

Impacts of the Eastern European Accession and the 2003-reform of the CAP Consequences for Individual Member Countries

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Abstract

At the Copenhagen European Council Meeting in December 2002 the European Union (EU) decided to enlarge the EU with ten new member states. In this study the impact of the accession for each of the EU-25 member states is analysed. In particular, results of the accession under different policy environments, including the impacts of the recently adopted reform of the Common Agricultural Policy, are presented.

The analysis shows that agricultural supply responses will be very different across acceding countries and that the impact of decoupling direct support is significant. The supply response in the new member states will be significantly smaller in the grain sector, when direct support is decoupled. In the old EU member countries, decoupling of animal premiums will lead to a 7 to 10 per cent decline in the production of beef in the EU-15 and that the lowering of intervention prices in the dairy sector will imply that milk quotas, in some member countries of the EU-15, are no longer binding. Finally, rural factor income in the European Union increase by 3-4 per cent due to the 2003-reform, i.e. including the impact of the decoupled single farm payment and the increased efficiency of agricultural production in all member states.

In economic terms the enlargement of the EU with the 10 accession countries is affordable. The analysis supports the view that not alone does economic welfare improve in the EU-15 member states, but the reform also seem to be an attractive alternative to the Agenda 2000 approach, for both the old and the new member states. Both agricultural income and macroeconomic welfare improve.

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1. Introduction

At the Copenhagen European Council Meeting in December 2002 the European Union (EU) decided to enlarge the EU with ten new member states. As anticipated, negotiations on the appropriations for agriculture, structural operations and administration for the new member states were difficult, but a compromise was reached.

The decision to enlarge the EU is a very important step in shaping the future political, institutional and economic structures of Europe. The impacts on growth, the economic structures and the international trade pattern will be affected by the agreements reached as well as the economic situation in the longer run will depend on the design of the Common Agricultural Policy (CAP).

In June 2003 the European Council agreed on a compromise for the future of the CAP – the so-called 2003-reform or Mid-Term Review (MTR) reform, which will affect the impacts of the accession of the ten new member states. The reform was also instrumental to the agreement on farm trade reached between America and the European Union on August 13th as well as the EU positioning in the international trade negotiations under the auspice of the World Trade Organisation (the Cancún Meeting in September 2003).

The purpose of this paper is to describe and analyse the economic implications of the accession agreement using a specifically tailored global general equilibrium model and database. In particular, our paper addresses the impact of accession under different CAP environments, namely EU enlargement under the existing CAP as formed by the “Agenda 2000” reform, contra EU enlargement where at the time of accession the 2003-reform is implemented in both the old and new member countries.

The paper starts with a brief overview of the enlargement process, the Agreement reached in Copenhagen in December 2002 and the Mid-Term Review’s reform of the CAP, whereafter the quantitative analysis is then presented, followed by a conclusion.

2. The Copenhagen Agreement

The European Council of December 2002 concluded Denmark’s tenancy of the revolving EU Presidency. On 13 December 2002 it featured a summit meeting in Copenhagen between the EU on one hand and prospective EU members on the other.

Agreement was reached, and eight Central and Eastern European Countries (CEECs), Cyprus and Malta will accede to the EU in the so-called “Eastern Enlargement”, scheduled for 1. May 2004.

The previous Danish EU Presidency (1993) had initiated the Eastern Enlargement, identifying necessary legislative, economic and political preparation by the accession countries that became known as “Copenhagen criteria”. During the decade 1993-2002 the 10 Accession Countries (AC) set about satisfying Copenhagen Criteria, the most demanding of which was the adoption and implementation of the 33 Chapters of the *acquis communautaire*, effectively the law of the EU. Agriculture (chapter 7) presented the most difficulties, and required the greatest changes in organization, institutions, and behaviour in the farming and food industries. In the EU, 1993-2002 featured the inception of the Single Market, accession by three new member states, the introduction of the Single Currency, and a number of the reforms of the CAP. These developments in the EU’s structures and institutions influenced the path taken towards the Eastern Enlargement, particularly in the context of agriculture.

The late 1990s produced various trade and aid arrangements between AC and the EU that were designed to promote integration. Trade protocols attached to Association Agreements provided a means for steadily increasing mutual market access, although agricultural products were featured only in their latter stages. EU aid took two simultaneous and separate approaches, the first being assistance with *acquis* adoption (e.g. under the Phare program), targeting institutional reform and training for future adoption of the CAP. No financial support to agriculture was involved. In the second approach, the SAPARD program established the institutional arrangements for regional development aid. Unlike Phare, SAPARD also provided funding.

While adopting the *acquis*, during the 1990s most AC established and expanded agricultural policy regimes that were at best poorly related to, and at worst contradictory to, the CAP. The challenges of economic transition, the disappearance of centrally-planned trade patterns, and accommodation of the new rural vote all contributed to the emergence of a considerable range of agricultural policies. These policies remain in place today.

The CAP as an influence on the Eastern Enlargement

In 1999 the (Berlin) European Council articulated initiatives in both CAP reform and the Eastern Enlargement. They reaffirmed commitment to production quotas and to direct payments, under the “Agenda 2000” reform that consolidated the earlier

MacSharry CAP reforms. At the same time, a 2-stage EU enlargement plan was revealed, involving 6 new AC members in 2002. A budget allocation was established, known as “the financial framework” or “Berlin guidelines”. Crucially, the financial framework assumed that AC farmers would receive no direct payments. It allocated sums for regional development and agriculture for the five years 2002-2006. Another significant outcome from Berlin was that AC received confirmation that production quotas would apply to them after the Eastern Enlargement. Quota amounts thus became key variables for AC’ future negotiation, despite the EU’s supposedly clear procedures for their calculation.

Concerns within the EU about the Eastern Enlargement concerned both the AC’ institutional capacities for operating EU policy instruments, and the fiscal cost of supporting AC farmers. As a consequence, two separate strands of the enlargement process appeared. The first emphasized the adoption of the *acquis*, while the second centred on the eligibility of AC for support under CAP instruments. The adoption of the *acquis* involved the complex programs and planning, “screening”, reporting and monitoring that had begun in the mid-1990s. Conversely, AC’ eligibility for CAP instruments required an *ad hoc* negotiation process. However, until late 2002 the EU had no unified position on eligibility matters and negotiations could not proceed. Uncertainty over the future shape of the CAP provided the AC with what was frequently described as a “moving target”.

Enlargement in 2002 proved infeasible, and more than 6 CEECs appeared ready for accession. A 2004 enlargement with 8 CEECs (plus Cyprus and Malta) was embraced by the EU, in that the proposed expansion of the CAP could/should be financed within the financial framework laid down by the Agenda 2000 CAP reform at the Berlin Summit meeting in March 1999.

At the Berlin Summit agreement the EU leaders agreed to stabilise EU spending on CAP expenditures (excluding rural development) at 40.5 billion € (in 1999 prices) a year over the period 2000 – 2006, plus 2 per cent yearly addition to adjust for inflation. The EU leaders extended this agreement in October 2002 (the so-called Schroeder-Chirac deal), to cover the period 2007 to 2013, in which the adjustment for inflation was fixed to 1 per cent per year. It is within this financial framework that the European Commission has to finance direct payments and market expenditures given to farmers in an enlarged EU comprised of 25 member countries.

Issues under negotiation

During 2000-2002, as adoption of the *acquis* proceeded, AC increasingly demanded eligibility for direct payments, and accordingly proposed base areas and animal numbers, and reference yields. Disappointing EU-AC trade performance had further influenced AC' domestic policy agendas and some AC proposed transitional trade barriers within the enlarged EU. Similarly, bans on foreign ownership of farmland were widely demanded. Several AC introduced tariff regimes that violated Association Agreements as well as WTO commitments.

By early 2002 most AC had satisfied the EU that the *acquis* had been adopted in most areas except Agriculture. Outstanding issues in (or related to) agriculture included institutional arrangements such as financial controls, databases and record keeping, and the organizations involved in management of commodity sectors. Related concerns formally voiced by the EU involved aspects of border controls, animal identification and land parcel registration: all essential for CAP operation.

In a March 2002 communication, the European Commission offered a comprehensive financial and structural plan for agricultural aspects of the enlargement. For the first time direct payments were discussed, in the form of a compromise that specified partial eligibility for AC farmers. It also detailed the reference quantities, areas and animal numbers considered valid for direct payments. Similarly, the EU's calculations of AC' quota levels were presented. AC were offered a simplified implementation procedure for direct payments that was not tied to CAP program commodities, and did not require set aside, for the first few years after accession. Partial eligibility entailed payments to AC' farmers at a level representing a small proportion of that paid to existing EU members. It was proposed that that level (25% in 2004) would steadily increase over a 10-year period to parity.

Quota levels and reference amounts for direct payments were set by the EU at levels far below those proposed by AC. AC' numbers were generally based on perceptions of 1980s' production and other criteria such as the anticipated transfer of volumes from subsistence to marketed production. Poland's proposal even featured a 2-stage introduction of dairy quota, with an increase at 2011.

In mid-2002 it was revealed that the Czech Republic and Slovenia would become net contributors to the EU budget immediately after the enlargement. Expanded direct payments eligibility was rejected in favour of a political fix that led to the 2004

accession date being specified at 1 May, so that new members would avoid most payments obligations earlier in the year.

During 2002 AC lobbied first for 100% eligibility for direct payments in 2004, then later for increases on the initial offer. Some AC that already operated CAP-like direct payments programmes lobbied for the right to continue them under CAP funding. In November 2002 the EU introduced the idea that AC would be permitted to “top up” their direct payments from national budgets, as well as from (up to 20% of) EAGGF regional development funds in 2004-2006. Topping up allowed the payment to AC farmers to increase to 40% of that made in existing member states in the first year (2004), with steady increases to follow. Also in November 2002, the EU raised several times the quota and reference quantities allocated to AC.

During 2002, and particularly late 2002, EU members further debated the future of the CAP. Their commitment to the financial framework was emphasized, at the same time as new reforms and future budgetary limits were discussed. In the same period, AC met with the EU in many formal and less formal fora. In these meetings, adoption of the *acquis* received far less emphasis than the negotiation of AC eligibility for direct payments; reference yields, base areas and quota levels.

By late 2002, all AC have satisfied Copenhagen criteria and all attention was focused on financial details. A curious twist was that although almost all AC had reached agreement with the EU before the summit, they had also retained the right to enjoy any additional concessions to countries reaching agreement later in negotiations. Primarily, this referred to Poland’s intense efforts to broaden eligibility, raise quota levels and secure additional financial resources.

A few of the conclusions reached

Final quota amounts allocated to AC were not changed at the Copenhagen summit. Leading up to the summit, quota volumes had been repeatedly raised, arriving at 70-100% the volumes claimed by ACs for milk, 60-90% for A and B sugar quota, but much lower levels for potato starch.

As for quotas, AC’ proposals for eligible quantities reflected 1980s’ production levels. An additional problem for AC was that their production systems (particularly in beef, and fodder production) were sufficiently different from those in the EU that definitions became difficult to equate. In the months before the summit, eligible areas and animal numbers rose steadily for almost all AC. These were not changed at the

summit. AC were allocated 60-100% of their proposed base areas at 70-100% of their proposed reference yields. In general, the larger AC (Poland, Hungary, Slovakia and the Czech Republic) were allocated quantities for arable crops close to those proposed. For beef, allocated numbers varied substantially amongst livestock classes. The smaller AC tended to receive allocations 70-100% of those requested while the larger AC fared less well.

At the Copenhagen summit the EU conceded greater scope for AC to top up direct payments. The maximum allowable proportion of existing EU levels was raised from 40% (the November proposal) to 55% for the first year (2004). Two options were approved at the Copenhagen summit. Both maintained the budgetary constraint that CAP funds would be allocated only up to a level of 25% of that paid to farmers in existing EU states in the first year 2004. Both also required that, what ever topping up occurred, in no case would AC' payments exceed those received in existing member states.

In the first option, AC could top up EU payments by up to 30%, for a total of 55%, 60% and 65% of the EU rate in the first three years. Such payments could be based on simplified schemes. In the second option, existing direct payments schemes could be maintained, and topped up by 10%.

At the Copenhagen summit, restrictions on the use of rural development funds were also maintained, with slight modifications: either a flat maximum rate of 20% of rural development funds allowed to be diverted; or an initial rate of 25% in 2004, declining to 20% and 15% in 2005 and 2006. Under both options, diversions from rural development funds could be made only in the years 2004-2006 and may only represent a topping up to 40% of EU levels.

3. The 2003-reform

In June 2003, the European Council agreed on a reform of the CAP – a compromise in response to the MTR Proposal of the European Commission of July 2002 (and its legal proposals of January 2003). The reform contains five main elements, namely

- Continuation of the Agenda 2000 approach (revisions of the market policy, e.g. reductions in intervention prices for dairy),
- Decoupling of direct support (a single farm income payment based on historical reference of payment),

- Introduction of cross compliance (reduction of direct payments in case of non-respect of EU standards in the field of environment, food safety, animal health and welfare),
- Strengthening of rural development by enhancing rural development instruments to meet new standards and by redistributing funds from 1st to 2nd pillar of the CAP (modulation).
- A mechanism for financial discipline to ensure that the CAP expenditures do not exceed the financial framework.

