by the author. As a result, 16 regional tables of inter-branch flows and 16 SAM matrixes were devised by the author. Thus, the model presents not only the direct effects of the applied policy but also further multiplier effects resulting from the interaction of agricultural sector with all other ones. Table 1 and Figure 2 feature a concise presentation of the model.

Table 1 Model RegPol at a glance

General Features
- computable regional general equilibrium simulation model
- static and dynamic short and long run regional policy analysis possible
- basically Walrasian, price adjustment equilibrates regional economy
- rigid real wages cause classical unemployment in the labour market
- net migration included

Benchmark data provided by Polish Central Statistical Office
- IO tables and SAMs for 16 voivodeship (NUTS 2) were created
- based on regional and national accounts
- based on regional income and expenditure data
- benchmark calibrated for year 2000 with updates to 2006

Consumption
- each region has one representative consumer household which maximizes welfare (CES utility function)
- public sector is divided into two inter-related agents: national and regional governments which act as separate decision makers

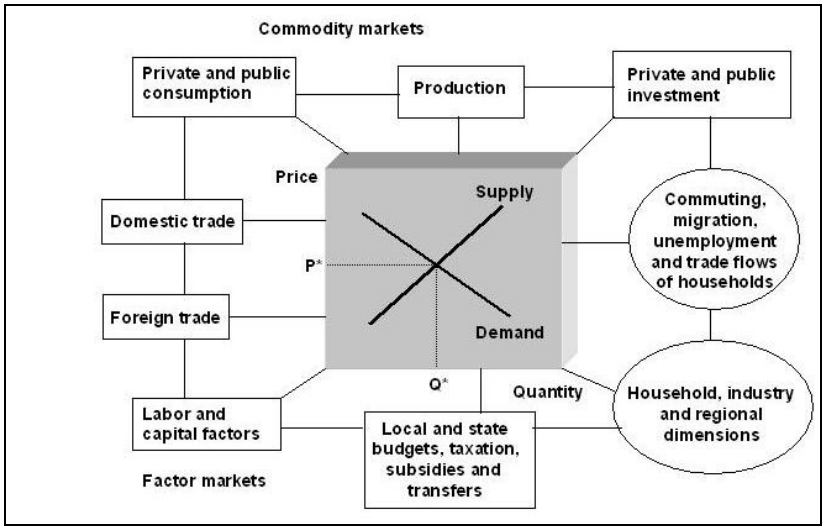
Production
- constant returns to scale and perfect competition assumed
- regional production is modelled through cost minimization of firms
- labour and capital as primary inputs (CES production function)
- inter-sectoral inputs are modelled via an input-output model (Leontief structure)
- 15 PKD sections per 16 regions

Foreign and domestic trade
- domestic production and exports modelled as joint products (CET production function)
- domestic and imported goods assumed qualitatively different (Armington assumption)
- domestic and foreign export and import included

Taxation and transfers
- taxes for factors and outputs denoted
- representative consumer has income taxation
- regional income and expenditure flows through public budgets denoted

Source: Based on Törmä and Zawalińska (2007)

Figure 2 Structure of the model



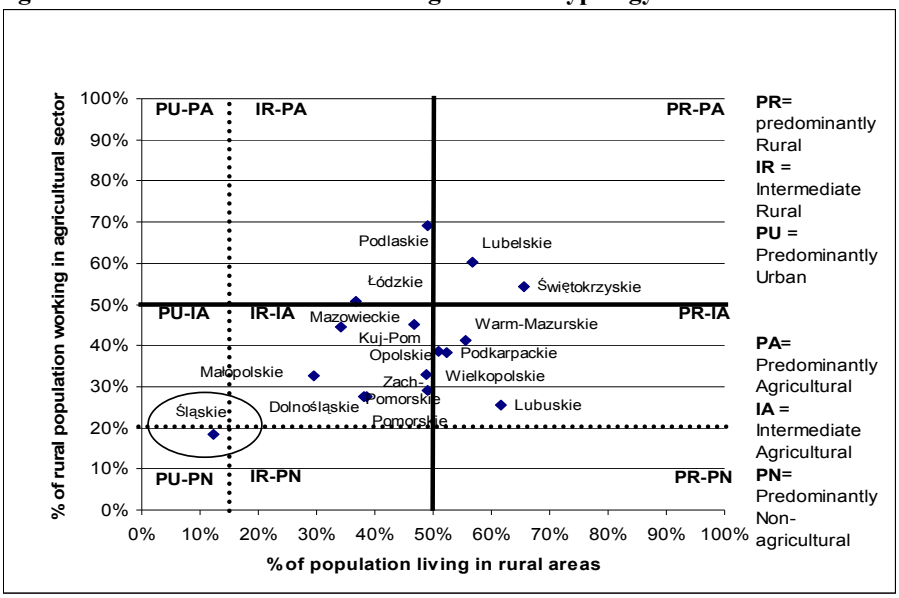
Source: Törmä and Zawalińska (2007)

Assessment of the rural development policy is analyzed quantitatively, mainly based on the two most important evaluation criteria: effectiveness and efficiency. Effectiveness was defined as the link between outputs planed vs outcomes achieved (ODPM, 2004:113). Assuming that the planed objective of rural development policy was the greatest rural development possible, the highest effectiveness will be generated by those measures which brought about the greatest positive growth of rural and regional development. As far as efficiency is concerned, it is measured as the greatest result obtained with the given input (Oxford Economic Dictionary, 1997:139, ODPM, 2004:113). In this case, the inputs are funds spent for each of the measure and the results are the economic effects obtained thanks to these funds (such as economic growth, employment increase, etc). In other words it is benefit-to-cost ratio.

