European Commission

Directorate-General for Agriculture

MID-TERM REVIEW

OF THE

COMMON AGRICULTURAL POLICY

JULY 2002 PROPOSALS

IMPACT ANALYSES

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Foreword

In its Communication on the Mid-Term Review (MTR) of the Common Agricultural Policy (CAP) of July 2002, the European Commission provided an assessment of the evolution of the reform process of the Common Agricultural Policy since 1992. Even if much has been achieved, gaps still exist between the objectives set for the CAP and its capacity to deliver what the society expects. As a consequence, a set of proposals for the adjustment of the CAP has been put forward.

This publication brings together the findings of a series of impact analyses of these Mid-Term Review proposals for the agricultural markets and income for the European Union. Four of these studies were carried out by independent experts, namely the Unit of the Food and Agricultural Policy Research Institute (FAPRI) at the University of Missouri (USA), the University of Bonn, and the Centre for World Food Studies of the University of Amsterdam (CWFS) and the Netherlands Bureau for Economic Policy Analysis (CPB) in The Hague. Two analyses have been conducted by the Commission services (Directorate General for Agriculture - DG AGRI) using the internal tools available for such impact assessment.

Although the quantitative results may differ somewhat across these analyses, they generally converge in their main findings on the impact of the Commission proposals on agricultural markets and farm income. An overview of the main results of these studies is given in the executive summary of this report.

List of acronyms and abbreviations

AWU	Annual Work Unit
bio	billion
BSE	Bovine Spongiform Encephalopathy
CAP	Common Agricultural Policy
CAPMAT	CAP Modelling and Accounting Tool
CEC	Commission of the European Communities
CEECs	Central and Eastern European Countries
CMO	Common Market Organisation
COP	Cereals – Oilseeds – Pulses
CPI	Consumer Price Index
CSE	Consumer Support Estimate
DG AGRI	European Commission, Directorate-General for Agriculture
EAA	Economic Accounts for Agriculture
EAGGF	European Agricultural Guidance and Guarantee Fund
EU	European Union
EUR	Euro currency
Eurostat	Statistical Office of the European Communities
FADN	Farm Accountancy Data Network
FAO	Food and Agriculture Organisation (of the United Nations)
FAPRI	Food and Agricultural Policy Research Institute
GDP	Gross Domestic Product
GVA	Gross Value Added
ha	hectare
kg	kilogram
LFA	Less Favoured Areas
MFSS	Medium-term Forecast and Simulation System
mio	million
MS	Member State
NUTS	Nomenclature of Statistical Territorial Units
NVA	Net Value Added
OECD	Organisation for Economic Co-operation and Development
PSE	Producer Support Estimate
SMP	Skimmed Milk Powder
$	US dollar
t	tonne
UAA	Utilised Agricultural Area
US	United States of America
WTO	World Trade Organisation

EXECUTIVE SUMMARY

1. **INTRODUCTION AND SUMMARY RESULTS**

The Commission Communication on the Mid-Term Review (MTR) of the Common Agricultural Policy (CAP) of July 2002 reflected the specific tasks given to the European Commission by the Berlin Summit to review agricultural policy in the main arable crop and livestock sectors, and the conclusions of the Göteborg Summit to guarantee that EU agricultural policy promotes sustainable development.

The medium-term economic consequences of these July 2002 MTR proposals for the agricultural sector of the European Union have been evaluated in six separate studies. The first two studies have been carried out by the Commission services (Directorate General for Agriculture - DG AGRI) on the basis of two in-house models. The first modelling tool has been regularly used to produce the medium-term projections of EU-15 agricultural markets, whereas the second model –the ESIM model- has been specifically developed and used to evaluate the impact of the EU enlargement. This second model allows shedding some light on the impact of the MTR proposals on the agricultural markets of an enlarged EU.

The four other studies have been carried out by external organisations at the request of the EU Commission. The first external impact assessment study has been conducted by the unit of the Food and Agricultural Policy Research Institute (FAPRI) at the University of Missouri (USA). The second external study, carried out by the University of Bonn, has been undertaken at regional level based on the CAPRI modelling system.

The Centre for World Food Studies of the University of Amsterdam (CWFS) and the Netherlands Bureau for Economic Policy Analysis (CPB) in The Hague jointly realised the third analysis using the CAPMAT model of the EU agricultural sector. Finally, a further impact assessment has been provided by the University of Bonn based on the CAPSIM model, which operates at national level.

Although the quantitative results for the EU-15 differ somewhat across the impact studies, they generally converge with respect to the overall direction of change resulting from the proposals:

- Even if the level of support to the farm sector is not projected to change significantly, all the analyses show that the proposed orientation towards a more competitive, market-oriented and sustainable agriculture -through the proposed market reforms, an improved balance of support and the strengthening of rural development policy, and the move towards more decoupled, non-commodity specific policy instruments with the introduction of a single farm payment scheme- should contribute to an improved allocation of resources and lead to greater income transfer efficiency.

- They also project that the MTR proposals would entail adjustment of production in several commodity sectors, notably those where production are strongly influenced by the level of support and by the coupled instruments in place (beef and sheep sectors) and/or which display unsustainable structural imbalances (rye and rice sectors).

- The MTR proposals are also expected to contribute to the improvement of the competitiveness of the cereal sector, as lower support price levels should increase the adjustment capacity of the sector to future developments and opportunities on both the internal and external markets. These adjustments are found to take place with only limited production abandonment and to have a rather favourable impact on the income of the agricultural sector.

When expressed in terms of deviation from a *status quo* scenario corresponding to the continuation of the Agenda 2000 CAP reform, the main quantitative results from these impact analyses on the medium-term developments of agricultural markets and income for EU-15 can be summarised as follows:

- A reduction in total cereal production as cereal area would be constrained by the land allocated to energy crops, the rise in voluntary set-aside and the changes in the support level in this sector. Rye and durum wheat would be the cereals most affected. Part of the negative impact on total cereal supply of the reduction in cereal area would be compensated by higher projected growth in cereal yields. Total cereal consumption would in turn exhibit slower growth in the face of lower availability, sustained prices and a projected reduction in feed demand from the animal sector (linked to the expected fall in beef production which would only be partially compensated by the slight increase in white meat production). These developments would also affect the level of net EU cereal exports, which would display a significant, fall. Total cereal stocks would drop significantly, with public stocks of cereals becoming non-existent.

- As far as land allocation is concerned, food oilseed area is generally projected to fall, whereas energy crops would develop on around 0.7-0.9 mio ha previously mainly allocated to cereals. Silage area would be reduced against Agenda 2000 levels in the face of the decline in beef production, greater incentives to shift towards more extensive animal production methods and competition from other fodder crops area. Finally, voluntary set-aside (abandonment of production) would rise by 0.4 to 0.7 mio ha as some land is foreseen to be taken out of production owing to low profitability.

- The implementation of the decoupling scheme would have a significant impact on the animal sector, notably in the beef and sheep sector as it would favour the extensification of production systems. Combined with a small increase in feed prices, it would entail a decline in beef production, estimated at between 3 % and 8 % by 2009. Sheep output would also fall by between 3 % and 6 % over the medium-term. Lower beef and sheep supply would trigger a rise in EU producer prices of some 6-8 % and 8-12 % respectively by 2009 and would result in a fall in domestic consumption of some 1-3 % and 3 % respectively. Net EU beef exports would show a significant decline.

- Over the medium term, the increase in prices and the fall in consumption expected in the beef and sheep sectors would favour pig and poultry consumption. This demand side effect would outweigh the negative impact of higher feed cereal prices on the competitiveness of the latter two sectors, which would display a small expansion in production and consumption.

- The MTR proposals would display a rather favourable, though limited impact on the income of the agricultural sector as compared to the baseline: all the impact studies show that the reduction in the level of agricultural production and the implementation of dynamic modulation would be broadly compensated by the resulting price rises (and the

- increase in the level of aids in the arable crops and rice sectors). Given that most of the savings from modulation (more than 3 bio EUR by 2009) can be assumed to return to the agricultural sector through the second pillar measures, the overall income of the agricultural sector should rise. However, diverging trends across the various commodity sectors and regions may be expected, with most favourable developments projected in the animal sector (notably the beef and pork sectors, which should display strong price increases).

The MTR proposals are also expected to generate a significant and sustainable improvement in the medium-term perspectives of the agricultural sector of the EU-25. Decoupling in the EU-25 would produce similar trends to those in the EU-15, as producers' decisions would be driven by market considerations rather than by the maximisation of direct payments. The balance of the rye and beef markets in the EU-25 would significantly improve. The MTR proposals would enable the significant rise in agricultural income projected in the new Member States after enlargement to be secured.

2. MODELLING FRAMEWORK AND ANALYTICAL APPROACH

2.1. Modelling framework

These impact analyses of the MTR proposals on the agricultural sector rely on a set of modelling tools. The first DG AGRI analysis has been undertaken on the basis of a set of partial equilibrium, dynamic models covering the most important arable crops, animal and dairy products in the EU. These models are used annually to develop the outlook for agricultural markets and to form the baseline for policy simulations. The second DG AGRI study has been conducted with the ESIM model, which is a price driven, world, multi-country non-linear, agricultural sector model, with an extended policy representation. Although originally designed to analyse the impact of EU enlargement to Eastern Europe, it has been further developed and updated to assess the impact of the MTR proposals.

The FAPRI models used in this exercise consist of a set of non-spatial partial equilibrium models for major agricultural markets used every year to develop projections of world agricultural markets which form the baseline for policy analysis of the US Congress. These models estimate production, consumption, stocks, trade and prices of major trading countries and agricultural commodities. This specific FAPRI-Missouri study used a detailed EU module which is of a similar general structure to the standard FAPRI models and which covers the most important EU policy instruments.

The CAPRI modelling system, whose development has been co-ordinated by the University of Bonn, is designed as a projection and simulation tool for the agricultural sector based on a physical consistency framework, economic account principles and a detailed policy representation. The model consists of separate supply and market modules, which are interactively coupled and operates at NUTS II level. It allows evaluating the impact of policy changes on agricultural markets, producers' income, the EAGGF budget, consumer welfare and some environmental indicators.

The CAP Modelling and Accounting Tool (CAPMAT) performs dynamic policy simulations on the basis of an analytical model of the applied general equilibrium type that generates developments in supply, demand and cross-commodity substitution. It

incorporates the CAP instruments and farmers' behavioural responses to policy changes through agricultural supply models at national and EU level.

The CAPSIM model is being currently developed by the University of Bonn for Eurostat (the Statistical Office of the European Communities). This partial equilibrium model allows forecasting and simulating policy changes on area allocation, production, consumption and income variables of the agricultural sector. It consists of a supply component and a demand component dynamically linked in an overall system that determines price formation.

2.2. Analytical approach

In all models, the impact of the MTR proposals is analysed for the year 2009 with reference to a *status quo* policy situation. The *status quo* scenario corresponds to the continuation of the Agenda 2000 agricultural policy over the medium-term. However, these *status quo* scenarios vary substantially across studies with regards not only to some key underlying assumptions concerning the trade policy framework, the macro-economic environment (notably GDP growth, inflation and the EUR/$ exchange rate) and the medium-term developments on world agricultural markets, but also to the overall market developments projected for some specific sectors.

Therefore, for comparative purposes, the simulation results are presented in the form of deviations from the *status quo* scenario. This allows to depict the likely impact of the MTR proposals while reducing (though not avoiding) any potential bias generated by the models and their starting point, when both *status quo* scenario and the MTR proposals situations are compared in terms of absolute levels. Furthermore, results should not be interpreted as changes relative to the current situation in 2003.

The policy scenario examined corresponds to the MTR measures proposed in the Communication of the European Commission published in July 2002. The main measures have been summarised and presented in annex, showing a comparison with the current (*status quo*) policy situation.

It should be mentioned that the measures concerning the consolidation and the strengthening of rural development through a wider scope of the accompanying measures (two new chapters on food safety and quality, and on the adaptation of farmers to standards; introduction of new measures regarding animal welfare in the agri-environment chapter) and those relative to some specific sectors such as the nuts, dried fodder and starch potato sectors have not been incorporated in these analyses.

The impact studies on the agricultural sector focus on the sectors mostly concerned by the MTR proposals, namely the arable crops and meat production sectors, with specific reference to area allocation, the main market variables (production, consumption, external trade, stocks and prices) and income changes.

The Modelling of Decoupling

The promotion of more market-oriented and sustainable agriculture constitutes one of the objectives of the Mid-Term Review proposals. It is achieved through the introduction of the concept of decoupling which, with the granting of a single income payment per farm replacing all existing (or newly introduced) direct payments -with the exception of some premia in some specific sectors- can be expected to have a significant impact on producers' behaviour, as the latter would increasingly base their production decisions on market signals (i.e. profitability expectations). At the same time, these new decoupled payments are linked to the respect of statutory environmental, food safety, animal health and welfare and occupational safety standards (cross-compliance).

These decoupled payments may be expected to generate significant adjustments in the production structure of the agricultural sector, although factors such as social and economic inertia, the maintenance of some crops for agronomic purposes, the participation in various schemes (e.g. agri-environmental programmes), and the eligibility to Less Favoured Area payments, may mitigate the pace and magnitude of these adjustments. Changes could take place in the production mix, in the production intensity and in farm structure, and could lead to abandonment of agricultural activities.

In spite of the difficulty to provide a quantitative assessment of the full impact of decoupling with the modelling tools currently available, the analytical studies attempted to capture these elements and quantify their effect on the agricultural sector. Yet, the modelling of this new policy instrument, i.e. the mathematical representation in the modelling tools of the way in which the single farm payment is implemented and influences producer decisions, has been carried out in different ways across studies which, to some extent, may have influenced the projected production patterns.

The decoupled payments have been considered in DG AGRI analyses to operate as lump sum transfers with no impact on production decisions of farmers. However, the cross-compliance requirements, the respect of good agricultural practices, the eligibility conditions attached to the decoupling scheme as well as agricultural legislation in Member States have been assumed to constrain the shift between activities, notably between grassland and arable land production and between agricultural activities and abandonment of production. In the FAPRI study, decoupled payments have been assumed to still retain some production-inducing effect, assumed at some 30 % of the supply-inducing effect of the more coupled payments they replace -that is broadly in line with FAPRI's assumptions for the US farm programme payments.

The impact assessment of CWFS/CPB considered that the decoupled payments would operate as a combination of a lump sum transfer and a (lower) flat area premium on account of maintenance requirements, eligibility, cross-compliance and the tight link to land in case of transfer. Finally, the two studies from the University of Bonn have treated the single farm payment as a uniform payment at national or regional level, i.e. a uniform non-crop-specific coupled payment. This could entail a redistribution of support between crops and farms, which would overestimate the impact of decoupling on land allocation, notably between activities eligible and those not eligible under present policies.

3.   SIMULATION RESULTS

3.1.   Consequences on the agricultural sector of EU-15

3.1.1.   Arable crop sector

The main impacts of the MTR proposals on land allocation in the EU over the medium term are projected to be dominated by the following three factors:

(1)   the reduction in the intervention price of cereals, which combined with the removal of the monthly increment system, would amount to an aggregate cut of 8.3 %; the abolition of the intervention price system for rye and the changes in the support to the durum wheat sector (cut in specific aid and granting of a quality premium);

(2)   the introduction of long-term environmental set-aside (with the impossibility to grow non-food crops on land set-aside) and of a non-crop-specific aid for energy crops;

(3)   the granting of a single decoupled income payment per farm.

Table i. Outlook for land allocation in the EU-15 in 2009 under the MTR proposals

	Agenda 2000 scenario	Mid-Term Review					
		DG AGRI (1)	DG AGRI (2)	FAPRI	Bonn University CAPRI model	CWFS/CPB CAPMAT model	Bonn University CAPSIM model
Cereal area	100.0	97.5	94.6	98.3	91.3	94.5	96.0
Wheat	100.0	97.1	94.6	99.4	91.2	92.5	94.0
Soft wheat	100.0	99.0	99.2	100.7	94.6		99.0
Durum wheat	100.0	90.3	85.7	95.0	77.1		76.1
Coarse grains	100.0	97.9	94.6	97.0	91.5	96.4	97.9
Barley	100.0	98.7	92.0	97.3	90.9	97.9	98.3
Maize	100.0	97.6	100.4	99.6	92.9	106.2	98.7
Rye	100.0	91.3	82.8	84.5	91.2	55.0	
Oilseed area	100.0	97.2	104.3	96.3	95.3	91.6	101.5
Rapeseed	100.0	89.6	107.0		94.5	94.4	99.4
Soyabean	100.0	97.0	134.0		95.0	103.1	98.5
Sunflower	100.0	107.2	97.0		92.6	83.0	105.9
Protein crop area	100.0	95.8			90.6	110.0	

This new policy environment with lower cereal price support, the development of energy crops and the granting of greater flexibility in producers' decisions is projected to lead to the following developments:

- A reduction in the total area grown with cereals: the decline would range from 2 % to 9 %. It appears that the rye and durum wheat sectors would exhibit the strongest falls in line with the overall reduction in the level of support in these two sectors;

- For oilseeds, results are mixed. Four of the six studies show a fall in oilseeds area of between 3 % and 9 %, but two analyses foresee a slight increase in oilseed area;

- Energy crops would develop on an area estimated to range between 0.7 and 0.9 mio ha previously allocated to arable crops (to a large extent cereals)[1];

- Silage area is expected to decline by some 5 to 7 % in line with the projected decline in beef production, greater incentives to shift towards more extensive animal production methods and competition from other fodder crops area;

- Voluntary set-aside (i.e. abandonment of land) would increase in all studies. However, this rise in voluntary set-aside would remain limited to approximately 0.4 mio to 0.7 mio ha.

The development of energy crops and the rise in voluntary set-aside would result in a fall in total cereal production which would range in most studies at between 1% and 4 % by 2009/10 (i.e. between 1 and 9 mio t) as yields would increase on account of the decrease in low-yielding, marginal land and higher price perspectives, and would thus partially compensate the decline in area harvested. Only the CAPRI model shows a more pronounced fall in cereal production.

