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Analysis of alternative rural support policy for a lagging region in Latvia

Abstract: The paper uses a bi-regional CGE model to assess the potential impacts of an alternative rural development policy design, which is more targeted to public sector investments on the economic activity of a lagging region of Latvia. The results show the distribution of effects between the rural and urban areas within the lagging region as well as differences in the impacts between the two policy scenarios that are explored. A specially constructed bi-regional SAM (Social Accounting Matrix), that reflects the specific characteristics of Latgale region, was used to calibrate the bi-regional CGE model; and two policy scenarios are explored. The two scenarios, "Enhanced Financial Envelope" and "Investment in Public Sector" are defined in terms of allocation volume and reallocation of funding among RDP measures and area payments. This represents the most radical kind of reallocation that is possible within the CAP, between Pillar 1 and 2 and within the Axes and Measures of RDP; and it completely removes the sectoral aspect of the support. The first scenario is based on current implementation plans but with enhanced funding for the lagging region of Latgale, and the second on the complete shift of these funds to public goods financing. Results show that both scenarios generate positive effects in terms of macroeconomic indicators (GDP and employment levels) and sectoral effects (factor income and household income expenditure). However, the effects from the "Investment in Public Sector" are stronger showing that the allocation of funds towards the public sector, which has the stronger links in the regional economy, has the highest positive effects for both rural and urban parts of region Latgale. Also, both scenarios have the ability to increase more the economic activity of the rural area while positive effects are diffused towards the urban area.

Keywords: lagging rural areas, bi-regional CGE model, rural development policy, CAP

Introduction

The practice of competitive programming of EU resources within Latvia has put lagging regions such as Latgale, the poorest in Latvia, at a disadvantage for financial flows outside of income payments through the CAP. Future reforms in CAP are likely to result in more funding available for rural development rather than farm support. The question is whether the transfer of resources from individuals to more broad-based development will have the desired multiplier effect. In other words, to find the most effective approach that will have the best economic performance in terms of macroeconomic indicators and sectoral effects for Latgale region.

The findings of different previous studies (Saktiņa and Meyers 2005) on regional development, inequality and government expenditure patterns have shown that RDP implementation did not reduce the polarization between the rich central and western regions and the poor eastern rural areas in Latvia. Further research (Saktiņa et al. 2006) provided practical recommendations on the development of the support policy to reach the goals defined for national development policy in Latvia. Also this study developed a methodology for regionalizing financial support, developing a support management system and a more professional approach in prioritizing support to regions with different development needs and potentials.

The main objective of this study is to evaluate impact of rural development policy alternatives within a single region by applying quantitative modelling. In particular, to evaluate the impacts of different development scenarios for the Latvian 2007-2013 RDP on urban and rural multi-sectoral economies and households in Latgale region. This region is the most disadvantaged one in terms of social and economic characteristics and due to this fact it was chosen for this study in order to assess the effects of alternative policy strategies on its economic activity.

The main approach of this study is to adapt a bi-regional CGE model to assess the impact of alternative policy scenarios on the regional development of Latgale region (Latvia). Although the model is essentially neoclassical, it is sufficiently flexible to accommodate a fairly wide range of views on how the regional economy adjusts to the specified policy scenarios. The model has also been adapted to include the differentiation of rural and urban production sectors, factors and households (disaggregated into seven household types) plus skilled and unskilled rural and urban labour and several specific characteristics of the regional economy under analysis. The disaggregation of factors and households provides a depth of results not often seen in such analysis.

A specially constructed bi-regional SAM (Social Accounting Matrix) table was used to calibrate the CGE model and two policy scenarios are explored in the paper. The scenarios that have been selected for this analysis are of direct relevance to the Rural Development Programme of 2007-2013 for the rural

region of Latgale. A combination of the RDP measures of 2007-2013 has been defined in two scenarios. The first scenario is based on current implementation plans but with enhanced funding for the lagging region of Latgale and the second on the complete shift of these funds from area payments and investment measures to public sector investment financing. The analysis of impacts of scenarios can guide the design of more appropriate regional policies that could more suitably address the balanced development of the regional economy.