Results of the model simulations are presented for 16 Polish NUTS 2 regions (voivodeships). They are featured in Figure 3 in a two-dimensional perspective, where the horizontal axis presents the percentage of the region's population living in rural areas (*rurality*), and the vertical axis indicates the percentage of rural population employed in

agriculture (*dependence on agriculture*). Thus we can quickly learn from this picture that 6 of Polish NUTS 2 regions are predominantly rural, 9 of the regions are intermediate rural and only one is predominantly urban (according to OECD typology, analysed on the horizontal axes). Using the analogue approach to occupation of rural population in agriculture, we can see that 4 regions are predominantly agricultural, 11 are intermediate agricultural and only 1 is predominantly non-agricultural.

Figure 3 Two-dimentional rural and agricultural typology for Poland



Source: Author's own study based on National Census 2002

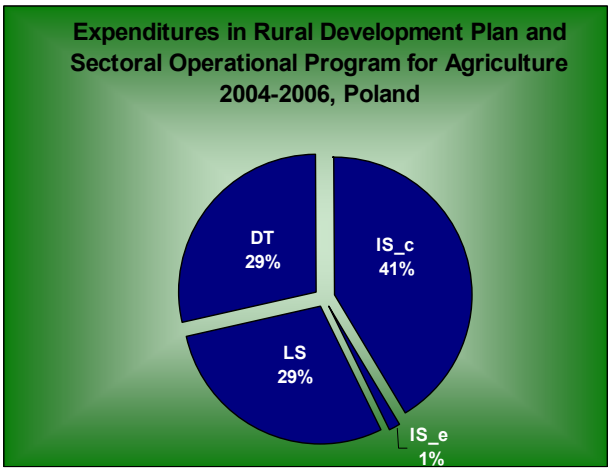
3. Classification of rural development funds according to economic criteria

Each measure chosen by Poland to implement rural development policy in 2004-2006 was thoroughly analysed by the author from the point of view of its economic nature and actual spend. The assessment was based on the analysis of the structure of eligible costs actually incurred and interviews with officials from Paying Agency (ARMA).

According to the classification, measures were divided into following four groups of economic instruments: 1. **Direct income transfers (DT)**: (here belong e.g.: early retirement, support for semi-subsistence farms, setting up of young farmers), 2. **Land subsidies (LS)** (e.g. support for less favoured areas, agri-environmental measures, etc.), 3. **Investment subsidies in construction (IS_c)** (e.g. investments in agricultural holdings, improving processing and marketing of agricultural products, etc.) 4. **Investment subsidies in human capital (IS_e)** (e.g. extension services, vocational training, etc.).

The distribution of payments shows that the highest support for rural development (42% of funds) was granted in the form of investment subsidies, of which 41% for investments in construction and 1% for investment in human capital. The second-highest support related to land subsidies (29%) and the third-highest to direct transfers (29%), as featured in Figure 4.

Figure 4 Classification of rural development funds in 2004-2006 according to economic criteria



Source: Author's calculations on the basis of payments effected as at 31.12.2007

As for the typology of measures by the actual spend of the funds, we divide them into three categories: investments, consumption and other. In case of investment subsidies, it is quite obvious that 100% of the funds was spend for investment, but in case of direct transfers (DT) and land subsidies (LS) it is not obvious how the funds were spent, because beneficiaries had quite an independence in their choices. In order to find out actual ways of spending the EU funds, the survey was carried out on 952 beneficiaries[2]. They were asked to declare their spend of the funds within each measure between 8 categories: 1) household consumption, 2) leisure, sports and culture, 3) education, 4) investments in the agricultural households, 5) petrol, fertilizers, etc., 6) repayment of the debts, 7) savings, and 8) other. The short summary of the aggregated results are indicated in Table 2.

Table 2 Measures in form of direct transfers and land subsidies by types of spend

Measures	Economic instruments	Actual use (spend)
1. EARLY RETIREMENT	DIRECT TRANSFER (DT)	6% investments, 94% consumption
2. SEMI-SUBSISTENCE FARMS UNDERGOING RESTRUCTURING	DIRECT TRANSFER (DT)	64% investments, 13% consumption, 23% other
3. LESS-FAVOURED AREAS (LFA)	LAND SUBSIDY (LS)	34% investments, 20% consumption, 46% other

[2] The survey was carried out as part of "Ex-post evaluation of Rural Development Plan 2004-2006 in Poland". The author was a scientific coordinator of the whole evaluation.