Table ii. Outlook for cereal production in 2009 under the MTR proposals

	Agenda 2000 scenario	Mid-Term Review					
		DG AGRI (1)	DG AGRI (2)	FAPRI	Bonn University CAPRI model	CWFS/CPB CAPMAT model	Bonn University CAPSIM model
Total cereals	100.0	98.0	99.6	99.1	92.6	95.5	97.1
Wheat	100.0	98.2	99.9	100.2	93.4	92.4	96.8
Soft wheat	100.0	98.9	101.2	100.6	94.5		98.5
Durum wheat	100.0	90.5	84.2	96.2	80.5		81.1
Coarse grains	100.0	97.8	99.2	97.7	91.6	98.9	97.5
Barley	100.0	98.7	97.5	97.6	90.7	97.9	96.6
Maize	100.0	97.7	100.0	99.7	92.8	106.2	98.7
Rye	100.0	91.2	57.7	84.4	92.7	55.0	

Rye and durum wheat are found to display the strongest fall in production levels. However, even if all studies agree on the direction of change, they exhibit wide differences regarding the magnitude of the MTR impact on these sectors[2]. Less pronounced developments projected for high-yielding cereals, such as soft wheat and maize, would somewhat mitigate the overall decline in cereal production.

Total cereal consumption would in turn decline slightly as most studies expect a fall limited to 1 % (or less than 2 mio t) in the face of lower availability, higher prices and a projected reduction in feed demand from the animal sector. One analysis (FAPRI) shows a small increase in cereal consumption linked to the stronger fall in cereal prices projected in

[1]   These projections for energy crops have been established based on the assumption that the tax incentives currently existing in EU Member States would prevail over the simulation period.

[2]   This is notably the case for the CAPSIM and CAPRI model results which modelled decoupled payments as a uniform non-crop specific coupled payment, thus overestimating the impact for crops such as durum wheat with a high share of direct payments in income.

this analysis, while CAPRI displays a marked drop in cereal consumption (owing to the fall in beef production and greater competition from fodder products).

Table iii. Outlook for cereal consumption in 2009 under the MTR proposals

	Agenda 2000 scenario	Mid-Term Review					
		DG AGRI (1)	DG AGRI (2)	FAPRI	Bonn University CAPRI model	CWFS/CPB CAPMAT model	Bonn University CAPSIM model
Total cereals	100.0	99.5	100.6	99.9	96.7	99.1	98.8
Wheat	100.0	100.1	99.0	99.6	97.5	99.4	98.9
Soft wheat	100.0	100.3		99.8	97.5		99.2
Durum wheat	100.0	99.0		97.9	97.4		96.8
Coarse grains	100.0	98.8	101.9	100.2	95.9	99.0	98.7
Barley	100.0	100.0	104.4	100.2	96.0		98.7
Maize	100.0	97.7	99.6	99.7	95.6		99.1
Rye	100.0	100.9	112.1	105.0	98.1		

In spite of a modest recovery on world commodity markets, lower availability and sustained domestic prices would affect the level of EU exports, which would display a significant decline over the medium term. EU cereal imports would also slightly increase owing to the reduction in the EU's border protection linked to the cut in support price[3].

Table iv. Outlook for cereal net exports in 2009 under the MTR proposals

	Agenda 2000 scenario	Mid-Term Review					
		DG AGRI (1)	DG AGRI* (2)	FAPRI	Bonn University CAPRI model	CWFS/CPB CAPMAT model	Bonn University* CAPSIM model
Total cereals	100.0	88.6	89.2	94.1	71.6	74.3	86.3
Wheat	100.0	85.4	105.8	100.6	74.7	74.8	87.9
Soft wheat	100.0	91.2		101.5	82.2		95.6
Coarse grains	100.0	95.6	73.9	64.3	67.9	104.8	82.0
Barley	100.0	95.5	94.4	79.5	71.9		71.3
Maize	100.0	100.0	2865.0	100.0	16.1		93.6

* Exportable surplus

The drop in net cereal exports is estimated to range between 6 % and 14 % in four studies, whereas two analyses display more pronounced falls at slightly more than 25 % (CAPRI and CAPMAT models). These large differences are due to the small absolute level and to the nature of the underlying variable (some studies forecast net export levels, others the exportable or production surplus). They also reflect the different projections for the EU cereal production pattern and for the world cereal market outlook. In any case, all studies converge to show a marked decline in the exportable surplus in the rye and durum wheat sectors.

After an initial fall linked to the existence of large public stocks and to the overall reduction in cereal support price, cereal prices would show a gradual recovery over the medium term supported by the more favourable trends on world cereal markets[4] and lower

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[3] Note that this analysis does not take account of the latest cereal import regime negotiated with Canada and the US.

[4] Lower EU net exports would also contribute to some modest increase in world cereal prices.

production levels in the EU. Common wheat and durum wheat are generally found to trend above *status quo* levels as these cereals would benefit from slightly lower production in the EU and supportive world market developments.

Table v. Outlook for cereal prices in 2009 under the MTR proposals

	Agenda 2000	Mid-Term Review					
	scenario	DG AGRI (1)	DG AGRI (2)	FAPRI	Bonn University CAPRI model	CWFS/CPB CAPMAT model	Bonn University CAPSIM model
Soft wheat	100.0	100.7	96.1	100.5	102.8	100*	100.1
Barley	100.0	100.9	107.6	99.5	98.9		100.3
Maize	100.0	100.0	83.3	100.8	101.8	102.2**	99.9
Rye	100.0	98.7	76.3	90.7	99.1		

* & ** average price for wheat and for coarse grains respectively.

The impact of lower domestic supply is generally found to outweigh the negative effects of lower feed demand from the livestock sector on coarse grain prices, with barley and maize prices developing slightly above *status quo* levels by 2009. There again, the magnitude of changes are strongly influenced by baseline levels and the projected production patterns. However, the outlook for coarse grain prices would still depend critically on the relationship between domestic and world market prices and on the Commission market management policy, notably for rye.

After a short-run fall linked to the abolition of the intervention price system and to the release of public stocks, rye prices would trend upwards over the medium term as production would decline and domestic consumption would strongly increase in view of its improved price-competitiveness. By 2009 however, rye prices would still develop at levels significantly below *status quo* levels.

The overall reduction in the production level would enable the balance of EU cereal markets[5] to be restored, with total stocks dropping by some 10 mio t by 2009 and no public stocks. The EU rye market would display the greatest improvement as lower prices would reduce production volume while supporting domestic consumption, thus allowing to absorb the accumulated surplus of rye in public stocks by 2004 and ensuring balance in the market.

The reduced area allocated to oilseeds in the EU is found in most studies to outweigh the small projected yield increase and a stagnating feed demand to trigger a slight rise in oilseed net imports and a modest rise in EU and world prices.

3.1.2. Rice

Quantitative estimates regarding the impact of the MTR proposals on the EU rice sector differ widely in their magnitude. The size of the sector may have affected its coverage in

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[5] The projected improvement in the overall balance of the EU cereal market remains strongly conditioned by the existence of a mandatory system of land set-aside, which remains set at a level corresponding to the current 10 % reference rate. Any changes in this reference rate could significantly modify the overall picture of the cereal market as given above.

the modelling tools currently available[6]. The reduction of around 50 % in the support price for rice is projected to translate into a very sharp fall in EU domestic prices towards world market levels, which would boost EU rice competitiveness while reducing the attractiveness of the EU market as an export market.

The fall in prices is however accompanied by the granting of direct payments, which are foreseen to maintain the production potential of the EU rice sector. Estimates of the drop in total EU rice production range between 1 % (FAPRI) and 29 % (CAPMAT).

In contrast, the fall in market prices would support rice consumption, which would increase strongly relative to *status quo* levels. Although lower supply combined with rising demand could set the stage for a surge in net imports over the short term, the greater competitiveness of the EU rice would allow to prevent EU rice imports and public stocks from rising to unsustainable levels by 2009, when the EBA agreement is fully implemented. By the end of the decade, total EU rice imports would stand at some one-third to one-tenth of the projected level were the current market organisation to be continued.

Table vi. Outlook for the rice sector in 2009 under the MTR proposals

| | Agenda 2000 scenario | Mid-Term Review | | | | | |
		DG AGRI (1)	DG AGRI (2)	FAPRI	Bonn University CAPRI model	CWFS/CPB CAPMAT model	Bonn University CAPSIM model
Area	100.0	90.3		96.9		74.0	
Production	100.0	86.7		98.8		71.0	
Consumption	100.0	110.7				104.0	
Net imports	100.0	43.2		47.9		154.1	
Ending stocks	100.0	9.8		33.3		100.0	
Producer prices	100.0	50.0		58.6		50.0	

3.1.3. Meat production

The implementation of the decoupling scheme is foreseen to have a significant impact on parts of the livestock sector. Combined with a small increase in feed prices, decoupling would lead to a decline in beef and sheep production, as it would favour the extensification of production systems. After a short-run increase resulting from the herd size reduction effect, beef output would decline progressively to stand some 3 % to 8 % below baseline levels by 2009.

The suckler cow sector would appear to be the most affected (with a projected fall in herd size of more than 10 %) as it would display the highest rate of output not covering variable costs in the beef sector (with the premium playing a major role in determining producer's behaviour). Similar trends are foreseen for the sheep sector, where output would drop by between 3 % and 6 %.

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[6] Furthermore, stocks are assumed to remain constant in the CAPMAT study, thus hindering a comprehensive analysis of the impact of the proposals on the balance of the rice market, notably with respect to the level of public stocks.

Lower beef availability would trigger a rise in EU producer prices of some 6 % to 8 % by 2009[7] and would result in a fall in domestic consumption of between 1 % to 3 %[8]. This would in turn entail a gradual decline in net EU beef exports: although two studies show that the EU would remain a net beef exporter, the four other analyses indicate that the EU would become a net importer of beef[9]. Sheep consumption is also found to decline in the EU by most of the studies, with producer prices rising between 8 % and 12% by 2009.

Table vii. Outlook for the beef sector in 2009 under the MTR proposals

| | Agenda 2000 scenario | Mid-Term Review | | | | | |
		DG AGRI (1)	DG AGRI (2)	FAPRI	Bonn University CAPRI model	CWFS/CPB CAPMAT model	Bonn University CAPSIM model
Production	100.0	97.2	94.3	96.9	93.6	96.9	92.4
Consumption	100.0	98.1	97.4	98.3	99.2	100.0	97.0
Net exports*	100.0	40.6	0.3**	33.3	*(19.1)*	*(184)**	*(140.8)**
Producer prices	100.0	107.4	106.7	108.1	105.6	100.0	107.7***

* ( ) net imports ; ** Exportable surplus; *** DG AGRI estimate from CAPSIM consumer price projections.*

The short run impact in the pig and poultry sectors is expected to be dominated by the effect of the fall in beef producer prices on the demand side which would more than compensate the impact of lower cereal feed prices and should maintain these two sectors under downwards pressure.

Table viii. Outlook for the pork and poultry sectors in 2009 under the MTR proposals

| | Agenda 2000 scenario | Mid-Term Review | | | | | |
		DG AGRI (1)	DG AGRI (2)	FAPRI	Bonn University CAPRI model	CWFS/CPB CAPMAT model	Bonn University CAPSIM model
Pork							
Production	100.0	100.3	103.9	100.5	100.1	99.8	100.4
Consumption	100.0	100.3	104.2	100.5	100.1	99.8	100.4
Exports	100.0	99.6	100.0*	99.9	100.7	100.0*	100.0*
Producer prices	100.0	104.5	96.9	101.0	100.6	101.6	101.1**
Poultry							
Production	100.0	100.4	100.4	100.6	100.2	100.2	100.4
Consumption	100.0	100.4	100.4	100.7	100.3	100.2	100.4
Exports	100.0	100.0	100.0*	99.3	98.0	100.0*	100.0*
Producer prices	100.0	99.8	98.4	101.1	100.6	98.5	101.1**

* Exports correspond to exportable surplus; DG AGRI estimate from CAPSIM consumer price projections

However, over the medium term, the increase in beef prices and the fall in beef consumption would favour pig and poultry consumption. This demand side effect would

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[7] Given that a significant part of beef production is produced on farms where market receipts only partially cover variable costs, the projected rise in market prices contributes to mitigate the negative impact of decoupling on the level of production in the beef sector.

[8] Results from the CAPMAT model do not capture any demand response from the beef sector as domestic prices are assumed to remain fixed at support level in the CWFS/CPB analysis.

[9] The magnitude of the medium-term impact on the beef market depends critically on the Commission market management. If the Commission were to reduce significantly the level of subsidised exports, the increase in beef prices would be lower, the impact on the pork and poultry mitigated, whereas the fall in beef output would turn stronger.

outweigh the negative impact of higher feed cereal prices on the competitiveness of the two sectors, which would display a small expansion in production and consumption.

The MTR proposals are projected to display only a marginal impact on the dairy sector over the medium term, with a very small impact feeding through from developments on the sheep and goat sector and cereal feed prices. Dairy cow numbers would remain essentially unchanged, as the quota would continue to drive milk production and the size of the dairy cow herd in the EU.

3.1.4. *Impact on agricultural income*

All studies display a rather favourable impact of the MTR proposals on the development of agricultural income. This would result from the combination of the following two developments:

(1)   A relative stability in the overall income of the agricultural sector (excluding rural development funds coming from the dynamic modulation) as compared to the situation under Agenda 2000. The reduction in the level of production and the implementation of dynamic modulation are foreseen to be broadly compensated by the rise in producer prices for many agricultural products, the increase in the level of direct payments in the arable crop and rice sectors, and the savings in the level of input costs. Estimates of this impact would range from –1.3 % to –0.1 %. The 0.8 % increase shown in the CWFS/CPB study includes income generated by non-agricultural activities[10];

(2)   The savings generated each year by the dynamic modulation would return to a large extent to the agricultural sector –estimated in DG AGRI analyses at approximately 80 %- through the rural development measures (estimated at more than 3 bio EUR by 2009).

Graph i. Outlook for agricultural income in the EU-15 in 2009 under the MTR proposals, relative to the *status quo* scenario

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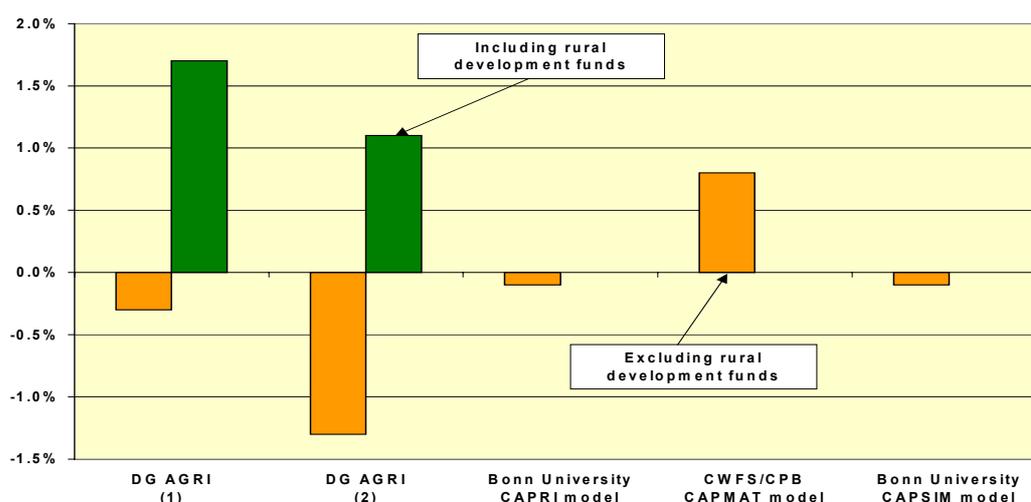
[10]   However, this study also assumes that some payments leave the agricultural sector when the land is used for non-agricultural activity

As a result, the overall impact on the income situation of the agricultural sector would become positive with a rise estimated at between 1.1 % and 1.7 % by 2009 according to the DG AGRI studies.

Diverging income impacts are projected across the various commodity sectors and production regions. Most favourable developments are expected to be found in the animal sector as the projected price increases would trigger a significant rise in market revenues, which would more than compensate the decline in production volumes. By contrast, income development in the cereal sector may reasonably be expected to be affected by the reduction in the production potential and by the implementation of the dynamic modulation.

3.1.5. Welfare analysis

Three studies performed a welfare analysis based on equivalent variation. They all show a net economic benefit from the MTR proposals estimated at between 0.1 bio EUR and 2.2 bio EUR by 2009. They all found that the loss in consumer welfare triggered by the rise in consumer prices would be outweighed by the savings in budgetary expenditure, whereas agricultural producer income would remain broadly stable[11].

3.1.6. Impact on environmental indicators

According to the CAPRI study, global warming emissions, measured as CO_2 equivalents and linked to mineral fertiliser use, methane emissions from ruminants and carbon dioxide linked to energy use, are projected to decrease by 5 % in global warming potentials compared to the continuation of Agenda 2000. This would be due to a reduction in cereal production, an increase in set aside and fallow land, and a fall in cattle production (high methane emissions). Parallel to the drop in greenhouse emissions, the implementation of the MTR proposals is also found to entail an average reduction in nitrate surpluses of slightly more than 3 % in the EU. According to this study, further positive effects may be expected from the shift from rotational to non-rotational set-aside.

3.2. Consequences on the agricultural sector of EU-25

3.2.1. Impact of Agenda 2000 on EU-25

In 2004, the accession of 10 new Member States (Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, and Slovenia) to the EU is expected to generate new opportunities in the Single Market for the agriculture and food industries in the new as well as in the current Member States.

From a sector perspective, the CAP is foreseen to improve the situation of agriculture in the new Member States as compared to a situation without membership and under the continuation of domestic policies. The CAP in combination with the Single Market should provide stable and, on average, higher prices than the domestic policies of these countries could sustain and secure in terms of WTO and government spending.

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[11] These calculations do not take into account the transfer of budget savings to the agricultural sector through rural development funds. However, the overall welfare comparison would remain unchanged if they were accounted for, as the budgetary expenditure would decline while agricultural income would increase.

The new Member States would add about 38 mio ha of utilised agricultural area to the 130 mio ha of the current Member States. However, the resulting increase in the agricultural production of the EU-25 would remain relatively moderate due to the lower intensity of production in the new Member States. The EU-25 would produce in 2009 about 28 % more cereals with 45 % more cereal area, 24 % more oilseeds with 32 % more oilseed area (excluding non-food production), 10 % more beef, 17 % more pork, and 27 % more poultry than the EU-15. At the same time, domestic use of cereals would increase by 27 %, of oilseeds by 6 %, of beef by 9 %, of pork by 23 %, and of poultry by 12%.

