BABEȘ -BOLYAI UNIVERSITY
FACULTY OF ECONOMICS AND BUSINESS ADMINISTRATION
RESEARCH FIELD: ECONOMICS

DOCTORAL THESIS SUMMARY

IMPACT STUDY ON THE REFORM OF THE COMMON AGRICULTURAL POLICY ON ROMANIA'S RURAL ECONOMY

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STRUCTURE OF THE THESIS

KEYWORDS

European Union, Common Agricultural Policy, reform process, economic sectors, agriculture, rural development, Input-Output Analysis, Agent-Based Modelling, impact assessment

INTRODUCTION

From 1st January 2007 – when Romania joined the European Union – our country had to apply the Common Agricultural Policy (CAP) as a member of the Union. Since then, the CAP plays an essential role in the evolution and development of the Romanian rural economy. Once with Romania's entrance to the Union, our country had to contribute to the common budget on the one hand, and had the possibility to benefit from supports granted via the first and the second pillar of the CAP – on the other hand. In the pre-aderation period (2000-2006) Romania benefited by the supports granted via the SAPARD program, but the real first experiences related to the application of the CAP started from 2007. The analysis of Romania's results of the CAP implementation plays an essential role as „lesson to learn" and to be built in to the forthcoming, 2014-2020 programming period's national strategy. Strength and weaknesses of both policy design as result of continuous reform process, as well as local capacities to live with the opportunities that the CAP offers are highly important to be analysed.

Supports granted through the first and second pillar of the CAP entered – and still continue to enter - the Romanian national economy since 2007 and have different impact potential based on the different intersectoral relationships experienced on national and lower territorial levels. That is the reason why we considered greatly important besides the national impact potential analysis of the CAP to integrate NUTS2 level studies into the thesis. Regional discrepancies regarding geographical and environmental endowments as well as demographical patterns and socio-economic characteristics lead to different „snapshots" of the Romanian regional economies as well as to different levels of entitlements for CAP pillar I funds, and different capacities to absorb CAP pillar II, rural development funds.

From a national perspective, the importance and actuality of the dissertation topic can be supported by the facts that the Romanian Agriculture Strategy as well as the National Rural Development Programme for 2014-2020 are being prepared. In this respect, CAP effects on the economy and the environment must be known and valued for rual modernization purposes, as well as for a beneficial integration of the Romanian agriculture and rural areas into European structures.

The **fundamental general goal** of the thesis is the deep analysis of the Common Agricultural Policy formation process on a three-level - i.e. past, present and future - time horizon on the one hand; and the quantification of its potential impacts on the Romanian economy on the other hand. The first two chapters of the thesis are meant to build-up a Common Agricultural Politic context for the following four chapters of related impact assessment.

Specific objectives of the investigation undertaken are:

On conceptual level:

Objective 1: Review successive CAP reforms - while comparatively analysing them

- from past to present and outline possible future directions

Objective 2: Review of methods suitable for socio-economic impact assessment of agricultural policies – with special focus on Input-Output methodology

Objective 3: Review of funds available via the CAP for Romania for the programming period 2007-2013

On operational level:

Objective 4: Characterise the role of agriculture in the Romanian economy

Objective 5: To analyse structural change of the Romanian national economy between 2008 and 2009 – generated by the financial-economic crisis - based on snapshot views (National Input-Output Tables)

Objective 6: Distribute CAP payments based on their destination among the sectors of the Romanian national economy

Objective 7: To explore the socio-economic situation of the Romanian development regions

Objective 8: To aggregate national IO Tables to serve as a base for potential impact assessment

Objective 9: To derive regional IO Tables to serve as a base for potential lower territorial level (i.e. NUTS2) impact assessment

Objective 10: The build-up of scenarios on national and regional level in order to quantify possible CAP policy impacts on sectoral level

Objective 11: The detection of EU post accession CAP impacts in Romania based on descriptive statistics regarding agricultural machinery, irrigated area and fertilizers' use evolution

