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## **Policy and Modelling Challenges: EU Enlargement and CAP Reform**

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# Policy and Modelling Challenges: EU Enlargement and CAP Reform

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## *Abstract*

The CAP reform and the enlargement process are projected to have major implications for the activity of the research community in Europe in the field of quantitative and modelling analysis. The main analytical challenges to be addressed will concern primarily the impact of decoupling with the need for a better representation of factor markets and agricultural household behaviour, the representation of our trade policy, the consequences of the recent and future enlargement and the improvement in the coverage of the EU rural development policy. Quantitative tools will increasingly need to be also policy-relevant, theoretically – and empirically – sound, validated and timely to contribute to the policy process.

**Key words:** CAP, enlargement, decoupling, factor markets.

## *Introduction*

Over the medium term, the agricultural sector in the European Union (EU) will be exposed to significant adjustment pressures. The reform of the Common Agricultural Policy (CAP) in June 2003 resulted in a major change in agricultural policy by largely decoupling agricultural support from production (even if the implementation of the single farm payment scheme allows EU Member States to choose among different options that could influence the degree of decoupling). The principle of decoupling will also be applied to still non-reformed sectors such as sugar. The 2003 CAP reform also strengthens the rural development policy of the European Union, which will grow in importance over the next decade. The rural development measures promote structural change and competitiveness, land management and environmental measures, as well as rural economies and social life.

The historic enlargement of the EU in May 2004 allowed the integration of the agricultural sectors of 10 new Member States into a single market, which will expand from 378 to 453 mio inhabitants. The enlargement process of the EU will continue in the foreseeable future. In

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2007 Bulgaria and Romania are projected to join the EU adding to the diversity of agricultural sectors, rural regions as well as social and economic conditions in the EU. Enlargement negotiations will soon be opened with Croatia and Turkey and more countries from the Western Balkan – but also from Eastern Europe – may be candidate to start the accession process for becoming EU member.

The CAP is challenged in the World Trade Organisation (WTO) negotiations as many countries ask for more access to the large and affluent European markets and to further reduce support to European farmers. Increasing market access as well as growing export opportunities will also arise from the EU trade policy. Bilateral trade agreements form the economic heart of the EU's association policy. The relations with Eastern Europe, with the Mediterranean basin through the Barcelona process and with our partners in the developing world will be substantiated.

Substantial analytical challenges arise from these policy developments, notably from the implementation of decoupling and the enlargement process. The new policies pose questions where traditional methods and available tools may prove to be less capable of giving the right answers in a European perspective. The empirical basis for many questions – for both data and methods – has to be developed, because they are not yet available in Europe.

This paper takes stock of the policy developments, identifies the key policy issues that will have to be addressed over the next years – in relation with the CAP reform and enlargement processes – and their implications in terms of analytical work and modelling activities. Some considerations are given regarding the extent to which European agricultural economists could meet these analytical challenges.

## ***1. The CAP reform process***

### *1.1 Main characteristics of the CAP reform*

The CAP has recently embarked on a process of reform – starting with the 1992 and Agenda 2000 reforms – which is expected to shape the EU agricultural sector over the next decade. After the major reform adopted by the Council of Ministers in June 2003, a new reform package covering tobacco, olive oil, cotton and hops was agreed in spring 2004. In July 2004, the Commission put forward new proposals for the sugar sector and for EU rural development policy. Altogether, these reforms constitute a complete and fundamental change in the way the EU will support its farm sector and rural economies.

The main objective of the reform lies in the promotion of the European Model of Agriculture, i.e. an agricultural sector which is competitive, sustainable, market-oriented, harmoniously integrated in rural areas and which meets society's concerns.

The key elements of the new CAP can be summarized as follows (European Commission 2003b):

- more market-oriented, simpler and less trade-distorting support thanks to the introduction a decoupled single farm payment (SFP) to replace most of the payments previously offered. The new payment is largely independent of production, with the exception of limited coupled elements where EU members consider this necessary to avoid the abandonment of production. The granting of this payment will be conditional to the respect of environmental, food safety, animal and plant health and animal welfare standards, as well as to the requirements to keep all farm land in good agricultural and environmental condition (“cross-compliance”).
- Strengthening of rural development policy with increased funding through the implementation of modulation, i.e. a reduction in the SFP for larger farms and the reallocation of the resulting financial resources, and the introduction of new measures to promote the environment, quality and animal welfare and to help farmers to meet new standards.
- Revisions to market policy (in particular for price support for the dairy, rice and rye sectors – with further proposals for sugar – and adjustment in support mechanisms for durum wheat, starch potatoes, nuts, dried fodder).
- Financial discipline, i.e. the introduction of strict budgetary ceilings for farm support (which will imply decreasing support in real terms).