The implementation of the Agenda 2000 policy in the new Member States would lead to an increase in cereal production from 57.6 mio t in 2002 to 64.1 mio t in 2009, demonstrating the rather moderate impact of the CAP on cereal production in the new Member States. Total EU-25 production would stand at some 293 mio t. Accession and the effects of the Single Market would entail a redirection of trade according to the relative competitiveness of the Member States. One of the prime shifts in trade concerns cereals, pork, and poultry. Latest data would suggest that the new Member States have improved their competitiveness in poultry production thanks mainly to foreign direct investments into production and processing. Upon enlargement an increasing part of poultry production -up to 0.9 mio t- would be directed to the current Member States as it would benefit from a comparative advantage. By contrast, a large part of pork production in the new Member States would have a comparative disadvantage with respect to quality, i.e. lean meat content, and feed costs. Here the projections suggest that the current Member States would trade between 0.7 mio t and 0.9 mio t of pork to the new Member States.

Generally, only a few sectors –such as the rye and beef sectors- would continue to display structural imbalance after the implementation of Agenda 2000 in the new Member States. The annual marketable surplus in rye would increase from 2.6 mio t in the EU-15 to 3.6 mio t for the EU-25, making intervention storage an even more important marketing instrument. Beef prices would also remain under pressure, with these being around 100 EUR/t lower in the EU-25 than in the EU-15.

3.2.2.   Impact of the MTR proposals on EU-25

The MTR proposals would contribute to smooth the effects of enlargement in comparison with our Agenda 2000 scenario. The implementation of decoupling in the EU-25 would produce similar trends to those in the EU-15. Decoupling would lead in the new Member States to a different production structure, as producers' decisions would be driven by market considerations rather than by the maximisation of direct payments. The resulting misallocation of scarce resources into production with limited or declining markets in the new as well as in the current Member States with Agenda 2000 would then be avoided. The balance of the rye and beef markets in the EU-25 would significantly improve, as sustainable supply and demand developments would be achieved. As in the EU-15, wheat and maize production in the new Member States would gain in relative importance from decoupling. The barley market would improve significantly after enlargement. The MTR proposals would enable the significant rise in agricultural income projected in the new Member States after enlargement to be secured. More generally, they are expected to generate a significant and sustainable improvement in the medium-term perspectives of the agricultural sector of the EU-25.

Annex

**Comparison of the current Agenda 2000 situation
and the MTR Communication Proposals (July 2002)**

SECTOR MEASURES	*Status quo* (Agenda 2000)	MTR proposals (July 2002)
Cereals	Intervention price at 101.31 EUR/t; Direct payments of 63 EUR/t multiplied with the reference yield Monthly increments (7 steps each adding 0.93 EUR/t to intervention price)	Final intervention price cut of 5 % (from the 20 % proposed in Agenda 2000), down to 95.35 EUR/t. Increase direct payment to 66 EUR/t, decoupled. Abolition of monthly increments
Rye	Rye intervention at the general cereals level	Abolition of rye intervention
Durum Wheat	Specific supplementary payment: • 344.50 EUR/ha in "traditional" areas • 138.9 EUR/ha in areas where the production is "well-established" Within the limit of the Maximum Guaranteed Areas (MGA) Supplements depending on the use of certified seed	Decoupling and reduction, over three years, of supplements to: • 250 EUR/ha in "traditional areas" • zero in "well-established areas". Introduce quality top-up premium of 15 EUR/t, depending on minimal quality criteria, requiring a contract
Oilseeds	Alignment of the area payment for oilseeds and cereals	No specific measures. Increase payment to 66 EUR/t, decoupled
Protein crops	Specific supplementary payment of 9.50 EUR/t times the reference yield	New stand-alone supplement of 55.57 EUR/ha (9.50 EUR/t times the average reference yields of regions where protein crops are grown)
Rice	Intervention price at 298.35 EUR/t (paddy rice) Direct payment of 52.65 EUR/t multiplied with the reference yield and paid per hectare, within Maximum Guaranteed Areas (MGA)	50 % cut in intervention price to 150 EUR/t, triggering private storage. Below 120 EUR/t, specific safety mechanism. Compensation payments of 177 EUR/t of which 75 EUR/t granted as a crop-specific payment. Reduce national MGAs to 1999-2001 average or the current MGA, whichever is the lower.
Starch potatoes	Measures for producers: • Minimum price of 178.31 EUR/t • Payment of 110.54 EUR/t	Decoupling

SECTOR MEASURES	*Status quo* (Agenda 2000)	MTR proposals (July 2002)
CO$_2$ Credits	Non-food regime on set-aside land (contract with processor required)	45 EUR/ha for energy crops (contract with processor required). MGA of 1.5 mio ha allocated by MS
Dried Fodder	Direct payments: • 68.83 EUR/t for dehydrated fodder • 38.64 EUR/t for sun dried fodder	Shared (50/50) support through: • decoupled income payment for farmers (envelope of 160 mio EUR) • single Maximum Guaranteed Quantity + industry aid of 33 EUR/t, transitional
Nuts	Multi-annual quality/marketing improvement plans, operated by producer groups Specific measures repealed in 1996 but possible to keep plans running until they expire (10 years), the last plans expiring in 2006/07. No specific support measures afterwards.	Flat-rate payment of 100 EUR/ha with MS top-up option up to 109 EUR/ha. MGA of 800 000 ha. Areas under active improvement plans not eligible to the new support
Beef	Basic price at 2 224 EUR/t with private storage possible at 103 % of this price. Safety net intervention level of 1 560 EUR/t; Headage payments: 150 EUR for steers (two payments), 210 EUR for bulls/year and 200 EUR/year for suckler cows. Slaughter premium of 80 EUR (bulls, steers, cows) and 50 EUR (calves) Eligibility criteria: up to 1.8 LU/ha (from 01.01.03, currently 1.9 LU), head limit of 90 (with derogation) Extensification premium: 100 EUR per premium (stocking density 1,4 LU/ha). Other options for MS: 80 EUR per premium for a stocking density below 1.4 LU/ha and 40 EUR for 1.4 to 1.8 LU/ha. National envelope (budget)	No specific measure foreseen, however major implications of decoupling. Reinforced cross-compliance conditions including land management conditions; Strengthening of quality and support for environmentally friendly beef production through the 2nd pillar; Granting export subsidies for live animal only on the basis of justified requests and in line with animal welfare requirements.

DECOUPLING	*Status quo*	**MTR proposals (July 2002)**
Scope	Various arable premia linked to the production of specific crops. Partial decoupling only due to the alignment of the cereals and oilseeds payments Animal premia linked to the requirement of producing beef or dairy	Single decoupled farm income payment covering: - cereals, oilseeds, protein crops, flax, hemp, linseed (base aid of 66 EUR/t) - durum wheat supplement (reduced to 250 EUR/t), - starch potatoes, grain legumes, - rice (102 EUR/t), - dried fodder (new) - beef, sheep - milk from 2004/05. The following payments are not included: - durum wheat quality premium, - protein crop supplement (55.57 EUR/t), - crop-specific payments for rice (75 EUR/t), - flax, hemp (processors) - potato starch (processors) - dried fodder (processors, 33 EUR/t, transitional) Fruit and vegetables are excluded
Reference period		Not specified
Set-aside	For arable crops, 10 % set aside, exempting farmers producing less than annually 92 t of cereals (calculated with the reference yields)	Maintenance of individual historical set-aside obligation (based on the 10 % set-aside requirement) but now on a long-term (10 years), non-rotational basis. Abolition of the non-food regime on set-aside land.
Establishment and transfer of rights		The single farm payment may be divided into entitlement rights to a payment attached to eligible land. The transfer of entitlement rights will occur in parallel to the transfer of land
Options		Member States may modulate the level of aid within certain limits
DYNAMIC MODULATION	Optional reduction of direct payments up to 20 % Unspent money remains in Member State to be spent on accompanying measures	Dynamic modulation of 3 % per year up to a total reduction of 20 %; 5 000 EUR franchise for each farm exempted from the cut. Member States may further exempt 3 000 EUR for each labour unit above two. Savings shifted to EU Rural Development budget (any measure). Distribution key based on agricultural area, farm employment and prosperity. Capping at 300 000 EUR per farm, with savings kept in the MS concerned.

OTHER MEASURES	*Status quo*	**MTR proposals (July 2002)**
Cross-Compliance	Optional use of reductions of direct payments for enforcing statuary environmental legislation and so-called specific environmental requirement	Compulsory cross-compliance (whole farm approach) Direct payments for respect of statuary legal standards (environment, food safety, and animal welfare) and keeping land in good agricultural condition.
Farm Audits	The establishment (not the operation) of certification systems is an option under the Rural Development package	Farm audits compulsory for all farms receiving more than 5 000 EUR Audits will account for all relevant material flows and on-farm processes. Financial support covering part of the costs for farmers is eligible under Rural Development
RURAL DEVELOPMENT (In addition to the simplification of certain current measures)	*Status quo*	**MTR proposals (July 2002)**
Food Quality	Investment aid in favour of food quality including the establishment of certification systems eligible under rural development plans Promotion of certain commodities subject to two horizontal regimes: one for internal promotion, one for external promotion.	Establish a food quality chapter as a new "accompanying measure" including: - Encouragement to farmers to participate in quality assurance and certification schemes - support for producer groups for promotion in the context of quality assurance, geographical indication and organic farming Target first pillar measures only to external promotion
Animal Welfare	Only regulatory measures	New animal welfare measure alongside and in the same logic as agri-environment measures (covering cost incurred and income forgone due to commitments beyond legal standards)
Agri-Environment	Current aid intensity - 75 % in Objective 1 areas - 50 % in others;	Raise the aid-intensity for agri-environmental measures: - 85 % in Objective 1 areas - 60 % in others
Meeting Standards	No incentive measure in place	Support for farm audits – flat-rate payments to farmers to cover audit costs Temporary and degressive aid (maximum of 200 EUR/ha) to farmers to help them to implement statuary standards when EU rules have not been transposed into national legislation. Not applicable where standards already transposed into national legislation

IMPACT ASSESSMENT

OF THE MID-TERM REVIEW

PROPOSALS

ON THE AGRICULTURAL MARKETS

AND FARM INCOME

IN THE EU-15

2004 – 2009

DG Agriculture

European Commission

EXECUTIVE SUMMARY

The Mid-Term Review proposals represent a significant change in EU agricultural policy by promoting further more competitive, market-oriented and sustainable agriculture. Whereas the overall level of support to the farm sector would not be significantly affected, the changing composition of policy instruments towards decoupled, non-commodity specific payments should lead to an improved allocation of resources and generate greater income transfer efficiency.

When presented in reference to the implementation of the Agenda 2000, the results from the impact analysis on agricultural markets and income presented in this chapter show that the MTR proposals would provide greater flexibility and market orientation in the producer's management decisions while guaranteeing income stability to the agricultural sector. As a result, the volume of production would decline in the commodity sectors where production decisions are strongly influenced by the level of support and by the coupled policy instruments in place. This reduction in production would give rise to an increase in market prices in the sectors concerned, so that farm income would remain stable.

Compared to a *status quo* scenario (i.e. Agenda 2000), the main impacts of the full Mid-Term Review proposals on land allocation in the EU over the medium term can be summarised as follows:

- A reduction in the area grown in cereals by around 2.5 % (or around 0.9 mio ha), with most of the impact being felt by durum wheat (-10 %) and rye (-9 %);

- A slightly higher fall in oilseeds area (approximately 3 %) and the development of energy crops on around 0.8-0.9 mio ha previously allocated to a large extent to cereals;

- A decline in silage area by some 7 % resulting mainly from the decline in beef production, greater incentives to shift towards more extensive animal production methods and competition from other fodder crops area;

- An increase in voluntary set-aside (beyond the mandatory environmental set-aside) of approximately 30% (or 0.6 mio ha).

If decoupling would entail a reduction in grain cereal area of some 300 000 ha, most of fall cereal area would still result from the implementation of the proposed market measures. A similar pattern is found in the oilseed sector.

In contrast, the largest impact of decoupling on the crop sector is projected to be found in the fodder production sector, notably in silage area, and in the development of voluntary set-aside (abandonment of production) which would rise by a further 600 000 ha as some land are foreseen to move out production owing to low profitability. Total cereal production would be constrained by the development of energy crops and the rise in voluntary set-aside. It would decline by 2.0 % by 2009/10 (or 4-5 mio t), i.e. approximately 3-4 mio t from market measures and 1 mio t from decoupling. Rye, durum wheat and maize would be the most affected cereals. Total cereal consumption would in turn decline by some 0.5 % (or 1 mio t) in the face of lower availability, higher prices and a projected reduction in feed demand from the animal sector (estimated at between 0.5 % and 1 %, due to the fall in beef production which would only be partially compensated by the slight increase in white meat production).

Lower production and higher domestic prices would also affect the competitiveness of EU exports which would fall by around 3 %, whereas EU cereal imports would increase owing to the reduction in EU's border protection (linked to the cut in support price).

Total cereal stocks would drop significantly by 25 % to stabilise at around 27 mio t, with no cereal in public stocks. The EU rye market would display the greatest improvement with a progressive restoration of market balance. Lower production volume and higher consumption –supported by lower prices- would allow in the short term to absorb the accumulated surplus of rye in public stocks by 2004 and to generate a gradual recovery in market prices close to pre-Mid-Term Review levels in the later years.

The implementation of the decoupling scheme in the livestock sector –combined with a small increase in feed prices- would entail a decline in beef production, as it would favour the extensification of production systems. After a short-term increase linked to higher slaughtering, beef output would decline progressively to stand at around 3 % below baseline levels by 2009 (or around 200 000 t).

Lower beef availability would trigger a rise in EU producer prices of some 7 % by 2009 and would result in a fall in domestic consumption of 2 % (or 150 000 t). This would in turn entail a decline in EU beef net exports of around 60 %, i.e. 100 000 t, due mainly to a fall in EU beef exports. It should be mentioned that, although the sheep sector has not been fully covered in our modelling exercise, it is expected to display a similar pattern to that of beef.

The short run impact in the pig and poultry sectors may be expected to be dominated by the effect of the fall in beef producer prices on the demand side which would more than compensate the impact of lower cereal feed prices and should maintain these two sectors under pressure. As a consequence, pig and poultry production and consumption would exhibit a slight fall ranging between 0 % and 0.5 %. Over the medium term, the increase in beef prices and the fall in beef consumption would favour pig and poultry consumption. This demand side effect would outweigh the negative impact of higher feed cereal prices on the competitiveness of the two sectors, which would display a small expansion in production and consumption.

The MTR proposals would display a rather favourable, though limited, impact on the income of the agricultural sector as compared to the baseline. The reduction in the level of agricultural production and the implementation of dynamic modulation are expected to be broadly compensated for by the resulting price rises and the increase in the level of aids in the arable crops and rice sectors. However, given that around 80 % of the savings from modulation can be assumed to return to the agricultural sector through the second pillar, the overall income would rise by some 1.7 % by 2009.

However, diverging trends across the various commodity sectors and regions may be expected, with most favourable developments projected in the animal sector (notably the beef and pork sectors, which should display strong price increases). In contrast, income development in the cereal sector may reasonably be expected to be affected by the reduction in the production potential and by the implementation of the dynamic modulation.

INTRODUCTION

In July 2002, the European Commission presented a Communication on the Mid-Term Review of the Common Agricultural Policy. This Communication, stemming from the mandate of the European Council of Berlin to submit a mid-term review of the Agenda 2000 decisions proposed a set of substantial adjustments to enhance the competitiveness of EU agriculture, promote a market oriented, sustainable agriculture and strengthen rural development. This chapter assesses the potential impact of these proposals on the agricultural markets of the European Union as well as on the income of agricultural producers over a medium-term perspective.

1.1   MODELLING FRAMEWORK AND METHODOLOGICAL APPROACH

This analysis has been undertaken on the basis of the modelling tools currently used by DG AGRI in the framework of its annual exercise of medium-term market projections. They consist in a set of partial equilibrium, dynamic models covering the most important arable crops, animal and dairy products in the EU (including cereals, oilseeds, protein crops, beef, pig, poultry, sheep, butter, skimmed milk powder and cheese)[12].

The impact assessment has been established over the **2004-2009 period** on the basis of the statistical information available in September 2002 and under a specific set of assumptions. All these assumptions, with the exception of agricultural policy in the EU, are maintained identical in all the policy scenarios.

The most important assumptions concern agricultural and trade policies, the macro-economic perspectives and the medium-term outlook for world agricultural commodity markets.

(1)   All policy instruments and measures in non-EU countries are expected to operate under the current rules or within the changes already decided by the end of September 2002 for the 2002-2009 period. This concerns particularly **the Farm Security and Rural Investment Act (FSRIA) of 2002** in the US. The impact of the FSRIA on world commodity markets has been estimated on the basis of the analysis carried out by FAPRI in July 2002. This analysis incorporated the provisions of the new farm bill and the most current market developments at the time[13].

(2)   All commitments taken within the **Uruguay Round Agreement on Agriculture** (URAA), regarding in particular market access and subsidised exports, are assumed to be fully respected. Thus, EU's subsidised exports are expected not to exceed the annual URAA limits, whereas EU's imports under current and minimum access are fully incorporated. In addition, the **URAA commitments are assumed to remain unchanged over the 2002-2009 period**.

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[12]   For further information on the modelling and methodological framework, cf. "*Prospects for agricultural markets 2002-2009*", published in June 2002, EC Commission.

[13]   FAPRI *2002 U.S. Baseline Briefing Book* July 2002.

(3)   The **trade agreements** that have been concluded by the EU prior to the end of September 2002, notably with the Least Developed Countries and the candidate countries from central and eastern Europe have been taken into account, notably the most recent "**double-profit"** agreements with the candidate countries;

(4)   **If the short-term perspectives for the EU economy** have been assumed to remain rather modest, several factors –including higher private consumption underpinned by increases in earnings and subdued inflation, investment spending, the rebuilding of inventories and a more supportive international environment- are expected to contribute to supporting a strengthening of economic growth and provide the basis for a sustainable expansion of the EU economy over the medium-term. **Economic growth** would average 2.6 % per year, whereas **inflation** would remain contained at approximately 1.9% per annum. The **$/EUR exchange rate** is assumed to stabilise around parity from 2003 onwards. **Population** growth in the EU is projected to decline slowly from around 0.3 % in 2004 to 0.2 % towards the end of the simulation period.

(5)   The medium-term outlook for world agricultural markets is foreseen to remain essentially supported by rising food demand driven by an improved macro-economic environment (with more broadly-based and sustainable growth), higher population, urbanisation and changes in dietary patterns, particularly in many emerging economies. World trade in agricultural commodities is expected to demonstrate sustained growth, as demand for food products should outpace production in many developing countries, while commodity prices are projected to show only moderate increases over the medium term (cf. graph 1.1)[14].