For cereals, the intervention price is maintained and the monthly increments are reduced by 50 per cent. The area premium (to cereals, oilseeds, protein and set-aside) remains unchanged at 63 €/t. For protein crops the existing supplement of 9,5 € will be maintained and converted into a crop specific area payment of 55.57 € per ha. For durum wheat, the specific aid is reduced by 17 per cent from 2004 to 2006 in the traditional zones and it will be decoupled in 2005. For rice the intervention price is cut by 50 per cent and for nuts, starch potatoes and dried fodder sectors the marked policy is reformed as well. Reforms for olive oil, tobacco and cotton will according to the decision, be discussed in the second half of 2003.

For dairy, the intervention price for butter will be reduced by 25 per cent, which is an additional price cut of 10 per cent compared to the Agenda 2000 reform of the CAP. For skimmed milk powder prices will be reduced by 15 per cent as agreed in Agenda 2000. The quotas shall be maintained to 2014/15 with an increase in the milk quota for Greece and Portugal in addition to what was agreed in Agenda 2000 (+2.39 per cent). To compensate for the price reductions a direct payment per tonne of milk quota is to be introduced from 2004 and onwards. The single farm payment (decoupling) will only apply in the dairy sector once the reform is fully implemented (2007), unless member states decide to introduce it earlier.

According to the decision, a significant share of the direct support is to be decoupled from production. The single decoupled farm income payment from 2005 onwards includes prior payments for cereals, oilseeds, protein crops, flax, hemp, linseed, durum wheat supplement, starch potatoes (40 per cent), grain legumes, rice, dried fodder, beef, veal, sheep, goats and milk (from 2006/07).

Each farmer having received a direct payment under the existing support schemes will be eligible to receive a single farm payment in the form of a number of payment entitlements which are determined by

- The total amount of direct payments destined for the single payment corresponding to the farmer in question during the reference period (2000, 2001 and 2002),
- The total reference area, which originally generated the payments destined for the single payment in the same reference period, including all forage area,
- The number of payment entitlements (€/ha) calculated by dividing the total amount of direct payment destined for the single farm payment by the total reference area,
- The total eligible area, defined as the total area of land on which the single farm payment may be claimed in the future.

The eligible area includes any type of agricultural land, with the exception of areas under permanent crops. The eligible area can be used for any agricultural activity defined as the production, rearing or growing of agricultural products as long as land is maintained in a good agricultural condition. Farmers may also sell or lease land with or without entitlements and they may also sell their entitlements with or without land. But in all cases, farmers need to have an area of eligible hectares equal to or greater than the number of payment entitlements they hold, in order to fully activate their single farm payment. A national reserve for hardship cases, problems of transition and new entrance farmers is to be established.

In addition the member states, at the national or regional level, may,

- Retain 25 per cent of the hectare premium or alternatively up to 40 per cent of the supplementary durum wheat aid,
- Continue up to 50 per cent of the current sheep and goat premia,
- Retain up to 100 per cent of the suckler cow premium component and up to 40 per cent of the slaughter premium component or instead retain either up to 100 per cent of the slaughter premium or alternatively up to 75 per cent of the special male premium component,
- Make additional payments for purposes of encouraging specific types of farming which are important for the protection or enhancement of the environment and improving the quality and marketing of agricultural products.

Under the term cross compliance the direct payment can be reduced in case of non-respect of obligations from EU standards in the field of environment, food safety,

animal health and welfare and maintaining land in good agricultural and environmental condition.

Under the term modulation the total direct aid payments for individual farms will be reduced. A franchise of 5000 € is applied. The modulation will start with a rate of 3 per cent in 2005, 4 per cent in 2006 and 5 per cent in 2007 and onwards. The saved amount will be used for rural development purposes and the money will be spent according to size of the agricultural area, agricultural employment and income across the member states. Member states will nevertheless receive at least 80 per cent of its contribution to modulation.

Finally, the financial discipline will be invoked from 2007, so that direct payments will be reduced if the budgetary ceiling is overshoot.

4. Modelling Framework and Scenarios

Our analysis is based upon a specifically tailored global general equilibrium model and database. The Global Trade Analysis Project (GTAP) model (Hertel, 1998) and database (Dimaranan et al, 2002) have been our point of departure in which the specifics of the agreement and the CAP is explicitly represented². Further, the study is based on an aggregation in which all EU-25 member countries are explicitly represented.

The GTAP model is a standard multi-regional, static computable general equilibrium (CGE) model. Like any other applied economic model, this model is of course based on specific assumptions both in terms of theoretical structure as well as the specific parameters and data used. In this model regional production is produced according to a constant return to scale technology in a perfectly competitive environment, and the private demand system is represented by a non-homothetic demand system (a Constant Difference Elasticity function)³. The foreign trade structure is characterised by the Armington assumption implying imperfect substitutability between domestic and foreign goods.

² The model is solved using GEMPACK (Harrison and Pearson, 1996).

³ Hence, the present analysis abstracts from features such as imperfect competition and increasing return to scale, which may however, be important in certain sectors.

The modelling of decoupled payments from production in the MTR-reform analysed in this paper, is done by converting direct aid payments, in each member country, into a uniform hectare payment given to all utilised agricultural area. Therefore the results found in this paper represent a decoupling of direct aid from production where no restrictions on the use of land are enforced.

The analysis presented in this paper is based upon a constructed baseline for the period 1997-2013, which provides a benchmark against which the impacts of accession are compared. The baseline features projects of the world economy plus incorporation of the effects of changes in the CAP as outlined in the Agenda 2000 reform, Everything But Arms' (EBA) initiative and EU preferential market access for bovine meat products and other meat products from the AC, cf. Baker (2002).⁴

The enlargement scenarios modelled in this paper entails the integration of the AC into the EU's CAP in the year 2013 in a world shaped by the baseline scenario. Enlargement of the EU implies that all tariffs and export subsidies as well as non-tariff barriers between the EU and the AC are abolished. At the same time all sectors in the AC are given the same level of protection against third countries as found in the EU at the time of accession. This implies that import tariffs for practically all agricultural commodities in all the accession countries will change – and often significantly. Also in a number of cases export subsidies are introduced for some agricultural commodities.

Furthermore, the expansion of the CAP to the AC follow the outlines for domestic support (direct payments, production quotas and other supply management instruments) as laid down by the Copenhagen Agreement, cf. Appendix A. The baseline as well as the specific changes in tariffs and export subsidy rates will not be presented further here as it is fully documented in Jensen and Frandsen (2003).⁵

⁴ The EBA initiative is modelled in the baseline period by reducing all EU tariff rates to zero on import from Malawi, Mozambique, Tanzania, Zambia, Uganda and the two GTAP aggregate regions Other Southern Africa and the Rest of Sub-Saharan Africa

⁵ Compared to the analysis undertaken in Jensen and Frandsen (2003), minor changes have been made to the initial database's domestic support in the 15 EU member countries. Specifically land subsidies not allocated as crop specific hectare premiums in the EU-15 have been disbursed across all land using commodities within each EU member country. In modelling the MTR it has become apparent that further work still needs to be done on how best to incorporate OECD's PSE

Four enlargement scenarios are presented in this paper.

In the **first** scenario (“Agenda 2000 scenario”), the 10 AC become members of the EU in an environment where the old CAP as shaped by the Agenda 2000 reform still prevails.

In the **second** scenario, which we label the “minimum decoupling scenario” the 2003-reform of the CAP is implemented at the time of accession in both the old 15 EU member countries as well as the 10 new AC. This implies that supplementary durum wheat payments are reduced to 250 €/ha (traditional areas) and 0 €/ha in well-established areas. That rice and dairy intervention prices are reduced (modelled as import tariff/export subsidy reductions) and that direct payments to rice as well as dairy premiums and additional payments to milk producers are increased. At the same time milk quotas in Portugal and Greece are expanded in concordance with the MTR agreement. Finally all member states maintain 25 per cent of hectare premiums, 50 per cent of sheep and goat premiums and 100 per cent of slaughter premiums coupled to production (the minimum decoupling requirement), while the remaining direct aid given to cereals, oilseeds, durum wheat, beef, sheep and milk payments are converted into a single (decoupled) farm payment.

The **third** scenario, which we label the “national decoupling scenario”, is an attempt to gauge the political discussions taking place in each member country with respect to which ‘decoupling model’ each particular member country chooses. This has resulted in the assumptions listed in Box 1 below. This differs from the previous scenario in which all members countries are treated equally with regard to the decoupling of the direct payments.

The **fourth** scenario, which we label the “maximum decoupling scenario”, differs from the two previous scenarios in that, all direct payments, which can be decoupled, are included in the single farm payment (this means that all hectare, sheep, goat and slaughter premiums are now decoupled together with milk premiums).

figures into the GTAP database. Especially the method used to dis-aggragted EU-15 PSE figures into 15 individual member countries needs to be revised.

In all the 2003-reform scenarios all direct payments are reduced as described above (modulation), where the amounts saved in direct payments are reallocated to rural development following the guidelines described earlier.⁶

Given this design of the four enlargement scenarios it then becomes possible to evaluate the impact of the MTR by comparing the results of each of the three decoupling scenarios with the “Agenda 2000” scenario.

Box 1. Coupling/decoupling assumptions in the “national decoupling scenario”				
	Cattle	Sheep /Goat	Durum Wheat	Hectare premiums
France	100% veal slaughter premiums 100% suckler cow and 40% slaughter premiums given to bulls, steers cows and heifers from the age of eight months	50% coupling	D	25% coupling
Denmark	75% coupling of special male premium	50% coupling	D	D
Portugal	100% coupling of suckler cow and 40% coupling of slaughter premiums	50% coupling	D	D
Finland	75% coupling of special male premium	50% coupling	D	D
Greece	D	50% coupling	40% coupling	D
Italy	100% coupling of slaughter premiums	D	40% coupling	D
Spain	100% coupling of suckler cow and 40% coupling of slaughter premiums	D	40% coupling	D
Austria	100% coupling of suckler cow and 40% coupling of slaughter premiums	D	D	D
Belgium/Lux	100% coupling of veal slaughter premiums	D	D	D
Germany	100% coupling of veal slaughter premiums	D	D	D
Netherlands	100% coupling of veal slaughter premiums	D	D	D
Sweden	75% coupling of special male premium	D	D	D
Ireland	Full decoupling			
UK	Full decoupling			
AC10	Full decoupling			
Note: D is equal to a 100 per cent decoupling of payments.				

5. Results: The Economic Implications of the Accession

Aggregated Supply Response

⁶ In the analysis under taken in this paper, the distribution of direct payments within each class of payment (≤ 5000 , > 5000 €), aggregated to country level for the old EU-15 members states is based on the working document n° 12 from the council working party (Council of the European Union 2003). From this data, aggregate national rates of reduction have been calculated and used to modulate direct payments.

In Table 1 the aggregate supply responses for the 10 Accession Countries (AC-10), EU-15 and the rest of the world (ROW) are shown for the four enlargement scenarios, using index numbers (where agricultural production in 2013 is equal to 100). Subtracting the results in the last three columns from the first column for each of the scenarios illustrate the impact of the 2003-reform of the CAP.⁷

The enlargement of the EU under the Agenda 2000 policy will increase the AC production of crops receiving hectare premiums (wheat by 13 per cent, other grains by 17 and oilseeds by 4 per cent), while the production of vegetables, fruits and nuts, plant-based fibbers and other crops decline. The production of bovine animals increases slightly in spite of the production of milk falls (introduction of milk quotas). In the EU-15 cereals production is reduced by roughly 2 per cent (to index 98) and bovine animal production by 1 per cent due to the enlargement, while production changes in the ROW are minimal.

Enlarging the EU in an environment as formed by the 2003-reform (scenario 2, 3 and 4) clearly changes the supply response in both the AC and the EU-15. The decoupling of hectare and animal premiums into one single decoupled payment allocated to agricultural land reduces cereal and bovine animal production in the enlarged EU-25 increasing production of these commodities in the ROW slightly.

In EU-15 the production of grains is estimated to decline by 4 to 9 per cent as a result of implementing the 2003-reform (scenario 2, 3 and 4) in the enlarged European Union and the production of bovine animals falls by 7 to 9 per cent following the decoupling of the animal premiums. Similar, the milk production in EU-15 will decline by 1 to 2 per cent.

In order to quantify and put some of the production changes shown in Table 1 into relief, FAOSTAT-Agricultural statistics (FAOSTAT (2003)) on crops and livestock production is used as an initial reference for the quantities of agricultural output in the base year 1997. Using the computed percentage changes in supply response, the level

⁷ In appendix B supply responses are shown for all 24 commodities in each of the 25 countries in the enlarged EU using index numbers where the year 2013 is index 100.

of agricultural output in the year 2013, pre and post enlargement of the EU are calculated, focusing on cereals, meat and milk production.⁸

⁸ The GTAP database is comprised of values wherefore we assume that initial value of production found in the GTAP database approximately reflects the quantity of production reported by FAOSTAT in 1997.