Proposals for the reinforcement, improvement and simplification of the EU’s rural development policy have recently been put forward by the Commission. By bringing the policy under a single funding and programming instrument, the new proposed Regulation seeks to increase its coherence, transparency and visibility and aims at facilitating its implementation, governance and accountability. A strengthened bottom-up approach will better tune rural development programmes to local needs. The new policy has three major objectives: increasing the competitiveness of the agricultural and forestry sector through support for restructuring, modernisation and quality production; enhancing the environment and countryside through support for land management; strengthening the quality of life in rural areas and promoting diversification of economic activities through measures targeting the farm sector and other rural actors.

This policy environment is expected to remain broadly stable over the coming years. It means that in addition to its support to agricultural markets – though to a lesser extent than in the past – the future CAP will address more intensively its territorial dimension and policy issues related to food quality and food safety, the safeguard of the rural economy and the protection of the environment (biodiversity, landscape, soil, air and water).

### *1.2 Main impact of the CAP reform*

Along the whole policy process (from the policy design to the negotiations and implementation), the European Commission carried out a series of quantitative analyses both at micro- and macro-levels based on a set of analytical tools. Some analyses have been undertaken internally using the ESIM model, the Aglink model of the OECD and some models developed in-

ternally (farm models and partial equilibrium models). Other analyses have been carried out by external independent organisations (of which the Food and Agricultural Policy Research Institute at the University of Missouri (FAPRI), the University of Bonn and the Centre for World Food Studies of the University of Amsterdam).

This section summarises the main results of the impact assessment of the 2003 CAP reform decisions as identified in European Commission 2003a and b for the main agricultural sectors. Compared to the continuation of Agenda 2000, the main impacts of the reform decisions over a medium-term horizon are:

- a slight decline in the total area of cereals projected to reach around 1% or 0.3 mio ha over the medium term, with rye and durum wheat areas exhibiting the strongest falls (10% and 6%, or 0.1 and 0.25 mio ha respectively) in line with the overall reduction in the level of support in these two sectors. Most of the reduction in cereal area will come from these market measures and the introduction of decoupling. The oilseed area is expected to show a 1% decline on average. Oilseed production in the new members will be higher under the policy reforms because of the increased competitiveness of these crops compared to coarse grains and potatoes. By contrast, voluntary set-aside (i.e. abandonment of production) would rise by around 20% or 0.5 mio ha as marginal land moves out of production.
- The implementation of the decoupling scheme would reduce the incentives towards the intensification of beef production systems. EU beef production would fall by 1.9% over the medium-term, triggering a rise in domestic producer prices of some 6% by 2010. Lower supplies and higher domestic prices will reduce EU beef exports and generate a 7% increase in beef imports. Higher beef and sheep prices would boost the relative competitiveness of the pork and poultry sectors which would display a small expansion in production and consumption.
- The proposed additional increase in milk production quota is projected to entail an equivalent increase in EU-15 milk production. The resulting rise in fat production and the proposed cut in the butter support price are expected to generate a corresponding fall in butter market price (10% compared to Agenda 2000 levels by 2010). With lower price incentives, butter production is projected to fall over the medium term by around 3%. Lower availability and rising internal use would entail a marked decline in EU exports which would fall by more than 20%.
- The lower attractiveness of the butter market would in contrast favour the production of other dairy products, such as yoghurt, which would benefit from lower milk prices to satisfy a steadily growing demand. However, cheese production and consumption are expected to fall slightly as cheaper milk fat and scarce milk protein are channelled towards other products. Following the combined effect of the higher quantities of milk proteins being channelled into the production of other dairy products and the smaller quantities of SMP being produced as a co-product of the butter production process, SMP production would fall significantly, whereas its domestic use and exports would decline further.

- The impact of the CAP reform decisions on the income of the agricultural sector would be very modest as farm income would be marginally down from the projected Agenda 2000 levels in 2010 (- 0.5%), but still some 2.8% higher than in 2003 (in real terms and per work unit). Diverging trends across sectors are expected, with less favourable developments projected in the dairy and oilseed sectors, whereas the overall meat sector would exhibit significant gains.

The CAP reform decisions are also expected to generate a significant and sustainable improvement in the medium-term perspectives of the agricultural sector of the enlarged EU. Decoupling in the EU-25 would produce similar trends to those in the EU-15 as producers' decisions would be driven by market considerations rather than by the maximisation of direct payments. The CAP reform would generally reduce most of the downside risks of agricultural markets in the EU-25, notably in the area of structural surpluses. In particular, the balance of the rye and beef markets would significantly improve.