The rest of the paper is structured as follows. Section 2 describes the nature and specific characteristics of the CGE modelling framework used in the analysis and its application in this case. Section 3 provides background information on the design of the two policy scenarios that are explored in this study, while Section 4 presents the results from the analysis. The paper ends with relevant conclusions and recommendations.

Choice of Region

The region covers about 22.5% of the Latvian territory with a population of about 369,000 (15.9% of the Latvian population). About 40% of the population resides in the two largest cities, where also 60% of the total number of region's enterprises is located. Latgale, especially its rural area, belongs to economically poor regions category in the country and also in EU NUTS 3 level. Contribution of region's economy to the total national GDP is only 7.6 percent, of which more than half (60 percent) was provided by the economies in two republic cities. Regional part of industrial Gross value added in national total is even less 6.6%, of which almost all is provided by two cities. The average GDP in 2005 averaged 3938 LVL/capita in Latvia, and in Latgale region it was 1910 LVL/capita, which is 48.5 percent of the country average. The density of population in the territory is 22.5 persons/ km², but in the rural part of the territory it is as low as 15.3 persons/ km². The demography in the rural territories is negative -a smaller share of population of working age and a higher share of population out of working age. Because less employment possibilities, there is continuing tendency to emigrate abroad, creating further pressures on the already bad demographic situation in Latvia.

The territory is located in the eastern part of the country and, because of bordering with Russia and Belarus, the region is the main transport corridor to these countries. The main economic sectors in Latgale are transport and storage, manufacture in the urban part, but in rural area -agriculture and public administration and social service rural tourism. The tertiary sectors in urban and rural areas are the most important employers, because of financing by national budget to provide social service availability. Tourism has big potential in the region, because it can influence income stabilization for farms, management of landscape and involve visitors to spend money for region goods. Since farms in Latgale region mainly are small ones with a mixed type specialization, mainly dairy farming, beef-cattle farming, and sheep-farming are developing due to the fact that agro-climatic conditions are more suitable for these industries.

Table 1. Main indicators on level of Latvian NUTS 3 regions

Region	GDP per capita, 2005	Industrial GVA, % of national total, 2005	Number of enterprises per 1000 working age inhabitants, 2005	Average wage, LVL at Jan. 2007	Tax Revenue per 1 household member, 2005	Total allocation for projects under SF	Allocation for projects under EAGGF
Latvia	3938	100	34,9	398	122,36	100	100
Rīga region	7114	50,4	62,9	452	175,45	43,4	24,5
Pierīga region	2743	13,8	26,0	382	110,63		
Vidzeme region	2309	8,3	21,0	309	92,45	11,3	20,0
Kurzeme region	3118	13,8	24,0	334	106,32	14,6	19,6
Zemgale region	2192	7,1	19,3	325	99,35	9,7	20,0
Latgale region:	1910	6,6	16,7	277	79,93	13,1	13,0
of which in rural area	1289	2,3	11,4	-	-	-	-

Source: LR Statistic office, 2005, 2007; LR Finance Ministry, 2008

Generally, production conditions in Latgale region are comparably worse than in other areas and also a small market for self-consumption is predominant there. This reflects also on support policy for agricultural and rural development in Latvia. The evaluation of rural development program implementation shows that the investments projects are smaller in this region, and the greatest part of active farmers and rural entrepreneurs have limited ability to attract financial investment from banks and Structural Funds (SF) for improvement of competiveness. The most actively used support is area payment type measures like LFA, SAP and agri-environment payments, which are income support and are paid directly to budget of agricultural households in rural region. (Saktiņa and Miķelsone 2006)

Territorially based financial envelopes

What is the rationale for regional financial allocations, or so called envelopes? The Latvian rural and agricultural development policy is implemented horizontally on the basis of national competition, resulting in support concentration in developed regions and limited access to financial support in less developed regions and to less skilful entrepreneurs. There are no regional rural development programs with specific targeted measures or finances for each region, which could provide for more stable access to support and internal competition within different sectors internally in regional economies.

Methods to calculate financial envelopes for regions at NUTS 3 level were designed in three variations. The financial envelope is calculated based on three options: 1) weighted factors such as shares of population, agricultural land, per capita Gross Domestic Product (GDP) and share of finances absorbed in regions under SPD 2004-2006 rural development measures; 2) based on a synthetic indicator called the territorial Development Index; and 3) based on one indicator, the share of finances under SPD 2004-2006 rural development measures absorbed in each region. Table 2 illustrates the potential share of financial support distribution to be calculated for each region, applying all variations.

