Allocation of CAP modulation funds to rural development measures at the regional level in Finland

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Abstract

Further coordination and coherence of the EU funds and policies has been increasingly called for, implying that the territorial perspectives should be included as a major element in the future policies. In this paper, CAP modulation is considered in a framework of a regional development such that it compares the effects on modulation funds first, as they are allocated as income subsidies to farm related, diversified economic activities and second, as they are channeled from agriculture to increased regional investment demand. A rural-urban Social Accounting Matrix is used as a base year data for the CGE-model. The results suggest that transferring CAP payments from actual agriculture as income support to diversified activity does not promote rural development and economic activity measured at the regional level. Accordingly, traditional agriculture seems to be able to exploit the subsidies more efficiently. On the contrary, the investment shocks resulted in positive total impacts in terms of the gross regional domestic product and regional employment. However, the positive GDP impacts were greater in the urban area, thus suggesting possible agglomeration development.

Introduction

Both regional and agricultural policies are reconsidered for the new EU programming period after 2013. The future policies are facing tightening EU budget constraints and in addition, agricultural policy is also expected to comply with WTO commitment and free trade pressures. Regarding both the policies, the penetrating principles for the future policy objectives are sustainability, competitiveness, and social and economic cohesion.

Assembly for European Regions (2010) calls for coordination between EU funds such that there would be more coherence between rural development and cohesion policy. Territorial perspective should be a major element in the future policies such that territorial strengths and potential would be better utilized, and the support and assistance would be allocated to territory specific needs. EU Commission (2010), for one, stresses that the CAP reform must continue such that it would promote greater competitiveness, the efficient use of taxpayers' resources and effective public policy returns for the European citizens. However, the ability and role of the CAP as a promoter of EU regional cohesion has also been questioned (i.e. Shucksmith, Thomson & Roberts 2005; Esposti 2007).

The regional and territorial impacts of the CAP have recently been largely analyzed. For example, Rizov (2004) concluded that CAP support redistribution can clearly impact rural development and household welfare. Shucksmith, Thomson and Roberts (2005), in turn, argued that the CAP has uneven territorial effects especially in terms of its first pillar. However, they admit that the second pillar, at least in some cases, may be more consistent with cohesion targets. Esposti (2007) found that CAP expenditure had no counter treatment effect, and that its positive impact on growth is marginal. Daniel and Kilkenny (2008) found that both coupled subsidies and single farm payments can decrease spatial agglomeration, and only the single farm payment policy raised welfare in both rural and urban regions. More generally, Shankar and Shah (2009) has collected an overview regarding the impacts of the European Union policies for regional development.

In Agenda 2000 reform, the Commission launched a new model of European agriculture that is based on two pillars, where the first pillar contains the traditional price and market policy, and the second pillar a policy component for rural areas and environment. It further introduced voluntary modulation that enabled Member States to transfer funds from first pillar to second pillar. Since the MSs used this option only marginally, obligatory modulation was introduced in the Fishler reform. Modulation became obligatory from 2005 onwards.

The major targets for the second pillar and ERDF for the period 2007-2013 are a) improving the competitiveness of agriculture and forestry, b) improving the environment and countryside and c) improving the quality of life in rural areas and diversification of rural economy e) LEADER initiatives (EU Official Journal 2005). As for the future second pillar, Burrell (2009) argues that among the policy makers there appears to be a clear commitment to further strengthen CAP second pillar in the future. Further , according to Esposti (2007), second pillar should include less sectoral and more economy-wide measures explicitly designed to combine with the structural policies at the regional or local level.

Outmigration and economic decline of remote rural areas has been a constant concern for local policy makers and for local people in Finland. Agriculture has traditionally been one of the key sectors preserving economic activity and viability in remote rural areas. Yet, because of northern location, Finnish agriculture is not competitive in comparison with the EU countries geographically more favourably located and is thus very dependent on policies and subsidies. Ritson and Harvey (1991, 158) list EU Commission targets for the future rural society and conclude that in order to met rural decline, a selective approach to diversification should be adopted, implying that the regions should aim at attracting industries which would have strong local linkages (for example, food processing industries) or for which there is increasing local demand (some services).