### *1.3 CAP reform – analytical consequences*

#### 1.3.1 Introduction of decoupled payments

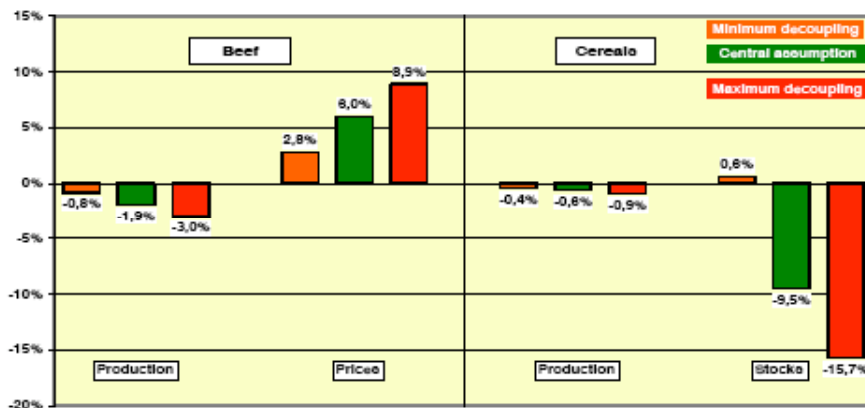
The CAP has substantially changed since 1992. Before 1992 most of the support to agriculture had been focused on commodities. Since then the market price support has been significantly reduced mostly by lowering intervention prices, export support as well as increasing market access through multi- and bilateral trade agreements. Market price support has gradually been replaced by direct income support which has rapidly grown in importance. With the implementation of the latest CAP reform in the Member States, it is estimated that approximately 90% of direct payments granted to the arable, meat and dairy sectors will be transferred in the form of decoupled payments whereas market price support will be largely reduced to a role of safety net.

*Policy issues.* The introduction of a decoupled support system is expected to raise many policy issues. The most important concerns the influence of decoupled payments on producer's behaviour and the extent to which they will influence production decisions (both over a short- and long-term perspective). Other critical issues relate to the impact of decoupling on market developments (supply and demand), farm income, farm structure and factor markets as well as on the environment. On the external side, the impact on trade will be of prime importance in the context of the multilateral negotiations.

Since the policy decision has been adopted an ever increasing number of analyses of the impact of decoupling has become available. Most of these analyses show a relatively low response of the decoupling of arable crop payments. This is mainly due to the degree of coupling under the Agenda 2000 policy framework which was already very low. By contrast a much hi-

gher impact is projected for the beef sector, where direct payments under Agenda 2000 policies were more coupled to production.

In most of these analyses much effort and thinking went into the choice of assumptions and the modelling of economic mechanisms. However, the impact of decoupling on agriculture depends on a number of key variables which were mere assumptions in these analyses. Most of the analyses were based on traditional partial equilibrium models, focused on commodity markets and the operating factor income and only took account of the static effect of the decoupled payments. The degree to which the new decoupled payments would influence production decisions was also based on explicit assumptions derived from various sources. The results from these analyses were also influenced by the specific set of assumptions used regarding the national implementation of the SFP schemes across the EU. In one of the analyses, the European Commission showed the potential impact of alternative decoupling implementation schemes on the beef and cereal markets (cf. Figure 1).



Source: European Commission (2003).

**Figure 1.** Impact of alternative decoupling scenarios on EU-15 beef and cereals markets, 2010 (% deviation from Agenda 2000)

*Areas of research.* If these analyses produced relevant, valuable and solid results on the basis of the modelling tools available at the time, they still fall short in addressing some policy issues related to the new CAP reform. Further research is therefore needed – either theoretical or empirical – in order to (better) integrate in the modelling tools used for policy analysis the following elements.

- The factor markets (notably the land market).



- The dynamic (long-term) effects of decoupled payments (in particular on the investment pattern and expectations).
- The farm household behaviour (consumption pattern, on/off-farm investment and income).
- The risk-related effects of decoupled payments (the insurance and wealth effect).
- Other issues related to cross-compliance, other potential effects from other policy instruments (such as production quotas).

Research on some of these elements may be mainly of a theoretical nature (such as the risk-related effect of the SFP) and only have a minor impact on commodity and factor markets. By contrast, critical determinants in the analysis of decoupled payments lie in the behaviour of production factors (land, labour, capital) and of agricultural households with regard to the allocation of their resources.

*Factor (land) markets.* Among the factor markets, land markets, in particular land lease, are the most significant factor markets for European agriculture, because land is an important cost component for area based production systems. Land lease allows active farmers to adjust production capacities over the short to medium term. Growing farms in Europe rely mostly on lease. About 54% of agricultural land is leased in the EU-15, reaching 90% in some regions.