Table 2. Calculated percentage of financial envelope division – three approaches for support of regionalisation

Region /Scenarios	Weighted factor formula, region share for financial envelope	Development index, region share for financial envelop	No envelope (SPD 2004-2006 experience) region share for financial envelope
Latvian rural total	100	100	100
Pierīga rural region	17,4	9,3	32,2
Vidzeme rural region	22,8	22,1	18,4
Kurzeme rural region	18,8	17	20,9
Zemgale rural region	18,7	19	19,6
Latgale rural region	22,3	32,6	8,9

Source: Saktina & Meyers 2006

The Modelling Framework

Over the last few decades CGE models have become a common tool of empirical economic and policy analysis in both developed and developing countries, and a standard methodology has been developed in particular to formulate, calibrate and solve such models. The CGE model implemented for this study draws especially on one of the standard frameworks made available by IFPRI (Lofgren et al. 2002). Starting with this basic structure, a number of necessary modifications have been made so that the adapted model reflects the specific characteristics of the study region and the key rural-urban interactions.

The bi-regional SAM

All CGE models use a SAM to provide the base year values which, in conjunction with other data (e.g. physical quantities, elasticities), are used to calibrate the CGE model. The basic regional SAM structure used for the purposes of this analysis consists of the productive activities of firms, the factors of production (labour and capital) and the household accounts which have been spatially disaggregated into urban and rural regions. Furthermore, households in the SAM table are also distinguished according to a) whether they derive income from agriculture and b) whether they commute, work locally or have some other status (e.g. retiree household or extra-regional commuter). Only commodities accounts have been kept identical across the whole study region due to extremely demanding requirements in terms of disaggregating the data. Also important in terms of interpreting the figures in the SAM and associated CGE model, is the Rest of the World (RoW) account that covers transactions with both the rest of the national economy and foreign imports/exports.

The bi-regional CGE Model

The CGE model used in the analysis is based upon a standard framework as given by IFPRI (Lofgren et al. 2002) but was modified so as to capture the key rural-urban interdependencies at the regional level. The model is comprised of a set of linear and nonlinear simultaneous equations. Production and consumption behaviour is captured by a number of nonlinear profit and utility maximization optimality conditions. The equations also include a set of constraints that have to be satisfied by the system as a whole, covering markets (for factors and commodities) and macroeconomic aggregates (balances for Savings-Investment, the current government account and the external balance (the current account of the balance of payments, which includes the trade balance). The description which follows presents key features of the model [19].

Production Behaviour

Production is based around activities, where each activity is based in either the rural or urban part of the region and produces one or more commodities in fixed proportions per unit of activity those allowing for a multiple output structure.

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19 The model equations, along with the full GAMS code and elasticities used to calibrate the base year SAM data are available from the authors on request.