Table 1. Change in Production, 2013 = index 100

	AC-10				EU-15				ROW			
	Agenda	Minimum	National	Maximum	Agenda	Minimum	National	Maximum	Agenda	Minimum	National	Maximum
Wheat	113	108	104	104	98	94	92	90	100	100	101	101
Other grains	117	109	104	105	98	94	89	88	100	100	100	101
Vegetables, fruit, nuts	80	88	91	90	101	104	105	106	100	100	100	100
Oilseeds	104	94	87	87	100	101	101	101	100	100	100	100
Sugar cane and beet	98	99	99	99	100	100	100	100	100	100	100	100
Plant based fibers	70	85	85	85	99	99	99	100	100	100	100	100
Other crops	79	86	88	88	100	104	105	106	100	99	99	99
Bovine animals	105	106	103	105	99	92	91	90	100	100	100	100
Other animals	101	105	106	106	99	100	99	100	100	100	100	100
Raw milk	65	65	65	65	101	99	99	99	100	101	101	101
Wool	94	98	100	100	99	108	110	111	99	99	99	99
Natural Resource	99	99	99	99	100	100	100	100	100	100	100	100
Bovine meat products	107	116	112	117	99	94	94	92	100	101	101	101
Other meat products	102	108	109	109	99	99	99	99	100	100	100	100
Vegetable oils and fats	87	87	85	85	101	101	101	101	100	100	100	100
Dairy products	55	55	55	55	101	100	100	100	101	102	102	102
Sugar	99	100	100	100	100	100	100	100	100	100	100	100
Other processed foods	115	116	115	115	99	99	99	99	100	100	100	100
Beverages and tobacco	71	72	71	71	102	102	102	102	100	100	100	100
Textiles/wearing apparel	170	169	169	169	99	99	99	99	99	99	99	99
Manufactures	101	100	100	100	100	100	100	100	100	100	100	100
Services	99	99	99	99	100	100	100	100	100	100	100	100

Cereals

Beginning with cereals Table 2 shows the global production responses for the world cereal market aggregated into the three regions, EU-15, AC-10 and the ROW for wheat, other grains and total cereals production.

Table 2. Global Cereal Production					
	2013 1000t	Agenda	Minimum % change	National	Maximum
Total cereals					
EU-15	230878	-2.1	-6.0	-9.2	-11.0
AC-10	65099	15.3	8.8	4.1	4.5
EU-25	295977	1.8	-2.7	-6.3	-7.6
ROW	2267955	-0.2	0.2	0.4	0.5
World	2563933	0.0	-0.2	-0.4	-0.4
Wheat					
EU-15	112397	-1.9	-6.1	-7.8	-10.1
AC-10	24096	13.2	7.7	3.6	4.4
EU-25	136493	0.8	-3.7	-5.8	-7.5
ROW	597310	-0.2	0.4	0.7	1.0
World	733803	0.0	-0.3	-0.5	-0.6
Other grains					
EU-15	114819	-2.3	-5.9	-10.7	-12.0
AC-10	40994	16.5	9.5	4.4	4.6
EU-25	155813	2.7	-1.8	-6.8	-7.6
ROW	950206	-0.3	0.1	0.4	0.5
World	1106020	0.1	-0.1	-0.6	-0.6

Note: Total cereals include the production of rice.

The global production of cereals is estimated to be 2,564 million tonnes in 2013 of which the EU-15 and AC produce 231 and 65 million tonnes respectively. An enlargement of the EU under the Agenda 2000 CAP would barely affects global cereal production as a whole. The production is however reallocated from the EU-15 and the ROW to the new member states as the overall level of protection and domestic support to the grain producers in the 10 AC increases significantly. Cereal production in the new EU member states is estimated to increase by almost 10 million tonnes or by 15.3 per cent, with production in the old member states declining by 2.1 per cent. Overall cereal production increases in the EU-25 by 1.8 per cent reducing production in the ROW by 0.2 per cent.

In the three MTR enlargement scenarios, cereal production in the EU-25 declines by 2.7, 6.3 and 7.6 per cent respectively, increasing production in the ROW by 0.2 to 0.5 per cent. A full decoupling of hectare premium reduces the cereals production in the

EU-15 by approximately 9 per cent ($[-11.0] - [-2.1]$) and reduces the expansion of cereal production in the AC to 4.5 per cent if payments are fully decoupled as compared to 15.3 per cent under the Agenda 2000 policies.

In the case of wheat, the production in the EU-15 is estimated to be 112.4 million tonnes in 2013 before the enlargement of the EU. Enlarging the EU under the Agenda 2000 policy reduces wheat production by 1.9 per cent in the EU-15 as compared to the MTR enlargement scenarios, which leads to a decline in the production of wheat by 6.1, 7.8 and 10.1 per cent. The largest percentage reductions in production of wheat in the MTR enlargement scenario are found in Greece and Portugal cf. Table 3, where durum wheat premiums have been transformed into decoupled payments. In scenario 3 (national decoupling) where Greece has opted to maintain 40 per cent of durum wheat payments coupled to production the decline in wheat production is reduced dramatically compared to scenario 4.

In the case of other grains the MTR enlargement scenarios 2, 3 and 4 reduces production in the EU-15 by 5.9, 10.7 and 12.0 per cent compared to scenario 1 in which the production declines by 2.3 per cent. The smallest reductions in other grain production are found in Italy, Portugal and Spain where the decoupling of durum wheat premiums have made the production of other grains more competitive relative to wheat production.

In scenario 3 (national decoupling) France is the only country to maintain 25 per cent of its hectare premiums coupled to production, which in the case of other gains actually has increased production in France relative to scenario 1 by 1.5 per cent ($[-0.8] - [-2.3]$). France increases its exports of cereals to the EU intra market due to declining production in other member states.

In the AC, enlarging the EU, if the Agenda 2000 policy was in place (scenario 1) Hungary alone accounts for 70 per cent (2.4 million tonnes) of the increased wheat production, while Poland's production hardly changes. This unchanged production response in Poland is the net effect of changing border projection rates and introducing higher levels of domestic support in the form of hectare premiums. On the

Table 3. Production of Wheat and Other Grains in the Member States

	Wheat				Other grain			
	2013 1000t	Agenda	% change		2013 1000t	Agenda	% change	
			Minimum	National Maximum			Minimum	National Maximum
Belgium/Lux	1926	-1.9	-9.1	-16.7	707	-0.7	-14.2	-28.6
Denmark	6095	-1.4	-5.7	-9.9	5372	-1.9	-11.4	-20.6
Germany	23453	-2.6	-5.1	-11.6	26734	-3.4	-7.5	-17.2
Greece	2002	-3.2	-29.2	-21.8	2272	-0.5	-4.0	-10.4
Spain	5135	-3.0	-11.9	-11.1	13881	-1.1	-3.9	-7.4
France	42423	-1.9	-5.5	-3.4	29159	-2.3	-5.4	-0.8
Ireland	663	-2.2	-1.0	-6.9	1038	-1.6	-3.5	-10.1
Italy	6428	-3.6	-10.2	-7.4	9372	-0.8	-1.1	-2.5
Netherlands	964	-4.1	-15.6	-28.7	431	-3.1	-16.3	-29.3
Austria	1764	6.9	2.3	-7.5	5139	-7.4	-4.8	-14.9
Portugal	580	-2.9	-16.0	-41.4	1163	-0.3	-0.1	-4.7
Finland	551	-1.8	-1.1	-2.2	3591	-2.3	-4.9	18.0
Sweden	2872	0.4	4.5	5.9	6790	-1.8	-6.0	-20.6
UK	17541	-1.0	-5.2	-9.7	9169	-0.5	-8.8	-17.3
EU-15	112397	-1.9	-6.1	-7.8	114819	-2.3	-5.9	-10.7
Cyprus/Malta	43	80.9	82.9	87.3	114	125.7	92.4	79.1
Czech Rep.	4326	1.3	-0.8	-4.6	4097	7.3	3.8	0.7
Estonia	136	8.0	8.1	6.5	760	9.5	16.7	-5.4
Hungary	5076	46.2	29.6	21.8	9227	26.3	14.7	11.8
Latvia	544	6.8	-1.4	-8.3	715	8.7	0.6	-15.8
Lithuania	1777	26.2	17.7	11.8	2055	54.7	34.8	16.9
Poland	9678	-0.6	-2.0	-3.5	21056	12.0	6.3	1.9
Slovakia	2313	13.6	10.3	6.0	2381	9.2	8.4	4.9
Slovenia	204	-8.7	-13.3	-18.3	588	-16.2	-18.7	-21.8
AC-10	24096	13.2	7.7	3.6	40994	16.5	9.5	4.4
EU-25	136493	0.8	-3.7	-5.8	155813	2.7	-1.8	-6.8

one hand Poland's production of wheat is slightly negatively effected by abolishing all trade barriers between the new EU-25 common market members and by adopting the EU-15 level of protection against third countries. Poland is a net importer of wheat with initially high level of protection before accession to the EU. On the other hand, increasing domestic support in the form of hectare premiums to land stimulates production of the so-called reform crops (including wheat). In sum, the net affect of EU membership does not change significantly the economic incentive of the wheat producers in Poland under the Agenda 2000 policies.

In Hungary, on the contrary, being a net exporter of wheat, the abolishing of all trade barriers between the new EU-25 common market members, increases production and the introduce of hectare premiums further stimulates the production of wheat. The overall net effect is that Hungary increases its production of wheat by a total 46 per cent, with Italy and Spain becoming major exports market for Hungary. In the MTR enlargement scenarios Hungary's expansion of wheat production is halved when hectare premiums are decoupled in the enlarged EU-25.

In the case of other grains, enlarging the EU as defined by scenario 1 stimulates the AC production (+16.5 per cent or 6.8 million tonnes), with Poland, Hungary and Lithuania accounting for 90 per cent of this increase. The majority of Poland and Lithuania's trade is increased exports to non-member countries (ROW), while the main part of Hungary's increased trade is intra exports to the new EU-25 common market.

Enlarging the EU under the MTR scenarios 2, 3 and 4 reduces the ACs supply response to an increase of 9.5, 4.4 and 4.6 per cent respectively, compared to 16.5 per cent in scenario 1.

The scenarios clearly illustrate that decoupling the existing direct support for crop production is expected to significantly impact on the supply response in the enlarged European Union with important derived effects on the intra and extra European trade.

Meat

In Table 4 the global meat production in carcass weight equivalent (cwe) is shown for the year 2013, together with the percentage change in production in the four-enlargement scenarios analysed.⁹

Table 4. Global Meat Production					
	2013 1000t	Agenda	Minimum	National	Maximum
		% change			
Total meat					
EU-15	38468	-0.7	-2.2	-2.5	-2.9
AC-10	7590	2.0	5.3	5.6	5.6
EU-25	46059	-0.2	-1.0	-1.2	-1.5
ROW	269597	-0.1	0.0	0.1	0.1
World	315656	-0.1	-0.1	-0.1	-0.1
Bovine meat					
EU-15	9552	-0.6	-7.5	-8.5	-10.1
AC-10	1263	4.7	5.9	3.3	4.6
EU-25	10815	0.0	-5.9	-7.2	-8.4
ROW	80212	-0.1	0.2	0.3	0.3
World	91027	-0.1	-0.5	-0.6	-0.7
Other meat					
EU-15	28917	-0.7	-0.5	-0.5	-0.5
AC-10	6328	1.4	5.1	6.1	5.8
EU-25	35244	-0.3	0.5	0.7	0.7
ROW	189385	0.0	0.0	0.0	0.0
World	224629	-0.1	0.1	0.1	0.1

Enlarging the EU as defined in scenario 1 marginally effects the production in the ROW, which declines by 0.1 per cent. The production of meat in the EU-15 declines by 0.7 per cent, mainly as a result of increased competition from the new member countries, where the production of bovine and other meat production increase by 4.7 and 1.4 per cent, respectively.

⁹ The initial production of meat in 2013 is calculated by using the model simulation percentage change in primary production of bovine animals (mainly bovine cattle, sheep, goats and horses) and other animal products (mainly pigs, poultry and other animals) together with the initial quantities of meat production in cwe as found in the FAOSTAT database for the year 1997. The initial amounts of meat production found in the FAOSTAT database include both commercial and farm slaughtered animals and meat equivalent of exported live animals wherefore the percentage change in production of bovine animals and other animal products is used to calculate production levels in 2013.

Under the MTR scenarios 2, 3 and 4, total meat production in the EU-15 declines by roughly 2 to 3 per cent respectively, with bovine meat production declining by 7.5 to 10.1 per cent, while other meat production increase a little (0.2 per cent points) relative to scenario 1.