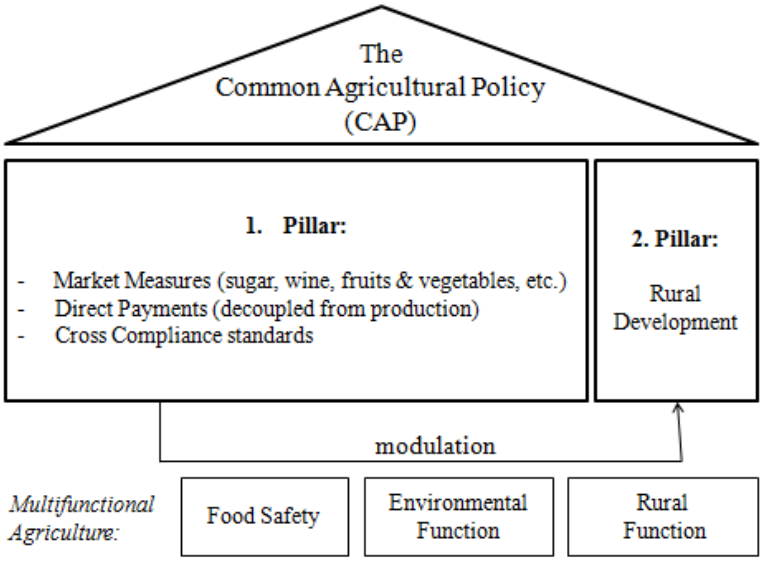
Objective 12: The design of a conceptual Agent-Based Model for studying the regional impact of different CAP scenarios on Romania.

I. THE PAST AND THE PRESENT OF THE CAP

In the first chapter of the thesis, formation of the Common Agricultural Policy since its inception up to nowadays is presented. The historical context is essential when analyzing changes of a long established policy, such as the CAP. Initial characteristics, mechanisms as well as their deficiencies leading to successive reform attempts and reform realizations constitute the base of understanding the formation of the Common Agricultural Policy (Garzon, 2006: 21).

Based on a meticulous scientific literature review, the milestones of the CAP are defined and the reform process is being analysed through a comparative analysis spectrum of policy changes since 1992. The paradigm change of the CAP formation is captured via its historical overview.

Current structure of the CAP



Source: adapted from Zahiu and Dachin, 2006b: 151 and Weisz, 2009: 49.

Current structure of the CAP contains two pillars. The first, 'sectoral' pillar of the two-pillar structure Common Agricultural Policy is the scene of market measures and income policy, while the second, so called 'territorial' pillar represents the rural development policy. The fact, that the problems of rural territories cannot be solved only via supporting the agricultural sector and producers had gradually been recognized during the policy formation procedure, together with the recognition that there is a need for special rural development approach (Vincze, 2008: 123.).

II. FUTURE OF THE CAP

The structure, budget and objective set of the CAP post 2013 has been highly debated in the past few years, due to which different perspectives emerged regarding the possible designs of the successor of the 2007-2013 programming period's agricultural policy. In the introductory part of the second chapter of the thesis a brief description of the policy's current structure is made, followed by the specification of the last two years (2010 and 2011) - from an agricultural politic perspective - milestone events, documents published on the European Union level. Meanwhile, the established positions as result of these events, as well as conclusions of documents are being summarized in order to give a comprehensive view on the future of the CAP post 2013 (and post 2020) taking place currently in the European stage, on possible future directions of the Common Agricultural Policy. This is followed by a short presentation of the viewpoints and positions that were born after each event together with the summary and evaluation of conclusions.

In the very last part of the second chapter, the permanence of changing CAP goals is analysed.

The objective sets suggest a triangle approach regarding the definition of sustainability. Along this idea, the first objectives can be associated with the notion of economic sustainability, the second ones with the issue of environmental sustainability, while the third ones can be related to what social sustainability means. In its current two-pillar structure, the CAP focuses more on economic aspects via its first pillar, and on social aspects with its second, rural development one. It is also noticeable that environmental concerns gain more and more importance in the political concept of the CAP, being present as a virtual "third pillar" both within the measures of the first and the second pillar of the policy.

Permanence in changing – an analogy of changing times' objectives

	Council Regulation 1698/2005	**COM(2011) 627**	**COM(2011) 672**	**Conference-debate "CAP reform through analytical lenses", 19.12.2011**
1. Objective/ theme	Improving the competitiveness of agriculture and forestry by supporting restructuring, development and innovation	Viable food production	Food security	Food security and competitive-ness of the agri-food chain
2. Objective/ theme	Improving the environment and the countryside by supporting land management	Sustainable management of natural resources and climate action	Environment and climate change	Sustainable development of EU agriculture
3. Objective/ theme	Improving the quality of life in rural areas and encouraging diversification of economic activity	Balanced territorial development	Territorial balance	Balanced territorial development