Each producer is assumed to maximize profits which are defined as the diffe-
rence between revenue earned and the cost of factors and intermediate inputs.
Profits are maximized subject to a production technology (Figure 1). At the
top level, the technology is specified by a constant elasticity of substitution
(CES) function of the quantities of value-added and aggregate intermediate
input. The CES function suggests that available techniques permit the aggre-
gate mix between value-added and intermediate inputs to vary. Value added
is itself a CES function of primary factors whereas the aggregate intermediate
input is a Leontief function of disaggregated intermediate inputs. At the bot-
tom level each activity uses composite commodities as intermediate inputs,
where intermediate demand is determined using fixed Input-Output (I-O) co-
efficients. Value added is a CES function defined over factors of production
which are spatially specific.
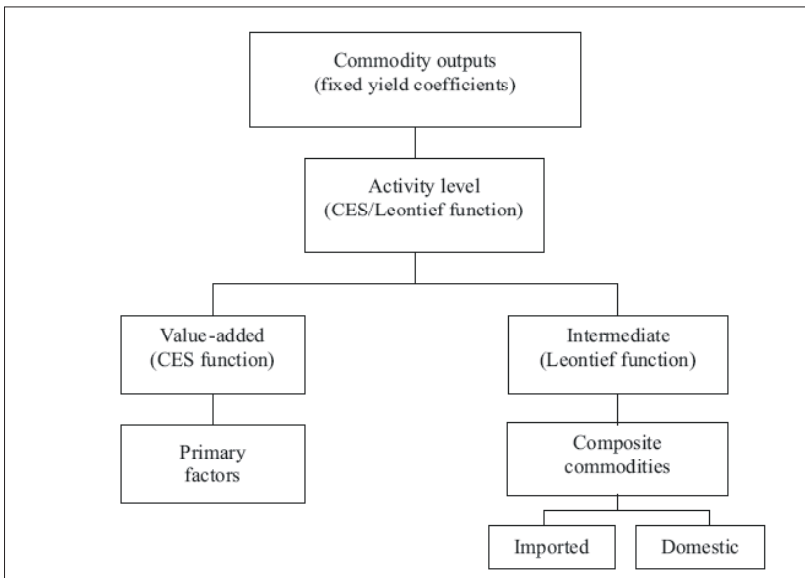
Figure 1. Production technology
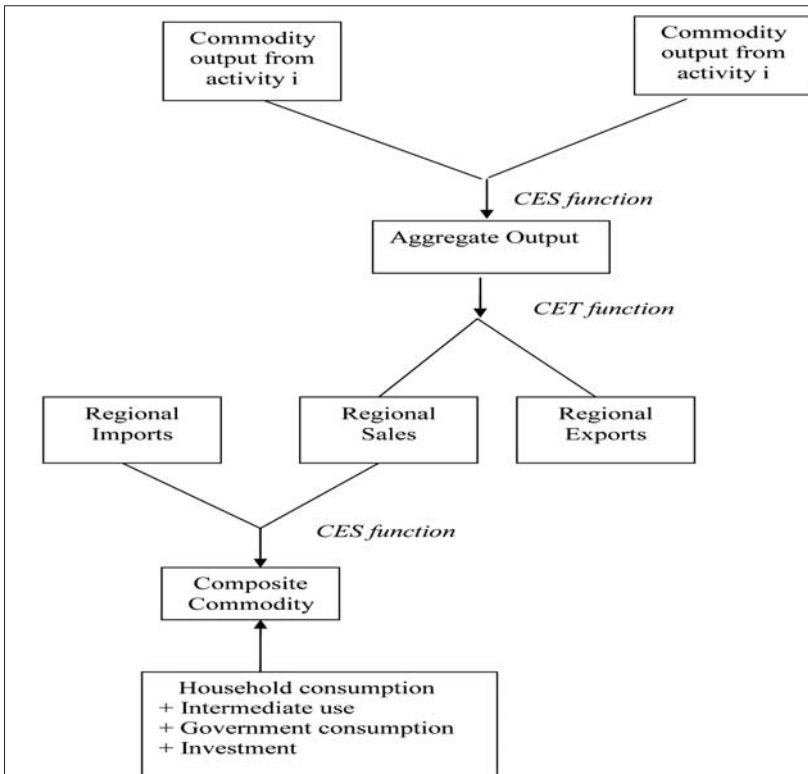Source: Lofgren et al. 2002

As part of its profit-maximizing decision, each activity uses a set of factors up
to the point where the marginal revenue product of each factor is equal to its
wage. Factor wages may differ across activities, not only when the market is
segmented but also for mobile factors.

Factor payments accrue to the owners of the factors (households) as reflected in
the base SAM. The CGE model requires certain assumptions in relation to the
way in which supply and demand in factor markets come about. In relation to
labour markets, these range from assuming the wage rate to be perfectly flexi-
ble (Neoclassical adjustment), to allowing for unemployment (Keynesian adjust-
ment) or segmented factor markets. Analogous assumptions exist for the capital
factor in the model.

Commodity Markets

All commodities (either produced within the region or imported), with the exception of home-consumed output, enter markets and activity-specific commodity prices serve to clear the implicit market for each disaggregated commodity. As shown in Figure 2, at the first stage regional (domestic) output is produced from the aggregation of output of different activities within the region of a given commodity. At the next stage, the aggregated regional output is split into the quantity of regional output sold domestically and of that exported via a constant elasticity of transformation (CET) function.