Clearly, decoupling animal premiums to a single land premium reduces the production of bovine animals in the EU-15 as the profitability declines significantly. In the AC, however, although the boost from the animal premiums in scenario 1 do not any longer take place, the increased export opportunities to the EU-15 member countries almost offset this negative impact of not extending the (coupled) animal premiums to the farmers in the new member countries.

Enlarging the EU with the AC in all the scenarios, increase notably Poland's production of bovine meat by around 15 to 20 per cent while the Czech Republic and Hungarian production declines, cf. Table 5.

This is a result of the impacts of the European association agreement as modelled in the baseline, where the Czech Republic and Hungary are assumed to get duty free access to the EU market during the baseline period, whereas Poland also gains improved market access during this period, but still faces an import tariff equivalent of 17.5 per cent at the time of accession. Therefore on accession, the Polish exports of bovine meat products gain duty free access to the EU-15 markets, reducing mainly Czech Republic's exports to the EU-15.

With respect to other meat products, enlargement under the MTR scenarios increase other animal production in the AC by 5.1 to 6.1 per cent compared to 1.4 under the Agenda 2000 scenario. The increased product of other meat stems from Poland and Hungary. A large part of this production is exported to the EU-15 in the form of other meat products substituting bovine meat products, which have become more expensive due to the decoupling of the animal premiums.

The analysis indicate that the implementation of the decoupling scheme in the livestock sector will entail a significant decline in the beef production in EU-15 – probably as it would favour the extensification of production systems. The lower beef availability would also trigger a rise in the EU-15 beef prices and a slight fall in beef

Table 5. Production of Bovine and Other Meat Products

	Bovine meat				Other meat			
	2013 1000t	Agenda	% change		2013 1000t	Agenda	% change	
			Minimum	National			Minimum	Maximum
Belgium/Lux.	368	-0.1	-11.2	-14.5	1697	-1.9	-1.4	-1.1
Denmark	188	0.1	-17.1	-19.9	1898	1.8	4.1	5.2
Germany	1409	-0.3	-4.3	-7.5	4609	-1.4	-1.4	-1.6
Greece	229	1.1	1.4	1.2	322	-0.1	0.1	0.0
Spain	1009	-0.4	-5.0	-3.0	4370	-1.0	-0.9	-1.4
France	2057	-0.4	-6.2	-2.3	5454	-0.8	-0.5	-0.4
Ireland	847	-0.5	-35.7	-43.2	362	-1.0	4.4	5.9
Italy	1181	-1.7	-3.0	-2.5	2852	-0.4	-0.2	-0.3
Netherlands	662	-1.8	-0.9	-10.8	2578	-1.3	-0.5	-0.1
Austria	185	1.1	-2.5	-1.4	654	0.1	0.3	0.4
Portugal	157	0.0	0.2	0.5	688	-0.1	0.1	0.1
Finland	102	-1.2	-2.1	-1.2	296	0.1	-0.1	-0.2
Sweden	145	-5.0	-13.4	-11.6	439	0.2	0.2	0.4
UK	1013	-0.2	-4.1	-5.6	2698	-0.2	-2.0	-2.8
EU-15	9552	-0.6	-7.5	-8.5	28917	-0.7	-0.5	-0.5
Cyprus/Malta	22	31.1	37.0	36.1	130	5.7	5.8	5.7
Czech Rep.	228	-22.1	-22.1	-22.7	790	-2.2	-0.9	-0.8
Estonia	24	4.7	5.1	4.2	40	2.5	2.2	3.2
Hungary	121	-11.8	-1.7	-3.5	1279	-0.1	9.8	14.3
Latvia	30	6.2	-2.1	-5.5	53	-3.6	-2.3	-2.2
Lithuania	109	8.3	6.0	1.6	133	-0.5	0.6	0.5
Poland	562	19.7	20.6	16.5	3314	3.8	6.4	6.3
Slovakia	89	-5.5	-6.1	-7.4	412	-4.0	-3.0	-2.6
Slovenia	78	-1.0	2.1	2.7	176	-2.9	-1.2	-0.7
AC-10	1263	4.7	5.9	3.3	6328	1.4	5.1	5.8
EU-25	10815	0.0	-5.9	-7.2	35244	-0.3	0.5	0.7

consumption is expected to favour the pig and poultry consumption with a small expansion in the consumption and production in EU-15.

Milk

The global production of raw milk is shown in Table 6. In 1997 the world production of milk amounted to 557 million tonnes, of which the EU-25 accounted for roughly one fourth of production.

Table 6. Global Raw Milk Production

	1997	2013	Agenda	Minimum	National	Maximum
	1000t		% change			
Total milk						
EU-15	125596	125804	0.8	-0.7	-0.6	-0.6
AC-10	22553	29492	-35.2	-35.2	-35.2	-35.2
EU-25	148149	155296	-6.0	-7.2	-7.1	-7.2
ROW	409198	521041	0.4	0.8	0.7	0.7
World	557346	676337	-1.1	-1.1	-1.1	-1.1

During the baseline period milk production in the EU-15 remains stable at around 126 million tonnes due to the EU milk quota regime, while the production increases by an average of 1.7 per cent a year in the AC. The AC' production of milk is not confined by the CAP quota system before 2013 - the year from which the economic consequences of the enlargement of the EU are evaluated in this paper.¹⁰ The applied method for evaluating the long-term implications of the European enlargement allows us to evaluate how restrictive milk quotas could be for the future milk production in the new member states.

According to the analysis the AC will in 2013 be producing around 35 per cent less raw milk as compared to a situation in which they did not join the European Union. Clearly, the allocated milk quotas according to the accession agreement do limit the

¹⁰ According to the Copenhagen agreement, milk quotas in the AC will be implemented in 2004. Therefore the estimated growth in milk production in the AC during the baseline period represents a possible expansion of production if the AC did not become a member of the EU before 2013 – i.e. the level from which we chose to evaluate the restrictiveness of the allocated quotas to the new members.

expansion of the milk production in the 10 new member countries with significant differences across the new members. The restrictive ness of the allocated quotas leads to a slight increase in the milk production in EU-15 and the regions outside Europe in scenario 1.

In Table 7 the production of raw milk within the EU-25 is shown for the base year 1997 together with the production in 2013 pre enlargement as well as for the four enlargement scenarios.

Table 7. Production of Milk						
	1997	2013	Agenda	Minimum	National	Maximum
	1000t		% change			
Belgium/Lux.	3477	3529	0.0	0.0	0.0	0.0
Denmark	4632	4701	0.0	0.0	0.0	0.0
Germany	28724	27846	3.2	-1.8	-1.6	-1.7
Greece	1982	2202	0.0	5.9	5.7	5.8
Spain	6545	7049	0.1	-3.0	-3.0	-3.4
France	25649	26033	0.0	0.0	0.0	0.0
Ireland	5256	5407	0.0	0.0	0.0	0.0
Italy	12818	12044	0.4	-1.7	-1.8	-1.9
Netherlands	10922	11086	0.0	0.0	0.0	0.0
Austria	3112	3159	0.0	-1.0	-0.5	-0.7
Portugal	1899	1927	0.0	2.6	2.6	2.6
Finland	2463	2500	0.0	-0.8	0.0	0.0
Sweden	3276	3237	2.2	-0.7	-0.4	-0.6
UK	14841	15084	0.0	0.0	0.0	0.0
EU-15	125596	125804	0.8	-0.7	-0.6	-0.6
Cyprus/Malta	229	465	-47.5	-47.5	-47.5	-47.5
Czech Rep.	2805	3151	-12.6	-12.6	-12.6	-12.6
Estonia	717	1144	-43.5	-43.5	-43.5	-43.5
Hungary	2019	2927	-31.0	-31.0	-31.0	-31.0
Latvia	988	1006	-27.5	-27.5	-27.5	-27.5
Lithuania	1950	2954	-42.3	-42.3	-42.3	-42.3
Poland	12125	15668	-40.1	-40.1	-40.1	-40.1
Slovakia	1134	1488	-28.9	-28.9	-28.9	-28.9
Slovenia	587	690	-16.4	-16.4	-16.4	-16.4
AC-10	22553	29492	-35.2	-35.2	-35.2	-35.2
EU-25	148149	155296	-6.0	-7.2	-7.1	-7.2

The production of raw milk in EU-15 amounted to 126 million tonnes in 1997 where roughly 4 million tonnes originates from goat and sheep milk. During the baseline period the Agenda 2000 reform of the CAP is implemented, increasing milk quotas in

the EU-15 by an average of 2.4 per cent. Nevertheless, milk production only increase on average by 0.2 per cent in the period considered as the initial quota rents for Germany, Spain, Italy and Sweden are estimated to be eroded, wherefore the milk quota is not any longer binding in these countries in 2013¹¹.

As a result, during the baseline period, the milk production in Germany, Italy, and Sweden decline by 3.1, 6.0 and 1.2 per cent respectively, whereas Spain increases its production by 7.7 per cent – an increase which still is less than the Agenda 2000 expansion of the Spanish milk quota (9.9 per cent). In all other EU-15 member countries, milk production expands, in line with the Agenda 2000 reform (the milk quota is still binding in these countries).

In the AC production increases from 23 million tonnes to 29 million tonnes during the baseline period with Poland being the major producer accounting for over half of total production in the AC. During the baseline period Poland increase its exports of dairy products significantly, mainly to countries in the rest of the world aggregate.

Introducing quotas in scenario 1 (Agenda 2000 scenario), reduces milk production in the AC by 10.4 million tonnes, with Poland making the largest reduction from 15.6 to 9.4 million tonnes. Poland reduces its dairy exports to the ROW by 95 per cent and at the same time increases its imports of dairy products mainly from Germany.

In scenario 1, Germany, Sweden, Italy and Spain increase their production of raw milk, with Germany making the largest increase in production. Even though milk production increases in these four countries, production still falls short of their milk quotas.

In the MTR enlargement scenarios where milk quotas are expanded in Greece and Portugal and the intervention price is lowered, production in the EU-15 declines by 0.6 to 0.7 per cent. The lowering of the intervention price reduces milk production in Germany, Italy, Sweden and Spain where the quotas were not binding prior to the enlargement, but also the production of milk declines in Austria and Finland where quotas no longer are binding¹². In Greece the milk production increases by nearly 6

¹¹ In appendix C, the method used to estimate and model the milk quotas rents is documented.

¹² In Finland the quota is not binding in scenario 2 when direct aid is max coupled to production but becomes binding again in scenario 3 and 4.

per cent under the MTR scenarios, but production falls short of the new quota, which increases by 6.37 per cent.

The impact of the 2003-reform on agricultural income

Implementing the CAP reform as decided will lead to an overall increase in the total agricultural farm income defined as the return to the primary factors employed in primary agriculture (i.e. the return to land, labour and capital), cf. Table 8. The changes shown in Table 8 measures the per cent change in factor income for the enlargement scenario under the reformed CAP (scenario 2, 3 and 4) relative to the enlargement under the Agenda 2000 policies (scenario 1).

Given the data and assumptions used, the 2003-reform of the CAP would lead to an increase in the total agricultural factor income in EU-25 by 3 to 4 per cent compared to the enlargement under the Agenda 2000 policies. This raise in factor income is a result of significantly higher agricultural land prices (22-28 per cent) assuming that the utilised agricultural area is constant. This increased land price is a result of the decoupling of direct aid and linking all or a significant share of all direct payments entirely to agricultural land. Capital income declines by 8 to 10 per cent (while labour income is almost unchanged) compared to the enlargement under the Agenda 2000 policies, contributing negatively to agricultural factor income in the EU-25. Assuming that primary agriculture sectors are price takers on both the labour and capital markets, the 8 to 10 per cent reduction in capital income can then be interpreted as an equivalent reduction in agricultural capital stock in the EU-25.

For the individual EU member states the impact on the aggregated agricultural factor income varies significantly. The impact at the member state level naturally depends critically on the amount of direct support being decoupled, terms of trade changes, changes in agricultural production and the initial production and input use structure in each of the European countries. It is obvious from the table that the price of agricultural land increase significantly in all member states – a result of the increase in the average payment to land (i.e. in the case of Ireland where animal premiums account for roughly 90 per cent of direct aid being decoupled into a single land payment).

In the case of Denmark, the total amount of direct aid payments, destined for the single payment relative to the reference area increase by approximately 20 per cent. Taking the impact on relative prices across the individual agricultural sectors into account the net effect on the Danish land prices amounts to roughly 12 per cent

increase in prices under the maximum decoupled scenario 4. Employment in the primary agricultural sector declines by 1.2 per cent and the capital stock is reduced by 2.5 per cent. In total, the total factor income to the Danish agricultural sector increase by 1.7 per cent under the maximum-decoupled scenario.