Source: own edition

III. METHODOLOGICAL REVIEW ON HOW TO ASSESS AGRICULTURAL POLICY IMPACTS

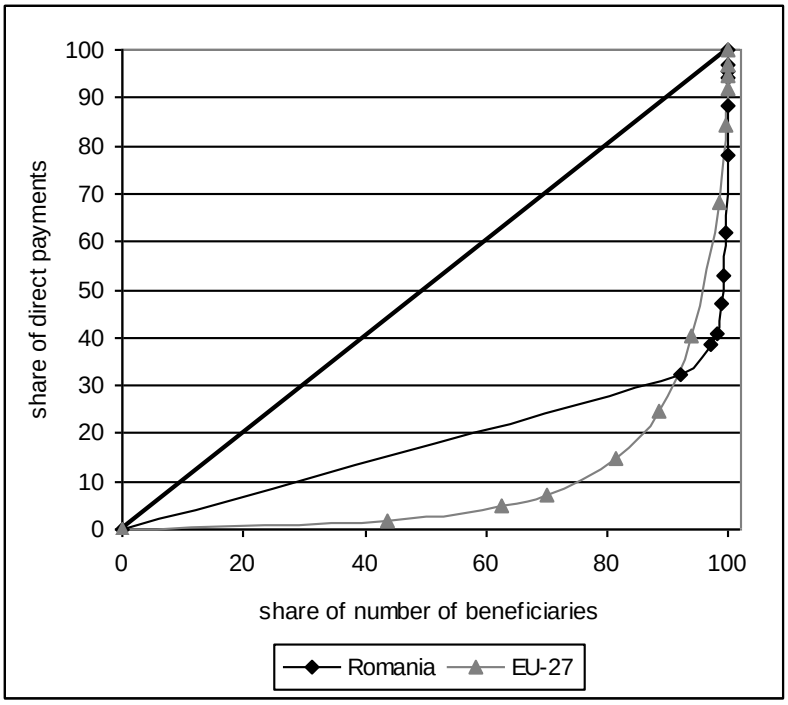
In within this chapter, three broad methodological approaches are reviewed as follows: partial and general equilibrium models – with special focus on partial and computable general equilibrium models with Common Agricultural Policy relevance; Agent-Based Modelling and Input-Output analysis. In later parts of the thesis Input-Output analysis is applied, as well as a conceptual Agent-Based Model is built in the view of Common Agricultural Policy impact assessment in Romania.

IV. FUNDS AVAILABLE FOR ROMANIA VIA THE FIRST AND SECOND PILLAR COMMON AGRICULTURAL POLICY IN THE 2007-2013 PROGRAMMING PERIOD

The fourth chapter of the thesis is meant to give an overview of first pillar direct payments and second pillar rural development payments of the Common Agricultural Policy as allocated for and implemented in Romania.

Detailed analysis is given on the application of the Single Area Payment Scheme (SAPS) in Romania starting from 2007. Followed by a farm structure analysis of the Romanian agricultural area and farms eligible under the SAPS in a European and Central and Eastern European context.

Lorenz curves of the distribution (%) of direct payments in Romania and in EU-27, 2009



Source: own edition based on EC (2011) data

As a result of our analysis, the downward bulge below the diagonal represents the fact that land is non-uniformly distributed between small and large farms in Romania. 93% of farms (the less

than 5 ha category) used 35% of the UAA in 2002, the same 93% of farms in 2010 used only the 30% of the total agricultural land. From an agricultural policy perspective it is a sign of land concentration when the total agricultural area utilized by the smallest farms shrinks in total, this way giving the opportunity to larger farms to enlarge. The upper 7% of farms (the larger than 5 ha category – middles and larges) used 65% of agricultural land available in 2002, while in 2010 the 7% of farms lead agricultural activity on 70% of the UAA. From a productivity and efficiency perspective, the continuation of transition from semi-subsistence agriculture to middle-sized family holdings in Romania is essential.

In the second part of the fourth chapter axes and measures of the second pillar of the CAP, the rural development policy are presented along with the National Rural Development Programme of Romania for the programming period 2007-2013.

V. INPUT-OUTPUT ANALYSIS APPLIED TO THE ROMANIAN ECONOMY IN THE VIEW OF MEASURING THE EFFECTS OF COMMON AGRICULTURAL POLICY SUBSIDIES

The fifth chapter contains the empirical research of the thesis. In its introductory part, the role of agriculture in the Romanian economy is defined based on statistical data as well as on literature review followed by IO modelling application by calculating sector-wise linkage coefficients regarding output, income and employment on national level.

Sectoral linkages in general describe a given sector's relationship with the rest of the economy. In the followings, the subscript AFF denotes the Agriculture, forestry and fishing sector. The output forward linkage (OFL_{AFF}=1.7485) of the agriculture, forestry and fishing sector measures the relative importance of it as a supplier to other sectors of the Romanian economy, while the output backward linkage (OBL_{AFF}=1.8089) measures agriculture forestry and fishing sector's relative importance as a demander. The level of agriculture forestry and fishing sector's backward and forward linkages indicate the pull and push capacity of the agriculture sector to stimulate other sectors in the terms of production, income and employment. Given its medium value of OBL and OFL – in comparison with similar indicators of other sectors' - the Romanian agriculture forestry and fishing sector has an average level interaction with the rest of the