Graph 1.1. Medium-term development in world cereal prices ($/t), 1981/82 – 2009/10
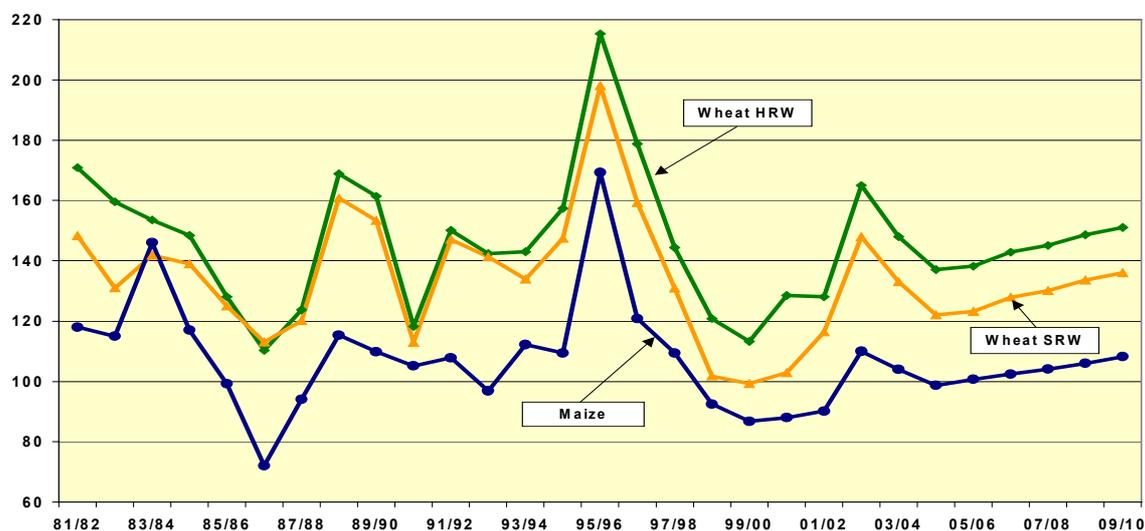
After a short-term hike, world cereal prices are assumed to trend upwards over the medium term and to reach some 151 EUR/t by 2009/10 for soft wheat (HRW, FOB Gulf), 108 EUR/t for maize (US FOB Gulf) and 230 EUR/t for milled regular rice.

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[14]   World agricultural markets have recently displayed significant developments marked by sharp price increases –mainly driven by unfavourable climatic conditions in North America and Australia. However, these developments are projected to have only a short-term impact on commodity markets.

World prices of oilseeds and oilseed products would also strengthen over the next seven years fuelled by higher demand, notably for vegetable oil, that should translate into a strong pattern for oil-rich oilseeds. Sunflower and rapeseed prices would increase from 2003/04 to 2009/10, rising from 250 to 270 $/t, and from 220 to 240 $/t CIF Rotterdam respectively.

1.2   EU POLICY SCENARIOS

The results of the impact analysis are presented in reference to a *status quo* scenario which corresponds to the **implementation of the Agenda 2000** as embodied in the medium-term projections published in December 2002 in the «*Prospects for agricultural markets 2002-2009 – Update for EU markets*», hereafter the «baseline»[15].

The impact assessment is carried out in **three progressive steps from 2004/05** onwards in order to allow a differentiated evaluation of the various MTR proposals.

1.2.1   **"Market measures" scenario**: The first step (hereafter **scenario MTR-1**) corresponds to the implementation of the proposed market measures, with the exception of those for the dried fodder and nuts sectors which are not covered by the model:

- **Reduction** of the intervention price for cereals from **101.31 EUR/t** to **95.35 EUR/t** (i.e. **6.0 %**) from 2004/05 onwards and removal of the **monthly increment system** (i.e. an aggregate reduction in price support of more than 8 %). Compensation for the cut in cereal support price by increased direct payments on similar terms as in Agenda 2000, i.e. by approximately 3 EUR/t (of reference yield);

- **Removal** of the intervention price system for **rye**. In order to smooth the impact of the measure on the cereal market, it is assumed that the **6 mio t of rye in public stocks** at the end of the 2003/04 marketing year are **gradually released over three years** as follows: 3 mio t in 2004/05, 2 mio t in 2005/06 and 1 mio t in 2006/07;

- **Reduction** of the specific additional payment in the **traditional areas** for durum wheat production from 344.5 EUR/ha **to 250 EUR/ha** and **removal** of the special aid in the **established areas.** These changes are phased in over three years. **Introduction** of a high quality premium of **15 EUR/t** conditional on the respect of quality requirements for all EU durum wheat producers;

- **Replacement** of the rotational set-aside by a **long-term environmental set-aside** (10 years) on arable land. The **production of energy crops** would no longer be allowed on the set-aside land. However, these crops would benefit from a non-crop specific aid of 45 EUR/ha with a maximum guaranteed area of 1.5 mio ha ("carbon credit").

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[15]   European Commission, Directorate-General for Agriculture *Prospects for Agricultural Markets 2002 – 2009 – Update for EU markets* December 2002. Brussels.

- **One-step reduction of 50 %** of the rice support price **to a basic price of 150 EUR/t** in 2004/05. A private storage is introduced which would be triggered when the market price falls below the basic price. In addition, a safety net is established at 120 EUR/t. This global price reduction is compensated at a rate of 88 % amounting to 177 EUR/t, with 102 EUR/t as an income payment and 75 EUR/t as a crop specific aid. The maximum guaranteed areas would be reduced to the 1999-2001 average of the current MGA, whichever is lower.

1.2.2   **"Modulation" scenario**: The second step in the MTR impact analysis (hereafter **scenario MTR-2**) introduces the <u>system of dynamic modulation,</u> in addition to the market measures. Under this system, all direct payments –both coupled and decoupled payments- would be reduced progressively in arithmetic steps of 3% per year to reach 20 % at the maximum (18 % in 2009).

- A franchise set at 5 000 EUR would be applied for farms employing up to 2 full time annual working units. For each additional employed annual working unit, the franchise would be increased by some 3 000 EUR. After the application of modulation and the franchise, the payments per farm would be capped at 300 000 EUR.

- Based on statistics from the Farm Structure Survey and the Farm Accountancy Data Network, it has been estimated that some 64 % of all direct payments would be affected by modulation. This proportion ranges from 59 % in the dairy sector to 67 % in the arable crop and beef sectors. The relevant proportion has been used for the various sectors, when this was possible, and implemented progressively over the simulation period.

1.2.3   **The full Mid-Term Review scenario**: Further to MTR-2, the third step (hereafter **scenario MTR-3**) introduces <u>the concept of decoupling</u>, with the granting of a single decoupled income payment per farm. This new payment would replace all existing (or newly introduced payments) direct payments, with the exception of the specific quality premium for durum wheat, the protein crop supplement, the crop specific payment for rice and the area payment for nuts.

In the modelling framework used in this analysis, the decoupled payments are considered to operate as lump sum transfers with no impact on production decisions of farmers. However, various requirements attached to the decoupling scheme such as conditions of eligibility of crops, cross-compliance conditions, and the close link to land of these payments in case of transfer may be expected to constrain the shift between activities (notably between grassland and arable land activities);

It has been assumed that the implementation of cross-compliance conditions related to the enforcement of "good farming practices" (maintenance of land in good agricultural condition and respect of statutory environmental, food safety, animal health and welfare standards) would only have a marginal impact on market balances as they are assumed to generate no additional production costs against the Agenda 2000 situation. Under the decoupling scheme, producers would have the flexibility to produce all farm products, with the exception of

vegetables and fruit. Finally, the conversion of pastureland to arable land was assumed to be limited as Member States would have the possibility to apply conditions hindering such shift.

It should be mentioned that other measures such as those concerning the consolidation and the strengthening of rural development through a wider scope of the accompanying measures (two new chapters on food safety and quality, and on the adaptation of farmers to standards; introduction of new measures regarding animal welfare in the agri-environment chapter) and some specific sectors such as the nuts, dried fodder and starch potato sectors have not been incorporated in this analysis.

1.3 IMPACT ANALYSIS ON AGRICULTURAL MARKETS

1.3.1 *Status quo* scenario

The *status quo* scenario corresponds to the continuation of the Agenda 2000 agricultural policy over the medium-term. The following elements, based on the medium-term projections published early December 2002 in the *«Prospects for agricultural markets 2002-2009 – Update for EU markets»*, aim at providing a brief summary of the markets outlook to be used as a reference.

1.3.1.1 Arable crops

Cereals

Total cereal area in the EU is projected to exhibit a slow decline over the medium-term from 37.4 mio ha in 2002 to 36.5 mio ha in 2009 owing to the overall decrease in average domestic feed cereal prices and improved price prospects for oil-rich oilseed. Common wheat, durum wheat and maize should exhibit strong gains, whereas barley would display a declining trend linked to less favourable profitability prospects. However, the projected rise in cereal yields (of approximately 1.1 % per annum) would more than offset the decline in cereal area and entail a gradual expansion in cereal production over the medium term to 224.7 mio t in 2009.

Table 1.1 Area under arable crops and set-aside in the EU, 2000 – 2009 (mio ha)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Cereals	37.5	36.4	37.4	36.8	36.9	36.8	36.8	36.7	36.6	36.5
Oilseeds [1]	4.5	4.4	4.2	4.6	4.5	4.5	4.5	4.6	4.6	4.7
Protein crops	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Linseed [2]	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Silage [3]	4.3	4.3	4.3	4.3	4.2	4.2	4.2	4.2	4.2	4.2
Total arable crops (a)	47.6	46.5	47.2	47.0	47.0	46.9	46.9	46.9	46.9	46.8
Compulsory set-aside	3.9	3.9	4.0	4.0	4.0	4.1	4.1	4.1	4.1	4.1
Voluntary set-aside	1.7	2.5	1.8	2.1	2.1	2.2	2.1	2.2	2.2	2.2
Total set-aside (b)	5.6	6.4	5.8	6.1	6.2	6.2	6.2	6.3	6.3	6.4
TOTAL COP (a+b)	53.2	52.9	53.0	53.2	53.2	53.2	53.2	53.2	53.2	53.2

(1) Excluding non-food oilseeds; (2) Including flax and hemp from 2001/02; (3) Excluding grass silage for Finland and Sweden

Renewed gains in the price competitiveness of cereals and the continuing growth in the global feed demand from the livestock sector (of approximately 3 % over the whole period) would enable the EU domestic feed market to absorb most of this additional production, though at a much more moderate pace than after the 1992 CAP reform.

The EU would expand its cereal exports to over 30 mio t[16] thanks to favourable medium-term perspectives on the world market, both for price and world import demand. By contrast, total cereal imports are projected to stabilise at around 9 mio t over the medium-term, i.e. above the level observed over the 1990s but below the level reached over the last two years.

The markets for common wheat and durum wheat should continue to remain rather tight over the next seven years as these cereals are expected to benefit from a steady growth in domestic and external demand which is foreseen to keep their market prices in line with world market developments and substantially above support levels.

Table 1.2. Total cereals balance sheet in the EU, 2000 – 2009 (mio t)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Usable production	213.3	198.4	209.1	209.9	214.1	215.7	219.1	220.6	223.3	224.7
Consumption	185.7	188.5	190.9	191.1	193.6	194.6	196.5	197.4	199.4	200.4
Imports	5.8	13.2	10.0	8.9	8.9	8.9	8.9	8.9	8.9	8.9
Exports	28.7	19.9	31.0	30.1	29.9	30.1	30.6	31.4	31.8	32.5
Beginning stocks	31.7	36.4	39.6	36.8	34.4	33.9	33.7	34.5	35.2	36.0
Ending stocks	36.4	39.6	36.8	34.4	33.9	33.7	34.5	35.2	36.0	36.8
of which intervention	6.7	8.1	7.3	7.1	6.7	7.2	7.7	8.2	8.9	9.5

While the market prospects for most coarse grains are foreseen to improve substantially (notably for barley over the next two years) the market for rye in the EU is still projected to display a continuing structural imbalance as the potential for adjustment in the supply and demand of this cereal should remain largely constrained by its relatively high market prices and the lack of market outlets. The annual production surplus of rye would continue to accumulate over the next seven years and entail a rise in total stocks to 10.1 mio t in 2009, of which 9.5 mio t would be in intervention stocks.

Oilseeds

Productivity increases and improved price prospects are expected to contribute to the gradual improvement in the production potential of the EU oilseed sector over the medium term. Total "food" oilseed area is estimated to bottom out in 2002 at 4.2 mio ha as the last step of the Agenda 2000 for this sector is implemented, before gradually increasing up to 4.7 mio ha in 2009. Oilseed area for non-food purposes would in turn stabilise at around 0.9 mio ha in line with the 10 % rate of mandatory set-aside assumed over the medium-term.

The recovery in oilseed yield growth and in harvested area would entail a regular rise in oilseed (food) production over the medium term to 13.5 mio t in 2009. Greater competition from domestic cereals on the EU feed market would constrain EU demand for oilseed and oilseed products.

1.3.1.2 Rice

The current market imbalance is projected to deteriorate further until 2006. The progressive reduction in tariff for rice imports from LDCs adopted under the "Everything

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[16] Thus exceeding the annual limit for subsidised exports set by the URAA thanks to some unsubsidised exports of durum wheat, common wheat and barley/malt (these projections for cereal exports remain conditional upon an export policy that ensures the full use of the URAA limits).

But Arms" initiative is then foreseen to dramatically worsen the overall outlook as EU domestic demand would become increasingly, and by the turn of the decade almost entirely, satisfied by more competitive imports from these countries, generating a rapid, dramatic and unsustainable increase in public stocks (at 2.7 mio t by 2009).

Table 1.3. Total rice balance sheet in the EU, 2000 – 2009 ('000 t)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Usable production	1 436	1 503	1 520	1 568	1 607	1 640	1 663	1 687	1 713	1 732
Consumption	1 813	1 819	1 865	1 898	1 928	1 946	1 967	1 999	2 084	2 112
Imports	546	559	624	574	583	594	604	749	1 427	1 699
Exports	215	261	221	221	221	221	221	221	221	221
Beginning stocks	638	592	573	631	654	695	762	841	1 058	1 893
Ending stocks	592	573	631	654	695	762	841	1 058	1 893	2 991
of which intervention	365	348	398	417	454	519	595	808	1 633	2 727

1.3.1.3 Meat and livestock

Meat markets are expected to return to a more normal situation. Beef is recovering in term of prices, production and consumption, while pig and poultry are returning to a more normal pattern after the exceptional market conditions experienced during 2000 and most of 2001.

Beef and veal

The beef market is projected to recover over the short-term from the exceptional events of the last few years as the rebound in beef consumption and improved market conditions should allow some sales out of intervention stocks by the end of 2002 and in 2003.

Beef and veal production would increase up to 7.67 mio t in 2004 and then decrease slightly in the following years as the beef production cycle reaches its minimum by the year 2005/06 (at 7.56 mio t). Beef production should then increase slightly to reach 7.64 mio t by 2009[17].

Table 1.4. Beef/veal projections in the EU, 2000 - 2009 ('000 t cwe)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Production (gross, excluding OTMS)	7464	7713	7495	7510	7711	7618	7607	7686	7705	7674
Import of live animals	36	28	25	30	48	50	51	51	52	52
Export of live animals	96	51	80	90	90	90	90	90	90	90
Production (net)	7404	7691	7440	7450	7669	7578	7568	7647	7667	7636
- Meat from destroyed animals		425								
Available net production	7404	7266	7440	7450	7669	7578	7568	7647	7667	7636
Consumption	7269	6709	7349	7410	7450	7435	7452	7514	7540	7540
Imports (meat)	379	350	410	400	410	418	422	425	425	425
Exports (meat)	577	499	520	600	650	600	588	558	552	521
Beginning stocks	65	2	309	270	110	89	50	0	0	0
Ending stocks of which:	2	309	270	110	89	50	0	0	0	0
- Public Intervention Stocks	2	259	200	40	19	0	0	0	0	0
- Special Purchase Scheme (in storage)	-	50	70	70	70	50	-	-	-	-
Stock changes	-63	307	-39	-160	-21	-39	-50	0	0	0
Special Purchase Scheme (for destruction)		100	20	0	0	0	0	0	0	0
p.c. consumption (kg)	19.28	17.75	19.39	19.49	19.54	19.47	19.48	19.60	19.64	19.60

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[17]   These projections are based on the assumption that the OTMS scheme in the UK will be maintained until March 2004.

A lower production pattern combined with a swift recovery in beef consumption and the impact of the special measures taken in 2000 and 2001 should contribute to the gradual improvement in the balance of the EU beef market over the next few years (intervention stocks could be cleared as early as 2005). Variations in exports are expected to be sufficient in order to cope with the cyclical ups and downs in production.

Pig meat

Pig meat production is foreseen to increase over the whole period, though at a slower rate than in the past, reaching around 18.5 mio t by 2009. The medium-term outlook for pig meat consumption is generally positive since pig meat is likely to continue to be favoured by consumers, although clearly less than poultry. Per capita pork consumption is projected to increase from 43.6 kg/year in 2001 to around 45 kg/year by 2009.

Table 1.5. Pig meat projections in the EU, 2000 - 2009 ('000 t cwe)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Production (gross)	17577	17534	17713	17754	17826	18092	18318	18333	18389	18510
Import of live animals	1	1	0	1	1	1	1	1	1	1
Export of live animals	1	3	5	5	5	5	5	5	5	5
Production (net)	17577	17532	17708	17750	17822	18088	18314	18329	18385	18506
Imports	49	52	50	60	69	72	76	80	83	89
Exports	1339	1099	1200	1200	1146	1166	1199	1219	1239	1259
Stock changes	-100	0	0	0	0	0	0	0	0	0
Consumption	16386	16486	16558	16610	16745	16995	17192	17190	17230	17336
p.c. cons. (kg)	43.47	43.61	43.68	43.70	43.93	44.51	44.94	44.85	44.87	45.06

Poultry

The outlook for EU poultry production is relatively positive, even if it is expected to remain under strong pressure from competitive import flows (+350 000 tons between 1999 and 2001) which could clearly constrain the EU production potential. Poultry consumption should continue to benefit from competitive prices with respect to other meats and strong consumer preference. Per capita consumption is projected to increase from 23.4 kg/year in 2001 to around 24.5 kg/year by 2009. This trend corresponds with the long-term growth in demand, which has been observed in the past.