Table 8. Changes in Agricultural Factor Income due to the 2003-reform of the CAP, per cent

	Minimum decoupled				National decoupling				Maximum decoupling			
	Total		of which		Total		of which		Total		of which	
	Income	Land	Labour	Capital	Income	Land	Labour	Capital	Income	Land	Labour	Capital
Belgium/Lux.	2.7	40.3	-2.4	-10.7	2.7	44.6	-3.3	-11.7	2.7	45.6	-3.5	-11.8
Denmark	1.6	9.7	-0.6	-1.8	1.1	8.8	-0.9	-2.1	1.7	12.0	-1.2	-2.5
Germany	4.2	18.0	0.8	-3.8	5.1	20.4	1.4	-4.1	5.3	20.9	1.4	-4.0
Greece	0.4	11.7	1.5	-7.3	0.2	12.8	1.0	-7.5	0.8	24.9	1.4	-11.5
Spain	1.8	21.0	1.2	-9.5	1.6	13.7	1.5	-6.1	2.8	30.6	1.4	-11.8
France	4.0	25.2	0.6	-7.5	3.3	17.5	0.7	-3.4	4.8	29.0	0.7	-7.9
Ireland	-0.7	172.4	-17.6	-37.1	-0.3	208.1	-21.5	-42.4	0.2	208.5	-21.0	-42.0
Italy	0.8	5.5	0.7	-1.8	0.8	7.9	0.5	-2.5	1.0	9.8	0.5	-2.6
Netherlands	1.7	19.7	-1.3	-1.6	1.3	21.3	-2.0	-2.4	1.3	22.6	-2.2	-2.6
Austria	4.3	37.5	-0.6	-10.7	3.8	30.5	-0.8	-6.5	5.3	44.3	-0.8	-11.1
Portugal	3.2	23.2	2.8	-11.9	2.7	13.4	3.3	-6.2	3.9	27.9	3.4	-14.3
Finland	3.7	17.8	0.7	-6.1	3.2	14.0	1.4	-5.8	4.5	19.7	1.2	-6.1
Sweden	6.6	39.4	-0.1	-18.6	7.1	38.3	1.2	-18.2	9.4	48.4	0.8	-19.0
United Kingdom	9.9	65.8	0.6	-15.4	12.9	83.8	0.5	-17.9	13.1	84.4	0.6	-17.8
EU-15	3.2	26.8	0.1	-8.0	3.3	26.8	0.0	-7.1	4.0	33.4	0.0	-9.4
Cyprus/Malta	0.7	3.3	0.1	-3.1	0.9	4.5	0.0	-4.1	1.0	4.8	0.0	-4.0
Czech Rep.	0.5	2.8	1.3	-11.0	1.1	4.3	1.1	-11.4	1.2	4.4	1.1	-11.3
Estonia	6.4	23.7	-0.3	-34.5	5.9	20.9	1.4	-34.8	6.0	21.0	1.4	-34.8
Hungary	1.4	9.9	1.3	-30.1	1.3	11.2	0.6	-34.2	2.0	12.5	0.9	-34.1
Latvia	3.4	10.0	2.9	-26.9	3.6	11.3	2.0	-27.8	3.7	11.4	2.1	-27.8
Lithuania	4.3	12.8	0.6	-21.8	4.7	15.0	-1.2	-23.7	5.0	15.5	-0.9	-23.4
Poland	4.0	12.4	2.1	-16.7	5.7	16.6	2.1	-16.8	5.9	16.9	2.2	-16.8
Slovakia	3.5	11.8	1.5	-17.2	3.2	12.9	0.0	-19.7	3.5	13.3	0.2	-19.5
Slovenia	0.8	7.7	0.1	-27.2	-0.7	5.9	-1.2	-28.5	0.2	7.1	-0.6	-28.2
AC10s	2.7	9.8	1.6	-19.0	3.4	12.0	1.2	-20.3	3.7	12.5	1.4	-20.3
EU-25	3.1	21.9	0.3	-8.9	3.3	22.6	0.1	-8.2	4.0	27.5	0.2	-10.3

In conclusion, the 2003-reform of the CAP would lead to a somewhat higher factor income in the agricultural sector in the European Union. This increase in factor income does not only stem from the new decoupled payments to land, but is also a result of increased efficiency in agricultural production in all member countries (i.e. the decoupling of the direct support allows the farmers to move out of less competitive commodities without losing direct payments). Also a single farm payment targeted at the use of agricultural land is more efficient as income support as opposed to e.g. output subsidies or subsidies targeted at labour or capital - both factors being employed in other parts of the economy (leakage).

The EU budget and inter-regional transfers

Two questions, often being raised in connection with the discussion of EU enlargement, is how much is it going to cost and who is going to pay for the enlargement.

Table 9 illustrates the budgetary costs pre and post the enlargement scenarios undertaken in this paper. The budget for 1997 is for the EAGGF financial year 1997/1998. The cost of the CAP in that year was € 43 billion. Given the assumptions applied in the analysis this cost increases to € 51 billion in 2013 (current prices) before the enlargement – a nominal increase of 17 per cent in total. This increase falls within the guidelines provided in the EU ‘Financial framework’ for the period 2000-2013¹³. To balance the EU agricultural budget the common rate of member state

¹³ The budgetary guidelines laid down by the European Council in Berlin stated that the category 1a CAP expenditure (market measures and compensatory direct aid) was to be limited at to a ceiling of 40.5 billion € in 1999 which was allowed to increase by 2 per cent per year in nominal terms for the period 2000 - 2006 (Agra Europe 1999). At the European Council meeting in Brussels in October 2002 the budgetary guidelines laid down by the European Council in Berlin were extended so that the overall CAP expenditure would be allowed to increase by 1 per cent per year in the period 2007 – 2013. Therefore, in 2013, the maximum CAP expenditure is limited to 49.9 billion € (current prices), which does not include rural development expenditures. Rural development expenditures in 2002 amounted to 4.6 billion € in the EU-15 and the European Commission allocated in 2006, 1.8 billion € (1999 prices) in rural development for the AC. Inflating these rural development payments using 2 per cent inflation until 2007 and 1 per cent in the period 2007 – 2013 and adding them to the 2013 CAP expenditure, a total agricultural expenditure of around 57.5 billion € in 2013 prices is assumed to be the EU financial framework ceiling in 2013. However, the funding cap from 2006 onwards does not cover expenditure on rural development policies, offering the possibility of an expansion in this area of CAP spending (Agra Europe 2002).

contributions is reduced from 0.598 per cent of GDP in 1997 to 0.414 per cent in 2013¹⁴.

The cost of the extending the CAP to the ACs in scenario 1 is 8.6 billion €, increasing the budgetary cost of financing the CAP by roughly 17 per cent. This exceeds the assumed budgetary guideline of 57.5 billion € by roughly 1.5 billion € in current 2013 prices.

Taking into account the simplified modelling of the CAP budget undertaken in this paper, the analysis shows that it should be possible to enlarge the EU with the AC without overshooting the financial perspectives for the EU-25 to any great extent. The common rate of member state contributions increases by 0.0511 per cent points to 0.4653 per cent, well below its 1997 level.

Table 9. Financial Impact of extending the CAP to the AC-10, million €, current prices

	1997	2013	Agenda	Minimum	National	Maximum
Total agricultural expenditure*	43029	50540	58982	60057	60084	60104
of which EU-15						
Hectare premiums	16100	16625	16573	3883	1632	142
Animal premiums	5787	8868	8868	2212	2058	0
Milk premiums	0	2958	2958	0	0	0
Single premiums	0	0	0	22704	25192	28756
Rural development	0	0	0	1090	1090	1090
Other support measures	16310	18297	18282	18241	18255	18260
Export refunds	4833	3792	3704	3144	3112	3099
Total EU-15	43029	50540	50384	51275	51338	51348
of which AC-10						
Hectare premiums	0	0	4051	997	0	0
Animal premiums	0	0	1166	361	0	0
Milk premiums	0	0	475	0	0	0
Single premiums	0	0	0	4445	5801	5801
Rural development	0	0	0	112	112	112
Other support measures	0	0	2618	2619	2603	2614
Export refunds	0	0	288	248	230	229
Total AC	0	0	8598	8782	8746	8757
Agricultural levies	-1102	-754	-658	-702	-722	-733
Net cost of CAP	-41927	-49786	-58325	-59355	-59363	-59371
- % of GDP	0.5980	0.4142	0.4653	0.4733	0.4733	0.4733

*Note: Initial total agricultural expenditure in the base year 1997 of the GTAP database originates from OECD's PSE Tables edition 2001 where:

Total agricultural expenditure = total PSE expenditure in 1998 – Market price support + export refunds

¹⁴ Note that given the estimated costs of the CAP, the contribution rate is endogenously determined.

When enlarging the EU under the MTR scenarios, the total agricultural expenditure increases by roughly 1.1 billion €. This increase in expenditure is the net effect of introducing additional compensatory payments given to dried fodder, rice and milk producers on the one hand and reductions in payments given to durum wheat producers together with lower export refund costs.

In Table 10 the modulation/degression of direct aid in the maximum decoupling scenario 4 is shown.

Table 10. Modulation/Degression and Single Payments, maximum decoupling scenario 3, million €, current prices

Direct aid decoupled	Old Payments	New Payments	Total Direct aid	Modulation/Degression	Single Payment
EU-15					
-Hectare premiums	16483	-191	16292		
-Plant fibres	49	0	49		
-Dried fodder		133	133		
-Rice		247	247		
-Animal premiums	8868	0	8868		
-Milk premiums	2958	1235	4193		
Total	28358	1424	29782	1026	28756
AC-10					
-Hectare premiums	4051	-2	4049		
-Animal premiums	1166	0	1166		
-Milk premiums	475	199	674		
Total	5692	198	5890	88	5801
Total EU-25	34050	1621	35672	1141	34557
Modulation of other direct aid	3555	0	3555	88	0
Total Modulation /deggression				1203	
Allocated rural development				1203	

In the EU-15, old Agenda 2000 direct aid payments given to hectare, animal and milk premiums are estimated to amount to 28.3 billion € in 2013, to which the 2003-reform modelled in this paper increase, as compensatory payments are given for further reductions in intervention prices. In total the compensatory payments are increased by 1.4 billion € to 29.7 billion, which is then reduced by 1.0 billion € as a result of

modulation, resulting in a single decoupled payment to agricultural land in the EU-15 of 28.75 billion €. ¹⁵

In the AC, direct aid given in the form of hectare, animal and milk premiums in the enlargement scenario 1 are increased by 0.198 billion € in the MTR scenario, giving a total direct aid of 5.89 billion €. From this direct aid, 88 million € is removed due to modulation and the remaining 5.8 billion € is allocated as a single decoupled agricultural land payment in the AC.

Other direct aid, which is not decoupled, is also degressed/modulated in the MTR reform. In this paper modulation of other direct aids amounts to 88 million €, which is mainly reductions in aid to olive oil and tobacco in the EU-15. ¹⁶

In total, the 2003-reform reduces new and old direct aids by 1.2 billion €, which is returned in the form of rural development to the member countries.

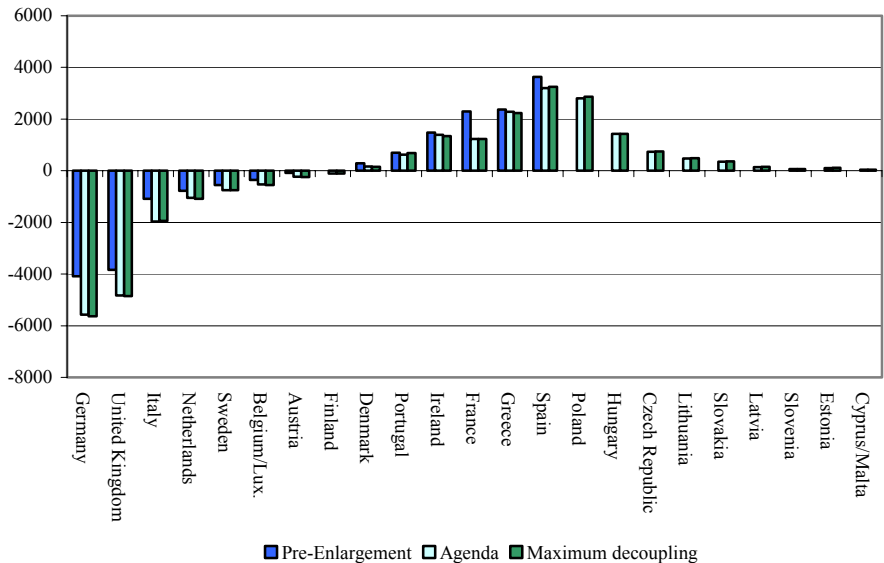
Leaving the aggregate EU budget, Figure 1 illustrates the net contributions of the individual member countries to the Common Agricultural Budget in 2013 before and after the enlargement. Net contributions are defined as the contribution from GDP (a per cent of their GDP) less support received (other subsidies, hectare and livestock premiums etc.), plus import tariff revenue collected. Figure 2 illustrates the net impacts of the enlargement on each of the member states net contributions.

In 2013 Belgium/Luxembourg, Germany, Italy, the Netherlands, Austria, Sweden and the United Kingdom will be net contributors to the CAP budget whereas Denmark, Finland, Greece, Spain, France, Ireland and Portugal were net receivers of financial support from the CAP budget (just as in the base year).