economy. On the one hand: OBL_{AFF}=1.8089 means that the increase of production in agriculture forestry and fishing sector's sector with one lei increases the agriculture forestry and fishing sector's input demand with a value of 1.8089 lei. On the other hand: OFL_{AFF}=1.7485 means that the increase with one lei of agriculture forestry and fishing sector's production corresponds to 1.7485 lei increase regarding agriculture forestry and fishing sector's output useable as input by other sectors of the economy. The value of IBL_{AFF} suggests that one lei increase in the final demand of the agriculture, forestry and fishing sector would increase the income in the economy by 0.2344 lei. This amount means the income of those involved directly and indirectly in the creation of each additional lei output. EBL_{AFF}=0.0426 means that the increase of final demand in the sector agriculture, forestry and fishing with one thousand lei could mean a 0.0426 increase in the demand for employees. While the employment forward linkage coefficient: EFL_{AFF}=0.0786 suggests a 0.0786 value change in the employment of the economy, due to one thousand lei change in the final payments of the agriculture, forestry and fishing sector. Considering the rank of the agriculture sector, it occupies 4^{th} position in OBL ranking; 5^{th} position in OFL ranking; 7^{th} position in IBL ranking; 8^{th} position in IFL; 2^{nd} position in EBL ranking and also 2^{nd} position in EFL ranking among the ten sectors considered in the model.

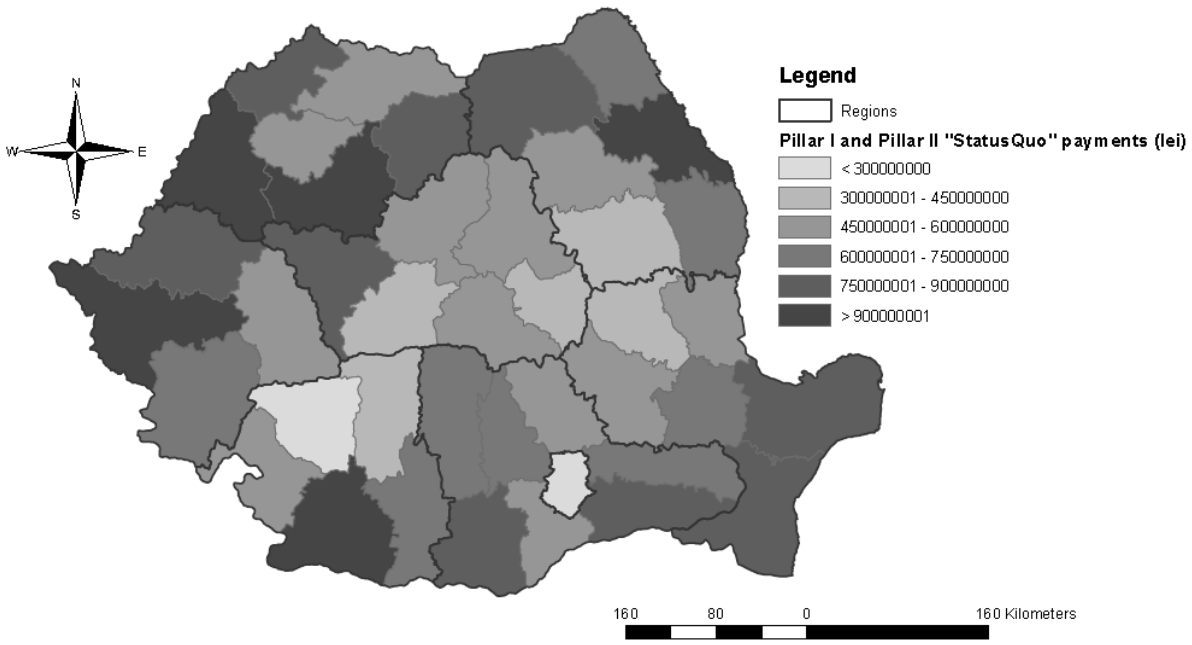
Changes from 2008 to 2009 based on aggregated National IO Tables and multipliers are detected in the next part of Chapter V, followed by the presentation of the procedure along which CAP supports (both pillar I and II) have been distributed - by the author of the thesis – among the ten sectors of the economy in order to make compatible with the Input-Output framework. As a result of this process, CAP subsidies have been divided into different sectors of the economy, in certain shares.