This study aims at considering CAP modulation in a framework of regional development. The modulation is simulated in two different ways. The aim is to compare the modulation effects first, when the funds are allocated as subsidies to the diversified farms and second, when they are channeled to increased regional investment demand. These impacts are regarded from the point of view of agriculture and food industry and from regional development.

The paper is structured as follows: First, a brief overview on the study region as well its agricultural sector and diversified farms are given. Second, basic information on the data and methods is provided. Next, the simulations are explained following the main results and finally, discussion closes the paper.

South Ostrobothnia, local agriculture and diversified farms

South Ostrobothnia is located in western Finland. The region, classified as NUTS3, has 194 100 inhabitants, corresponding 3.4% of the Finnish population. In the model, the urban area Seinäjoki corresponds approximately 19 per cent of the region's population. The region is particularly known for its active entrepreneurship, fertile countryside and versatile culture. Agriculture and forestry account for the relatively larger shares of value added, employment and trade compared with the national average. An additional special feature is a high number of small businesses and the regional clusters they form (Regional Council of South Ostrobothnia 2007). South Ostrobothnia has lower GDP per capita in comparison with the European Union and the Finnish national averages. In 2007, the regional GDP per capita was 67% of the national average(Statistics Finland 2009). This is partly due to a fact that a large share of employed are working for the sectors in which the GDP per worker is below the national average. Another explanatory factor is that the local enterprises are predominantly small enterprises. The region has also suffered from outmigration of working age population simultaneously as the number of pensioners is constantly growing. The main economic clusters are food-, metal- wood- and construction clusters. During the period 2000-2008, both employment and local economy grew. However, this development is twofold such that population and labour force are increasing only in the Seinäjoki sub-region. On the contrary, the other sub-regions have been suffering from outmigration and decrease of work force (Mella 2008). Yet

recently, due to the economic decline, unemployment has grown in South Ostrobothnia more rapidly than in Finland in average (Kaarna & Mella 2010).

South Ostrobothnia is nationally important producer of agricultural and food products. Together with input industry, other related industries and services, agriculture and food industries form the local food cluster. Several cumulative factors have affected the development of the food cluster. Since the local markets are thin, the food industry is export oriented, and exports both to national and international markets. There is a strong tradition of entrepreneurship and co operative associations in the region. The cooperative-based ownership structure of the manufacturing has provided sufficient demand for raw materials and kept up the processing industry in the region despite the remoteness from the main market areas of the products. In addition, favourable nature conditions have earned competitive advantage to the region and guided resources to the primary production. Despite the recent concentration development, agriculture is evenly scattered to the region. In 2008, there were 7390 farms in South Ostrobothnia, contributing 11% of the Finnish farms and 4% of the farm land in Finland. The average farm size is 33 ha (in Finland 35 ha). The local farms have 12% of the Finnish cattle, 17% of the pigs, 22% of the poultry and they produce 11% of the Finnish milk. In 2008, the average yield per hectare exceeded the national averages being, for example, 3815 kg per ha for spring wheat and 4030 kg per ha for barley (TIKE 2009). Yet, these levels are very low in comparison with those, for example, in France or Germany.

Due to the strong structural change, other farm related economic activities, in addition to the traditional agriculture, has become increasingly important in the rural areas in Finland. The farm accounting in 2000, for the first time, collected information on these business activities and their economic importance. According to TIKE (2006), the term 'diversified farm' refers to a farm that has other business activities in addition to agriculture or forestry. The farm structure studies of 2003 and 2005 (TIKE 2004; TIKE 2006) have collected further information on these farms, and ongoing farm accounting is carried out concerning the year 2010. The number of diversified farms both in 2003 and 2005 was the highest in South Ostrobothnia among all the Finnish NUTS3 –regions. There were 24249 diversified farms in Finland in 2005 and 2596 of these were located in South Ostrobothnia.