4. AGRI-ENVIRONMENT AND ANIMAL WELFARE PROGRAMS	LAND SUBSIDY (LS)	44% investments, 19% consumption, 37% other
5. AFFORESTATION OF AGRICULTURAL LAND	LAND SUBSIDY (LS)	30% investments, 14% consumption, 46% other
6. SUPPORT FOR AGRICULTURAL PRODUCERS' GROUPS	DIRECT TRANSFER (DT)	100% other - covering the running costs of producers' groups

Source: Author own compilation based on Survey (952 observations)

According to the opinion of the beneficiaries, measures granted in form of direct transfers (DT) are on average invested in 35% (varying from 6% in case of early retirement to 64% in case of semi-subsistence farms), and those granted in form of land subsidies (LS) are on average invested in 36% (varying from 30% in case of afforestation to 44% in case of agri-environment programs). Since the total DT is 29%, LS is also 29% and IS is 42% of total rural policy, the investments in total rural policy are about 60% out of which 8% from DT, 10% from LS and 42% from IS – see Table 3. Analogically, the consumption shares are 21% from DT, about 19% from LS, and 0% from IS.

Table 3 Investments and consumption shares by types of economic instruments in rural policy

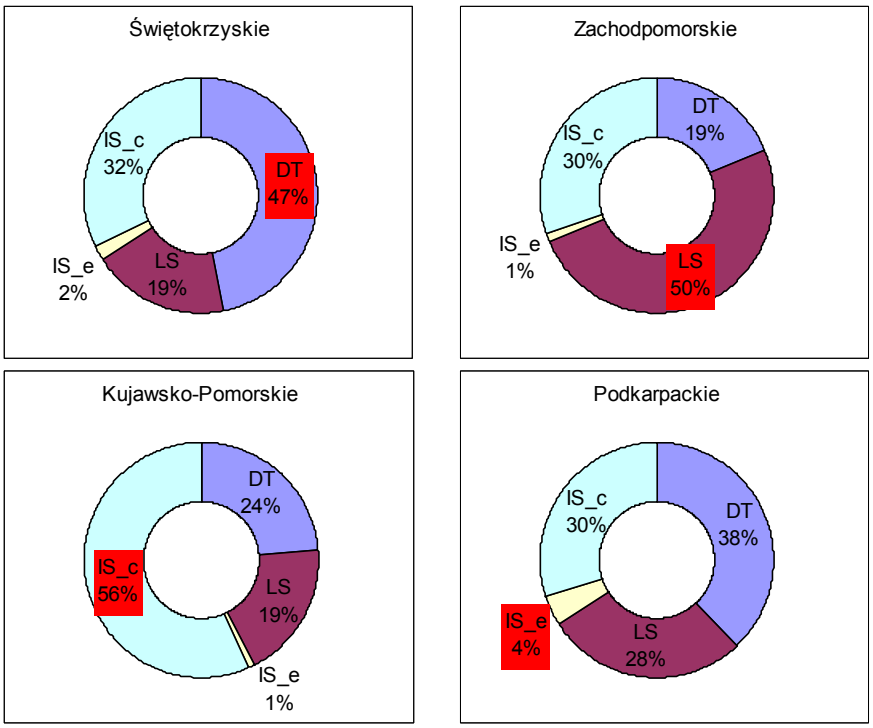
Economic instruments:	Investment Subsidies (IS)	Land Subsidies (LS)	Direct Transfers (DT)	TOTAL policy for Rural Development
Investments as % of total RDP	42%	10%	8%	60%
Consumption as % of total RDP	0%	19%	21%	40%
TOTAL	42%	29%	29%	100%

Source: Authors own calculations

Thus, we have obtained a picture showing an excess of pro-investment (pro-efficiency) support over pro-equality support while we expected the opposite. We thought that the countries such as Poland will use the excess of the measures in form of social support, and devote it into consumption. However, the excess of investments is only counted quantitatively not qualitatively, and it could well appear that investments were not very efficient, eg. too big machinery, etc.

The absorption of the funds according to their economic types veries regionally, at the NUTS 2 regions - Figure 5.

Figure 5 Differences in the structure of fund absorption in selected voivodeships