In the forthcoming parts of Chapter V, assumptions are made, hypotheses are set and scenarios are defined as a necessary prerequisite of actual CAP impact assessment. Impact analysis is first made on the Romanian national level – using as a starting point the aggregated NIOT, and after that on NUTS2 regional level – using as starting point RIOTs derived – using GRIT technique - from the NIOT. In order to lead regional level impact assessment, first the author of the thesis had to derive RIOTs from the NIOT. From a methodological point of view regional IO models have been derived from the national one by applying the non-survey GRIT (Generation of

Regional Input-Output Tables) technique, taken from the EU FP5 REAPBALK project (Mattas et al, 2006:75-101). This method was used to assess output, income and employment implications of pre- and post-accession EU funds on the Romanian rural economy, at the level of the North-West development region (Vincze et al., 2004; Vincze et al., 2006a; Vincze et al., 2006b). Afterwards it was used to capture climate change impacts on the Romanian economy – focusing on the analysis of the crop production of the North-West region, within the framework of the EU FP 6 CLAVIER project (Vincze et al., 2007; Bíró and Szőcs, 2009; Szőcs and Bíró, 2009a, 2009b, 2009c; Szőcs, 2011; Szőcs and Vincze, 2011). GRIT technique was originally developed at the Department of Economics of Queensland University Australia by Jensen and others (Jensen et al., 1979: 40-44; Hewings and Jensen, 1986: 295-355).

Regarding national level impact assessment, actual simulation has been made on the Romanian national level presuming the hypothetical situation when all public funds allocated for the period 2007-2013 are being absorbed (TotAlloc scenario, meaning "total allocated" public payments), as for regional impact assessment we used the StatusQuo scenario (meaning "current situation" of public payments absorbed), trying to capture the effects of CAP public payments that entered regional economies so far. Scenario StatusQuo – contains CAP payments' situation as on 16.02.2012, giving a recent view on the current absorption of CAP funds regarding pillar II. Data was available on county level for direct payments (referring to years 2007-2010) and for the measures of the rural development pillar (public value of contracted projects as on 16.02.2012).

Total CAP payments (pillar I and pillar II) on county level as used for impact simulation on regional level in StatusQuo scenarios



Source: own edition in ArcGIS 10.1

After the introduction of regional subsidy values into the RIOTs, their potential impact has been analysed with the multiplication of output backward and forward linkages, and a comparison of ex-post total output values with their ex-ante correspondents. The results suggest that not only the absolute value of CAP supports that entered the regional economies are determinative in generating impacts, but also the output backward and forward capacity of each sector in each region is important in the view of actual manifestation of CAP supports territorially.

VI. RESEARCH OUTLOOK: COMMON AGRICULTURAL POLICY IMPACT ASSESSMENT USING AGENT-BASED MODELLING

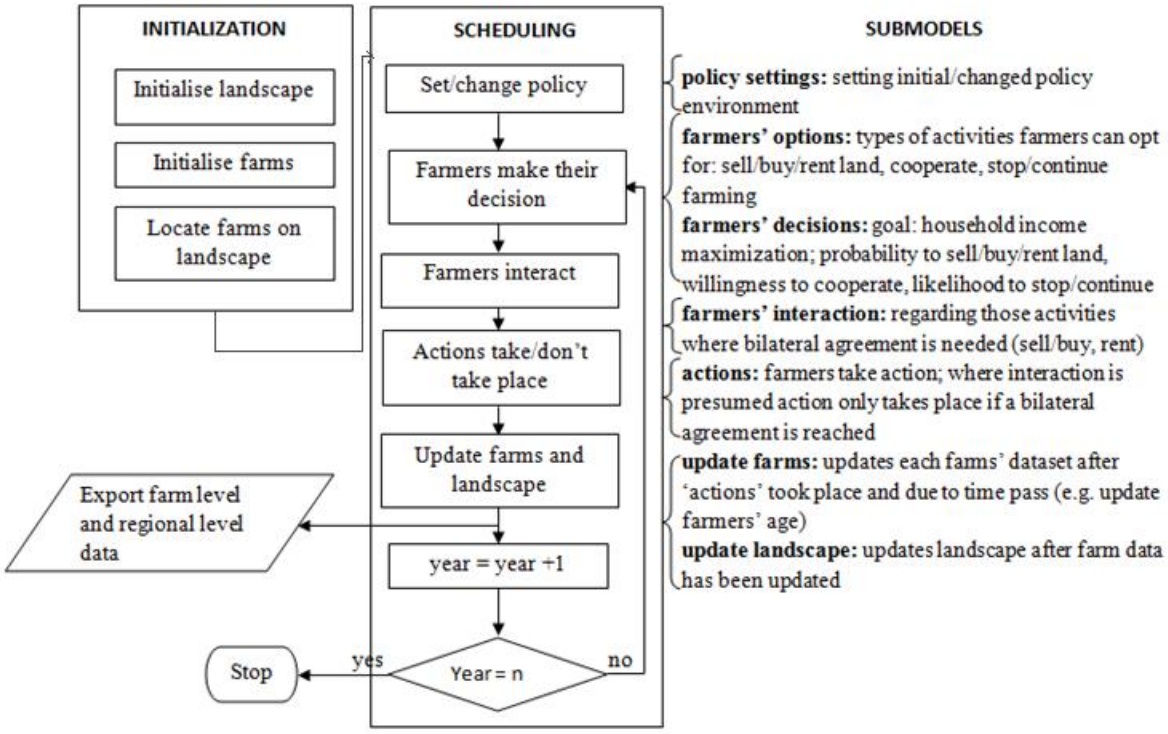
Chapter VI of the thesis proposes to give a short overview on: complex systems, agriculture as a complex system, as well as on agent-based modelling and the rationale behind using this approach in agricultural economics. In the second part of the chapter a conceptual model is built up that should serve as a base for studying the regional impact of different Common Agricultural Policy scenarios in Romania.