Social Accounting Matrix

The regional input-output tables of Statistics Finland (2006), relating to the year 2002 were used as a core information in building the Social Accounting Matrix for Southern Ostrobothnia. The tables comply with the concepts and definitions of the European System of Accounts (ESA95) and with the UN System of National Accounts (United Nations 1999). The industrial classification used in the in the SAM is based on the national standard industrial classification TOL2002. Respectively, the product classification follows the activity based products classification CPA of the European Union (Statistics Finland 2007). The regional make and use tables served as control totals for the disaggregated accounts of the SAM. The disaggregation was based on information collected from several secondary data sources from national, regional and municipality levels. The gaps still remaining were filled with the household survey and the firm interview findings. In the end, the SAM was balanced by using a cross entropy method (Robinson et al. 2000).

Since the 1970s, SAMs has been increasingly constructed particularly for the purposes of developing country research (for example Pyatt & Thorbecke 1976; Hayden & Round 1982). At the moment, country level SAMs are used widely, but due to the high data requirement, regional and particularly the bi-regional SAMs are not as common. Examples of these, however, are the SAM constructed for analysing the relationship between East and West Malaysia (Round 1985), the

SAM analysing the spatial diffusion of rural-urban spillovers in Grampian, Scotland (Roberts 2000) and the SAM analysing rural-urban interdependencies and their diffusion patterns in southern Greece (Balamou and Psaltopoulos 2006). In Finland, regional level SAMs have been constructed by, for example, Nokkala and Kola (1999), Marttila (2007) and Törmä in his RegFin CGE model (e.g. Törmä 2002). All of these are based on the Statistics Finland's regional input- output tables for years 1995 or 2002.

According to Pyatt and Round (1985), a Social Accounting Matrix represents macroeconomic and mesoeconomic accounts of a socioeconomic system by capturing the transactions and transfers between the economic agents included in that particular system. A SAM aims at recording and portraying all the economic activities, such as consumption, production, accumulation, and distribution taking place during an accounting period. The SAM used in this research aims at capturing the rural-urban linkages of South Ostrobothnia and its central town Seinäjoki. The general structure of the SAM is shown in Appendix 1.

The South Ostrobothnia SAM has 28 accounts for rural and 25 accounts for urban activities. The commodities accounts are not spatially disaggregated. There are ten different factor accounts that are spatially distinguished according to the rural/urban industry shares. Labour factor division is two- fold: white collar and rural blue collar workers in rural and urban areas. However, in this paper the labour market is integrated, implying that the labour force can move freely inside the region. The capital accounts are rural capital, urban capital and agricultural capital. The agricultural land factor is separated and finally, accounts for rural housing rent and urban housing rent are distinguished. In addition, there are six different household groups, accounts for government, the rest of the world and finally, account for savings and investments.

Computable General Equilibrium Model

Wing (2004) characterises computable general equilibrium models as simulations that are combining the abstract general equilibrium structure with realistic economic data in order to solve numerically for the levels of supply, demand and price supporting equilibrium across a specific set of markets. Thus Walrasian general equilibrium is prevailed when supply and demand are equalized across the interconnected markets in the economy described by the model. The CGE model used in this research draws on the standard stationary general equilibrium framework made available by the International Food Policy Research Institute (IFPRI). Thus, the equations and the specific structure of this constant returns to scale -model are provided in Lofgren et al. (2002). However, the model used in this study is slightly modified in order to follow the core structure of the SAM which also serves as a base year data for the Computable General Equilibrium model. The modifications are specified in Phimister et al. (2006).