The profitability of crop production as well as that of the extensive beef and sheep production is strongly influenced by land prices. A change in this cost component influences agriculture in many ways. For example, low land prices are beneficiary for land extensive production such as suckler cows, while high land prices are only sustainable under intensive production systems, such as irrigated maize. Apart from the intensity of production, land prices influence investment and growth strategies of farms, i.e. long-term decisions which potentially change the dynamics of the agricultural sector.

Land is the constraining factor for agricultural production with an inelastic supply and an elastic demand. Each increase in demand as a response to growing agricultural income materialises in land prices. Therefore, an increase in land productivity would lead to an increase in land prices. Agricultural support policies would influence land values as well, directly as in case of area-based payments and indirectly via agricultural revenues in case of market price support.

However an examination of the different institutional (legal) settings of land markets across the Union, significantly complicates this simple text book equation. Rights and obligations of owners and users of agricultural area hugely differ across regions as well as the price formation mechanism. In some regions the legal position of the tenant is very strong, in others it is that of the land owner. In some regions contract lengths are long with strict and binding contracts; in others they might be very short and rather informal. In some regions land prices are strongly regulated, while they are largely free in other regions. In some regions owners of agricultural land are mainly constituted by farmers, in other regions the share of urban owners is large. Cross compliance, in particular the requirement of maintaining agricultural land in good conditions, should influence the functioning of the land market. All these elements influence the elasticities of supply and demand on land markets as well as the price formation and the overall efficiency of the land market.

The new decoupled support ties payments to land. A further unknown arises from the tradability of premium rights that can be separated from land. Whether active farmers would gain market power vis-à-vis land owners will depend on the implementation of decoupling in Member States and the specific regulatory framework given to the market of premium rights.

The implementation of the CAP reform in the Member States as well as the institutional settings are expected to impact the extent to which demand and supply on land markets respond and adjust to changes in the agricultural sector and vice versa. This response could be very different between regions in the EU and thus lead to different regional responses of agriculture on decoupling. In particular, the functioning of the land markets will influence the capitalisation of support in agricultural land values and determine how much of the payments remain with the active farmers, i.e. the demand side on land markets, how much will remain in rural regions and how much will benefit urban landowners.

The labour and capital markets are of lower importance for agriculture in the short to medium-term. An analysis of long-term effects of the reform would however require the integration of these markets, notably in view of their importance for structural change in agriculture. There is so far little empirical overview in Europe on how the specific organisation of land, labour and capital markets and their interaction with changing agricultural policies influence structural change of agriculture, the adjustment process of producers to policy reform and the competitiveness of agriculture.

An enhanced knowledge of the functioning of factor markets in the EU would largely improve our evaluation of the transfer efficiency of agricultural policies. The transfer efficiency measures how much of the decoupled support payments actually remain on the farm at the disposal of farm households. The level of transfer efficiency could play a role in the overall assessment of future policy developments (in terms of policy design and aid level) and in the appraisal of the various implementation schemes of decoupling in the Member States (as the latter should influence the levels of farmers income across the EU).

*Farm household behaviour.* The provision of a solid analysis of the impact of decoupled payments on the long-term dynamics of the farm sector, taking in particular account of the interaction between agricultural policy, market institutions and agricultural factor markets necessitates a sufficient empirical foundation as regards farm household behaviour. As highlighted by some of our international partners, it is unclear how much of the decoupled support would be used to cover production costs, how much would be used for agricultural investments (thus remaining globally coupled in the long run) and how much would fall in consumption – all this given different attitudes of farm households towards risk, different expectations of the future and different developments in the value of their assets.

The knowledge and understanding of household behaviour are important for the analysis of the development of agriculture under different institutional and policy settings. They would also provide a systematic link for assessing the impact of rural development measures and to what extent rural development policy could cushion policy adjustment<sup>1</sup>.

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<sup>1</sup> A reliable, quality and up-to-date statistics of agricultural households would constitute the foundation of such work. Unfortunately, this basis is currently weak at EU level and any analysis would have to rely on national statistics and

In summary, traditional partial and general equilibrium models as well as programming models might become less accurate in predicting adjustment trends on agricultural commodity and factor markets in a European context with largely decoupled agricultural support policies and an increasing support to rural development, in particular for medium- to long-term analyses. The main reason is that many of the underlying dynamic aspects like the functioning of factor (land) markets and farm household behaviour are not explicitly included in the model mechanisms. More systematic research would be needed before traditional quantitative tools could tackle these aspects and give stable and satisfying answers. The very few existing tools which could cover decoupling policies more sufficiently, like the highly stylised Policy Evaluation Model of the OECD, could be significantly improved with the help of more systematic empirical research. Moreover, it seems inevitable that policy analysis tools for the EU should contain an appropriate geographical resolution in order to incorporate these developments while taking account of the wide diversity of the EU farm sector.