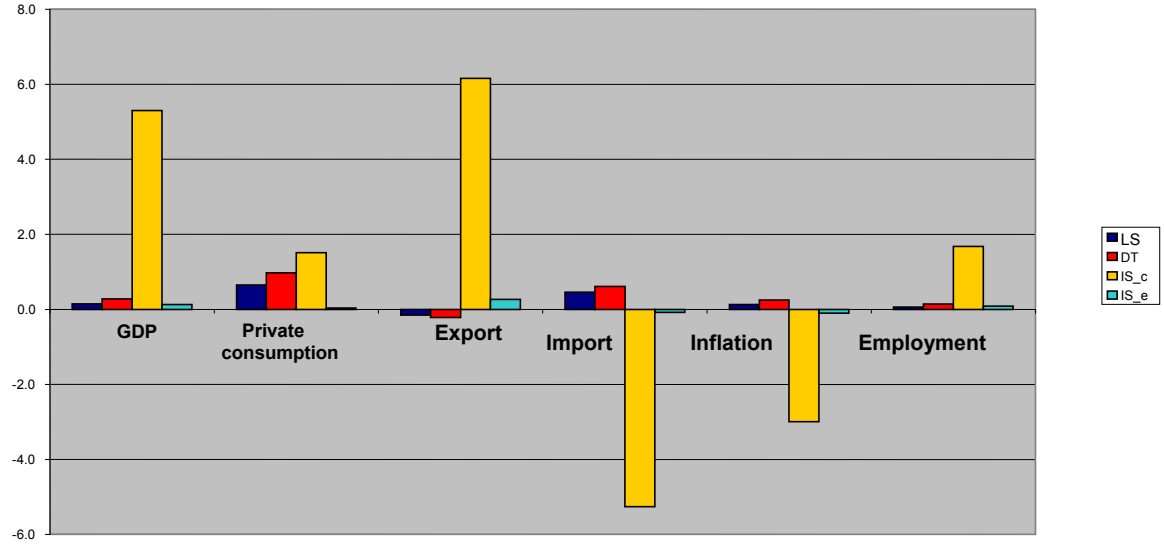
Source: Author's own calculations.

It is quite clear that the types of funds which were absorbed were driven at least to some extent by the types of the regions. In świętokrzyskie region, where mostly are small semi-subsistent farms, the region absorbed the most of direct transfers (47%), in the region zachodniopomorskie where are post-social cooperative farms of large size, the less favoured areas support in form of LS prevails (50%). In kujawsko-pomorskie, the region strong in agriculture, most of the absorbed funds were in form of investment subsidies (56%).

4. Differences in effectiveness of rural development support instruments in 2004-2006

By applying the RegPOL model, we have obtained empirical results showing the effectiveness of rural development funds measured by the following macroeconomic indicatos: GDP (domestic and regional GRP), individual consumption, export and import, employment and prices. The graphical presentation of the effectiveness' results are shown in Figure 6 and subsequent tables.

Figure 6 Effectiveness of rural development instruments applied in 2004-2008 at the national level (% changes)



Source: Author's own calculations

Economic growth effect of rural development (RD) funds

Payments granted in form of IS_c had the greatest impact on economic growth (it increased by 5.3% in long run - cumulative effect), DT had the second greatest impact but on a significantly smaller scale (growth by 0.3%). LS and IS_e had marginal impact on GDP growth (0.1%). In case of IS_e it was due to the fact, that very small amount of all funds was granted in this form (only 1%). As regards specific rural measures, "investments in agricultural holdings" had the greatest impact on the GDP growth- the funds spent amounted to PLN 2,274 million and they stimulated a 1.6% GDP growth in a long run. At the same time the LFA payments, to which similar amounts of funds were allocated, contributed to as little as 0.1% GDP growth.

Consumer and income effect of RD funds

It was IS_c which had the greatest impact on the consumption growth (by 1.5%), followed by DT (by 1%) and then the LS (by 0,6%), while IS_e had no influence on the factor. As regards individual programmes, it is interesting that 3 measures (LFA support, structural old-age pensions and investments in agricultural holdings) falling into three different types of instruments (DT, LS and IS_c) had the same influence on the increase in private consumption (by 0.5%). However, as a rise in income intended for such consumption had a fundamentally different source (an increase in income due to transfers compared to the investment-related increase), hence, despite the same increase in consumption and its significant share in GDP,

economic growth varied greatly due to each of the measures, as has already been discussed above. Other differences resulting from different sources of these incomes were shown in another GDP component, i.e. the volume of foreign trade.

Impact of funds on foreign trade

Instruments of the LS and DT type were evidently favourable to foreign trade deficit, because they contributed to an increase in imports (by 0.5% and 0.6%, respectively) and a decrease in exports (by -0.2%). In contrast, IS_c and IS_e were favourable to foreign trade surplus, and contributed to an increase in exports (by 6.2% and 0.3%, respectively) and, at the same time, a decrease in imports (by 5.3% and -0.1%, respectively). Therefore, the pro-development funds led to the trade balance exacerbation, while pro-efficiency funds to its improvement. On examination of individual measures, it can be concluded that “support for LFA” exerts the greatest pressure on the trade deficit (a decrease in exports by -0.1% and an increase in imports by 0.4%), while “investments in agricultural holdings" had the greatest positive influence on the trade balance surplus (an increase in exports by 1.9 % and a decrease in imports by -1.6%),

Impact of rural development funds on employment

Investment subsidies in construction (SI_c) had the greatest positive impact on employment in the economy (increase by 1.7%). The remaining types of economic instruments, such as direct income transfers (DT) or land subsidies (LS) were of slight influence on the size of employment (0.1%), even despite considerable funding earmarked for that purpose within the overall rural development policy. Similarly, investment subsidies in human capital (IS_e) were of negligible influence on employment in the economy, but that was mainly due to limited funds allocated for that purpose within the overall rural development policy and to the fact that a training course completion did not always translate into finding a job.