The model consists of a set of linear and nonlinear simultaneous equations that determine the behaviour of the economic agents in the model. These equations also include a set of macroeconomic constraints that cover factor and commodity markets, balances for government, current accounts and savings and investments. These closures are defined more precisely in the next paragraph. The social accounting matrices are used, not only as a base year data for the CGE model, but also to calibrate the coefficients of the model equations together with the production, trade and consumption elasticities. The elasticity values are based on the previous Finnish research (Törmä & Rutherford 1992; Törmä, Rutherford & Vaittinen 1995; Vaittinen 2004; Törmä 2006). Empirical examples of using simulation models on modelling CAP measures can be found for example from Balkhausen (2008). Recently in Finland, Törmä and Lehtonen (2010) had evaluated the overall economic effects of decoupled agricultural payments in Finland.

Simulations

In order to simulate subsidy transfer from agriculture to the other farm activities, an additional farm activity was included in the SAM. Since the total output of other activities on the regional level is rather small, all the different activities were not included as such. The representative diversified activity consists of 26% food manufacturing, 6% of trade, 17% of tourist services and 50% of business services. Yet, these shares and activities reflect the actual data collected from South Ostrobothnia such that the shares of manufacturing and services are corresponding, and the most important activities are included. The structures of production processes were differentiated, implying that the inputs and input shares used differ from those of the actual agriculture. Accordingly, each of the industries included in the representative diversified industry has individual input structure, productivity per employer and the capital income share. These figures and shares were derived from the corresponding local rural activities. However, since these rural activities are an aggregation of all the firm i.e. both large and small, it was necessary to presume that the productivity of these often very small farm related enterprises were below the industries' averages. The figures were cross examined with the figures attained from the farming accountings information on the diversified farms. The 2005 farm accounting provided information on the working hours used for the other activities in the regional level. These working hours were transformed to man-years. Further, by using the information collected for the SAM concerning the numbers of entrepreneurs and employees working for agriculture, the shares of wages and capital incomes were counted. Finally, the share of the output of the diversified farms of the original agricultural activity account output was 21%. In the model, it is presumed that diversified farms are 25% more efficient than traditional agriculture measured in terms of output per working hour. However, compared with the regional averages of these rural representative activities, the difference would have been clearly wider. 'Diversified activity'- wages are channelled to several household types. However, all the capital income is channelled to the agricultural households. The agricultural land factor was left under the actual agriculture.

Three different simulations were carried out. All of them aim at reflecting the so called 'modulation' from the CAP first pillar subsidies to the second pillar. Environmental and LFA subsidies are left under the actual agricultural industry. Accordingly, these modulation simulations aim at reflecting transfers to actual rural development measures. Concerning all the three simulations, 30% of the total agricultural subsidy is cut from the agricultural primary industry. The total agricultural subsidy (allocated to the Activity tax account as a negative receipt whereas activity taxes are there as positive receipts) was 192.6 million€, and thus the 30% cut amounted 57.8 million€. Regarding the diversified farm simulation, the subsidy is transferred to the diversified activity as an income subsidy, whereas concerning the investment simulations, the corresponding sum is transferred to increased investment demand. The 'Modern investment' –simulation allocates the funds to the increased investment demand for investments of business services, electronic equipment and trade services, each of which having the equal shares. The 'Traditional investment' – simulation similarly distributes the funds to the investment demand for construction, machinery and timber.

The model is closed with the macroeconomic constraints that cover factor and commodity markets, balances for government, current accounts and savings and investments. The final choices of the closures used in this study were based on the characteristics of the study regions and on previous research. In Finland, taxation decisions are made either on the government level or on the municipality level, not at the regional level. Accordingly, it was reasonable to choose a government closure that leaves all tax rates fixed but enabled government saving to change, instead of letting the direct tax rates of domestic institutions to adjust in order to generate a fixed level of government

savings. The real exchange rate is fixed while foreign savings and thus trade balance is flexible. This reflects the situation of a small open economy that faces infinitely flexible demand. The investments are savings-driven. As for the factor market, simulations were carried out under the so called Keynesian closure that allows labour supply vary but assumes that the factor price of labour is fixed. This is justified, since Finland has traditionally had a strong corporative system, implying that the wages and conditions of employment had been negotiated between the nationwide trade unions and the employers' organisations. Finnish government has, to a large extent, participated these negotiations. Land factors and capital factors were fully employed and activity specific.