Table 1.6. Poultry meat projections in the EU, 2000 - 2009 ('000 t cwe)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Production (gross)	8814	9135	9088	9020	9102	9219	9363	9508	9617	9700
Import of live animals	1	1	1	1	1	1	1	1	1	1
Export of live animals	4	5	5	5	5	5	5	5	5	5
Production (net)	8811	9131	9084	9016	9098	9215	9359	9504	9613	9696
Imports	557	741	711	722	729	736	741	745	748	750
Exports	974	966	1093	1000	1000	1000	1000	1000	1000	1000
Stock changes	-52	45	0	0	0	0	0	0	0	0
Consumption	8446	8861	8702	8738	8827	8951	9100	9249	9361	9446
p.c. cons. (kg)	22.40	23.44	22.96	22.99	23.16	23.44	23.79	24.13	24.38	24.55

1.3.1.4 Milk and dairy products

Milk production and deliveries to dairies broadly follow the same development, reflecting the evolution of the milk reference quantities[18]. The rise in milk production resulting from

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[18]   On-farm use of milk (which is not governed by quotas) only plays a minor role and continues its decreasing trend, and direct sales are not concerned by the milk quota increases decided under Agenda 2000.

the milk quota increases decided under Agenda 2000 is likely to slow down somewhat the long-term decline of the dairy herd. Assuming a further increase in milk yields of around 1.4 % per year on average over the forecast period, the number of dairy cows in the EU is projected to decline from 20.1 mio animals recorded in 2001 to around 18.1 mio animals by 2009.

Table 1.7. Milk production, deliveries and dairy herd in the EU, 2000 - 2009

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Production (mio t)	121.0	121.8	121.6	121.1	121.0	121.3	121.7	122.1	122.0	121.9
Deliveries (mio t)	114.1	114.8	114.8	114.4	114.4	114.8	115.3	115.7	115.7	115.7
Delivery ratio (in %)	94.36	94.26	94.41	94.49	94.57	94.63	94.69	94.75	94.80	94.84
Fat content (in %)	4.07	4.09	4.09	4.10	4.10	4.11	4.12	4.12	4.12	4.13
Milk yield (kg/dairy cow)	5832	6018	6128	6199	6298	6414	6518	6609	6674	6738
Number of dairy cows (000)	20371	20126	19686	19372	19063	18797	18576	18379	18191	18082

Note: Dairy cow numbers refer to the end of the year (historical figures from the December cattle survey)

The medium-term outlook for **cheese** consumption should remain generally positive. As the steady growth in domestic consumption is projected to absorb most of the increase in cheese production, the exportable surplus should decrease slightly from 2005 onwards to stabilise at approximately 440 000 t by 2009.

By contrast, **butter** production and consumption are projected to decrease slightly over the medium term. The Agenda 2000 quota increases foreseen for the period 2005/06-2007/08 are not expected to change this downward trend as the production of other dairy products is expected to absorb most of the additional deliveries. Furthermore, the lower intervention prices decided under Agenda 2000 will make it less attractive to sell butter and SMP into intervention. After a difficult short-term situation, decreasing production should entail a gradual reduction in intervention stocks from 2004 onwards.

After a short interruption in 2002, the downward trend in the production and consumption of **skimmed milk powder** should continue over the medium-term. The strong reduction in production projected over the medium-term is foreseen to outpace the slow decline in consumption (which should benefit from lower prices following the implementation of the Agenda 2000 price cut) leading to the gradual disappearance of intervention stocks after 2005.

1.3.2   Market measures scenario (MTR-1)

1.3.2.1 Arable crops

The **short-term supply response** is projected to be dominated by the two following factors:

- the **new set-aside regulations** (notably the impossibility to grow non-food crops on set-aside land): these new conditions combined with the new carbon credit payments should lead to the development of energy crops[19] on more than 800 000 ha previously allocated to a large extent to cereals;

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[19]   These projections for energy crops have been established based on the assumption that the tax incentives currently existing in EU Member States would prevail over the simulation period.

- the **existence of large public stocks of cereals** (mainly of coarse grains) at the end of 2003/04: the accumulated 7 mio t of rye public stocks should weight heavily on the EU feed cereal market by deepening the impact of the removal of the support price for rye and the cut in the cereal support price on market prices[20].

These two factors are foreseen to entail a decline in total cereal area of approximately 2 % (or 0.8 mio ha) as compared to the baseline scenario, a very slight fall in oilseed area and a shift towards energy crops and, to a lower extent, voluntary set-aside.

Over the longer-run, cereal markets would gradually absorb the rye surpluses and adjust to the new set-aside conditions and price environment. Total cereal area would then recover to 35.9 mio ha, i.e. some 1.7 % or 600 000 ha below baseline level, whereas total food oilseed area would decrease by around 2.0 % (slightly less than 100 000 ha). Stronger developments in cereal prices by the end of the decade would bring more land into production and voluntary set-aside would decrease slightly (around 50 000 ha). Energy crops would expand slowly to reach approximately 900 000 ha by 2009/10.

Rye and durum wheat area would display the strongest decline, notably in the short-run as these two cereals would be affected by the abolition of the intervention system for the former and by the reduction in the specific aid for the latter.

Table 1.8. Land allocation in the EU, 2004/05 – 2009/10 (mio ha) – Scenario MTR-1
(% deviation from baseline in %)

	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
Total cereals	**36.0**	**36.1**	**36.0**	**36.0**	**36.0**	**35.9**
	-2.4%	-1.9%	-2.1%	-1.7%	-1.7%	-1.7%
Soft wheat	**13.7**	**13.9**	**13.9**	**13.9**	**13.9**	**13.9**
	-3.2%	-1.1%	-2.0%	-1.4%	-1.6%	-1.4%
Durum wheat	**3.8**	**3.7**	**3.7**	**3.8**	**3.8**	**3.8**
	0.2%	-5.6%	-3.2%	-4.4%	-3.9%	-4.1%
Barley	**10.2**	**9.9**	**10.0**	**9.9**	**9.8**	**9.6**
	-1.0%	-2.5%	-1.5%	-1.4%	-1.6%	-1.4%
Maize	**4.0**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**
	-3.1%	0.7%	-0.9%	-0.1%	-0.5%	-0.3%
Rye	**1.1**	**1.1**	**1.1**	**1.1**	**1.2**	**1.2**
	-11.8%	-8.6%	-8.7%	-6.6%	-2.7%	-3.9%
Total oilseeds	**4.5**	**4.5**	**4.5**	**4.5**	**4.5**	**4.6**
	-0.1%	-1.0%	-0.3%	-1.6%	-1.7%	-2.0%
Voluntary set-aside	**2.3**	**2.2**	**2.2**	**2.2**	**2.2**	**2.2**
	7.4%	1.1%	1.9%	-1.2%	-1.1%	-1.2%

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[20] The management of these public stocks should prove to be critical to the short-term impact of the market measures. The release of the rye public stocks on the cereal market in one step in 2004/05 –as compared to the gradual release over three years as assumed in this impact analysis- could lead to a stronger drop in rye prices and greater shift between cereal area and voluntary set-aside. Furthermore, the extent to which rye prices would fall depends heavily from the level of exports. In spite of lower prices, exports have been estimated to stagnate at around 1.2 mio t –like in the baseline simulations- as world import demand is foreseen to remain at low level. Any additional export would significantly reduce the drop in feed grain prices and the level of cereal surplus available on the EU market. By contrast, lower export level would add pressure on the feed grain market and maintain rye prices at lower level.

Total cereal production would drop by 1.4 % by 2009/10 (i.e. 3 mio t) as yields should increase on account of the decrease in area planted and higher price perspectives, and thus partially compensate the decline in area harvested. Wheat would exhibit a 2 mio t fall in production level (soft wheat falling by 1.4 % and durum wheat by 4.1 %), while coarse grain production would only decrease by 1.1 % (the significant drop in rye production being cushioned by the milder fall in maize production).

Table 1.9. Total cereals balance sheet in the EU, 2004/05 – 2009/10 (mio t) Scenario MTR-1
(deviation from baseline in %)

	2004/05f	2005/06f	2006/07f	2007/08f	2008/09f	2009/10f
Production	208.3	212.4	214.6	217.6	220.0	221.7
	-2.7%	-1.5%	-2.1%	-1.4%	-1.5%	-1.4%
Consumption	193.8	195.5	196.0	197.1	199.0	200.1
	0.1%	0.4%	-0.2%	-0.2%	-0.2%	-0.2%
Exports	29.5	29.5	29.8	30.7	31.1	31.7
	-1.5%	-1.9%	-2.7%	-2.5%	-2.3%	-2.2%
Ending stocks	30.0	27.7	26.7	26.8	27.0	27.1
	-11.5%	-17.9%	-22.8%	-23.8%	-25.1%	-26.2%
of which intervention stocks	3.0	1.0	0.0	0.0	0.0	0.0
	-54.9%	-85.9%	-100.0%	-100.0%	-100.0%	-100.0%

The reduction in the cereal support price should affect EU border protection for cereals[21] and generate additional imports estimated at approximately 1 mio t for wheat and, to a lower extent, barley.

The removal of the intervention price for rye and the reduction in support price for the other cereals would trigger a short-run fall in the market prices of feed cereals in the EU ranging between 1 % and 3 %. Lower cereal prices would lead to a small increase in total cereal consumption, whereas lower availability should constrain cereal exports, in particular for common wheat and durum wheat.

From 2006/07 onwards -when all public stocks of rye are released on the market- cereal prices would start rising above baseline levels (for around 1%) as cereal area would remain constrained by the development in energy crop area. As a result, the lower price-competitiveness of EU cereals would affect both domestic consumption and exports which would decline by 0.2 % and 2.2 % respectively by 2009/10. The overall reduction in the level of cereal price support would enable to restore the balance of EU cereal markets, with stocks dropping swiftly and stabilising at approximately 27 mio t (i.e. some 10 mio t below baseline level) and no public stocks.

The projected improvement in the overall balance of the EU cereal market remains strongly conditioned by the existence of a mandatory system of land set-aside, which remains set at the 10 % reference rate. Any changes in this reference rate could significantly modify the overall picture of the cereal market as given above[22].

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[21] Note that this analysis does not take account of the latest cereal import regime negotiated with Canada and the US.
[22] In this respect, it is worth noting that a reference rate of 0 % would trigger a significant rise in EU cereal production (some 4 mio t over baseline level). In spite of higher domestic and external demand, larger availability on the EU cereal market would lead to much lower cereal prices (more than 10 % below baseline levels) and an accumulation of stocks that would develop beyond 40 mio t, of which more than 15 mio t of public stocks of barley (a 60 % rise vs. the baseline).

Table 1.10. Rye balance sheet in the EU, 2004/05 – 2009/10 (mio t) – Scenario MTR-1
(% deviation from baseline)

	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
Production	**5.3**	**5.5**	**5.5**	**5.8**	**6.1**	**6.2**
	-11.9%	-9.6%	-9.5%	-6.9%	-2.7%	-4.0%
Consumption	**6.6**	**6.4**	**5.5**	**4.7**	**4.9**	**5.0**
	65.1%	45.2%	25.8%	3.5%	11.0%	6.8%
Exports	**1.2**	**1.2**	**1.2**	**1.2**	**1.2**	**1.2**
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Ending stocks	**4.0**	**2.0**	**0.8**	**0.7**	**0.7**	**0.7**
	-45.2%	-75.0%	-90.3%	-92.1%	-92.4%	-92.7%
of which intervention stocks	**3.0**	**1.0**	**0.0**	**0.0**	**0.0**	**0.0**
	-54.9%	-85.9%	-100.0%	-100.0%	-100.0%	-100.0%

Unlike barley and maize -that would still benefit from a support price that would help to sustain their market prices- **rye** prices would drop sharply (-18 % and –14 % in 2004/05 and 2005/06) under the assumption of a progressive three-year release of rye public stocks. This fall in prices would entail a sharp reduction in production levels, which would fall by about 10 % in the short run, whereas domestic consumption would strongly increase in view of its improved price-competitiveness.

Over the medium term, the gradual release of **rye** public stocks would allow to smooth the adjustment of the sector. Thanks to market prices ranging some 2 % below baseline levels, rye production would decrease by 4 % by 2009/10, whereas rye consumption would rise by 7 %.

The cut in the cereal support price is projected to alleviate the impact of the abolition of rye intervention on the **barley market** by supporting barley's competitiveness on the EU domestic feed market. The short-term fall in barley prices would enable to sustain barley demand, whereas the decrease in barley area would remain limited (as compared to soft wheat) by some shift in production area from rye to barley.

Over the medium term, barley prices would develop some 1 % above baseline levels, with production, consumption and export levels down 1.4 %, 0.5 % and 2.2 % respectively.

Table 1.11. Barley balance sheet in the EU, 2004/05 – 2009/10 (mio t) – Scenario MTR-1
(% deviation from baseline in %)

	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
Production	**46.6**	**45.6**	**46.4**	**46.4**	**46.3**	**45.8**
	-1.0%	-3.0%	-1.6%	-1.3%	-1.5%	-1.4%
Consumption	**39.7**	**38.0**	**38.1**	**38.0**	**37.8**	**37.3**
	0.1%	-3.1%	-1.4%	-0.4%	-0.7%	-0.5%
Exports	**8.6**	**8.7**	**8.6**	**8.8**	**8.8**	**8.8**
	0.0%	-0.6%	-2.3%	-2.8%	-2.8%	-2.2%
Ending stocks	**6.5**	**5.7**	**5.7**	**5.7**	**5.6**	**5.6**
	-3.9%	-3.9%	-1.3%	-1.1%	-0.9%	-1.9%
of which intervention stocks	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

The **durum wheat sector** would display a small short-term increase in production as the prices of other competing cereals fall and the granting of the quality premium more than compensates the progressive reduction in the specific payment. As domestic (feed)

consumption would show a slight decline, exports would rise by more than 4 %. Over the medium term, the impact of the full reduction in the specific payment would be partially offset by the quality premium and a lower overshoot of the maximum guaranteed area. It should then entail a limited fall in durum wheat production, but a more pronounced fall in exports.

Table 1.12. EU durum wheat balance sheet, 2004/05 – 2009/10 (mio t) – Scenario MTR-1
(% deviation from baseline in %)

	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
Production	9.8	9.4	9.7	9.8	9.9	10.1
	0.2%	-5.6%	-3.2%	-4.4%	-3.9%	-4.1%
Consumption	9.2	9.3	9.4	9.5	9.7	9.8
	-0.5%	-0.5%	-0.3%	-0.3%	-0.3%	-0.3%
Exports	1.6	1.1	1.3	1.2	1.2	1.3
	4.2%	-32.2%	-18.6%	-25.5%	-24.3%	-24.1%
Ending stocks	0.6	0.6	0.6	0.6	0.6	0.6
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
of which intervention stocks	0.0	0.0	0.0	0.0	0.0	0.0

1.3.2.2 Rice

The reduction of around 50 % in the support price for rice should bring EU domestic prices to world market levels[23] (at around 230 $/t, regular milled indica equivalent, Thailand orig. CIF Rotterdam). Import duties would become very low or even nil for husked rice (depending on the changes in the $/EUR exchange rate). By contrast, import duties for milled rice would remain substantial.

Total EU rice production would only decline by some 12 % - in comparison with baseline levels - to 1.5 mio t in 2009/10, thus maintaining the production potential of the EU rice sector. This drop would result from a fall in areas (-9 %) and lower yields (-4 % on average). As the reduction in market prices would only be partially compensated by the granting of direct payments, the total rice area would decrease to 391 000 ha in 2009/10, i.e. below the total proposed MGA (392 800 ha).

The increase in direct payments and the fall in prices would combine to entail a marked slowdown in total productivity growth. Like for area developments, indica yields would be slightly more affected than japonica yields.

The fall of about 50 % in market prices would **boost rice consumption** that would increase by more than 10 % on average to reach 2.3 mio t in 2009/10. This represents a growth in per capita consumption of approximately 0.6 kg and some 250 000 t per year over baseline levels from 2004/05 to 2009/10.

Lower supply combined with rising demand would set the stage **for a short-term surge in net imports** that would rise to 200 000 t over baseline levels by 2005/06. However, the full implementation of the EBA agreement at the end of the period would not have a

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[23]   Japonica prices have been assumed to trade some 5% above indica prices as was the case on world markets over the most recent years.

dramatic impact on the market balance and public stocks, as total imports would be limited to slightly less than 900 000 t (as compared to 1.7 mio t under the *status quo* scenario).

Table 1.13. Total rice balance sheet in the EU, 2004/05 – 2009/10 (000 t) – Scenario MTR-1
(% deviation from baseline in %)

	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
Production	**1 409**	**1 441**	**1 459**	**1 477**	**1 496**	**1 516**
	-12.3%	-12.2%	-12.2%	-12.5%	-12.7%	-12.5%
Area (000 ha)	**375**	**381**	**384**	**386**	**388**	**391**
	-9.0%	-8.9%	-8.9%	-9.0%	-9.1%	-8.6%
Yield (t/ha)	**3.8**	**3.8**	**3.8**	**3.8**	**3.9**	**3.9**
	-3.7%	-3.6%	-3.7%	-3.8%	-3.9%	-4.3%
Consumption	**2 180**	**2 205**	**2 233**	**2 272**	**2 307**	**2 338**
	13.1%	13.3%	13.5%	13.7%	10.7%	10.7%
Exports	**29**	**20**	**24**	**30**	**32**	**21**
	-87.1%	-90.8%	-89.1%	-86.3%	-85.6%	-90.6%
Imports	**418**	**788**	**801**	**830**	**847**	**846**
	-28.3%	32.6%	32.6%	10.8%	-40.7%	-50.2%
Ending stocks	**273**	**276**	**279**	**284**	**288**	**292**
	-60.8%	-63.8%	-66.8%	-73.2%	-84.8%	-90.2%
of which intervention stocks	**0**	**0**	**0**	**0**	**0**	**0**
	-100.0%	-100.0%	-100.0%	-100.0%	-100.0%	-100.0%

Whereas total imports were projected to represent some 30 % of total EU consumption by 2008/09 before rising to 80 % under a *status quo* policy, the substantial drop in internal market prices would enable the EU market to lessen its dependency on imported rice. The import/consumption ratio would stabilise below 40 % over the whole period thanks to the greater price competitiveness of EU production and to the EU market becoming less attractive as an import market, since domestic prices would develop at world market levels.