As to individual measures, the following had the greatest influence on employment: “adaptation to EU standards” and “investment in agricultural holdings” which were the largest measures of the “investment in construction” type. They were conducive to boosting employment in the economy by 0.6% and 0.7%, respectively.

Price effects of rural development (RD) funds

Out of all types of economic instruments, only investment subsidies (both infrastructural and educational) did not trigger any inflationary pressure, they even resulted in decreasing inflation by -3%, while support in the form of DT and LS tended to trigger a slight upward inflationary pressure (by 0.1%). The fact is easy to explain as in the case of investment subsidies certain capital is produced which does not directly impact demand for consumer goods (it may impact demand for production goods and the price index of investment goods). Thus, investment demand does not influence the increase in the prices of consumer goods included in the inflation rate. The situation is different for social transfers such as DT and LS where the effect of an inflow of funds (from the EU) may be compared with the effect of "printing money" without limit as no direct change in production or productivity takes place. Then, funds earmarked (at least partially) for consumer demand exert pressure on the increase in prices of consumer goods, i.e. an increase in inflation. As to individual measures, most representative of their respective groups, less favoured areas (in the LS category) and structural old-age pensions (in the DT category) triggered an increase in inflation by 0.1% each. By contrast, investment in agricultural holdings (in the IS_c category) and Consultancy together with trainings (in the IS_e category) contributed to a decrease in inflation by 0.9% and 0.1%, respectively.

4.1 Difference in Effectiveness of rural development funds by regions

In the regional perspective, the impact of rural development (RD) funds 2004-2006 on the economic growth showed significant differentiation between voivodeships, from as little as 0.9% in Mazowieckie voivodeship up to as much as 7.8% in Podlaskie Voivodeship (Table 5). In general, the greatest economic growth in voivodeships was primarily attributable to investment subsidies in construction (IS_c), secondly to direct transfers (DT), and then to the same extent to land subsidies (LS) and investment subsidies in human capital by education/extension services (IS_e). As a result of IS_c, the following voivodeships enjoyed the greatest economic growth: Podlaskie (by 6.3%), Warmińsko-Mazurskie (4.4%) and Kujawsko-Pomorskie (3.8%). The IS_e contributed to the highest growth in Podkarpackie (0.3%) as well as Lubelskie and Świętokrzyskie (0.2% each) Voivodeships. DT had the most beneficial effect on economic growth in Lubelskie (0.5%), Podlaskie (0.5%) and Świętokrzyskie (0.4%) Voivodeships. The LS contributed to economic growth mostly in Podlaskie (0.9%) and Warmińsko-Mazurskie (0.3%). However, it must be emphasized that

obtaining aid under LS did not always guarantee economic growth. Some voivodeships recorded a decline in the growth rate, e.g. Opolskie by -0.2% and Małopolskie, Dolnośląskie and Śląskie by -0.1%.

Table 5. Ranking of the regions according to effectiveness of rural policy instruments

GDP change, in % resulting from the groups of instruments:	LS	DT	IS_c	IS_e	SUME	ranking
PODLASKIE	0.9	0.5	6.3	0.1	7.8	1
WARMINSKO-MAZURSKI	0.3	0.2	4.4	0.0	4.9	2
KUJAWSKO-POMORSKIE	0.1	0.2	3.8	0.0	4.1	3
SWIETOKRZYSKIE	0.0	0.4	3.2	0.2	3.8	4
LUBELSKIE	0.0	0.5	2.7	0.2	3.5	5
PODKARPACKIE	-0.1	0.2	3.1	0.3	3.4	6
MALOPOLSKIE	-0.1	0.0	2.8	0.1	2.8	7
DOLNOSLASKIE	-0.1	0.0	2.7	0.0	2.6	8
OPOLSKIE	-0.2	0.1	2.6	0.0	2.5	9
LODZKIE	0.0	0.2	2.0	0.1	2.4	10
WIELKOPOLSKI	0.1	0.1	2.0	0.0	2.2	11
SLASKIE	-0.1	0.0	2.3	0.0	2.2	12
POMORSKIE	0.1	0.0	1.7	0.0	1.8	13
ZACHPOMORSKI	0.1	0.0	1.6	0.0	1.7	14
LUBUSKIE	0.1	0.0	1.3	0.0	1.4	15
MAZOWIECKIE	0.1	0.0	0.7	0.0	0.9	16

Source: Author's calculations

As regards the influence of individual measures on voivodeships development, based on the example of the largest instruments of each type, it can be observed that "investments in agricultural holdings" (falling into IS_c type) had greater, than other measures, influence on the regions' development of (Table 6). They contributed to economic growth by 2.1% in Podlaskie, 1.3% in Świętokrzyskie and 1.2% in Dolnośląskie Voivodeships. Structural old-age pensions, had the greatest impact on economic growth in Podlaskie (0.3%) and Lubelskie (0.2%), while advisory and training services in Podkarpackie (0.3%), as well as Świętokrzyskie and Lubelskie (0.2%). As regards support for LFA, the effect of this type of measure varied – it did not contribute to economic growth in all voivodeships. The relations are presented in Table 6.