Agent-based modelling (ABM) is an approach receiving more and more attention within the agricultural economists' community. Incorporating the impact of individual decision making, ABMs use a bottom-up approach that studies what emerges from individual decision makings and interactions, and not a top-down - average of all – classical situation. The creation of a virtual world using ABM seems to be more realistic, but more complex, and harder to treat and to interpret its outputs. Agent-based modelling is a method currently actively applied in many areas. Macal and North (2007: 99) give a sum-up of broad fields ABMs are used in, as follows: business and organizations, economics, infrastructures, crowds, society and culture, military and biology. Parker et al. (2003: 318) highlight in their study the use of multi-agent systems in the fields of: natural resource management, agricultural economics, archaeology and urban simulations. Within the economics area, agent based modelling has been developing relatively recently – nevertheless in an accentuated way - in the field of agricultural economics. In within the field of agricultural economics, agent-based modelling has recently been used to study (on theoretical and/or application level): agricultural policy impact (Berger, 2001; Happe, 2004), structural and land use change in agriculture (Balmann, 1997; Happe et al., 2006; Freeman et al., 2009; Bert et al., 2011 and Parker et al., 2003, Valbuena et al., 2008; Valbuena et al. 2010), computational modelling in agricultural economics (Torii et al., 2006; Macmillan and Huang, 2007; Nolan et al., 2009).

In the second part of Chapter VI a conceptual model is built up that should be able to capture CAP policy impacts on lower (i.e. county) territorial levels in Romania. The purpose of the model would be to analyze ex-ante the impact of the change of the Common Agricultural Policy

(focusing on first and second pillar subsidies*)* on structural change – physical and economic size dynamics - in Romania, on NUTS3 (county) level. The central research question is how farm structures - physical and economic size change in response to particular policy switches in within the CAP? And how they are possibly going to change due to different policy scenarios after 2013 (ex-ante analysis)?

Flow chart of the conceptual ABM



Source: Bíró, 2012:80

The conceptual model presented within the framework of this chapter shows high level of complexity when it comes to the development of the actual computer program on the one hand, and the more complex the model the more demanding the validation process – on the other hand. Difficulties can also occur regarding (Leombruni and Richiardi, 2005): the interpretation of the results of simulation dynamics as well as the generalisation of them; estimation of the simulation model; validation of the model; comparing simulated distributions with real world observations.

CONCLUSIONS AND FURTHER RESEARCH

Along with the objectives set in the introductory part of the thesis, the following conclusions and perspectives of research emerged:

Objective 1: Comparative analysis of successive reforms of the CAP shows radical changes in the objective set of the agricultural politic mechanisms and instruments, agricultural support system, creative political orientation, new concepts of modernisation base on environmental protection, biodiversity, harmonious rural development, encouragement of young farmers, etc. Eastern enlargement of the EU and its broadening to 27 member states have led to changes in the structure and orientation of budget expenditure in line with reform measures, with the new farm structure, and with the need to reduce disparities in the development of rural areas. For Romania, the targeting towards the ”European model of agriculture” is vital. That is why harmonious territorial development is being seeked in the European territory, of which Romania - as a member state – can benefit. The idea of emergence of a third pillar of the CAP that should unify pillar I and II pursuit regarding the achivement of food security goals in the context of climate change and achieving performance in territorial management would raise several problems related to the efficiency of financing through CAP.

Objective 2: Chapter III of the thesis is devoted to make an assessment and review a suite of models that can be used to estimate socio-economic as well as environmental impacts of the CAP. Three broad methodological approaches are reviewed as follows: partial and general equilibrium models – with special focus on partial and computable general equilibrium models with Common Agricultural Policy relevance; Agent-Based Modelling and Input-Output analysis. Due to restricted data availability as well as the lack of access to the models presented in Subchapter III.1, author of present thesis could have applied none of these models in practice for Romanian impact simulation of the Common Agricultural Policy. National as well as regional Input-Output simulations were led in the applicative part of the thesis (Chapter V) and an Agent-Based model had been developed

on conceptual level (Chapter VI) – all of them in the view of capturing potential CAP impacts in Romania.