Results

The macroeconomic impacts of the 'modulation' shocks at the regional economy of South Ostrobothnia are presented in Table 1. The first column shows the base values in millions EUR derived from the Social Accounting Matrix. The second column presents the percentage changes from the base values caused by a 30% cut of agricultural subsidy and the corresponding transfer to the diversified farms. Similarly, the third and fourth columns show the effects of a 30% agricultural subsidy cut and transfer to increased investment demand.

Table 1. Macroeconomic indicators

	BASE milj.€	**Diversified farms, %ch**	**Modern investment, %ch**	**Traditional investment, %ch**
Private Consumption	2448,79	-0,01	-1,06	-0,45
Investments	718,55	0,39	23,92	28,361
Exports	2442,42	-0,1	-0,6	-0,59
Imports	2534,21	0,02	3,96	4,71
GDP at Factor Costs	3424,46	-0,06	0,51	1,04

The increased investment demand resulted in positive effects on the regional GDP, investments and imports, whereas the transfer to the diversified farms resulted in a slightly negative GDP effect and slightly positive impact on investments. Indicators presented in Table 1 are further detailed and explained below. In addition to rural and urban totals, the aggregated figures of rural primary, rural and urban manufacturing and rural and urban services sectors were counted (although they are not presented in the tables below).

Table 2. Regional GDP at factor costs.

	BASE milj.€	**Diversified farms, %ch**	**Modern investment, %ch**	**Traditional investment, %ch**
GDP total area	3424,46	-0,06	0,51	1,04
Rural area	2587,25	-0,08	0,39	0,99
Urban area	837,21	0,00	0,85	1,18
Diversified' activity	66,19	5,33	0,05	0,04
Agriculture	253,33	-2,13	-2,13	-2,11
Food industry, rural	157,79	-0,27	-1,19	-1,24

Table 2 shows that rural area collects 75% of the regional GDP and correspondingly, agricultural activities 9% and food industries 6%. The GDP effects are measured at factor costs. The subsidy

transfer benefited not only the diversified farms but also both rural and urban aggregated manufacturing industries. As for the investment simulations, the 'Traditional investment' resulted in greater total gains such that especially manufacturing, but also services, increased their value added. Spatially, the urban area earned a higher GDP increase compared with the rural area in both of the investment simulation. Value added of agriculture and food industries were decreasing, whereas the value added of the diversified farm activity increased.

Table 3. Employment and rent effects.

	Diversified farms, %ch	**Modern investment, %ch**	**Traditional investment, %ch**
Employment			
White collar	0	1,01	1,86
Blue collar	0,01	1,03	2,28
Factor rents			
Rural Capital	-0,03	2,11	3,71
Agricultural Land	-25,32	-25,27	-25,08
Agricultural Capital	4,86	-18,99	-18,88
Urban Capital	0,03	2,6	3,42

Employment and capital rent effects are presented in Table 3. Since the labour market was integrated for the simulations, employment differences between the rural and urban areas are not considered here. Employment increased in both the 'Investment' -simulations such that the 'Traditional' generated higher employment effects and further, the employment of blue collar workers increased more compared with the white collar employment. Since agriculture in Finland is predominantly entrepreneurship based, the major effects on the agricultural households came through the capital incomes. The effects were especially reflected in the agricultural land rents, and to a lesser extent to the agricultural capital rent.

Table 4. Domestic sales, exports and imports.