Table 6. Changes in regional GDP resulting from the selected measures, %

	Support for LFA (LS)	Early Retirement (DT)	Investments in agricultural farms (SI_b)	Extensions and Vocatiomal train. (IS_e)
DOLNOSLASKIE	-0.1	0.0	1.2	0.0
KUJAWSKO-POMORSKIE	0.1	0.1	0.9	0.0
LUBELSKIE	0.0	0.2	1.0	0.2
LUBUSKIE	0.1	0.0	0.4	0.0
LODZKIE	0.0	0.1	0.7	0.1
MALOPOLSKIE	-0.1	0.0	0.9	0.1
MAZOWIECKIE	0.1	0.0	0.2	0.0
OPOLSKIE	-0.1	0.1	1.3	0.0
PODKARPACKIE	-0.1	0.1	0.7	0.3
PODLASKIE	0.8	0.3	2.1	0.1
POMORSKIE	0.0	0.0	0.5	0.0
SLASKIE	-0.1	0.0	0.8	0.0
SWIETOKRZYSKIE	0.0	0.1	1.3	0.2
WARMINSKO-MAZURSKIE	0.2	0.1	1.0	0.0
WIELKOPOLSKI	0.1	0.0	0.6	0.0
ZACHODNIOPOMORSKIE	0.1	0.0	0.7	0.0
SUMA	**1.2**	**1.1**	**14.4**	**1.0**

Source: Author's calculations

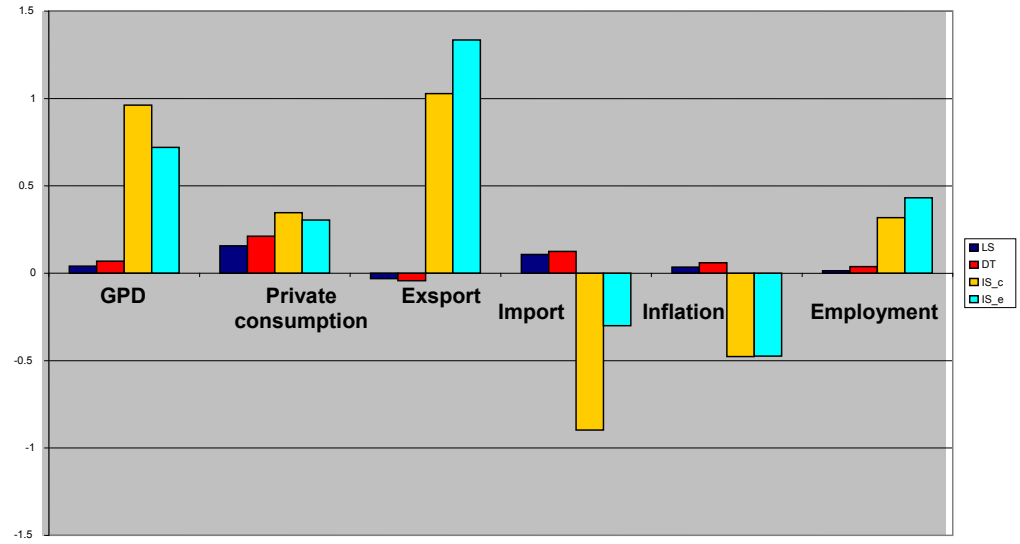
While analysing all types of instruments and measures together, it should be noted that, all voivodeships benefited from the rural development policy implemented in 2004-2006 to a smaller or greater extent. Definitely Podlaskie (one of the poorest and most agricultural regions) benefited to the greatest extent as it experienced a total GDP increase of 7.8% (Table 5). The structure of the support there was dominated by IS_c (the most effective of all instruments, as mentioned above) and LS, which probably helped to attract capital to the Voivodeship and achieve high economic growth. On the other hand, Mazowieckie Voivodeship (the reachest and capital region) hardly benefited from the RD policy. The structure of the absorbed funds was dominated there by "support for LFA" (27%), which was not very efficient instrument.

5. Differences in efficiency of rural development support instruments in 2004-2006

Until now we have considered the economic effects of various types of instruments without taking into account the differences in costs (funds directed to) those instruments. However, if we want to assess the efficiency of the measures we must also consider the fact that different amounts of funds were allocated to individual measures in particular voivodeships, and which

had a relatively different importance for individual voivodeships. In other words, we must consider the cost calculus of RD policy in relation to the achieved benefits (see Figure 8[3]).