As is widely practiced in the CGE literature, a so-called "Armington" function is used to prevent "over-specialization" and to better reflect the empirical realities of most regions. This approach assumes imperfect substitutability between imports, exports and commodities produced within the region. Regional market demands are thus assumed to be for a composite commodity made up of imports and regional output, as captured by a CES aggregation function. Also, the model assumes that export and import demands are infinitely elastic at given world prices. Flexible prices are also assumed to equilibrate demands and supplies of domestically marketed domestic output.

Figure 2. Commodity Flows
Source: Lofgren et al., 2002

Institutions

Institutions in the CGE model are represented by households, government and the rest of the world account. Households (disaggregate according to the SAM table) receive income from the factors of production (in proportions fixed at the base year level), and transfers from other households, the government and the Rest of the World. This income is spent to pay direct income taxes, to consume, save and make transfers to other institutions. Direct taxes and transfers to other domestic institutions are defined as fixed shares of household income whereas the savings share is flexible. The treatment of direct income tax and savings shares is related to the choice of closure rule for the government and savings-investment balances. Household consumption covers marketed commodities, purchased at market prices that include commodity taxes and transaction costs, and home commodities, which are valued at activity-specific producer prices. Household consumption is allocated to market and home commodities based on a linear expenditure system (LES) demand function that is derived from the maximization of a Stone-Geary utility function (Dervis et al. 1982, Blonigen et al. 1997).

The second institution is the combined government account (representing both local and central government). Government collects taxes (all taxes are at fixed ad valorem rates) and receives transfers from other institutions. The government uses this income to purchase commodities for its consumption and to make transfers to other institutions (e.g. Households). Its consumption is fixed in real terms whereas government transfers to domestic institutions are CPI-indexed. Government savings (the difference between government income and spending) is a flexible residual.

The final institution is the Rest of the World account. Transfer payments between the rest of the world and domestic institutions and factors are all fixed in foreign currency. Foreign savings is the difference between foreign currency spending and receipts.

The model also includes three macroeconomic balances, the government, the external balance and the Savings-Investment balance. The government balance was achieved by allowing government savings to adjust endogenously within the model while direct tax rates were fixed. The external balance was achieved through flexible foreign savings while the real exchange rate was assumed fixed. Finally, for achieving the Savings-Investment balance we used the 'balance' Keynesian closure rule that assumes that adjustments in absorption are spread across all of its components (household consumption, investment, and government consumption) and the nominal absorption shares of investment and government consumption are fixed in real terms. Also, the savings rates of selected institutions are scaled so as to generate enough savings to finance investment.

In the case of the labour market we choose to use the Keynesian closure rule which assumes that a factor (and more specifically labour) can be unemployed and the real wage is fixed. This assumption is appropriate in settings where there is considerable unemployment for a given labour category in the regional economy. In this setting the economy-wide wage variable is fixed (or exogenized) while the labour supply variable is flexible (endogenous to the model). The supply variable is superfluous; it merely records the total quantity demanded.

Policy Scenarios

The scenarios that have been selected for this analysis are of direct relevance to area payment schemes (Pillar 1) and the Rural Development Programme (RDP) of 2007-2013 (Pillar 2) for the rural region of Latgale. There have been defined three policy scenarios in order to guide the design of more appropriate regional policies that could more suitably address the balanced development of the regional economy. The scenarios analyzed in this paper include:
1. Base: **No Latgale Financial Envelope**, in which a total funding available is the share of funding that actually occurred in RDP and SF measures during 2004-06;
2. Scenario 2: **Enhanced Financial Envelope** (based on the Development Index) for regional RDP measures of 2007-2013 in Latgale and area payments support flows under Pillars 1 and 2 of the CAP;
3. Scenario 3: **Investment in Public Sector only:** area payments and funds for RDP investment measures for business development are transferred to public social and economic infrastructure measures with none going to private investment.

Presentation of Results

In this section, main results from the policy scenarios are presented in terms of impacts on macroeconomic indicators (real GDP and employment levels) and sectoral effects (factor income and distribution of household income and consumption expenditure between different household categories). The effects of the two policy scenarios are measured as deviations from the "No Latgale Financial Envelope" which represents the share of total funding that actually occurred in RDP and SF measures during 2004-2006.