	BASE milj.€	**Diversified farms, %ch**	**Modern investment, %ch**	**Traditional investment, %ch**
Quantity of domestic sales				
All products	4563,70	0,04	1,11	2,43
Agri products	424,17	-0,59	-1,51	-1,51
Food products	174,23	-0,25	-1,05	-1,01
Quantity of exports				
All products	2442,40	-0,10	-0,60	-0,59
Agri products	57,34	-1,04	-3,03	-2,93
Food products	808,78	-0,26	-1,22	-1,29
Quantity of imports				
All products	2534,20	0,02	3,95	4,71
Agri products	50,50	-0,13	0,04	-0,70
Food products	286,86	-0,23	-0,88	-1,07

Food industry is export oriented in South Ostrobothnia, accounting for 33% of the total export incomes of the region. The domestic sales, exports and imports of the food products decreased due to the simulations. However, both domestic sales and imports of aggregate products and services increased. All the simulations had a positive impact on the foreign saving, i.e. investments from other parts of Finland (and other countries) the government savings also increased. As for the price changes, the value added price of agriculture was decreasing in all the simulations by around 20%. The corresponding decrease for the food industries were 0,3-1,3. On the contrary, the producer and consumer prices of agriculture and food products were slightly increasing in all the simulations, whereas agricultural product prices were increasing.

Discussion

This paper considers the CAP modulation in a framework of a regional development such that it compares the effects on modulation funds first, as they are allocated as income subsidies to farm related, diversified economic activities and second, as they are channeled from agriculture to increased regional investment demand.

Both of the investment shocks resulted in positive total impacts in terms of the gross regional domestic product and regional employment. The 'traditional' investments, (i.e. construction and machinery) created stronger positive effects in comparison with the 'modern' investments, (i.e. electronic equipment and business and trade services). However, the positive GDP impacts were greater in the urban area, thus suggesting possible agglomeration development. On the contrary, transfer of the income subsidies from the traditional agriculture to the diversified activities resulted in negative total GDP impacts on the regional level. Yet, agricultural capital earnings increased while the agricultural land rents decreased. Common positive impact following all the simulations was that both foreign and government savings increased and thus boosted the local investments.

The results suggest that transferring CAP payments from actual agriculture as income support to diversified activity does not promote rural development and economic activity measured at the regional level. Accordingly, traditional agriculture seems to be able to exploit the subsidies more efficiently than the other farm related economic activities do. One explanation might be that the traditional farmers are used to regarding these income subsidies as a part of their earned wages and not as an extra income. There are also other values, such that family traditions and lifestyle, connected with agriculture. However, it is worth to mention that Environmental and LFA compensations were in purpose left under the agricultural activity to reflect the linkage of the land factor to the actual farming. In reality in Finland the major part of the CAP second pillar funds are channelled to these the measures and only a marginal part to actual rural development.

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Appendix 1
The basic structure of the rural-urban SAM of South Ostrobothnia.

	Activities		**Commodities**	**Factors**		**Firms**		**Households**					
	Rural	Urban	Commodities	Rural	Urban	Rural	Urban	Rural	Urban	Government	ROW	S-I	Total
Rural activities			Marketed output										Gross output
Urban activities													
Commodities	Intermediate inputs							Consumption expenditures		Government consumption	Exports	Gross capital formation + change in stocks	Demand
Rural factors	Value added												Factor income
Urban factors													
Rural firms				Factor income		Capital transfers		Inter-household transfers		Transfers to households	Factor income from ROW		Firm income
Urban firms													
Rural HHs													Household income
Urban HHs													
Government	Net production and product taxes		Sales taxes	Factor taxes		Income taxes		Income taxes			Transfers from ROW		Government income
Rest of the World			Imports	Factor income to ROW						Transfers to ROW			Foreign exchange outflow
Savings-Investments						Savings		Savings		Savings	Foreign savings		Savings
Total	Rural gross input	Urban gross input	Supply	Factor expenditures		Firm expenditures		Household expenditures		Government expenditures	Foreign exchange inflow	Investments	