¹⁵ The average modulation/degression rate in the EU-15 is 3.417 per cent, ranging from 4.276 per cent in the United Kingdom to 1.496 per cent in Greece. In the AC, the lowest modulation/degression rate of 1.496 per cent found in the EU-15, is used in all AC.

¹⁶ In the MTR reform modelled in this paper, not all direct aids included in the reform, corresponding to the list contained in the Annex to Regulation (EC) n° 1259/1999 plus all new aids, are included in the analysis undertaken.

Figure 1. Net Contributions to CAP Budget, Pre and Post Accession 2013, million €, current prices

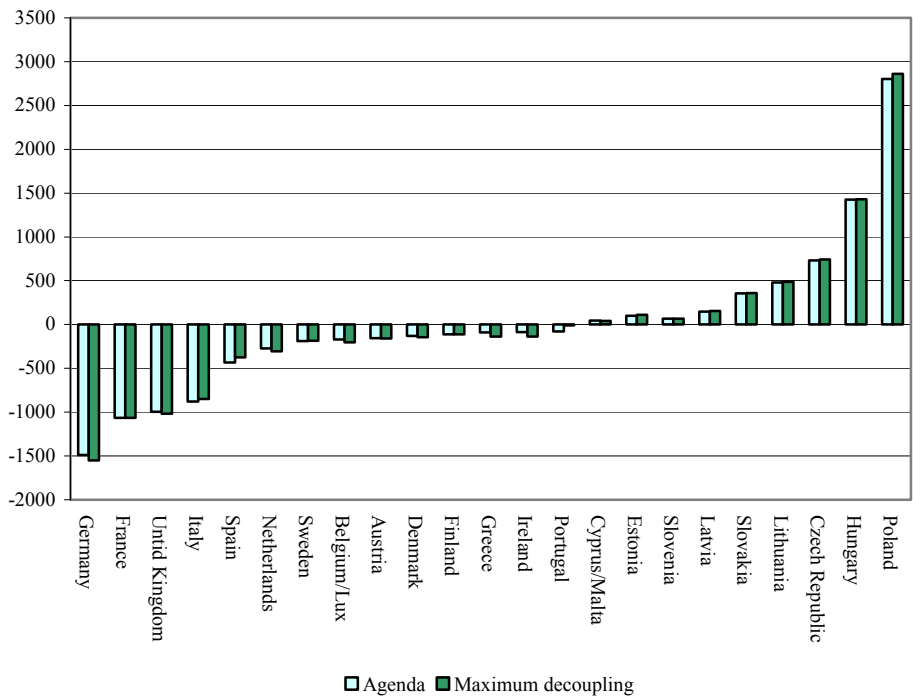


Enlarging the European Union leads to higher net contributions for all the old member states whereas the new member countries – not surprisingly are net receivers of transfers from the CAP budget. The total net cost (expenditures of 8.6 billion € less contributions) of enlarging the EU is 6.2 billion € in scenario 1, with Poland being the largest net recipient of CAP transfers followed by Hungary and Czech Republic. Of

the net 6.2 billion € the AC receives, Germany is paying roughly 24 per cent of this net transfer followed by France, the United Kingdom, Italy and Spain contributing with 17, 16, 14 and 7 percent, respectively. These five countries are paying roughly 80 per cent of the net cost of the EU enlargement. The remaining 20 per cent is financed by the remaining 10 smaller countries in the old EU with Portugal, Greece, Ireland and Finland with the smallest contributions.

A similar picture emerges in the MTR enlargement scenarios where the total net cost of enlarging the EU increase to roughly 6.3 billion €.

Figure 2. Change in Net Contributions to CAP Budget 2013, million €, current prices



Welfare implications

More important than such budgetary implications are the overall welfare implications – although the political debate very often focuses exclusively on the effects on the ‘visible budget’. The welfare effects, quantified by using the money metric value of the Equivalent Variation, are shown in Table 11.¹⁷

¹⁷ Note, however, that the welfare effects reported in this paper are explained entirely by the impacts of extending the CAP to the ACs, as the objective of this study has been to study these aspects. Therefore, the welfare effects reported do not include the effects of an extension of the structural funds support or the possible important effects of dynamic efficiency gains from trade liberalisations or the potential role foreign direct investments might have (i.e. enhanced capital accumulation and higher productivity growth).

Table 11. Enlargement, Change in Economic Welfare, million €, current prices

Region	Minimum occupying			National occupying			Maximum occupying					
	Total welfare	T	AE	TOT	Total welfare	T	AE	TOT	Total welfare	T	AE	TOT
Belgium/Luxembourg	-556	-424	-205	222	-432	-204	253	-442	-402	-205	264	-451
Denmark	-76	-13	-148	131	9	-149	146	0	10	-145	153	8
Germany	-527	355	-1523	1382	493	-1553	1533	562	563	-1550	1520	588
Greece	-123	35	-133	264	-82	31	268	-83	110	-138	379	-108
Spain	-273	190	-370	758	-202	6	602	-236	217	-375	899	-309
France	-1116	113	-1079	990	192	-158	734	156	393	-1067	1127	322
Ireland	-136	421	-180	623	-40	549	702	-34	549	-137	693	-25
Italy	-598	-470	-852	599	-347	-574	623	-343	-695	-851	660	-512
Netherlands	-640	-118	-295	410	-246	-129	456	-295	-127	-306	459	-298
Austria	77	247	-153	409	-10	228	387	-1	268	-161	424	5
Portugal	-162	102	-25	233	-83	65	174	-82	149	-9	280	-98
Finland	-86	-11	-111	70	35	2	80	39	5	-112	83	38
Sweden	-116	45	-186	182	47	67	193	62	75	-187	197	61
United Kingdom	-1018	11	-1030	934	121	226	1081	177	238	-1017	1081	193
EU-15	-4828	353	-6289	7208	-546	447	7232	-520	1354	-6260	8218	-588
Cyprus/Malta	219	222	42	11	151	222	14	150	223	41	14	150
Czech Republic	2009	2214	755	693	661	2204	709	663	2205	738	706	666
Estonia	219	233	95	-54	170	261	108	172	262	108	-41	172
Hungary	2342	2695	1395	316	923	2752	1391	942	2778	1396	361	961
Latvia	215	261	154	-18	93	285	-13	94	266	153	-13	95
Lithuania	862	975	484	20	358	983	39	361	986	472	39	363
Poland	6390	7045	2870	4885	-183	7135	2864	-160	7161	2866	4972	-146
Slovakia	846	950	354	80	433	970	99	435	971	356	97	438
Slovenia	545	629	75	523	41	625	530	40	631	65	532	44
AC-10	13647	15225	6224	6454	2649	15419	6663	2697	15482	6195	6666	2743
EU-25	8820	15578	-65	13663	2103	15866	13895	2176	16836	-65	14884	2156
Rest of World	-3346	-3986	0	-1890	-2154	-4150	-1992	-2228	-4146	0	-2006	-2208
Total	5473	11592	-65	11772	-51	11716	11902	-51	12690	-65	12879	-52

Note: Economic welfare is measured as the money metric value of the Equivalent Variation. T = Transfers; AE = Allocative efficiency; TOT = Terms of trade.

In total the world welfare increase due to the enlargement of the EU by 5.5 billion € in scenario 1, which is more than doubled in the MTR scenarios to 11.6, 11.7 and 12.7 billion €. The efficiency gain of decoupling the direct support is definitely significant. The ROW loses on average due to a small loss of allocative efficiency and terms of trade loss.

Beginning with the EU-15 it becomes apparent that the welfare loss of the enlargement under Agenda 2000 policies is turned into a gain by reforming the CAP in line with the 2003-reform. The allocative efficiency gains increase from 2 billion € (not shown) to 7 and 8 billion € in MTR scenarios, implying that the efficiency of the European agricultural production increases significantly. Clearly when comparing scenario 1 with the MTR scenarios an overall welfare loss of 4.8 billion € a year is turned into a gain of 0.3 to 1.3 billion €, a net gain of 5 to 6 billion € a year.

In the AC-10 larger welfare gains are also obtained in all countries under the MTR enlargement scenarios, where total welfare increases from 13.6 to more than 15 billion € a year. Once again the decoupling of hectare and animal premiums implies that the efficiency of the agricultural production in the accession countries is somewhat improved.

Overall welfare loss/gains for the old EU members is estimated to be very small and the welfare losses in non-member regions is also found to be minimal. Clearly measured in economic welfare terms, the MTR enlargement scenarios offer the largest gains in the AC and the EU-15 compared to a continuation of the existing Agenda 2000 approach.

6. Areas for future research

The results estimated in this analysis are no better than the data and parameters used and our efforts has identified areas that require further data work in the future. These include for example improvements of the base data to more adequately reflect actual allocation of land across crops producing sectors and distinguish between arable and permanent pasture land by improving cost structures – especially the factor cost shares in the land using sectors. A few of the input-output tables also need to be adjusted with respect to the links between the primary agricultural sector and the processing industries, which would clearly enhance the usefulness of the database and model for future policy studies.

7. Conclusion

In this paper we have addressed the economic implications of enlarging the European Union with 8 Central and Eastern European Countries together with Malta and Cyprus. The consequences of expanding the CAP to the new member states was evaluated under two different agricultural policy environments namely

- EU enlargement under the existing CAP as formed by the Agenda 2000 reform and the Copenhagen Agreement
- EU enlargement where at the time of accession the 2003-reform of the CAP is implemented in both the old and new member countries in that the Copenhagen Agreement is adjusted in line with the reform under three different implementations of the Agreement (minimum, national and maximum decoupling).

Under the Agenda 2000 policy the production of cereals in the 10 new member countries is estimated to increase by 15 per cent, whereas under the reformed CAP scenarios supply response is reduced to an increase of 4 to 9 per cent. In the EU-15, the impact on cereal production is limited to a 2 per cent decline under the Agenda 2000 scenario – whereas the decoupling of the area premiums implies that the production of cereals in the EU-15 declines by 6 to 11 per cent.

Decoupling the existing direct support for crop production will therefore significantly impact on the supply response in the enlarged EU, with important derived effects on European trade.

In the case of meat products, production in the AC increases by 2 per cent if the CAP is not reformed, compared to an increase of 5 to 6 per cent under the 2003-reform enlargement scenarios. This increased meat production in the AC is caused by a decline in the EU-15 production of meat by 2 to 3 per cent, where especially bovine meat production is reduced by 7 to 10 per cent.

Clearly, decoupling animal premiums to a single land premium reduces the production of bovine animals in the EU-15 as the profitability declines significantly. In the AC, however, although the boost from the animal premiums in the Agenda 2000 scenario do not any longer take place, the increased export opportunities to the EU-15 member countries offset this negative impact of not extending (coupled) animal premiums to the farmers in the 10 new member countries.

Dairy production in the new member countries in 2013 appears to be significantly constrained by the quotas agreed to in Copenhagen in December, given the existing milk production and its likely growth. Further, our study includes new estimates of milk quota rents in each of the existing EU-15 member countries. We find, given our initial estimates of the value of the quota rents and the assumed price, quota and productivity changes in the period 1997 to 2013 that milk quotas are no longer binding in Germany, Italy, Spain and Sweden in 2013. This certainly has implications for the economic impacts of the reform of the EU dairy policy.

Our analysis suggests, that the 2003-reform of the CAP would imply a 1 to 2 per cent lower milk production in the EU-15 compared to an enlargement under the Agenda 2000 policy regime, as six of the 15 member states would reduce their production of milk. In the AC-10 milk production would remain constant as the milk quotas remain binding under the 2003-reform of the CAP.

The analysis also shows that the reform would lead to a higher factor income in the agricultural sector in the European Union. The analysis finds that the income would increase by 3 to 4 per cent due to the recent reform of the CAP. This increase does not only stem from the new decoupled payments to land, but is also a result of increased efficiency in agricultural production in all member countries (i.e. the decoupling of the direct support allows the farmers to move out of less competitive commodities without losing direct payments). The single farm payment targeted is also more efficient as farm income support as opposed to e.g. output subsidies or subsidies targeted at labour or capital - both factors being employed in other parts of the economy (leakage).

In economic terms the enlargement of the EU with the AC is affordable. The analysis supports the view that not alone does economic welfare improve in the EU-15 member states, but the 2003-reform also seem to be an attractive alternative to the Agenda 2000 approach, for both the old and the new member states. Both agricultural income and macroeconomic welfare improve.