Figure 8 Efficiency of rural policy instruments at the national level (% changes)



Source: Author's calculations

The most efficient in the context of the whole economy turned out to be measures of the investment subsidies type, both with regard to construction/infrastructure and to human capital. These types of measures, in comparison to others, had the greatest impact on GDP increase, a rise in employment in the economy and a surge in exports. At the same time it was the only type which did not trigger inflationary pressure.

Comparing the effect of the same amount of funds spent in the form of investment subsidies with other forms of measures we have concluded that they lead to 10 times greater positive impulse to GDP increase than other forms of support. If we compare direct transfers with land subsidies, we can observe that the former stimulate development only to a slightly higher degree than the latter. Probably, as a result of less significant "adverse effects" (they are a simpler form of support that is less distorting to the relationship in the economy, which the economic theory confirms).

Both on the regional and national levels, investments in infrastructure were the most efficient form of rural development support. In particular, the following voivodeships can be mentioned in this context: Śląskie, Świętokrzyskie, Opolskie and Małopolskie. The second

[3] Costs of individual measures were normalized to unity, hence the observed effects reflect efficiency (i.e. the greater the impact of a given measure with the same cost, the greater its efficiency.

most efficient form in the majority of voivodeships were investments in human capital, especially in Śląskie, Podkarpackie and Dolnośląskie voivodeships. In two voivodeships these investments were even more efficient than subsidies in construction – in Lubelskie and Mazowieckie The majority of voivodeships direct transfers and land subsidies proved not to be highly efficient (except for Kujawsko-Pomorskie voivodeship). Table 7 shows the ranking list of voivodeships by the efficiency of specific measures, while Table 8 presents the efficiency threshold (i.e. benefits/cost index below 1).

Table 7 Ranking of the regions according to efficiency of rural policy instruments

GDP growth	LS	DT	IS_c	IS_e	Total	Ranking
SLASKIE	-0.08	0.15	3.17	3.02	6.27	1
KUJAWSKO-POMORSKIE	1.44	0.15	2.46	1.46	5.51	2
DOLNOSLASKIE	0.41	0.15	2.52	2.00	5.08	3
MALOPOLSKIE	-0.16	0.15	2.70	1.95	4.64	4
PODKARPACKIE	-0.38	0.14	2.45	2.36	4.56	5
WARMINSKO-MAZURSKIE	0.80	0.14	2.33	1.28	4.55	6
OPOLSKIE	-0.02	0.14	2.71	1.51	4.35	7
SWIETOKRZYSKIE	-0.32	0.14	2.86	1.41	4.09	8
POMORSKIE	-0.15	0.14	2.53	1.54	4.06	9
ZACHODNIO-POMORSKIE	0.33	0.15	2.50	1.04	4.01	10
PODLASKIE	0.68	0.13	1.99	1.03	3.83	11
LODZKIE	0.49	0.14	1.55	1.44	3.62	12
WIELKOPOLSKI	0.81	0.14	1.61	0.72	3.28	13
LUBELSKIE	-0.03	0.15	1.50	1.65	3.27	14
LUBUSKIE	-0.20	0.15	1.85	1.03	2.83	15
MAZOWIECKIE	0.42	0.09	1.06	1.07	2.65	16

Source: Author's study.

In order to verify whether the results of the model are reliable, we used another, simpler method of efficiency assessment, i.e. for each region we assumed that costs mean the value of rural development funds obtained by the region in relation to the region's Gross Regional Product (GRP) and that benefits mean an increase in GRP (percentage) achieved due to these funds for each region. As a result, we have compiled the ranking list of regions grouped by efficiency very similar to the one based on the model. Furthermore, we set the efficiency threshold (namely the relation of benefits to costs equalling 1), which is shown in Table 9. Thus, the voivodeships that used rural development funds most efficiently were as follows: Śląskie, Dolnośląskie, and Małopolskie. In contrast, the least efficient in absorbing these funds were Mazowieckie, Lubelskie and Lubuskie voivodeships.

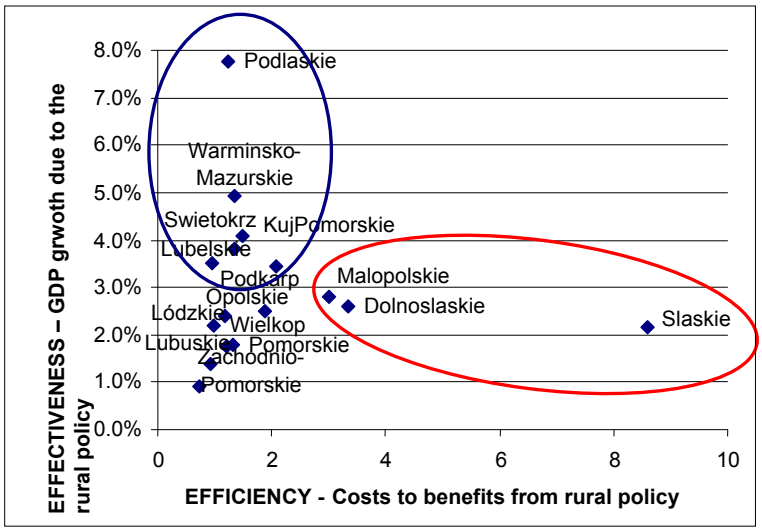
Table 9. Ranking of the regions by benefit-cost ratio