1.3.2.3 Meat and milk production

The impact of the market measures on the animal sector would mainly take place through the projected changes in feed prices. Given the low magnitude of feed price changes, negative in the short run and positive but below or at 1 % in the later years, the meat and dairy sectors would show only nil or marginal changes in the main market variables. In the early part of the 2004-2009 period, pork and poultry production and consumption would benefit from lower feed prices and would display a limited increase of 0.1 %, whereas their producer prices would stand between 0.5 % and 1 % below baseline levels. In the latter years, higher feed prices would entail slightly higher pork and poultry prices and lower production and consumption of white meat. The impact on the beef sector would come not only from developments on feed prices, but also from competition on the demand side. Beef prices, production and consumption are projected to exhibit a similar pattern to the white meat sector, though at a more moderate pace.

1.3.3   Modulation scenario MTR-2

1.3.3.1 Arable crops

The implementation of a dynamic modulation on all payments would have a limited impact on arable crop markets when compared to the market measures (MTR-1). The progressive decline in the level of direct payments would slightly affect oilseed area –as these crops are

more sensitive than other arable crops to the level of support- to the benefit of voluntary set-aside which would develop marginally above the MTR-1 level and, to a lower extent, cereals.

Table 1.14. Land allocation in the EU, 2004/05 – 2009/10 (mio ha) – Scenario MTR-2
(% deviation from baseline in %)

	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
Total cereals	36.0	36.1	36.0	36.0	36.0	35.9
	-2.5%	-1.9%	-2.0%	-1.7%	-1.7%	-1.6%
Total oilseeds	4.5	4.5	4.5	4.5	4.5	4.6
	-0.1%	-1.1%	-0.6%	-1.8%	-2.0%	-2.4%
Voluntary set-aside	2.3	2.2	2.2	2.2	2.2	2.2
	9.1%	1.5%	2.1%	-0.3%	0.3%	-0.1%

The impact of modulation on cereal markets would be marginal when compared to the MTR-1 as shown by the table below.

Table 1.15. EU total cereals balance sheet, 2004/05 – 2009/10 (mio t) – Scenario MTR-2
(% deviation from baseline in %)

	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
Production	208.0	212.4	214.6	217.5	219.9	221.6
	-2.8%	-1.5%	-2.1%	-1.4%	-1.5%	-1.4%
Consumption	193.7	195.4	196.0	197.1	198.8	200.0
	0.1%	0.4%	-0.3%	-0.2%	-0.3%	-0.2%
Exports	29.4	29.5	29.9	30.6	31.0	31.7
	-1.8%	-1.8%	-2.5%	-2.7%	-2.5%	-2.4%
Ending stocks	29.9	27.7	26.7	26.8	27.0	27.3
	-11.8%	-17.9%	-22.7%	-23.8%	-25.0%	-25.8%
of which intervention stocks	3.0	1.0	0.0	0.0	0.0	0.0
	-54.8%	-86.1%	-100.0%	-100.0%	-100.0%	-100.0%

1.3.3.2 Rice

In a similar way, the developments on the rice market would not be significantly affected by the dynamic modulation. Only area harvested would display a small decline against the sole implementation of the market measures

Table 1.16. Total rice balance sheet in the EU, 2004/05 – 2009/10 (mio t) – Scenario MTR-2
(% deviation from baseline in %)

	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
Production	1 406	1 438	1 454	1 469	1 485	1 502
	-12.5%	-12.3%	-12.6%	-13.0%	-13.3%	-13.3%
Area (000 ha)	374	380	382	383	385	386
	-9.2%	-9.1%	-9.3%	-9.7%	-10.0%	-9.7%
Yield (t/ha)	3.8	3.8	3.8	3.8	3.9	3.9
	-3.6%	-3.6%	-3.6%	-3.6%	-3.6%	-4.0%
Consumption	2 180	2 205	2 233	2 272	2 307	2 338
	13.1%	13.3%	13.5%	13.7%	10.7%	10.7%
Imports	421	791	807	839	858	860
	-27.8%	33.1%	33.5%	11.9%	-39.9%	-49.4%
Ending stocks	273	276	279	284	288	292
	-60.8%	-63.8%	-66.8%	-73.2%	-84.8%	-90.2%

1.3.3.3 Meat and milk production

As compared to the impact of market measures mentioned in the previous section, the only noticeable impact of dynamic modulation on these sectors concerns the suckler cow activity which, in the face of the high share of direct payments in the total receipts of this activity, would show a decline in the total suckler cow herd of some 1% below baseline levels.

1.3.4   Full Mid-Term Review scenario

It should be first acknowledged that the quantitative assessment of the impact of the decoupling of direct payments is in general a difficult analytical task, and in particular with the modelling tools currently available. Thus caution is deemed necessary when analysing and interpreting the results from this quantitative analysis.

If the support to the agricultural sector becomes decoupled, producers may be expected to increasingly base their production decisions on market signals (profitability expectations), thus potentially leading to significant changes in the allocation of production. However producers' behaviour could also be influenced by other considerations, such as social inertia (arguably a short-term issue), the maintenance of some crops for agronomic purposes, the participation in agri-environmental programmes, the need to depreciate long-term investment, the eligibility to Less Favoured Area payments –which requires the continuation of production- etc, which could all be expected to mitigate the overall impact of decoupling on the farm sector.

Production may also be expected to adjust when market revenues do not cover variable cost on a structural basis (such as some crop production in marginal areas, in the beef and sheep sectors where the support system may create incentives to base production decisions on the maximisation of subsidy revenues rather than on the basis of what market prices would normally imply).

This adjustment could take several forms including:

• An adjustment in the production mix (including non-eligible production alternatives): this adjustment may be expected to be constrained between major production sectors - such animal and arable crop sectors- as the conversion of pasture land to arable land could be limited on a statutory basis. Any significant shift between COP products and fresh fruit and vegetables production may also be reasonably assumed to be limited as a major increase in land allocation towards fruit and vegetables could create major economic disturbances in these sectors;

• An adjustment in the production intensity, notably in the beef and sheep sectors;

• Abandonment of production: this alternative may be expected to be constrained by cross-compliance conditions for the receipt of the single payment (it may, in some cases, be more profitable for some producers to simply reduce their production intensity than to stop producing);

• Adjustment in the farm structure with sale or lease of all or part of the land: this last alternative does not necessarily entail a reduction in the production potential.

The present analytical work attempted to capture these elements and quantify their effect on the agricultural sector. The main impacts of the full Mid-Term Review proposals on land allocation in the EU over the medium term can be summarised as follows:

- A reduction in the area grown in cereals by around 2.5 % (or around 0.9 mio ha), with most of the impact being felt by durum wheat (-10 %) and rye (-9 %);

- A slightly higher fall in oilseeds area (approximately 3 %);

- The development of energy crops on between 0.8 and 0.9 mio ha previously allocated to a large extent to cereals;

- A decline in silage area by some 7 % resulting mainly from the decline in beef production, greater incentives to shift towards more extensive animal production methods and competition from other fodder crops area;

- An increase in voluntary set-aside (beyond the mandatory environmental set-aside) of approximately 30% (or 0.6 mio ha).

The impact of decoupling alone would thus entail a further reduction in grain cereal area of some 300 000 ha as opposed to the sole implementation of market measures and modulation. A similar pattern is found in the oilseed sector where the introduction of a single farm income payment would generate a further decline in area cropped of some 50 000 ha[24]. However, these changes may be considered as rather limited when compared to the effect of the market measures and modulation.

Table 1.17. Land allocation in the EU, 2004/05 – 2009/10 (mio ha) – Scenario MTR-3
(% deviation from baseline in %)

	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
Total cereals	**35.7**	**35.7**	**35.8**	**35.7**	**35.7**	**35.6**
	-3.3%	-3.0%	-2.7%	-2.5%	-2.4%	-2.5%
Soft wheat	**14.0**	**14.0**	**14.0**	**14.0**	**14.0**	**14.0**
	-1.4%	-0.6%	-0.9%	-0.9%	-0.6%	-1.0%
Durum wheat	**3.6**	**3.5**	**3.5**	**3.6**	**3.6**	**3.6**
	-6.4%	-9.9%	-8.6%	-9.7%	-9.7%	-9.7%
Barley	**10.1**	**9.9**	**10.1**	**9.9**	**9.9**	**9.6**
	-1.7%	-3.1%	-0.1%	-1.6%	-0.6%	-1.3%
Maize	**4.0**	**4.1**	**4.2**	**4.1**	**4.2**	**4.1**
	-3.8%	-2.2%	-2.0%	-2.2%	-1.7%	-2.4%
Rye	**1.0**	**1.0**	**1.0**	**1.1**	**1.1**	**1.1**
	-21.4%	-18.1%	-18.6%	-12.1%	-7.8%	-8.7%
Total oilseeds	**4.3**	**4.4**	**4.4**	**4.5**	**4.5**	**4.6**
	-3.6%	-2.4%	-2.6%	-3.1%	-3.3%	-2.8%
Voluntary set-aside	**3.0**	**2.9**	**2.8**	**2.8**	**2.8**	**2.8**
	38.8%	32.7%	30.5%	28.7%	27.5%	27.4%

[24] These results have to be examined in the light of the findings of a micro-economic analysis (based on simulations using the Farm Accountancy Data Network) which would show that the share of output generated from farms where market revenues would not cover the variable costs could amount to approximately 20 % in the beef sector, 30% in the sheep sector, 15 % in the cereal sector and 20 % in the oilseed sector.

In contrast, the largest impact of decoupling on the crop sector is projected to be found in the fodder production sector, notably in silage area, and in the development of voluntary set-aside (abandonment of production) which would rise by a further 600 000 ha as some land are foreseen to move out production owing to low profitability.

The overall impact on the overall cereal market would broadly follow the projected impact of the market measures:

- Total cereal production would be constrained by the development of energy crops and the rise in voluntary set-aside. It would decline by 2.0 % by 2009/10 (or 4-5 mio t), i.e. a limited further decline of 1 mio t from the impact of the market measures. Rye, durum wheat and maize would be the most affected cereals;

- Total cereal consumption would in turn decline by some 0.5 % (or 1 mio t) in the face of lower availability, higher prices and a projected reduction in feed demand from the animal sector (estimated at between 0.5 % and 1 %, due to the fall in beef production which would only be partially compensated by the slight increase in white meat production);

- Lower production and higher domestic prices would also affect the competitiveness of EU exports which would fall by approximately 3 %, whereas EU cereal imports would increase owing to the reduction in EU's border protection (linked to the cut in support price);

- Total cereal stocks would drop significantly by 25 % to stabilise at around 27 mio t, with no cereal in public stocks.

Table 1.18. Total cereal balance sheet in the EU, 2004/05 – 2009/10 (mio t) – Scenario MTR-3
(% deviation from baseline in %)

	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
Production	207.8	210.4	214.3	216.2	219.5	220.2
	-3.0%	-2.5%	-2.2%	-2.0%	-1.7%	-2.0%
Consumption	193.6	194.0	195.3	196.2	198.4	199.3
	0.0%	-0.3%	-0.6%	-0.6%	-0.5%	-0.5%
Exports	29.4	29.0	30.0	30.2	31.0	31.2
	-1.6%	-3.4%	-2.1%	-3.8%	-2.7%	-3.8%
Ending stocks	29.8	27.4	26.6	26.6	27.0	26.9
	-12.1%	-18.8%	-23.1%	-24.3%	-25.0%	-26.7%
of which intervention stocks	3.0	1.0	0.0	0.0	0.0	0.0
	-55.2%	-85.8%	-100.0%	-100.0%	-100.0%	-100.0%

The EU rye market would display the greatest improvement with a progressive restoration of market balance. Lower production volume and higher consumption –supported by lower prices- would allow in the short run to absorb the accumulated surplus of rye in public stocks by 2004 and to generate a gradual recovery in market prices close to pre-Mid-Term Review levels in the later years.

Table 1.19. Rye balance sheet in the EU, 2004/05 – 2009/10 (mio t) – Scenario MTR-3

(% deviation from baseline)

	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
Production	4.8	5.0	4.9	5.5	5.8	5.9
	-21.5%	-18.9%	-19.1%	-12.4%	-7.7%	-8.8%
Consumption	6.1	5.8	4.9	4.4	4.5	4.7
	53.3%	31.9%	12.2%	-4.0%	2.6%	0.9%
Exports	1.2	1.2	1.2	1.2	1.2	1.2
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Ending stocks	3.9	1.9	0.7	0.6	0.7	0.7
	-46.5%	-76.1%	-91.2%	-92.9%	-92.6%	-93.2%
of which intervention stocks	3.0	1.0	0.0	0.0	0.0	0.0
	-55.2%	-85.8%	-100.0%	-100.0%	-100.0%	-100.0%

The implementation of the decoupling scheme in the livestock sector –combined with a small increase in feed prices- would entail a decline in beef production, as it would favour the extensification of production systems. After a short-term increase linked to increased slaughtering, beef output would decline progressively to stand around 3 % below baseline levels by 2009 (or around 200 000 t).

The suckler cow sector would be most affected as it would appear to display the highest rate of output not covering variable costs in the beef sector (with the premium playing a major role in determining producer's behaviour). The suckler cowherd is projected to fall by 11 % by 2009, generating a 4 % decline in total cowherd.

Table 1.20. EU livestock and beef balance sheet, 2004 – 2009 (000 t) – Scenario MTR-3

(% deviation from baseline)

	2004	2005	2006	2007	2008	2009
Impact on sucker cows	-2.7%	-5.5%	-8.5%	-10.3%	-11.4%	-11.0%
Impact on total cows	-1.2%	-2.5%	-3.3%	-3.7%	-3.8%	-3.8%
Production	7 703	7 665	7 571	7 534	7 475	7 422
	0.5%	1.1%	0.0%	-1.5%	-2.5%	-2.8%
Consumption	7 485	7 523	7 455	7 427	7 397	7 397
	0.5%	1.2%	0.0%	-1.2%	-1.9%	-1.9%
Net trade	282	220	205	144	110	54
	0.0%	-0.9%	0.0%	-16.5%	-33.1%	-59.4%
Producer prices	-2.2%	-5.0%	0.2%	5.1%	6.4%	7.4%

Lower beef availability would trigger a rise in EU producer prices of some 7 % by 2009 and would result in a fall in domestic consumption of 2 % (or 150 000 t). This would in turn entail a gradual decline in EU beef net exports which would stand at around 60 % below baseline levels, i.e. 100 000 t, due mainly to a fall in EU beef exports.

It should be mentioned that, although the sheep sector has not been fully covered in our modelling exercise, it is expected to display a similar pattern to that of beef.

Table 1.21. EU pork & poultry balance sheet, 2004 – 2009 (000 t) – Scenario MTR-3

(% deviation from baseline)

	2004	2005	2006	2007	2008	2009
Pig meat						
Production	17 814	18 040	18 269	18 362	18 432	18 553
	0.0%	-0.3%	-0.2%	0.2%	0.3%	0.3%
Consumption	16 735	16 944	17 148	17 228	17 290	17 389
	-0.1%	-0.3%	-0.3%	0.2%	0.3%	0.3%
Producer prices	-1.6%	-2.9%	1.1%	3.0%	3.5%	4.5%
Poultry						
Production	9 082	9 170	9 339	9 529	9 648	9 732
	-0.2%	-0.5%	-0.2%	0.3%	0.4%	0.4%
Consumption	8 811	8 906	9 080	9 274	9 395	9 481
	-0.2%	-0.5%	-0.2%	0.3%	0.4%	0.4%
Producer prices	-0.4%	-0.7%	-0.3%	0.3%	0.1%	-0.2%

The short run impact in the pig and poultry sectors may be expected to be dominated by the effect of the fall in beef producer prices on the demand side which would more than compensate the impact of lower cereal feed prices and should maintain these two sectors under pressure. As a consequence, pig and poultry production and consumption would exhibit a slight fall ranging between 0 % and 0.5 %.

Over the medium term, the increase in beef prices and the fall in beef consumption would favour pig and poultry consumption. This demand side effect would outweigh the negative impact of higher feed cereal prices on the competitiveness of the two sectors, which would display a small expansion in production and consumption.

1.4   IMPACT ANALYSIS ON AGRICULTURAL INCOME

An analysis of the effect of the MTR proposals on agricultural income has been carried out based on the findings of the market impacts presented above and on the economic accounts for agriculture, which constitute the statistical basis of the income measure. Whereas the medium-term changes in the price, volume and subsidy components of the arable crop and most animal sectors have been established in line with the market impact projections, those of the other agricultural sectors –mainly fruit, vegetables, wine and olive oil- have been assumed to follow historical trends.

The full Mid-Term Review proposals are projected to generate:

- A rather favourable impact on the development of agricultural income. The implementation of the market proposals, modulation and decoupling measures would lead to stagnation in the overall income of the agricultural sector against the continuation of current policy. However, as the savings generated each year by the dynamic modulation would come back –for approximately 80 %- to the agricultural sector through the rural development measures (estimated at more than 3 bio EUR by 2009), the overall impact on the income situation would become positive with a rise estimated at 1.7 % by 2009 (cf. table 1.22).

Table 1.22. EU agricultural income in 2009 – Scenario MTR-3

(deviation from baseline in %)

	2001	*Status Quo* scenario	MTR - 3 scenario
Agricultural Output	100	105	98
			-6.6%
Intermediate Consumption	100	109	109
			-0.2%
Gross value added	100	101	88
			-12.7%
Other subsidies on production	100	111	288
			160.1%
Factor income	100	99	100
			1.7%
Farm Income / Work Unit*	100	122	124
			1.7%

* Assuming a constant 2.8 % reduction in agricultural labour input

- A radical change in the structure of agricultural income: if the bulk of direct payments are currently accounted for as subsidies on products, i.e. part of the value of output, they will be recorded as income payments when fully decoupled in the item "other subsidies on production", thus leading to a fall in the value of output and in the gross value added at basic price[25] of the agricultural sector. However, this changing composition of support to the farm sector should remain income-neutral. As shown in table 1.22, the value of output and gross value added would fall in nominal terms by some 7 % and 13 % respectively, whereas the level of other subsidies would increase by 160 % thanks to the reclassification of direct payments as income payments.

The value of input costs would display rather limited developments as, after a short-term fall, feed prices would increase in the later years, thus offsetting most of the reduction in the overall expenditure triggered by the small decrease in the production volumes of beef and arable crops. The major increase in "other subsidies" results from the reclassification of the current direct payments and from the overall effect of the proposed increase in arable crop direct payments and the estimated impact of the dynamic modulation system.