### 1.3.2 Rural development

*Policy issues.* Rural development policies directly aim at supporting structural change and competitiveness as well as supporting the multifunctionality of agriculture, i.e. land management, the agri-environment and the rural economies. The strengthening of the second pillar of the CAP as well as the significant needs for rural development in an enlarged EU raises questions on the effectiveness and efficiency of these measures in promoting structural change and the competitiveness of the agricultural sector, the provision of environmental services and socio-economic development in rural areas.

In order to address these issues, many questions need to be answered. They relate to the strength and weaknesses of rural areas, their long-term perspectives in the context of changing economic and trade patterns, the functioning of their economies (and how they could differ from that of urban areas), the impact of the CAP on the environment and the overall consistency between the agricultural, environmental and cohesion policies. They also concern the extent to which the understanding of the wide diversity and complexity of rural areas across the EU, the implementation and design of rural development programmes as well as rural governance and local initiatives could contribute to the overall enhancement of the effectiveness of this policy.

The evaluation studies carried out on the previous rural development programmes have highlighted some dispersal of support and reduced efficiency due to the long list of possible measures. They also recommended the need to better targeting of rural development measures in order to enhance their effectiveness. However, apart from some regional case studies, there is little solid research available which would provide an EU-wide perspective on the effects of rural development policies on agriculture, rural areas and the environment.

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surveys. The statistical office of the European Communities will carry out a feasibility study in 2005 with a view to develop such statistics.

*Analytical issues.* On account of the growing importance of rural development, the development of a sound analytical basis to meet these policy issues should constitute the aim of the research community. However given the diversity of objectives of rural development policy, these issues would certainly be best met by a portfolio of analytical tools.

As for the analysis of the decoupled payments, the impact of rural development policy on the agricultural sector would require to improve the coverage of the factor markets as well as farm household behaviour in the existing modelling tools. On the other hand, some regional programming tools already attempt at examining the impact of agriculture on the environment. A thorough appraisal of the rural development measures targeted to the rural economies would require general rural equilibrium models in order to capture investments as well as rural factor markets and the other sectors of the rural economies. So far these are largely missing in Europe. In the process of developing an analytical basis many analytical issues need to be tackled. They include in particular:

- the necessary definition and collection of an appropriate set of relevant indicators (for the design, monitoring and evaluation of rural development programmes).
- The scale of analysis (in terms of geographical coverage, level of disaggregation, time horizon).
- The extrapolation issue (is it relevant and how to build from local and/or regional experience to provide an EU-wide perspective).
- The assessment of farmer's participation in voluntary programmes.

Developing a methodology for a comprehensive and sound analysis of European rural development policies constitute a major task, requiring basic theoretical as well as empirical research. A lot of groundwork still lies ahead.

### 1.3.3 Market policy

*Policy issues.* The market price support for key products has been significantly reduced since 1992. At the same time European agricultural markets opened significantly in the wake of the Uruguay Round Agreement on agriculture and have been increasingly integrated into world markets. The EU is an important player on world commodity markets with a significant influence on market and policy developments. The subsequent reforms (Agenda 2000 and the 2003 CAP reform) led to a further reduction in intervention prices and to changes in production quotas.

The main policy issues that would need to be addressed over the medium-term with respect to market policy relate to:

- the contribution of the reduction in support prices to the internal and external competitiveness of the agricultural and food sector, notably in the context of further trade liberalisation (through WTO negotiations and bilateral trade agreements).

- The impact of support price changes on commodity and food markets.
- A certain segmentation of commodity and food markets generated by the increasing diversity in EU consumer preferences and the EU geographical expansion (reinforced by marketing inefficiencies – including transport costs).
- The need for risk management tools.

*Analytical issues.* The impact of these changes on commodity markets (i.e. production, consumption, exports and imports as well as levels of public stocks) is relatively well captured and analysed in traditional partial equilibrium models with an explicit modelling of policy instruments and their mechanisms.

However some models, notably many general equilibrium models, still define agricultural policies as “data” or price wedges. One of the prime sources of information for these indicators of agricultural support is the OECD’s Producer Support Estimate (PSE). It is an accounting system which measures the level and composition of support provided to producers as an aggregate across all policy measures, i.e. market price support, output payments, input payments, payments based on area/livestock numbers, payments based on historical entitlements etc. However, the PSE – which is not aimed at reflecting trade distortions and the effects of policy changes towards less trade distorting instruments – is often wrongly used in these models as a measure of protection. Since 1992, the gradual shift in the CAP from product to producer support has significantly affected the value of modelling results from these types of models, their interpretation and usefulness for policy analysis.