Objective 3: The first subchapter of Chapter IV achieves to give a detailed view on direct payment models implemented under the CAP in different EU member states; implementation of Single Area Payment Scheme in Romania as well as regarding the situation of direct payments n Romania. Direct payments per beneficiary show a different sequence of Member States that the one per hectare. This is primarily explainable by the fact that farm structure – which varies considerably from country to country - plays essential role when calculating the payment per beneficiary indicator. Consequently in Member States with higher average farm size higher direct payment values per beneficiary are noticeable; Romania's extremely fragmented land structure is also reflected by the very low payment per beneficiary value, near the relatively low payment per hectare as well. In the second subchapter of the fourth chapter axes and measures of the second pillar of the CAP, the rural development policy are reviewed along with the National Rural Development Programme of Romania for the programming period 2007-2013.

Objective 4: During the documentation and the actual development of the thesis we considered the current state of knowledge in the field of research, changes that have taken place in the Romanian agriculture in the pre- and post accession period, macroeconomic evolutions and their sectoral structure. We conclude that agriculture is the backbone of the rural territories and the Romanian economy is highly dependent on this sector. Therefore, the analyses performed within the thesis have addressed jointly Pillar I and II in order to evaluate the common effects of mechanisms applied via the CAP.

Objective 5: Multiplicative capacities of sectors have been analysed in terms of output, income and employment to detect changes from 2008 to 2009. Taking the output backward linkages, it is noticeable that the sector with highest potential to generate output impacts in the Romanian national economy is the commerce, hotels, restaurants sector, with a value of 3.3104 in 2008, and a slightly lower value of: 3.2612 in 2009, followed by the energy industry, which had a value of 2.1988 in 2008, and a larger:

2.5805 in 2009. This means that an increase with one lei in the final demand for the products and services of the commerce, hotels, restaurants sector caused an increase in the total national production by 3.3104 lei (in 2008), 3.2612 lei (in 2009); an increase with one lei in the final demand for the products of energy industry sector caused an increase in the total national production by 3.3104 lei (in 2008), 3.2612 lei (in 2009). Regarding all types of backward linkages analysed, i.e. OBL, IBL and EBL, commerce, hotels and restaurants sector occupies the first position. Income backward linkage coefficient values calculated reveal that commerce, hotels, restaurants sector has the highest impact in the national economy: with higher value in 2009 (1.2007) than in 2008 (1.0734), while real estate activities have the lowest (10^{th} position both in 2008 and in 2009, with values 0.1225 and 0.0970). Regarding employment generation, commerce, hotels and restaurants sector has the highest potential to increase employment in Romania based on calculation results both for years 2008 and 2009, with values of 0.0542 in 2008 and 0.0538 in 2009. It is followed by agriculture, forestry and fishing sector that also has significant employment generation potential on Romanian national level, with an EBL value of 0.0426 in 2008 and 0.0445 in 2009. The last position is being occupied by extracting industry (EBL 0.0028) in 2008 and by real estate activities sector in 2009 (EBL 0.0037, slightly after extracting industry's EBL 0.0038).

Objective 6: CAP pillar I SAPS payments have been integrated into several sectors of the economy. While dividing direct payments we assumed that these payments are spent by farmers along their household consumption structure, using as a starting point the data of the Romanian NIS on the structure of total consumption expenditure per farmers' households by categories. CAP pillar II payments are being granted via specific measures as laid down in the National Rural Development Programme (NRDP) of Romania for the period 2007-2013. These payments have been distributed among economic sectors based on: the legal documents that serve as a base for the implementation of measures; on sets of objectives for each measure as presented in the latest version of the National Rural Development Programme of Romania for the period 2007-2013 (PNDR version no.9, May, 2012 – Romanian language) and NRDP – English version; on eligible costs as presented in Guidelines for applicants of the measures (where available). As a result of

the above procedure, we created a sector-wise and measure-wise table of shares of public CAP supports – necessary prerequisite for impact simulation.

Objective 7: In order to explore the socio-economic situation of the Romanian development regions, a sectoral view on the GVA, employment, labour productivity, and income levels was realised. The analysis targeted to serve as a socio-economic snapshot, highlighting regional discrepancies based on regional values of GVA, employment and labour productivity in the year 2008, and the evolution of regional sectoral incomes between 2000 and 2008. Labour productivity is one of the main factors regarding a region's competitiveness: high labour productivity attracts economic activity and thus increases competitiveness. The obviously worst-performer sector is agriculture, with its extremely low labour productivity of 14175.6 lei/employee on national level. High agricultural labour productivity values are noticeable both in more developed (West: 17547.4 lei/employee) and less developed (South-Muntenia: 14659.9 lei/employee) regions. National average values are considerably enlarged because of the large labour productivity values registered in the region of the capital city, Bucharest-Ilfov in the case of industry, construction and services sector. The best performer in the industry sector is South-Muntenia region, with a labour productivity of 71089.1 lei/employee, in the construction and services sector the West region, with 78368.3 and 66873 lei/employee labour productivity value.