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Appendix A

Table A.1. The Copenhagen Agreement's final quotas, reference yields and base areas for new member states – selected key commodities

	Total milk quotas in tonnes		Base Area Ha		Reference Yield tonnes/ha		Slaughter premium (adult) number of animals		Slaughter premium (calves) number of animals	
	Final	Requested	Final	Requested	Final	Requested	Final	Requested	Final	Requested
Cyprus	145200	150000	79000	89183	2.30	2.45	21000	26500	0	0
Czech Republic	2737890	3100000	2253600	2401845	4.20	4.20	483382	530000	27380	131100
Estonia	646368	900000	362827	650000	2.40	3.50	107800	106600	30000	79300
Hungary	1990060	2800000	3487792	3653353	4.73	5.04	141600	480000	94400	480000
Latvia	728650	1200000	443600	753000	2.50	3.59	124300	145000	53280	75000
Lithuania	1704800	2250000	1146600	1355000	2.70	3.50	367484	335000	244200	290000
Malta	48700	60000	4600	4500	2.02	N.Q.	6000	N.Q.	20	N.Q.
Poland	9380143	13740000	9454671	9248000	3.00	3.61	1815400	2021000	839500	1017000
Slovak Republic	1040770	1235900	1003500	992000	4.06	4.99	204062	260000	62841	60000
Slovenia	576638	695000	125200	150000	5.27	6.12	161137	163000	35852	22000

	Special beef premium number of animals		Suckler cow premium number of animals		Additional payments beef (€)		Mother ewes & goats number of animals		Sheep national envelopes (€)	
	Final	Requested	Final	Requested	Final	Requested	Final	Requested	Final	Requested
Cyprus	12000	13650	500	500	308900	N.Q.	472400	421000	441000	
Czech Republic	244349	305000	90300	230000	8776000	N.Q.	66733	130000	71000	
Estonia	13600	50000	13416	2000	1134500	N.Q.	48000	142000	29000	
Hungary	94620	245000	117000	300000	2936100	12000000	1146 000	1550000	1086000	
Latvia	70200	75000	19400	25000	1330680	3500000	18437	50000	19000	
Lithuania	150000	154000	47200	62000	4942300	N.Q.	17304	12000	18000	
Malta	3200	N.Q.	450	N.Q.	0	N.Q.	8500	N.Q.	-	
Poland	926000	2200000	325600	1500000	27300000	N.Q.	335900	720000	355000	
Slovak Republic	79348	80000	28100	50000	4500535	N.Q.	305800	400000	323000	
Slovenia	92300	95000	86384	150000	2964780	4500535	84900	125000	86000	

Source: European Commissions Issues paper (2002), Report to the Council of the European Union (December 2002) and Agra Europe (December 2002).

N.Q. not quantified

Appendix B

Table B.1. Supply response in EU-25, enlargement 2013, index 2013=100, and percentage point difference

	Wheat			Other Grains			Oilseeds			Sugar cane and beet		
	Agenda	Min	Nat'l.	Max	Agenda	Min	Nat'l.	Max	Agenda	Min	Nat'l.	Max
Belgium/Luxembourg	98	91	83	85	99	86	71	73	100	100	100	100
Denmark	99	94	90	92	98	89	79	81	100	100	100	100
Germany	97	95	88	91	97	93	83	85	99	100	100	100
Greece	97	71	78	57	99	96	90	91	100	100	100	100
Spain	97	88	89	82	99	96	93	93	100	100	100	100
France	98	95	97	91	98	95	99	91	100	100	100	100
Ireland	98	99	93	94	98	96	90	92	100	100	100	100
Italy	96	90	93	82	99	99	97	98	100	100	100	100
Netherlands	96	84	71	73	97	84	71	73	100	100	100	100
Austria	107	102	92	96	93	95	85	87	97	100	100	100
Portugal	97	84	59	60	100	100	95	96	100	100	100	100
Finland	98	99	98	98	98	95	82	83	100	100	100	100
Sweden	100	104	106	109	98	94	79	80	102	100	100	100
United Kingdom	99	95	90	92	99	91	83	84	100	100	100	100
Cyprus/Malta	181	183	187	190	226	192	179	180	131	104	104	104
Czech Republic	101	99	95	96	107	104	101	101	107	94	94	94
Estonia	108	108	107	107	110	117	95	95	114	99	100	100
Hungary	146	130	122	124	126	115	112	112	117	94	101	102
Latvia	107	99	92	92	109	101	84	84	82	94	96	97
Lithuania	126	118	112	114	155	135	117	117	100	99	100	100
Poland	99	98	96	97	112	106	102	102	92	102	102	102
Slovakia	114	110	106	107	109	108	105	105	100	96	96	96
Slovenia	91	87	82	82	84	81	78	79	95	99	99	100

Table B.1. Supply response in EU-25, enlargement 2013, index 2013=100, and percentage point difference (continued)

	Plant based fibres				Vegetables, fruit and nuts				Other crops				Bovine animals			
	Agenda	Min	Nat'l.	Max	Agenda	Min	Nat'l.	Max	Agenda	Min	Nat'l.	Max	Agenda	Min	Nat'l.	Max
Belgium/Luxembourg	100	109	116	116	101	100	101	100	102	100	100	99	100	89	85	86
Denmark	99	113	120	120	100	109	114	114	100	106	109	109	100	83	80	74
Germany	99	109	114	113	102	108	112	111	101	110	116	115	100	96	92	93
Greece	99	101	101	101	102	105	104	105	101	104	103	104	101	101	101	100
Spain	99	101	101	102	102	107	108	108	100	102	102	102	100	95	97	92
France	100	3	3	3	100	105	104	108	100	103	103	105	100	94	98	93
Ireland	102	114	118	118	100	105	107	105	101	111	115	114	100	64	57	58
Italy	99	101	101	102	101	104	104	104	100	102	102	103	98	97	97	96
Netherlands	100	9	9	9	102	98	97	97	101	100	101	101	98	99	89	90
Austria	103	106	108	108	100	103	106	105	102	100	101	100	101	98	99	97
Portugal	100	115	120	120	100	105	108	107	100	106	108	108	100	100	100	100
Finland	92	102	105	105	100	107	112	111	100	112	120	120	99	98	99	98
Sweden	100	120	132	131	100	107	111	110	100	108	113	113	95	87	88	84
United Kingdom	100	1	1	1	100	105	108	107	100	107	112	111	100	96	94	95
Cyprus/Malta	63	63	63	63	143	143	143	142	114	112	111	111	131	137	136	139
Czech Republic	57	79	89	89	77	92	95	95	82	90	91	90	78	78	77	77
Estonia	76	68	90	90	90	88	110	109	74	70	94	94	105	105	104	105
Hungary	64	76	72	71	72	78	81	80	68	77	82	81	88	98	97	99
Latvia	60	81	81	81	84	96	101	101	80	94	101	101	106	98	94	95
Lithuania	83	91	88	88	87	99	105	105	80	90	95	95	106	106	102	102
Poland	126	135	139	138	79	86	88	88	81	86	88	88	120	121	116	119
Slovakia	49	63	76	76	73	84	87	86	73	81	80	80	95	94	93	93
Slovenia	66	84	93	92	60	78	73	72	70	80	74	74	99	102	103	104

Table B.1. Supply response in EU-25, enlargement 2013, index 2013=100, and percentage point difference (continued)

	Other animal products					Raw milk					Wool					Bovine meat products				
	Agenda	Min	Nat'l.	Max		Agenda	Min	Nat'l.	Max		Agenda	Min	Nat'l.	Max		Agenda	Min	Nat'l.	Max	
Belgium/Luxembourg	98	99	99	99		100	100	100	100		98	102	104	104		100	86	82	84	
Denmark	102	104	105	105		100	100	100	100		103	112	116	116		100	81	79	72	
Germany	99	99	98	98		103	98	98	98		99	122	135	134		100	95	92	93	
Greece	100	100	100	100		100	106	106	106		99	106	105	106		101	101	101	100	
Spain	99	99	99	99		100	97	97	97		99	106	107	107		100	95	97	92	
France	99	100	99	100		100	100	100	100		99	108	107	111		100	92	98	91	
Ireland	99	104	106	106		100	100	100	100		100	123	134	133		99	61	52	53	
Italy	100	100	100	100		100	98	98	98		101	109	106	108		98	97	97	96	
Netherlands	99	99	100	100		100	100	100	100		99	100	101	101		98	99	87	88	
Austria	100	100	100	100		100	99	100	99		99	111	117	116		101	98	99	97	
Portugal	100	100	100	100		100	103	103	103		100	121	127	127		100	102	102	102	
Finland	100	100	100	100		100	99	100	100		100	114	124	124		99	98	99	97	
Sweden	100	100	100	100		102	99	100	99		114	137	106	106		95	86	88	83	
United Kingdom	100	98	97	97		100	100	100	100		99	104	105	105		100	100	98	99	
Cyprus/Malta	106	106	106	106		53	53	53	53		136	136	136	136		196	221	220	231	
Czech Republic	98	99	99	99		87	87	87	87		84	90	94	94		45	46	46	46	
Estonia	102	102	103	103		57	57	57	57		98	98	100	100		140	157	157	164	
Hungary	100	110	114	113		69	69	69	69		105	111	114	113		88	103	101	104	
Latvia	96	98	98	98		73	73	73	73		85	89	89	89		84	92	88	91	
Lithuania	99	101	100	101		58	58	58	58		104	106	105	105		200	212	192	199	
Poland	104	106	106	106		60	60	60	60		101	102	101	101		163	171	160	168	
Slovakia	96	97	97	97		71	71	71	71		90	90	91	90		76	77	76	77	
Slovenia	97	99	99	99		84	84	84	84		94	98	99	100		95	120	127	136	

Table B.1. Supply response in EU-25, enlargement 2013, index 2013=100, and percentage point difference (continued)

	Other meat products				Dairy products				Sugar				Vegetable oils and fats			
	Agenda		Nat'l.		Agenda		Nat'l.		Agenda		Nat'l.		Agenda		Nat'l.	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Belgium/Luxembourg	98	99	98	99	100	101	102	101	100	100	100	100	100	100	100	100
Denmark	102	106	107	107	100	100	100	100	100	100	100	100	102	101	101	101
Germany	98	98	98	98	104	98	99	99	100	100	100	100	100	100	100	100
Greece	100	100	100	100	100	105	105	105	100	100	100	100	100	103	103	103
Spain	99	99	98	99	100	97	97	97	100	100	100	100	100	100	100	100
France	99	99	99	100	100	101	100	101	100	100	100	100	100	99	99	99
Ireland	98	107	109	109	100	103	103	103	100	100	100	100	99	99	99	100
Italy	99	99	99	99	100	98	98	98	100	100	100	100	100	102	101	102
Netherlands	98	99	100	100	100	100	100	100	100	100	100	100	100	102	102	102
Austria	100	100	101	101	100	100	100	100	100	100	100	100	108	108	108	108
Portugal	100	100	100	100	100	103	103	103	100	100	100	100	100	101	101	101
Finland	100	99	100	99	100	99	100	100	100	100	100	100	100	100	100	100
Sweden	100	100	100	100	102	99	100	99	100	100	100	100	104	104	105	104
United Kingdom	100	94	92	92	100	100	100	100	100	100	100	100	98	98	98	98
Cyprus/Malta	108	108	107	107	45	45	45	45	100	100	100	100	111	111	110	110
Czech Republic	97	99	100	100	89	89	89	89	100	100	100	100	97	99	98	98
Estonia	122	119	124	124	43	43	43	43	100	101	101	100	89	90	90	90
Hungary	103	119	127	125	65	65	65	65	92	100	100	100	72	71	68	67
Latvia	67	69	69	69	78	78	78	78	100	100	100	100	88	89	88	88
Lithuania	83	84	84	84	36	36	36	36	100	100	100	100	88	88	86	86
Poland	105	110	111	111	35	35	35	35	100	100	100	100	88	86	85	85
Slovakia	97	98	99	99	56	56	56	56	100	100	100	100	91	91	91	91
Slovenia	83	86	88	88	78	77	77	77	92	101	100	100	72	74	74	74

Table B.1. Supply response in EU-25, enlargement 2013, index 2013=100, and percentage point difference (continued)

	Other processed foods					Beverages and tobacco					Textiles/wearing apparel					Natural resources				
	Agenda	Min	Nat'l.	Max		Agenda	Min	Nat'l.	Max		Agenda	Min	Nat'l.	Max		Agenda	Min	Nat'l.	Max	
Belgium/Luxembourg	98	96	96	95		101	102	102	102		96	96	96	97		100	100	100	100	
Denmark	97	96	96	96		102	102	102	102		110	110	110	110		100	100	100	100	
Germany	97	97	97	97		101	101	101	101		101	101	101	101		100	100	100	100	
Greece	100	100	100	99		102	102	102	102		98	99	99	99		100	100	100	100	
Spain	99	99	100	99		101	101	101	101		99	98	98	98		100	100	100	100	
France	99	99	99	99		101	102	102	102		98	98	98	97		100	100	100	100	
Ireland	98	97	97	97		103	105	106	105		98	98	98	98		100	100	100	100	
Italy	100	100	100	100		102	102	102	102		99	99	99	99		100	100	100	100	
Netherlands	99	100	100	100		105	105	105	105		100	100	100	100		100	100	100	100	
Austria	99	99	99	99		111	111	111	112		105	105	105	105		100	100	100	100	
Portugal	100	100	100	100		101	101	101	101		97	97	97	97		100	100	100	100	
Finland	100	100	100	100		106	106	106	106		101	101	101	101		100	100	100	100	
Sweden	99	98	98	98		104	104	104	104		103	103	103	103		100	100	100	100	
United Kingdom	99	99	99	99		102	102	102	102		99	98	98	98		100	100	100	100	
Cyprus/Malta	141	138	135	135		108	109	109	109		251	252	252	252		100	100	100	100	
Czech Republic	103	105	104	104		89	90	88	88		132	131	132	132		99	99	99	99	
Estonia	126	126	126	126		96	96	96	96		183	185	183	183		99	99	99	99	
Hungary	106	108	108	107		59	60	60	59		128	126	126	126		99	98	99	99	
Latvia	96	98	98	98		148	152	153	154		223	220	220	220		99	99	99	99	
Lithuania	89	91	91	91		58	60	61	61		194	191	192	191		99	99	99	99	
Poland	127	127	126	126		59	59	59	59		193	192	192	192		99	99	99	99	
Slovakia	102	102	102	102		95	96	96	96		131	130	130	130		99	99	99	99	
Slovenia	98	99	99	98		71	72	70	70		140	139	139	139		99	99	99	99	