Real GDP at Factor Cost

The scenario-specific impact on sectoral and total real GDP at factor cost is shown in Table 3. Results indicate that both scenarios will have positive impacts on total real GDP of both regions, with effects in the rural region being higher. Comparing the two scenarios it seems that "Investment in Public Sector" scenario has the ability to increase more the total and regional (rural/ urban) GDP and in particular the generated impacts are twice compared to the "Enhance Financial Envelope" scenario. However, the positive effects in both cases are quite small compared to changes in the sectors of the regional economy.

Turning to rural and urban GDP effects, results show that the model predicts higher positive effects in the case of the rural sectoral GDP. In the case of the rural region, sectoral GDP effects have different sectoral distribution and they are always positive, with the exception of the negative effects in the primary sectors from the "Investment in Public Sector" scenario. Specifically, the "Enhanced Financial Envelope" scenario raises more the GDP of the primary sector while "Investment in Public Sector" affects more the GDP of the tertiary sector. Also, the GDP of the secondary sector is increased from the implementation of the two scenarios. This reflects increases in allocative efficiency from the removal of coupled support and the transfer of funds from area payments to different sectors of the rural region.

In the urban region there is a different picture of impacts concerning the distribution of sectoral effects. The "Enhance Financial Envelope" scenario continues to increase more the GDP of the primary and the secondary sectors as in the rural region. However, the "Investment in Public Sector" scenario increases more the GDP of the urban secondary sector while the effects in the tertiary sector are the lowest.

The most important finding from the implementation of the two scenarios is that the impacts in rural sectoral GDP from the "Investment in Public Sector" scenario are different compared to the "Enhanced Financial Envelope" due to the fact that all funds are allocated towards public sector investment. Also, the reason that rural total GDP increases more from this scenario can be explained by the fact that funds are allocated to sectors that are labour and capital intensive, which means that they are important in the formation of the rural GDP.

Table 3. Aggregate Impacts on Real GDP at Factor Cost (% changes from the "No Latgale Financial Envelope" scenario)

	No Latgale Envelope (1000 LVL)	Enhanced Financial Envelope (%)	Investment in Public Sector (%)
Rural Area	**207756**	**0.82**	**1.64**
Primary	34688	1.46	-5.74
Secondary	50663	1.12	2.00
Tertiary	122405	0.51	3.57
Urban Area	**318155**	**0.15**	**0.36**
Primary	714	0.29	0.14
Secondary	109710	0.20	0.91
Tertiary	207731	0.13	0.07
Total	**525911**	**0.42**	**0.86**

Employment Effects

The effects of the two alternative scenarios on skilled and unskilled employment levels are shown in Table 4. Both scenarios have positive skilled employment effects. The "Enhanced Financial Envelope" scenario has the ability to

increase more the employment skilled levels of the rural and urban primary sector. Also, due to high linkages of the primary sector with the secondary sector, a considerable increase in the skilled employment levels of the rural secondary sector is recorded. In contrast, the "Investment in Public Sector" scenario has clearly the best total skilled employment impacts but it is negative for the rural primary sector due to the shift of area payments to investment. The higher impacts in total employment are due to the high positive impacts in the employment of the rural tertiary and secondary sectors which result from the focus on public infrastructure investment. These sectors are also labour intensive and, consequently, in order to produce more they demand more workers.

Table 4. Skilled and Unskilled Employment Effects (% changes from the "No Latgale Financial Envelope" scenario)

	No Latgale Enve-lope (FTEs)		Enhanced Finan-cial Envelope (%)		Investment in Pu-blic Sector (%)	
	Skilled	**Unskilled**	**Skilled**	**Unskilled**	**Skilled**	**Unskilled**
Rural Area	30963	9898	1.32	1.28	4.94	4.45
Primary	2042	544	4.24	4.24	-2.25	-2.25
Secondary	6487	2846	1.97	1.67	4.34	1.02
Tertiary	22439	6509	0.83	0.84	5.76	6.71
Urban Area	42006	12915	0.30	0.18	0.70	0.52
Primary	128	0	0.73	0	0.34	0
Secondary	12245	5347	0.40	0.21	1.72	1.11
Tertiary	29636	7568	0.25	0.16	0.15	0.10
Total	72996	22791	0.94	0.59	3.38	1.99

In the case of unskilled employment levels, the sectoral distribution of effects has the same direction as skilled employment effects. However, percentage changes are a little bit lower for unskilled employment levels. The only difference is observed in the rural tertiary sector where unskilled employment effects increase more from the implementation of the two policy scenarios compare to skilled employment levels.