The MTR proposals would have diverging income impacts across the various commodity sectors and regions. Most favourable developments are expected to be found in the animal sector. This concerns notably the beef and pork sectors where the projected price increases are foreseen to trigger a significant rise in market revenues, which should more than compensate the decline in production volumes. In contrast, income development in the cereal sector may reasonably be expected to be affected by the reduction in the production potential and by the implementation of the dynamic modulation.

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[25]   The basic price is the price used to value output in the national accounts. It corresponds to the producer price –the amount received by the producer from the purchaser for a product- minus any tax on products, and plus any subsidy on products (such as the current direct payments).

1.5   CONCLUSIONS

The MTR proposals represent a significant change in EU agricultural policy by promoting further more competitive, market-oriented and sustainable agriculture. Whereas the overall level of support to the farm sector would change little, the changing composition of policy instruments towards decoupled, non-commodity specific payments should lead to an improved allocation of resources and generate greater income transfer efficiency.

When presented in reference to the implementation of Agenda 2000, the results from the impact analysis on agricultural markets and income show that the MTR proposals would provide greater flexibility and market orientation in the producer's management decisions while guaranteeing income stability to the agricultural sector, as they are projected to significantly contribute to:

- A reduction in the production level in several commodity sectors where production decisions are strongly influenced by the level of support and by the coupled policy instruments in place. This concerns in particular the beef, sheep and durum wheat sectors. As a result, net exports of many farm commodities from the EU would decline;

- An improvement in the competitiveness of the cereal sector as lower support price levels should increase the adjustment capacity of the sector to future developments and opportunities on both the internal and external markets. If some of the reduction in EU cereal production is expected to result from decoupling, most would be generated by the new provisions governing the set-aside regime and the support granted to energy crops;

- A significant improvement in the structural imbalance of the rye and rice sectors.

- A small increase in farm income as compared to the baseline: the MTR proposals would also display a rather favourable impact on the income of the agricultural sector. The reduction in the level of agricultural production and the implementation of dynamic modulation are expected to be broadly compensated for by the resulting price rises and the increase in the level of aids in the arable crops and rice sectors. However, given that around 80 % of the savings from modulation can be assumed to return to the agricultural sector through the second pillar, the overall income would rise by some 1.7 % by 2009.

Annex

A.   Impact of Market measures (scenario MTR-1)

Table A.1   Total wheat balance sheet in the EU, 2004/05 – 2009/10 (mio t) – MTR-1

(deviation from baseline in %)

	2004/05f	2005/06f	2006/07f	2007/08f	2008/09f	2009/10f
Production	105.3	107.6	108.8	110.5	112.0	113.3
	-2.9%	-1.5%	-2.2%	-1.6%	-1.8%	-1.6%
Consumption	95.3	96.8	97.8	98.7	99.7	100.5
	-1.3%	-0.1%	-0.6%	-0.1%	-0.4%	-0.2%
Exports	17.0	17.0	17.4	18.1	18.5	19.1
	-2.5%	-2.9%	-3.5%	-2.8%	-2.5%	-2.7%
Ending stocks	12.1	12.3	12.4	12.6	12.7	12.8
	-1.3%	0.1%	-0.7%	-0.4%	-0.3%	-0.3%
of which intervention stocks	0.0	0.0	0.0	0.0	0.0	0.0

Table A.2   Total EU coarse grain balance sheet, 2004/05 – 2009/10 (mio t) – MTR-1

(deviation from baseline in %)

	2004/05f	2005/06f	2006/07f	2007/08f	2008/09f	2009/10f
Production	103.0	104.8	105.8	107.1	108.1	108.4
	-2.5%	-1.5%	-1.9%	-1.1%	-1.1%	-1.1%
Consumption	98.5	98.7	98.3	98.4	99.2	99.6
	1.5%	1.0%	0.1%	-0.2%	-0.1%	-0.2%
Exports	12.4	12.5	12.4	12.6	12.6	12.6
	0.0%	-0.4%	-1.6%	-1.9%	-1.9%	-1.6%
Ending stocks	17.9	15.3	14.2	14.3	14.3	14.4
	-17.2%	-28.2%	-35.3%	-36.8%	-38.5%	-40.0%
of which intervention stocks	3.0	1.0	0.0	0.0	0.0	0.0
	-54.9%	-85.9%	-100.0%	-100.0%	-100.0%	-100.0%

B.   Impact of Market measures and Modulation (scenario MTR-2)

Table B.1   Total wheat balance sheet in the EU, 2004/05 – 2009/10 (mio t) – MTR-2

(% deviation from baseline in %)

	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
Production	105.1	107.6	108.7	110.3	111.7	113.0
	-3.2%	-1.5%	-2.3%	-1.8%	-2.0%	-1.9%
Consumption	95.1	96.7	97.7	98.6	99.5	100.2
	-1.4%	-0.2%	-0.7%	-0.3%	-0.6%	-0.4%
Exports	16.9	17.0	17.4	18.0	18.5	19.1
	-3.1%	-2.9%	-3.3%	-3.1%	-2.5%	-2.7%
Ending stocks	12.1	12.4	12.4	12.5	12.6	12.8
	-1.6%	0.2%	-0.8%	-0.6%	-0.6%	-0.3%
of which intervention stocks	0.0	0.0	0.0	0.0	0.0	0.0

Table B.2   Total EU coarse grains balance sheet, 2004/05 – 2009/10 (mio t) – MTR-2

(% deviation from baseline in %)

	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
Production	**103.0**	**104.8**	**105.9**	**107.2**	**108.1**	**108.6**
	-2.5%	-1.5%	-1.8%	-1.0%	-1.1%	-0.8%
Consumption	**98.6**	**98.6**	**98.3**	**98.5**	**99.3**	**99.8**
	1.6%	0.9%	0.1%	-0.1%	-0.1%	0.1%
Exports	**12.4**	**12.5**	**12.5**	**12.6**	**12.5**	**12.6**
	0.0%	-0.4%	-1.4%	-2.1%	-2.3%	-1.9%
Ending stocks	**17.8**	**15.3**	**14.3**	**14.2**	**14.4**	**14.5**
	-17.6%	-28.3%	-35.2%	-36.8%	-38.2%	-39.4%
of which intervention stocks	**3.0**	**1.0**	**0.0**	**0.0**	**0.0**	**0.0**
	-54.8%	-86.1%	-100.0%	-100.0%	-100.0%	-100.0%

C.   Impact of the full Mid-Term Review (scenario MTR-3)

Table C.1   Total wheat balance sheet in the EU, 2004/05 – 2009/10 (mio t) – MTR-3

(% deviation from baseline in %)

	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
Production	**106.5**	**107.6**	**109.4**	**110.4**	**112.4**	**113.1**
	-1.8%	-1.5%	-1.7%	-1.7%	-1.4%	-1.8%
Consumption	**96.3**	**97.3**	**98.3**	**99.1**	**100.5**	**100.8**
	-0.2%	0.4%	0.0%	0.2%	0.4%	0.1%
Exports	**17.0**	**16.7**	**17.3**	**17.7**	**18.1**	**18.7**
	-2.8%	-5.1%	-4.0%	-4.9%	-4.6%	-4.9%
Ending stocks	**12.3**	**12.4**	**12.5**	**12.6**	**12.8**	**12.8**
	0.0%	0.3%	0.1%	-0.1%	0.5%	-0.1%
of which intervention stocks	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

Table C.2   Total EU coarse grains balance sheet, 2004/05 – 2009/10 (mio t) – MTR-3

(% deviation from baseline in %)

	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
Production	**101.3**	**102.7**	**104.9**	**105.8**	**107.1**	**107.1**
	-4.1%	-3.4%	-2.7%	-2.3%	-2.0%	-2.2%
Consumption	**97.3**	**96.7**	**97.0**	**97.1**	**97.9**	**98.5**
	0.2%	-1.0%	-1.2%	-1.5%	-1.5%	-1.2%
Exports	**12.4**	**12.4**	**12.7**	**12.5**	**12.8**	**12.6**
	0.0%	-1.2%	0.8%	-2.3%	0.0%	-2.2%
Ending stocks	**17.5**	**15.0**	**14.0**	**14.0**	**14.2**	**14.2**
	-18.9%	-29.9%	-36.2%	-37.8%	-38.9%	-40.9%
of which intervention stocks	**3.0**	**1.0**	**0.0**	**0.0**	**0.0**	**0.0**
	-55.2%	-85.8%	-100.0%	-100.0%	-100.0%	-100.0%

IMPACT ASSESSMENT

OF THE MID-TERM REVIEW

PROPOSALS

FOR AGRICULTURAL MARKETS

AND REVENUES

IN THE EU-15 AND IN THE EU-25

USING THE ESIM MODEL

DG Agriculture

European Commission

EXECUTIVE SUMMARY

This chapter presents the main results of the impact analysis of the Midterm Review for agricultural markets and revenues in the EU-15 and in the EU-25. **The impact analysis on the EU-25 takes into account the specific conditions of entry for the new Member States as proposed in the last Common Positions of the EU before the agreement of Copenhagen.** The decisions of the Copenhagen summit might alter some of the results in respect to the top-up possibilities for direct payments as well as for the level of milk produced. However, the impact assessment of the different scenarios in comparison with the reference scenario (i.e. the continuation of Agenda 2000 policies) should not be affected significantly.

a) The **"Market"** scenarios simulate the effects of the proposals for market measures and set aside for the EU-15 as well as for the EU-25. Land is set aside on a non-rotational, long-term basis related to historical references (the equivalent resulting from 10% set aside obligation). Contrary to the current regulations energy crops are not allowed to be grown on this area.

b) The scenario "**Modul**" assesses the MTR proposals on market measures and modulation for the EU-15 and the EU-25. For accession countries it is assumed that modulation would not be implemented during the 10 years phasing-in period. This scenario identifies the market effects of modulation with coupled payments: *It is assumed that the direct payments would be coupled to production as currently foreseen in the CAP. In a decoupled system, i.e. where the level of direct payments would not affect the production decisions of farmers, modulation would not affect production.*

c) Market + dec. simulates market measures and decoupling of direct payments (COP, beef, milk) on production and agricultural markets in the EU-15 and the EU-25. In this scenario direct payments do not affect the decisions of farmers. In terms of market effect this scenario could be regarded as the full MTR proposal scenario, because modulation would have no effects on production once direct payments were decoupled.

Agenda 2000 continuing (baseline)….

Although the development of agricultural markets in the EU-15 appears to be generally positive, it is accompanied by mounting structural surpluses for rye declining prices for beef. The income situation develops quite favourably overall.

In the EU-25, the CAP would improve the situation of agriculture in the new Member States compared to the situation without membership and under domestic policies. The CAP in combination with the Single Market provides stable and on average higher prices than domestic policies of the Accession Countries can sustain and secure in terms of WTO and budget for the years to come.

The agricultural prospects of the new Member States develop, therefore, more positively after accession than without accession. Agricultural production after accession modestly expands as a response to high and stable prices and good perspectives on the single market. Compared to the EU-15, perspectives in the EU-25 would not be that different.

The Effects of the Market Proposals…..

The proposed MTR measures on EU-15 markets would reduce overall cereal production in 2006 from 218 mio t in **baseline** to 210.8 mio t in **market**. The proposed MTR measures, particularly the 10% environmental set aside obligation would restrict the cereal supply.

Rye prices in the EU-15 would be significantly lower, but structural surpluses would disappear. Barley prices would be between 95 and 100 EUR/t. Wheat prices are projected to stay above current intervention price levels. The MTR proposals on markets would have some slight positive side effects for pork and poultry production, because feed grains would become less expensive.

In the EU-25 similar trends would appear though the structural deficits of rye could not be reduced after enlargement. This is due to the fact that coupled direct payments would attract the conversion of more arable area in the new Member States into cereals and partly also into rye area. Prices for rye would be therefore lower in the EU-25 than in the EU-15. Exports would reach more than 1 mio. t, the maximum which could be traded on world rye markets in normal years.

Modulation would only have slight effects on markets….

In the EU-5, the relative small impact of modulation on the use of agricultural area would imply only a relatively small effect on the production of cereals. Modulation would put emphasis on the trend to higher yielding crops such as soft wheat and maize, which explains the 0.9 mio. t. higher production than without modulation. At the same time domestic use, particularly feed use, would increase due to favourable price developments for feed grains. From 2006, however, the growth of domestic use would be smaller than the growth of production, i.e. marketable surplus would be higher than in the market scenario.

Modulation would have a larger effect on beef production in the EU-15 especially after 2009, because premiums make up a significant part of revenues of production. And the beef premiums could be considered as being more coupled to production than the area payments. Production therefore would react negative to the gradual decline of the premiums. In 2006 production would be about 0.2 mio. t. smaller than in the market scenario and the declining production would reduce the marketable surplus of beef in the projected years. However, prices would appear to be slightly higher than in the **"market"** scenario and in the "**baseline"**.

Until 2013 - as long as the direct payments would be phased in - it is assumed that direct payments would not be modulated in the new Member States. Therefore, **modulation would have no direct effect on production in the new Member States.** The only effect, which could influence production and domestic use in the new Member States, would be spillover effects from markets of the old Member States. Since, however, the projected effects would be mostly small in the old Member States, the projected effects are marginal for the new Member States.

The effects of decoupling…..

reduce the area of cereals compared to the **"market**" scenario. Particularly the less competitive cereals such as rye and hard wheat and partly also barley would be affected. Oilseed area would further increase by 200 000 ha, and set-aside would increase by 460 000 ha.

Decoupling would be particularly positive for the beef sector in the EU-15. Although production would drop by 5.7% compared to the baseline, prices would increase by 6.7%. The negative effect of decoupling on beef supply, therefore, would be offset by the relatively larger increase of prices leading to a small positive overall income effect.

Decoupling in the EU-25 would produce similar trends than in the EU-15. However, decoupling would lead in the new Member States to a different production structure. In the "**market"** scenarios farmers would produce – and invest into new capacities of – those products which is subject to direct payments. This wrong allocation of scarce resources – especially capital – would be avoided in the scenario with decoupled payments.

For rye, decoupling would lead to an improved situation compared to non-decoupling in the EU-25 (see "**market**" and **"modulation"** scenarios). Decoupling would lead to less area flow from other crops and fallow land into arable land in the new Member States. Therefore, less rye would be produced but also more rye from the new Member States would find markets in the old Member States. Prices would be higher than without decoupling. This shows that with decoupling production would evolve better according to the relative competitiveness of markets in the different Member States.

In the EU-15 in the short-term the impact of market measures on agricultural income, measured in market revenues including and excluding direct payments, is slightly positive. However, the **"market"** scenario indicates that this income advantage gradually declines and would turn to be negative after 2008 compared to 2002. In 2009 the sector income is 2.8% lower than in 2002. One of the prime reasons for this development seem to be the income situation for cereals which appears to be squeezed by the permanent set aside obligation of 10%.

Modulation would produce a positive income effect in the EU-15 compared to the "market" scenario, if the rural development measures are taken into account.

With decoupling income exhibits a short-term decline in the EU-15. However, the more sustainable production in the medium term produces more income than in the scenarios without decoupling. In 2009 the income in the EU-15 is **4.2% higher** than in the **"market"** scenario without decoupling and 0.6% lower than in "baseline". **Taking into account the effects of rural development, farm income would be 0.3% higher than Agenda 2000 policies.**

Similar trends would be visible in the scenarios for the EU-25, which show that each scenario produces significant income gains for the acceding countries.

2.1   INTRODUCTION

This chapter presents the main results of the impact analysis of the Midterm Review for agricultural markets and revenues in the EU-15 and in the EU-25. The assessment simulates the proposals the European Commission made in the Communication presented in July 2002 as well as the entry conditions for the new Member States stated in the latest Common Position of the European Union before the European Council of Copenhagen.

The impact analysis is carried out on the basis of the ESIM model (European Simulation Model) for the EU-15 alone as well as for the EU-25, i.e. explicitly including the 8 CEECs foreseen to become new Member States on May 1, 2004[26]. So far Cyprus and Malta are not covered by ESIM. However, this should not change the magnitude of the main variables examined in this report.

2.2   POLICY SCENARIOS AND HYPOTHESES

Baseline simulates the continuation of Agenda 2000 policies. The key economic assumptions on the development of exchange rates and world market prices are in line with those retained for the medium-term projections published early December 2002 in the "Prospects for agricultural markets 2002-2009 – update for EU markets.

Apart from the standard assumptions the Less Favoured Area (LFA) payments have been added. Due to the regional nature of LFA payments and the concentration of particular sectors such as milk and beef production in eligible areas, a certain implication for production of these commodities could be expected.[27]

The main assumptions for the impact analyses are:

- all **direct payments** for COP area, beef cattle, and milk are totally decoupled and given to the farmers on an individual farm basis for their utilised agricultural area, fruits, vegetables, and wine. The payment does not include an obligation to produce but an obligation for maintaining the area in good conditions. For methodological reasons a differentiation farms has not been taken into account.

- Models like ESIM simulate with their mathematical equations the decision making of farmers. With decoupling the level of direct payments does not play a role for farmers to take production decisions. To model decoupling, direct payments have therefore been completely removed from the relevant behavioural equations.

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[26]   These countries are the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, and Slovenia.

[27]   The impact, however, is relatively small for the sector on average due to the low average levels of payments (e.g. 15 EUR/t for beef on the sector average). It could however be expected that it would have a larger regional implication, where payments reach levels of about 200 EUR/ha including national co-financing. This regional aspect could not be included into the simulations.

- The change of the **set aside** obligation from a rotational concept to a fixed long-term set aside based on historical areas. For the new Member States the area equivalent to 10% set aside obligation in 2004 has been put aside in the simulations.

- Non-food production is not allowed on the set aside land.

- The set aside area in 2002 of 3.95 mio ha is permanently removed from cropping in all scenarios except for baseline.

- The decoupled payment applies also to set aside cropland (obligatory and voluntary), for which the average COP payment of 290 EUR/ha under the current system decreases to the average hectare premium of 221 EUR/ha under the new system.

- The introduction of a **targeted payment for energy plants (carbon credits)** of 45 EUR/ha for a maximum of 1.5 mio ha.

- The changes in the intervention system for cereals:

  - The intervention prices for cereals is lowered by further 6% from the present level of 101.31 EUR/t to 95.35 EUR/t, and the abolition of monthly increments of intervention prices.

  - The removal of the intervention price system and public intervention for rye. However, for the development of the rye markets in the medium term it is important to consider the way of reducing the large accumulated stocks of 7.7 mio t. In these simulations it has been assumed that these stocks would be reduced via exports to third markets. Therefore, no further export refunds would be used to support current rye production.