Table B.1. Supply response in EU-25, enlargement 2013, index 2013=100, and percentage point difference (continued)

	Manufactures				Services			
	Agenda	Min	Nat'l.	Max	Agenda	Min	Nat'l.	Max
Belgium/Luxembourg	100	100	100	100	100	100	100	100
Denmark	99	99	99	99	100	100	100	100
Germany	100	100	100	100	100	100	100	100
Greece	100	100	100	100	100	100	100	100
Spain	100	100	100	100	100	100	100	100
France	100	100	100	100	100	100	100	100
Ireland	100	101	101	101	100	100	101	101
Italy	100	100	100	100	100	100	100	100
Netherlands	100	100	100	100	100	100	100	100
Austria	100	100	100	100	100	100	100	100
Portugal	101	100	100	100	100	100	100	100
Finland	100	100	100	100	100	100	100	100
Sweden	100	100	100	100	100	100	100	100
United Kingdom	100	100	100	100	100	100	100	100
Cyprus/Malta	91	91	91	91	98	98	98	98
Czech Republic	106	105	105	105	98	98	98	98
Estonia	95	95	94	94	97	98	98	98
Hungary	111	111	111	111	97	97	97	97
Latvia	88	87	87	87	98	98	98	98
Lithuania	84	84	84	84	98	98	98	98
Poland	92	92	92	92	100	100	101	101
Slovakia	101	101	101	101	99	99	99	99
Slovenia	105	105	105	104	98	98	98	98

Appendix C

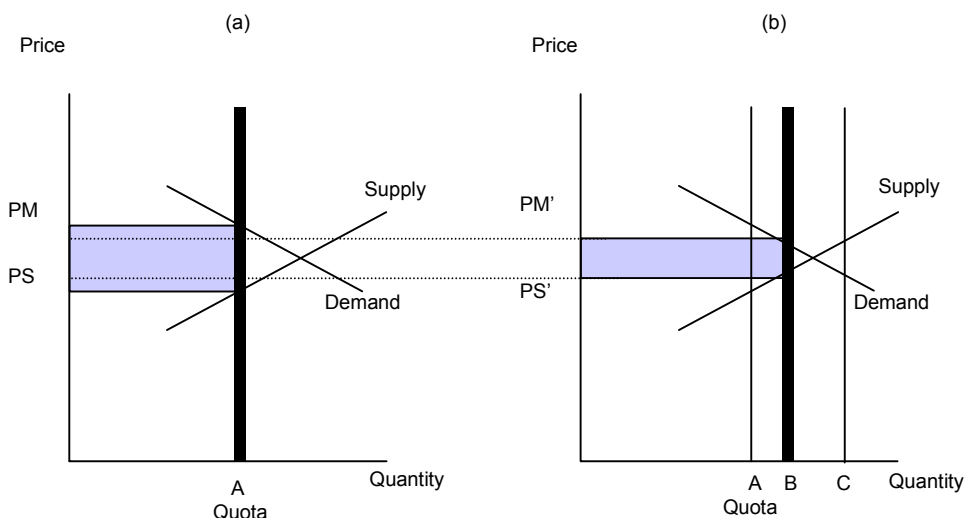
Milk Quota Rents

In the analysis undertaken in this paper the CAP milk quota regime is modelled as an output quota restricting the quantity of milk being produced.

If the quota is restricting production (binding) then consumers are paying a higher price for milk than production costs. In Figure C1 (a) this situation is depicted where the quota at quantity A restricts the milk production and consumers (dairies) are paying the market price P_M for milk, while the costs of production for the producer is equal to the price P_S . The difference between the prices P_M and P_S is the so-called quota rent associated with milk production when the quota is binding.

Figure C1 (b) illustrates the situation where the milk quota A is expanded to quantity B. The increased supply lowers the consumer price P_M and increases the producer price P_S , reducing the quota rent per unit of output. If the quota was expanded even further to the right, beyond the intersect of supply and demand to C, then the quota would not be filled and the quota rent would be reduced to zero ($P_M = P_S$).

Figure C.1. Modelling of an output quota



In the simple example illustrated here the supply and demand curves are fixed and the only change being made is the size of the milk quota. During the baseline period from 1997 to 2013 not only are milk quotas being expanded due to the Agenda 2000 agreement but supply and demand curves are also moving in response to income growth on the demand side and changes in relative factor prices on the other side. On top of this the Agenda 2000 and MTR agreement also reduces the consumer price PM for milk.

In the simulation under taken in this paper the milk quota rent is endogenously determined by the model and the amount of milk produced is exogenously determined in that the milk quotas are expanded in line with the Agenda 2000 agreement for the EU-15 countries during the baseline period. In the case of Germany, Spain, Italy and Sweden where the milk quota is found not to be binding in 2013, the milk quota rent is reduced to zero ($PM = PS$) exogenously and the quantity of milk produced is determined endogenously by the model.

In the base year 1997 all milk quotas in the EU-15 were binding wherefore all member countries initially had positive milk quota rents. In the analysis undertaken in this paper, initial quota rents are incorporated into the 1997 base year data set using the calculated quota rents as a per cent of producer prices (PS) shown in Table C1.

Tabel C.1. Milk quota rents in the EU15

	*Quota Price €/t	Value of Quota Rent €/t	*Consumer Price PM €/t	Producer Price PS €/t	Quota rent as per cent of PS %
Belgium/Lux.	785	31	300	269	12
Denmark	422	17	331	314	5
Germany	801	32	297	265	12
Greece	281	11	457	446	3
Spain	360	14	263	249	6
France	726	29	308	279	10
Ireland	429	17	265	247	7
Italy	412	16	323	307	5
Netherlands	1182	47	334	287	16
Austria	833	33	404	371	9
Portugal	400	16	299	283	6
Finland	167	7	411	404	2
Sweden	182	7	320	312	2
United Kingdom	564	23	276	253	9

Note * The estimated quota prices and the associated consumer price (PM), is based on Jansson (2002)

The calculated value of quota rents in € per tonnes, shown in Table C1 is determined by using a 4 per cent real interest rate with infinity depreciation time. This corresponds to an annual cost of 0.04 times the cost of acquisition (the quota price).

The method used in a number of other studies, typically use a shorter depreciation time (8 years in Jansson (2002)) when calculating annual quota cost, increasing the value of initial quota rents substantially compared to the rents used in this paper. This difference in depreciation time raises the question as to whether or not farmers expect to get compensatory payments for any changes made to the quota system. By using an infinity depreciation time, the quota rents used in this study assume that farmers do expect to be compensated for any future changes made to the CAP dairy regime. Looking back this has typically been the policy in past reforms.¹⁸

In Table C2 the initial quota rents, used in this analysis, are shown as a per cent of the price PS in the base year 1997, together with the resulting quota rents in 2013, pre and post enlargement.

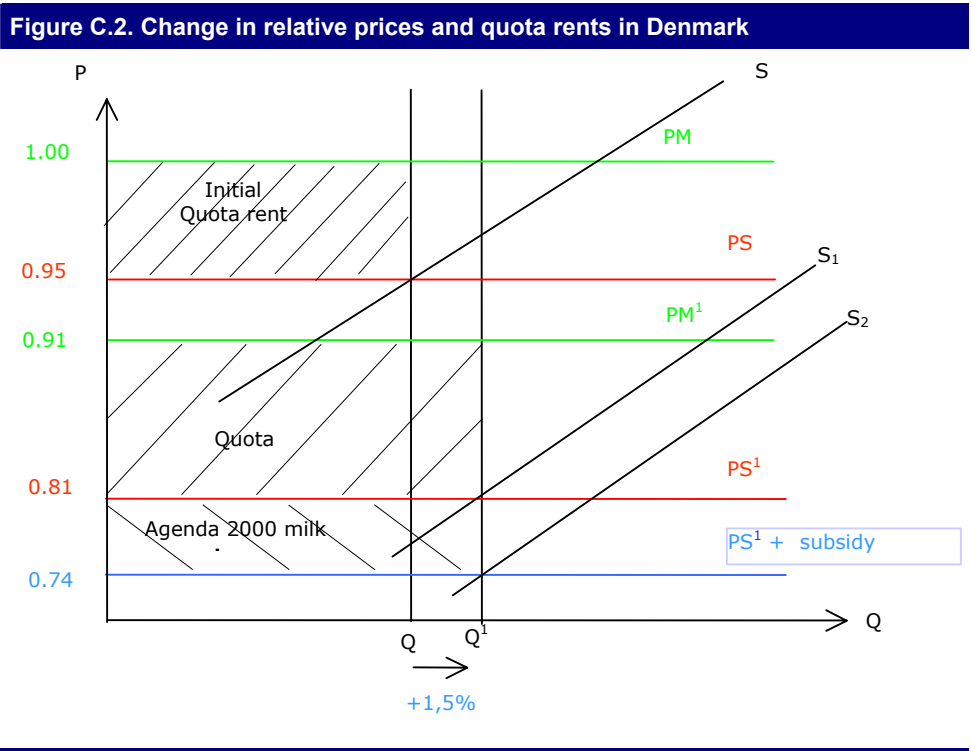
Tabel C.2. Milk quota rents, per cent

	1997	2013 pre	Enlargement scenarios			
			Agenda	Min	Nat'l.	Max
Belgium/Luxemborg	11.9	26.0	28.0	15.1	15.3	15.1
Denmark	5.3	23.4	27.2	17.2	18.1	17.9
Germany	12.0	0.0	0.0	0.0	0.0	0.0
Greece	2.6	6.9	8.8	0.0	0.0	0.0
Spain	5.8	0.0	0.0	0.0	0.0	0.0
France	10.5	20.9	24.3	11.8	12.7	11.9
Ireland	7.2	29.6	31.0	17.7	18.0	17.9
Italy	5.3	0.0	0.0	0.0	0.0	0.0
Netherlands	16.6	29.9	32.0	18.8	18.8	18.7
Austria	9.0	3.2	6.7	0.0	0.0	0.0
Portugal	5.9	89.0	89.7	62.0	62.6	62.3
Finland	1.6	1.2	4.0	0.0	0.4	0.3
Sweden	2.2	0.0	0.0	0.0	0.0	0.0
United Kingdom*	5.3	6.2	11.1	0.8	1.0	0.7

Note: The quota rent in the United Kingdom should have been initially 8.9 per cent in 1997, but due to an error made in the initial calibration of the database the simulations have been carried out with a initial quota rent of 5.3 per cent in the UK. This fault will be corrected in future simulations,

¹⁸ The Agenda 2000 reform of the CAP compensated farmer with 17.24 € per ton of quota for price reductions.

In Figure C2, the initial quota rents in Denmark are depicted together with the endogenously determined quota rents in Denmark pre enlargement in 2013.



Initially the relative price of PM is equal to 1 and the producer price PS is equal to 0.95 ($[1/0.95-1]*100 = 5.3$ per cent in quota rent). During the baseline period the relative price PM declines to 0.91 and the producer price PS to 0.81 and the milk quota is increased by 1.5 per cent to Q^1 . But the introduction of new Agenda 2000 dairy premium and the additional payment to milk producers in the baseline (modelled as output subsidies) implies that the producer price (PS) plus the premium (subsidy) declines to 0.74 ($[0.91/0.74-1]*100 = 23.4$ per cent quota rent in 2013). Therefore the reported quota rents, shown in the 2013 pre and Agenda columns in Table C2 include contributions from dairy premiums given to milk producers as output subsidies. In the case of Denmark the consumer price PM would have to fall below 0.74 before milk production would decline in 2013.

In the last three MTR columns of Table C2, premiums give to milk producer are 100 per cent decoupled and included in the single payment allocated to land (modelled as a homogenous land input subsidy). This removal of milk output subsidies and introduction of homogenous land input subsidies in the MTR enlargement scenarios does effect the reported milk quota rents in the last two columns together with the reduction in intervention price for butter.