In conclusion, it can be said that the "Investment in Public Sector" scenario has the largest increases in total, rural and urban skilled and unskilled employment levels, but this is due to the labour intensive sectors to which funds are allocated. Only the employment levels of the primary sector record the highest increase due to the "Enhanced Financial Envelope" scenario.

Factor Income

Factor income changes provide the most general indicator of labour and capital incomes (Table 5). Both scenarios give positive effects in the income of both rural and urban labour and rural and urban capital factors with the "Investment in Public Sector" scenario resulting in impacts that are more than

two times higher except in the case of urban capital. Also, both scenarios seem to affect more the income of rural labour factors that is rural unskilled, skilled labour and rural capital.

Household Income

The impacts of the two policy scenarios on the distribution of income of different household categories are presented in Table 6. In the case of agricultural households, the "Enhanced Financial Envelope" scenario has the highest incomes, which is due to the direct transfer of area payments to their budget. In contrast, the "Investment in Public Sector" scenario results in a very big decrease in the income of agricultural households because area payments are transferred to investment support for public infrastructure. However, the increase investment support has the ability to result in highest positive impacts on the incomes of the rest of rural and urban household categories. Rural local households and those urban households working in rural areas benefit from the largest income increases. An important finding is that the two scenarios result in positive diffusion of impacts towards the income of urban households.

Table 5. Impacts on Factor Income (% changes from the "No Latgale Financial Envelope" scenario)

Factors	No Latgale Enve-lope (1000 LVL)	Enhanced Finan-cial Envelope (%)	Investment in Pu-blic Sector (%)
R-Unskilled Labour	249386	1.28	4.45
R-Skilled Labour	862786	1.32	4.94
U-Unskilled Labour	415860	0.18	0.52
U-Skilled Labour	1367259	0.30	0.70
Urban Capital	1380206	0.34	0.66
Rural Capital	788159	2.20	4.74

Table 6. Impacts on Household Income (% changes from the "No Latgale Financial Envelope" scenario)

Households	No Latgale Envelope (1000 LVL)	Enhanced Financial En-velope (%)	Investment in Public Sector (%)
Rural HHS	249761	1.12	-12.56
Rural Local	30153	1.40	4.15
Rural Commuter to the Urban area	32841	0.80	2.25
Rural Commuter to the RoW	14160	0.75	2.05
Agricultural HHS	172608	1.15	-19.29
Urban HHS	318846	0.42	1.00
Urban Local	282806	0.38	0.83
Urban Commuter to the Rural area	26077	0.89	3.01
Urban Commuter to the RoW	9963	0.22	0.49
Total HHS Income	568607	0.72	-4.96

Household Expenditure

In terms of household expenditure (Table 7) the "Enhanced Financial Envelope" scenario results in the best outcomes for agricultural households, but expenditures for other rural and all urban households are lower compared to the "Investment in Public Sector" scenario. This shows that the trade off between agricultural households and all others is seen in the results. The reduced spending of agricultural households in the "Investment in Public Sector" scenario is due to the big loss in their household income when area payments are removed. The interesting fact that emerges is the big increase in the expenditures of urban households that occurs from the direct effect of shifting area payments to investment support. Investment support leads to an increase in the production of urban sectors and consequently more labour is demanded in order to produce more. Since households are the owners of the labour factor this would result into an increase in their income and consequently to their expenditure levels.

Furthermore, the "Investment in public Sector" scenario has the largest positive impact on rural non-farm households and on all households in aggregate. Expenditures of all non-farm and especially urban households are significantly higher compared to the "Enhanced Financial Envelope" scenario, which is attributable to the direct effect of investments linked to production in the case of rural non-farm households and due to investment in commodities in the case of urban households. Also, the "Enhanced Financial Envelope" scenario decreases, even slightly, the expenditure levels of urban local and urban commuters to RoW even though their income increases.