The gradual increase in the competitiveness of European agriculture and food industries and the higher price transmission from world to EU markets over the last decade are projected to raise additional challenges for modelling, with in particular a need for an improved representation of EU trade policy commitments and instruments (covering the whole range of EU trade agreements, tariff-rate quotas etc.) and a better coverage and linkage between the agricultural sector and the food sector.

They should also lead to changes in the geographical and product coverage: whereas most analytical tools used to display a very inward focus with at times a very detailed representation of EU markets, the proper representation of world markets will become increasingly critical. However, this representation will have to cover the most important trading partners of the EU to be relevant for policy and market analysis. The latter might not necessarily be the same as those traditionally represented in most world models (such as the FAPRI and the OECD models). The neighbouring regions of the EU such as the Mediterranean basin, the least developed countries as well as the transition economies of Eastern Europe are of major importance for the EU agricultural and trade policy.

The quality of products will further contribute to the segmentation of markets for products once seen as homogenous. One prime example is certainly the world market for wheat: price developments in level as well as in direction may at times differ significantly between the US and European wheat markets<sup>2</sup>. As a result model projections for world wheat markets from

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<sup>2</sup>This may also call into question the continuous use of the underlying assumption of perfect competition in agricultural commodity markets.

many international organisations are becoming increasingly inaccurate when used for market and policy developments in the EU. Likewise, the selection of reference commodity for most world market models (such as for instance maize for coarse grains and soybean for oilseed) is not always the most relevant for an EU perspective (where barley and rape seed are respectively more important).

The geographical expansion of the EU and its subsequent impact on the segmentation of commodity markets should impact the EU intra- and extra-trade and necessitate the addition of a spatial dimension to the analytical tools used for policy and market analysis.

The reduction in market price support and in the management of commodity markets is likely to induce more volatility and more risk on EU markets. As a result, greater consideration should be given towards the integration of risk in the modelling tools used for policy analysis in order to better reflect and interpret producer's behaviour in their response to policy and market changes.

Except the last element, the challenges for modelling future market and trade policies in the EU are rather straightforward and would not require a fundamental change in the principle and methodology of current modelling. However, the proper representation of markets, products, transport costs and, where necessary, qualities will increasingly become a crucial determinant for assessing market developments in the EU. In that respect a solid empirical foundation and an efficient and operational representation of regions should be seen as key ingredients.

#### 1.3.4 Other issues

A proper representation of European agriculture would require the expansion of the "traditional" product coverage to other agricultural products such as fruit, vegetables and wine which are becoming increasingly important for the EU agricultural sector and which will most likely be subject to further policy reform over the next few years. Particularly important for these two sectors, the expansion of the scope of our analytical base from commodity markets and farm activities to the food markets and downstream activities will generate significant gains in the understanding and knowledge of the economics of the whole food chain.

The analysis of other agricultural sectors such as sugar, dairy and even cereals would also require a certain representation of downstream activities since an increasing share of agricultural products is being processed and the food sector is ensuring the marketing of commodity and food products to final consumers. In some of these sectors, the food industry is increasingly concentrated (vertically and horizontally) and operates at EU and even world level. Consequently, the integration of the downstream activities will become of prime importance for a comprehensive analysis of markets, policy adjustment and competitiveness of the farm sector.

Markets for renewable energy could constitute an important opportunity for the agri-food economy in the EU. The Member States have notified their strategies in the framework of the "bio-fuel Directive" (Directive 2003/30/EC of May 2003) and the picture becomes clearer how many resources would be available for promoting this new industry. However, modelling

them would go beyond the traditional scope of sector models. The markets for energy have to be represented alongside substitution products. A proper modelling would require to build markets for ethanol from cereals, bio-diesel from oilseeds as well as the other major forms of bio-energy production. Since all these new products depend heavily on public support policies, the latter would have to be modelled in details. The main instruments would appear to be tax incentives for bio-fuels (cf. the new Directive on energy taxation – Directive 2003/96/EC of October 2003), direct support payments and investment aid for the processing industries.

## ***2. The EU enlargement process***

### *2.1 Medium-term perspectives for the new Member States*

The enlargement of the EU to ten new Member States will add about 38 mio ha of utilised agricultural area to the 130 mio ha of the EU-15. The additional 30% in area will raise the production of most products by approximately 10% to 20%. The gross value added of agriculture in the EU-25 will be 6% higher than that of the EU-15, but the number of people employed in agriculture will increase by some 60%. These differences illustrate the lower intensity of production in the new Member States and the significantly lower labour productivity than in the EU-15.

The implementation of the CAP in the new Member States is generally expected to improve the overall economic situation of their agricultural sector. The CAP in combination with the access to the Single market should provide more stable and slightly higher prices (on average) than those that would have occurred under the continuation of domestic agricultural policies of the individual accession countries.