Objective 8: The National Input-Output Table for year 2008, containing 89 industries in its most disaggregated form (according to NACE Rev.2) have been consolidated into ten sectors. The aggregation process was needed due to the lack of additional data regarding employment, income and GVA values – indispensable when putting into practice Input-Output simulation. From a technical point of view, the aggregation procedure – as well as all further calculations – have been done in *MS Excel 2007*.

Objective 9: For the derivation of the RIOTs, the non-survey GRIT technique had been used – as suggested by the literature. As a result of the regionalisation procedure, eight

regional input-output tables (RIOTs) have been obtained, each reflecting the economic structure of the Romanian development regions as they were in 2008.

Objective 10: Two scenarios had been defined, namely TotAlloc and StatusQuo. The hypothetical TotAlloc scenario that presumes that all pillar I and II CAP funds are going to be fully absorbed by the Romanian economy – is tested on national level. While the StatusQuo scenario – which is a more realistic approach having as a base current absorption situation of funds – is tested on regional level.

Objective 11: Poor results regarding the ex-post accession impact of the CAP are noticeable in the development of fixed capital (machinery, tractors) and irrigated areas. Compared to the pre-accession period: the evolution of agricultural machinery is very slow in the 2008-2011 period, largest share being held by imports on the one hand and we face a dramatic decrease of irrigated areas on the other hand. As a result of direct payments granted starting from 2007 however, a slow increase of chimical fertilizers used is noticeable.

Objective 12: An Agent-Based model had been created in the last chapter in order to implement the most novel method in the research field of present thesis on the conceptual level, and to serve as a base for research outlook regarding its implementation on the practical level. Having the theoretical background and the conceptual model, the third phase would be its implementation. A suitable environment for 'putting it in practice' could be NetLogo[1]. After implementation, verification (both theoretical and computational) and validation (comparing with previous work and/or real world observations, deductive reasoning) procedures are going to be also needed in the view of complete finalization of modelling.

[1] http://ccl.northwestern.edu/netlogo/, accessed on 10.02.2012

Final considerations:

The application of the Common Agricultural Policy in Romania requires scientific support to serve as a base for understanding current processes in agriculture and rural areas, as well as for prefiguration of future changes that depend highly on specific conditions of the country and on well-tailored national policies to the Community rules. For Romania, the increase of the absorption of second pillar CAP funds is still essential. If the absorption capacity does not increase – based on the development of eligible projects – Romania will contribute to the EU budget without the return of these sums in the national economy (Zahiu and Dachin, 2006a: 133). We hope that present thesis contributes to a better understanding of the support philosophy of the Common Agricultural Policy and to the exploitation of Romanian national and regional level sectoral potential to a better absorbtion of funds granted in forthcoming programming periods.

DISSEMINATION OF THE RESULTS

The results of the thesis have been disseminated through the articles presented in the last section of present summary, entitled **REFERENCE** – indicated with bold letters, i.e. **Bíró, B.J.**

LIST OF ARTICLES

The complete list of articles developed and presentations made so far by the author of the thesis are listed in the followings. 30 out of the 39 realisations have been developed during the doctoral studies (1st October 2009 – 30th September 2012). Nine works belong to the pre-doctoral research work of the author (1., 2., 19., 20., 21., 22., 23., 24., 37.)

Publications:

1. Vincze Mária, Pete István, Szőcs Emese, **Bíró Boróka**: The main factors influencing Romanian crop production, Proc. International Conference Competitiveness and European Integration, Cluj, Romania, Oct. 26-27, 2007, p. 268 - 277.
2. Szőcs Emese, **Bíró Boróka**: A klímaváltozás növénytermesztésre gyakorolt hatásai az Északnyugati régióban (Impactele schimbărilor climatice asupra sectorul vegetal din regiunea Nord-Vest al Romaniei), Economists' Forum, ed. April-May, 2009, Vol. XII, no. 87, p. 15-28.
3. Szőcs Emese, **Bíró Boróka**: Territorial Differences of Climate Change Impact on Romanian Crop Production, Scientific Journal, SGGW, Problems of World Agriculture, Vol. 6., Warsaw University of Life Sciences Press, Octombrie, 2009, p. 74 – 87.
4. **Bíró Boróka**, Szőcs Emese: A CLAVIER projekt bemutatása (Prezentarea proiectului CLAVIER), Economists' Forum, ed. October-November, 2009, Vol. XII., no. 90, p. 66-68.
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