Table 7. Impacts on Household Expenditure (% changes from the "No Latgale Financial Envelope" scenario)

Households	No Latgale Envelope (1000 LVL)	Enhanced Financial Envelope (%)	Investment in Public Sector (%)
Rural HHS	184609	1.01	-10.11
Rural Local	22904	1.30	6.89
Rural Commuter to the Urban area	26016	0.71	4.25
Rural Commuter to the RoW	11781	0.69	3.57
Agricultural HHS	123908	1.05	-17.56
Urban HHS	160939	-0.21	14.52
Urban Local	145546	-0.24	14.47
Urban Commuter to the Rural area	10424	0.25	17.44
Urban Commuter to the RoW	4969	-0.21	9.79
Total HHS Expenditure	345548	0.44	1.36

Conclusions

This analysis has focused on the description of the magnitude and the distribution of effects that result from the implementation of two alternative policy scenarios for the Latgale region. The results show that each scenario is predicting different qualitative and quantitative impacts in total and also in sectoral effects as well as differences in the distribution of effects between its rural and urban parts.

Comparison of the "No Latgale Envelope" scenario to the "Enhanced Financial Envelope" reveals the positive impacts of the increased financial allocation to Latgale Region. The addition of this extra funding resource has the effect of increasing all the indicators related to employment, GDP, and factor income even though area payments remain the same as in the "No Latgale Envelope" scenario. Also, this scenario seems to affect more positively the primary and secondary sectors and that is due to increased investments in the agriculture and agribusiness sector.

The comparative analysis of the scenario results show that in terms of GDP, the "Investment in Public Sector" scenario is the one that leads to the largest increase in the total and regional (rural-urban) GDP. Focusing on the aggregate sectoral effects it seems that this scenario increases the GDP of the rural tertiary and urban secondary sectors more, while the "Enhanced Financial Envelope" scenario has the ability to increase the GDP of the rural primary sector more. In the "Investment in Public Sector" scenario, rural GDP has a net increase despite the fact that removal of area payments reduced agricultural GDP. This means that non-agricultural employment and economic activity increases enough to more than offset the loss of jobs and economic activity in the primary and related secondary sectors. The strongest growth is in the rural tertiary sector, since that encompasses all the public sector activity that is emphasized in the investment priorities. Factor incomes for rural skilled and unskilled labour and for rural capital are the highest in this scenario.

Overall, the results suggest that in order for an economy to have a good economic performance it's not only about enhanced funding but is about the targeting of these funds to the more productive sectors of the economy. These would be the sectors that have the highest linkages within the economy and have the potential to create strong direct and indirect effects spread to the regional economy. In particular, the "Investment in Public Sector" scenario is the one that leads to the strongest positive effects both in the rural and also in the urban part of the region. These effects are mainly attributable to the positive effects that are recorded in the tertiary sector and also in the positive effects that are recorded in the tertiary and secondary commodities. As for the "Enhanced Financial Envelope" scenario, it is the one that affects more the primary sector in both areas.

Sensitivity analysis was carried out to test for the robustness of the findings. In particular the policy simulations were repeated assuming double levels for

the Armington elasticities. In this case, as anticipated, the results were affected but by small amounts and there were no qualitative changes in terms of direction of impacts or distribution of effects across rural-urban space.

Recommendations

This analysis would be more valuable if it could be extended to all regions of Latvia. The CGE modelling framework used for this impact assessment has proved to be an effective analytical tool for the evaluation of alternative rural development policies. However, the analysis is limited due to the fact that it was possible to be done only for Latgale region and not for all the regions of Latvia. In particular, when the financial envelope for Latgale was increased, the positive effects in the economic activity of Latgale was shown in the results but the impacts in the performance and well being of other regions cannot be adequately measured. A national analysis of the same or other policy alternatives requires a replication of this modelling and assessment in all regions together.

Regional modelling and analysis covering all regions of Latvia is recommended both for planning of strategy and projecting likely results of alternative policy implementation and for evaluation of results at the Mid-term review and the conclusion of the programming period. Having such an assessment tool would make it possible to conduct a much more quantitative evaluation before, during and after the RDP implementation.

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