Despite the progress achieved in the restructuring of the agricultural and food sectors in the preparation for EU membership, much remains to be done in order to increase competitiveness in the enlarged EU market, particularly in animal production. Subsistence farming is an important feature of the farm sector in these countries as it ensures the livelihood of many pensioners and unemployed persons in rural areas. Until 2013 the new Member States will receive additional rural development funds which will be gradually reduced as the direct payments are phased in. This should enable the new Member States to facilitate and speed up the process of structural change. However, the structural change in agriculture is likely to be primarily influenced by broader economic and social developments rather than agriculture and its related policies.

The increase in the total agricultural area generated by the expansion of the EU shows the significant production potential in the new Member States. However, the on-going restructuring tends to suggest that this potential will only be gradually exploited and fully used in the longer term. Over the medium term, agricultural production in the ten new Member States is expected to expand thanks to the price effects, access to a larger market, and the impact of rural development measures.

During the last decade a high level of integration of markets and policies was achieved in the EU-25 prior to enlargement. Substantial bilateral trade liberalisation took place thanks to mutual efforts undertaken within the framework of the Europe Agreements and between the new Member States themselves (CEFTA, BAFTA). The resulting significant increase in bilateral trade in agricultural commodities represents one important factor for the high level of market integration prior to membership. Another important factor arises from the implementation of the *acquis communautaire*, which led to largely harmonised rules and standards prior to enlargement. The third component is the alignment of many aspects of the national agricultural policies to that of the CAP in anticipation of membership. This effect was particularly strong in the last three years. The share of the new Member States' exports and imports conducted with the EU-25 reached 66% and 71% respectively in 2003.

The high level of trade integration should not however prevent further adjustments in production and consumption to take place over the medium term in the EU-25 as a result of enlargement. One of these adjustments will come from the development of sufficient marketing (export) infrastructure in the grain basins of the new Member States. The competitiveness and standards of the meat and dairy industries in a number of new Member States constitute another currently less visible but nevertheless important determinant for the medium-term perspectives. Yet, the actual size of these challenges to the agricultural sector and the food industry is significantly smaller than earlier expected and should be outweighed by the opportunities offered by the single market to agriculture and food industry in the old and new Member States<sup>3</sup>.

## 2.2 Analytical issues

With enlargement, the agricultural sector in the EU has drastically increased its diversity in structure, products and competitiveness which needs to be properly represented in the analytical tools:

- market-oriented agriculture competes with subsistence agriculture for resources in some New Member States (like the dairy sector in Poland).
- Inefficiencies exist in the downstream sector and problems of standards of production, processing and marketing are becoming a crucial determinant of the competitiveness of agriculture in the new Member States (as reflected by the grain market situation in Hungary in 2004/05).
- Some (new) products should gain importance and differing dietary patterns and consumer preferences may lead to an increased segmentation of the EU market.

The importance of the agricultural sector in the development of rural areas and in the economy of many new Member States is very different from the old Member States. Their specific policy

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<sup>3</sup> For further details on the enlargement impact analyses, cf. European Commission (2004).



setting (notably the availability of direct payments, rural development and structural funds), the pace of investment, the projected rapid growth in the economy (and the subsequent increasing labour costs) and the appreciating currencies are all expected to significantly impact agricultural competitiveness. These characteristics of transition economies need to be fully incorporated in analyses of the agricultural sector. Usually many traditional partial and general equilibrium models cover these aspects in an incomplete manner (surprisingly too in relatively new research efforts). As a result the effects of enlargement have often been overestimated with regard to production responses.

The EU enlargement is an on-going process which has often outpaced the geographical expansion of analytical tools. Only few modelling tools can now provide a full coverage of the EU-25. In the next few years, many new Member States will enter the EU (starting with Bulgaria and Romania, and possibly Croatia and Turkey over the medium-term). Expanding the geographical coverage of analytical tools is therefore crucial for the enlargement agenda. An enhanced coverage of models needs a strong empirical basis in order to provide timely, meaningful and useful analytical tools for the support of policy decisions. The case of the on-going enlargement demonstrates the importance of long-term and active regional research co-operation across Europe in order to provide timely research which can then really improve policy decisions.

### *3. Consequences for quantitative tools*

#### *3.1 Role of quantitative tools in the policy process*

The role of analytical tools has increased in recent years, as the activity of economic and policy analysis, forecasting and evaluation has emerged as an important aid in policy decisions. At the formulation stage, models have proved on numerous occasions to be a vital tool for decision-makers during the work of economic and policy analysis that is required when preparing measures for adoption. Then, models have made a significant contribution to the assessment and evaluation of the implementation, monitoring and effectiveness of measures adopted as part of the CAP as well as to the enlargement strategy and negotiations.