Measures / Regions	Costs (in % GDP)	benefits (GDP growth)	benefits / costs	Ranking
Śląskie	0.3%	2.2%	8.59	1
Dolnoslaskie	0.8%	2.6%	3.33	2
Małopolskie	0.9%	2.8%	3.00	3
Podkarpackie	1.7%	3.4%	2.09	4
Opolskie	1.3%	2.5%	1.88	5
Kujawsko-Pomorskie	2.7%	4.1%	1.49	6
Warm-Mazursskie	3.6%	4.9%	1.36	7
Świętokrzyskie	2.9%	3.8%	1.34	8
Pomorskie	1.3%	1.8%	1.33	9
Podlaskie	6.3%	7.8%	1.23	10
Zachodniopomorskie	1.4%	1.7%	1.22	11
Łódzkie	2.0%	2.4%	1.18	12
Wielkopolskie	2.2%	2.2%	0.99	13
Lubelskie	3.7%	3.5%	0.95	14
Lubuskie	1.5%	1.4%	0.94	15
Mazowieckie	1.3%	0.9%	0.72	16

Source: Author's calculations

Once both the effectiveness and efficiency of rural development support are analysed, the question arises whether there is any relation between the two. Figure 9 shows that voivodeships that were most effective in absorbing the funds were not the most efficient ones.

Figure 9. Relationship between effectiveness and efficiency of regions



Source: Author's own calculations

It is an interesting observation for a general debate on cohesion policy and the basic dilemma whether it is worthwhile to invest in the regions lagging behind which may not always use the support most efficiently. The higher effectiveness of those regions came from the larger absorption but lower efficiency from the unfavourable structure of the absorbed funds.

6. The efficiency as a criterion for selection of instruments for rural development policy

While observing how much efficiency of particular policy instruments differ from one to another it seems obvious that the selection of less efficient instrument impairs the pace of development. However, a survey conducted on a sample of 80 employees of Paying Agency (Agency for Restructuring and Modernization of Agriculture, ARMA) implementing the rural development programs in Poland, revealed that the measures easiest to absorb by farmers are direct transfers because the do not require difficult applications, but at the same time from our analyses we know that they are the least efficient. At the same time, the measures in form of investments are perceived by farmers as most difficult and most proved most demanding in absorption. Thus we can say that the easiest to absorb funds are least efficient while the funds which are the most difficult to obtain are the most efficient. The funds in form of direct transfers and land subsidies together exceed the investment types.

The key argument for politicians for preserving those less efficient forms of support is the fact that they are easier to absorb so the uptake of the measures in higher, so farmers are more satisfied. However, such a way of thinking in rural development policy means increased absorption at the expense of development (forsaken efficiency). Keeping the funds absorption at a high level should be rather reconciled with applying efficient forms of support instead of resorting to the easiest but not very efficient forms of support. So an effort should be made to make the most efficient forms of support easier for beneficiaries rather than granting measures in inefficient way. Thus, we should aim at increasing the absorption of “difficult” yet, most efficient measures. While translating these conclusions into the EU debate, it should be analysed which measures in the form of direct transfer or land subsidies support could be changed into investment support, easy enough to be still absorbed by farmers.

7. Recommendations for policy instead of summary

1. In order to improve the economic conditions of rural population, rural development policy should primarily focus on the most efficient measures, which mostly proved to be investment subsidies (IS_c) in infrastructure and human capital (IS_e).

2. One should also try to replace the measures that take rather inefficient forms with those taking more efficient ones. Hence, support in form of direct transfers (DT) and land subsidies (LS) should be minimized or replaced. The easiest way would be to redesign those measures into more efficient instruments such as investment subsidies. For example the support for young farmers (which was a direct transfer) can be granted in form of simple investment subsidies instead.

3. At the same time its is necessary to aim at disrupting the existing unfavourable relationship between "difficulty" and "efficiency" of the measure, i.e. measures which are most efficient are at the same time most difficult to absorb. Easy solution would be to simplify the requirements for investment subsidies but controlling for the size of the funds (i.e. more requirement could hold for larger investments but less for smaller investments to avoid the loosening of financial control).

4. While at the national level there is quite excess of pro-efficiency vs pro-equality measures in ration 60% to 40%. The picture is, however, much more diverse at the regional level. Poorer and less developed regions seem to be more keen on absorbing easier, but less efficient measures. So keeping the efficient measures difficult, favours better regions.

5. All in all, the poorer regions absorbed more funds in terms of their regional GDPs but at the same time those funds occurred less efficient in terms of GDP growth in those regions per unit of funds spent.

6. One could say that in Polish case, rural policy plays also a role of cohesion policy, because more funds are granted to poorer regions, however this happens at certain expense of efficiency losses, which should be estimated.

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