They substantially contributed to the improvement of the understanding of economic fundamentals, to the provision of orders of magnitude and general trends for economic developments on the basis of explicit hypotheses and to the structuring and fostering of the policy debate on an objective basis.

However, if quantitative tools are to continue to play an essential role in the policy process in the future, they need to be policy-relevant, theoretically- and empirically-sound, validated and timely to gain any credibility and to be of any significance and usefulness to policy-makers. Given the emergence of numerous model-based analyses over the recent past, notably in the trade policy context, it is important to ensure that these qualifications are fully met to avoid situations which could be detrimental not only to the policy debate, but also to the credibility of the modelling community.

The recent years have shown the increasing integration of various policy issues in the CAP, such as food quality, food safety, the environment and rural development. The resulting multiplicity of issues to tackle by quantitative analytical tools can only be addressed by a variety of quantitative tools as no single model can answer every question. Future developments of models should follow an objective-driven approach with key policy issues to address and the appropriate commodity, geographical and policy picture. Yet, one should not exclude to supplement such quantitative approach with more qualitative analyses, based on case studies, which could allow a more thorough analysis of certain specific developments.

### *3.2 Modelling needs*

How to meet these analytical challenges is best left to agricultural economists. However, some considerations could be given regarding the consequences of the new requirements in relation to models development (adaptation of existing models or development of new models), technical features, data base and institutional cooperation between model builders and users.

#### 3.2.1 Model development

The new policy issues to address could translate into:

- the development of new models (e.g. under an object-oriented approach such a wine sector model);
- the development of new modules in existing models (e.g. for environment or trade policy analysis);
- linking different models which operate under different scales (e.g. for issues with a strong micro-economic and spatial component such as decoupling, environment and rural development).

#### 3.2.2 Technical features and model validation

As already mentioned in previous sections, the representation of factor markets and agricultural households behaviour in modelling tools should be subject to further research (both theoretical and empirical) with a view to address analytical needs derived from the CAP reform and enlargement. The modelling of policy instruments should also be reviewed to assess model's performance. This concerns particularly the direct payments and their degree of decoupling, trade policy instruments (especially non-tariff trade barriers and tariff quotas) and supply management tools (production quota). In view of their growing importance, rural development instruments should be the subject of more research and form one of the major axes of develo-

pment with regard to agricultural sector modelling in the next few years. Finally the integration of risk into the quantitative tools could also be improved.

The increasing role of quantitative tools should be linked to a more systematic process of evaluation and validation of their performance to promote their acceptability and usefulness to policy-makers. This should include the assessment of their conceptual, theoretical and statistical robustness and reliability, of the data base consistency, reliability of parameters and calibration methods. Given that some models are still using elasticities estimated in the early 1980s in a few EU member States, much ground research work is needed in this field.

The capacity of models to produce credible, realistic and sensible results, together with their degree of transparency (through the provision of user-friendly documentation and interface) should prove vital in promoting their future use and acceptability.

### 3.2.3 Data issues

In addition to sound theoretical foundations, modellers need to have access to basic data that are accurate, relevant, consistent, reliable and up-to-date. However, despite the efforts of statistical institutes in ensuring greater transparency and accessibility of data, the availability of reliable data could become an important constraint over the medium-term for the development of quantitative tools due to resource difficulties (this concerns in particular price, household and rural statistics). Consequently, more empirical work based on regional/national sources might be necessary in order to meet these objectives.

### 3.2.4 Institutional cooperation

Given the existing human and financial resource constraints and the numerous challenges to address, greater rationalisation of the modelling activities and cooperation between modelling teams and between model builders and users should be developed on the basis of an on-going dialogue with policy-makers. This basis for collaboration should ideally result not only in a clearer definition of medium-term needs for policy analysis and fundamental research, but also in a greater accessibility, transparency and user-friendliness of analytical tools. These developments should help modellers and users to optimise their work while promoting the development of and enhancing policy-makers' confidence in quantitative analyses.

## *Conclusions*

The medium-term outlook for the EU agricultural sector is expected to be shaped to a large extent by the consequences of the reform of the CAP and the on-going enlargement process.

These developments are projected to have major implications for the activity of the research community in Europe in the field of quantitative and modelling analysis.

The main analytical challenges to be addressed will concern primarily the impact of decoupling (with the need for a better representation of factor markets and agricultural household behaviour), the representation of our trade policy, the consequences of the recent and future enlargement and the improvement in the coverage of the EU rural development policy.

The capacity of quantitative tools to demonstrate policy relevance, theoretical and empirical robustness, timeliness and to undergo a validation process will also prove increasingly important for their contribution to the policy process.

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