- The impact analysis on the **EU-25 takes into account the specific conditions of entry for the new Member States** as proposed in the last Common Positions of the EU before the agreement of Copenhagen. The results of the Copenhagen summit might alter some of the results in respect to the top-up possibilities for direct payments as well as for the level of milk produced. However, the simulation should sufficiently rank the different variables among the scenarios.

Three main scenarios have been simulated in order to analyse the impact of each of the main proposals of the MTR in respect to the EU-15 and the EU-25. The explicit treatment of the EU-15 alone is meant to allow for a comparison with the analyses of the EU-25 in order to see the different developments in old and new Member States after 2004.

a) The **"Market"** scenarios simulate the effects of the proposals for market measures and set aside for the EU-15 as well as for the EU-25. Land is set aside on a non-rotational, long-term basis related to historical references (the equivalent resulting from 10% set aside obligation). Contrary to the current regulations energy crops are not allowed to be grown on this area.

b) The scenario "**Modul"** assesses the MTR proposals on market measures and modulation for the EU-15 and the EU-25. For accession countries it is assumed that modulation would not be implemented during the 10 years phasing-in period. This

scenario identifies the market effects of modulation with coupled payments: It is assumed that the direct payments would be coupled to production as currently foreseen in the CAP. In a decoupled system, i.e. where the level of direct payments would not affect the production decisions of farmers, modulation would not affect production.

c) Market + dec. simulates market measures and decoupling of direct payments (COP, beef, milk) on production and agricultural markets in the EU-15 and the EU-25. In this scenario direct payments do not affect the decisions of farmers. This scenario aims at identifying the effects of decoupling in comparison to the other elements of the MTR proposal. In terms of market effect this scenario could be regarded as the full MTR proposal scenario, because modulation would have no effects on production once direct payments were decoupled.

2.3   METHODOLOGY

The sector model ESIM, which is described in detail in European Commission (2002a) and Münch (2002), serves as a tool for the analysis. It is a price driven, world, multi-country, non-linear agricultural sector model, which models agricultural policies in great detail. Though originally designed to analyse the impact of CEEC-EU accession, the model has been further developed and updated to analyse the effects of instruments proposed in the MTR. Especially the model covers the aspect of non-food oilseed production, silage maize production in respect to changes of cattle herds, the effects of LFA payments on production, voluntary set aside, and decoupling. The model is solved for 2006/07, 2007/08, and 2009/10.

The likely income effects are measured in changes of market revenues between 2002 and 2006, 2007, and 2009. The **baseline** scenarios are used as reference for the EU-15 and for the EU-25.

2.4   IMPACT ANALYSIS ON AGRICULTURAL MARKETS

The continuation of current policies and its effects on the EU-15…..

The expected developments under Agenda 2000 policies are simulated in "**baseline**" and some general trends are identified. This section aims at describing the general underlying developments until 2009. The "**baseline**" scenario serves as reference for the assessment of effects of the MTR proposals.

Oilseed prices are expected to become more favourable relative to coarse grains and partly also to soft wheat prices of standard European quality. Oilseed area, in particular that for rapeseed, is expected to expand by 700 000 ha until 2006. This figure includes non-food oilseeds as well. Since market prospects of these crops depend mainly on the relative competitiveness of biofuel compared to normal fuel, it is assumed that tax policies in Member States will continue as presently defined.

The situation of surpluses in the cereal sector would develop positively for wheat as world markets carry largely the developments. Wheat prices therefore are expected to stay well above the intervention price level of 101.31 EUR/t. These developments take

into account the substantial imports of wheat at competitive prices and qualities from the black sea region.

Table 2.1. The development of area use in the EU-15 in baseline (mio ha)

	Baseline			
	2002	2006	2007	2009
cereals	37.24	36.65	36.62	37.38
wheat	17.80	17.93	17.99	18.57
coarse grain	19.44	18.72	18.64	18.80
oilseeds	3.90	4.60	4.60	4.19
non-food	0.84	0.86	0.86	0.84
soybeans	0.22	0.30	0.30	0.24
rapeseed	2.05	2.40	2.40	2.22
sunseed	1.63	1.90	1.90	1.74
set aside	5.65	5.90	5.93	5.97
of which regular	3.95	4.06	4.09	4.14
of which non-food oilseeds	0.84	0.86	0.86	0.84
other	1.70	1.84	1.84	1.84

Table 2.2. Baseline, EU-15 market balance of wheat* (mio t)

Wheat	Baseline			
	2002	2006	2007	2009
area	17.8	17.9	18.0	18.6
yield (t/ha)	6.0	6.2	6.3	6.1
production	106.1	110.6	112.7	113.7
domestic use	94.4	96.6	98.2	98.1
feed use	43.8	44.5	45.5	44.8
marketable surplus	11.8	14.0	14.6	15.5
EUR/t	112.4	116.4	116.3	116.1

(*Including durum wheat)

The competitive situation for barley would depend largely on the level of exchange rates of the Euro against the USD. In the baseline prices would be at intervention price level suggesting that barley might get under pressure in the medium term with continuous exports marketable surpluses of 7 to 9 mio t.

The other important cereal with potentially increasing market imbalances would be rye, where marketable surpluses accumulate relatively quickly over the medium term to levels of about 9 mio t. This poses several problems as the world market for rye trades annually about 1 mio t. Therefore, the main market outlet for rye in the EU-15 would be intervention storage.

Table 2.3. Baseline, EU-15 market balance of barley (mio t)

| Barley | Baseline | | | |
	2002	2006	2007	2009
area	10.6	10.1	9.9	10.2
yield (t/ha)	4.5	4.6	4.7	4.6
production	48.3	46.7	46.3	46.4
domestic use	40.4	40.3	38.2	37.5
feed use	30.4	30.2	28.1	27.4
marketable surplus	7.9	6.4	8.1	9.0
EUR/t	101.3	101.3	101.3	101.3

Table 2.4. Baseline, EU-15 market balance for rye (mio t)

| Rye | Baseline | | | |
	2002	2006	2007	2009
area	1.1	1.3	1.3	1.3
yield (t/ha)	4.7	5.1	5.2	5.6
production	5.4	6.4	6.6	7.0
domestic use	3.5	3.8	4.0	3.9
feed use	1.7	1.9	2.1	2.1
marketable surplus	1.9	2.6	2.6	3.1
EUR/t	101.3	101.3	101.3	101.3

Prospects for beef markets would become more favourable after emerging from the follow up of FMD and BSE. Domestic consumption would recover and increase to 7.6 mio. t in 2009. Moreover, stable export possibilities are assumed to open up. This positive market stabilisation would be accompanied by constantly decreasing market prices of about 300 EUR/t between 2002 and 2009, because beef would be still regarded by consumers as relatively inferior compared to poultry and partly pork.

Milk production would not change, though prices for SMP and butter are reduced beginning in 2006 under Agenda 2000 policies. From a sector point of view this finding suggests quite some room between milk prices and the relatively low (marginal) production costs of milk.

Table 2.5. Baseline, EU-15 market balance for beef (mio t)

Beef	Baseline			
	2002	2006	2007	2009
production	7.6	7.7	7.8	7.8
domestic use	7.4	7.4	7.5	7.6
marketable surplus	0.17	0.25	0.25	0.25
EUR/t	2 666.9	2 483.6	2 439.8	2 354.4

For pork production the development would appear mildly positive for producers and consumers alike leading to an expansion of production from 17.9 mio t in 2002 to 18.6 mio t. in 2009.

Table 2.6. Baseline, EU-15 market balance of pork (mio t)

Pork	Baseline			
	2002	2006	2007	2009
production	17.9	18.6	18.6	18.6
domestic use	16.8	17.4	17.6	17.5
marketable surplus	1.15	1.17	1.17	1.17
EUR/t	1 415.5	1 427.3	1 419.9	1 437.2

The EU-15 could develop to a slight net-importer of poultry due to imports of mainly Brazilian poultry at very competitive prices. The developments of these imports have assumed to be stabilised over the projected period. Production is expected to expand, but less optimistically than without these imports by 400 000t until 2009.

Table 2.7. Baseline, EU-15 market balance poultry (mio t)

Poultry	Baseline			
	2002	2006	2007	2009
production	9.1	9.4	9.4	9.5
domestic use	9.0	9.4	9.4	9.5
marketable surplus	0.06	-0.04	-0.04	-0.04
EUR/t	1 319.6	1 325.9	1 328.7	1 338.4

…and on the EU-25….

With accession of 10 new Member States (Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, and Slovenia) in 2004, relatively dynamic market economies with 75 mio consumers will become part of the European Union.

Opportunities on the single market will open up for the agriculture and food industries in the new as well as in the old Member States.

From a sector perspective, the CAP would improve the situation of agriculture in the new Member States compared to the situation without membership and under domestic policies. The CAP in combination with the Single Market provides stable and on average higher prices than domestic policies of the Accession Countries can sustain and secure in terms of WTO and budget for the years to come.

The agricultural prospects of the new Member States develop, therefore, more positively after accession than without accession. Agricultural production after accession modestly expands as a response to high and stable prices and good perspectives on the single market.

The new Member States add about 38 mio. ha of Utilised Agricultural Area to the 130 mio. ha of the old Member States representing an increase of 30%. Agricultural production of the EU-25 would be moderately larger as in the EU-15 because of lower intensities of production in the new Member States. The EU-25 would produce in 2006 about 30% more cereals with 42% more cereal area, 25% more oilseeds with 37% more oilseed area (without non-food production), 10% more beef, 18% more pork, and 27% more poultry than the present EU-15. At the same time domestic use of cereals increases by 23%, of oilseeds by 6%, of beef by 2.5%, of pork by 22%, of poultry by 12%.

The phasing-in of direct payments, even when considering the topping up possibility to increase payments to 40%, leads to a slower inflow of additional area from fodder crops, potatoes and fallow land and would be balanced in the first years by set aside, and slows the conversion of land into arable and particularly into cereal and oilseed area. The simulations suggest that set-aside has only a very limited supply control effect in most of the new Member States.

In the new Member States, production of cereals would increase from 57.6 mio. t in 2002 to 61.5 mio. t in 2006. This demonstrates the positive but moderate effects of the CAP on cereal production in the new Member States. The EU-25 would produce 282 mio. t. With enlargement the new market dynamics would also increase cereal production of 2 mio. t in the old Member States (220 mio. t with enlargement compared to 218 mio. t without enlargement).

The building up of beef herds in the new Member States would take place at a slower pace than with 100% direct payments. Market prospects indicate that beef production in the old as well as in the new Member States would remain rather stable. The new Member States would just add 10% more production and equally 10% more consumption to the EU-15. Accession therefore, would lead only to a decline of average EU prices of about 100EUR/t. Agenda 2000 policies give the beef market enough price flexibility such that no structural surpluses could be expected.

Accession and the effects of the single markets would lead to a redirection of trade according to the relative competitiveness of the Member States. One of the prime shifts of trade is concerning cereals, pork, and poultry. New data seems to suggest that the new Member States have gained increasing competitiveness in the area of poultry production

Table 2.8. Baseline, EU-25 balance of cereals (mio t)

Cereals	Baseline 2002	2006	2007	2009
area				
EU-15	37.2	36.6	36.6	37.0
Laeken-10	16.0	15.9	15.9	16.2
EU-25	53.3	52.6	52.6	53.2
yield				
EU-15	5.7	6.0	6.1	6.2
Laeken-10	3.6	3.9	3.9	4.0
EU-25	5.1	5.4	5.4	5.5
production				
EU-15	213.7	220.2	223.9	228.5
Laeken-10	57.6	61.5	61.5	64.1
EU-25	271.3	281.7	285.4	292.6
domestic use				
EU-15	191.1	195.8	196.8	199.9
Laeken-10	50.9	54.8	54.8	56.4
EU-25	241.9	250.6	251.6	256.3
feed use				
EU-15	119.3	122.1	122.4	124.3
Laeken-10	33.6	36.6	36.6	37.4
EU-25	152.8	158.7	159.0	161.7
marketable surplus				
EU-15	22.7	24.3	27.0	28.5
Laeken-10	6.7	6.8	6.8	7.8
EU-25	29.4	31.1	33.8	36.3

Table 2.9. Baseline, EU-25 balance of beef (mio t)

Beef	Baseline 2002	2006	2007	2009
production				
EU-15	7.6	7.7	7.8	7.8
Laeken-10	0.7	0.8	0.8	0.7
EU-25	8.3	8.5	8.5	8.6
domestic use				
EU-15	7.4	7.5	7.5	7.6
Laeken-10	0.7	0.7	0.7	0.7
EU-25	8.1	8.1	8.2	8.3
marketable surplus				
EU-15	0.2	0.3	0.3	0.3
Laeken-10	0	0.1	0.1	0
EU-25	0.2	0.3	0.3	0.3
EUR/t	2 666.9	2 383.0	2 348.9	2 306.9

mainly due to foreign direct investments into production and processing. It seems that upon enlargement an increasing part of poultry production in the new Member States (up to 900 000t) would be directed to the old Member States benefiting from a comparative advantage. On the other hand, a large part of the pork production in the new Member States would have a comparative disadvantage in respect to quality, i.e. lean meat

content, and feed costs. Here the simulations suggest that the old Member States might trade 700 000 t to 900 000 t of pork to the new Member States.

Table 2.10. Baseline, EU-25 market balance for pork (mio t)

Pork		Baseline 2002	2006	2007	2009
production					
	EU-15	17.9	19.7	20.0	20.4
	Laeken-10	3.5	3.5	3.5	3.7
	EU-25	21.4	23.3	23.5	24.1
domestic use					
	EU-15	16.8	18.6	17.2	18.4
	Laeken-10	3.5	4.2	4.2	4.4
	EU-25	20.3	22.8	21.4	22.8
marketable surplus					
	EU-15	1.1	1.2	2.7	2.0
	Laeken-10	0.0	-0.7	-0.7	-0.8
	EU-25	1.2	0.5	2.1	1.2
EUR/t		1 415.5	1 245.7	1 238.7	1 226.9

Table 2.11. Baseline, EU-25 market balance for poultry (mio t)

Poultry		Baseline 2002	2006	2007	2009
production					
	EU-15	9.1	8.5	8.6	8.8
	Laeken-10	1.7	2.3	2.3	2.3
	EU-25	10.8	10.8	10.9	11.0
domestic use					
	EU-15	9.0	9.4	9.4	9.7
	Laeken-10	1.3	1.2	1.2	1.2
	EU-25	10.3	10.6	10.5	10.9
marketable surplus					
	EU-15	0.1	-0.9	-0.8	-0.9
	Laeken-10	0.4	1.1	1.1	1.1
	EU-25	0.5	0.2	0.4	0.2
EUR/t		1 319.6	1 275.8	1 275.7	1 276.2

As a result of these trade shifts the feed use of cereals remains largely balanced between the new and the old Member States. Therefore, the largest part of the additional production would be consumed in the EU-25 itself and only a limited amount would have to be additionally exported.

From a market perspective, only few areas would remain where enlargement would add to existing problems. One such areas would be rye production, for which marketable

surplus would increase from 2.6 mio t for the EU-15 to 3.6 mio t for the EU-25, making intervention storage an even more important marketing instrument.

The Impact of the MTR proposals on markets and set-aside in the EU-15….

The simulations presented in this part only take into account the proposals on market measures stated in the communication of the European Commission from July. All other elements like modulation and decoupling are added in other scenarios.

The MTR proposals foresee a lowering of intervention prices for cereals, dropping the monthly increments, and changing the rules for set aside. Moreover, substantial changes are also proposed for durum wheat and rice.

In total, the MTR proposal on markets would decrease cereal area in 2006 by 0.75 mio ha compared to the baseline. The oilseed area including non-food oilseeds would remain fairly stable and voluntary set aside would increase from 1.84 mio ha in the baseline to roughly 1.96 mio ha in 2006.

Table 2.12. Market, EU-15 area use (mio ha)

	2002	**2006**			**2007**			**2009**		
	Baseline	Baseline	market	% dev. baseline 2006	Baseline	market	% dev. baseline 2007	Baseline	market	% dev. baseline 2009
cereals	37.24	36.65	35.99	-1.8%	36.62	35.98	-1.8%	37.38	36.78	-1.6%
wheat	17.80	17.93	17.78	-0.8%	17.99	17.85	-0.8%	18.57	18.47	-0.5%
coarse grain	19.44	18.72	18.21	-2.7%	18.64	18.13	-2.7%	18.80	18.31	-2.6%
oilseeds	3.90	4.60	5.38	17.0%	4.60	5.38	17.0%	4.19	5.02	19.8%
non-food	0.84	0.86	0.84	-2.2%	0.86	0.84	-2.0%	0.84	0.83	-0.8%
soybeans	0.22	0.30	0.30	-0.8%	0.30	0.30	-1.0%	0.24	0.24	0.5%
rapeseed	2.05	2.40	2.36	-1.8%	2.40	2.36	-2.0%	2.22	2.21	-0.4%
sunseed	1.63	1.90	1.88	-0.9%	1.90	1.89	-1.0%	1.74	1.74	0.2%
set aside	5.65	5.90	5.91	0.3%	5.93	5.91	0.0%	5.97	5.92	-0.9%
of which regular	3.95	4.06	3.95	-3.0%	4.09	3.95	-3.0%	4.14	3.95	-4.5%
of which non-food oilseeds	0.84	0.86			0.86			0.84		
other	1.70	1.84	1.96	6.8%	1.84	1.96	7.0%	1.84	1.97	7.1%

The proposed carbon credit of 45 EUR/ha for energy plants would basically stabilise the production of non-food oilseeds, in presence of 10% environmental set aside, in spite of the prohibition of growing them on set aside area. However, much of these prospects would not depend on agricultural policies, but on the competitiveness of biofuel on the petrol market in the EU. The assumed stable market for biofuel depends not primarily on agricultural policies, i.e. the supply of raw materials, but on the relative competitiveness of biofuel to normal fuels, i.e. the demand side. The demand of biofuel is largely determined by tax policies in the Member States.

The proposed MTR measures on markets would reduce overall cereal production in 2006 from 218 mio t in **baseline** to 210.8 mio t in **market**. The proposed MTR measures, particularly the 10% environmental set aside obligation would significantly restrict the cereal supply.

Table 2.13. Market, EU-15 cereals balance (mio t)

Cereals	2002	2006			2007			2009		
	Baseline	Baseline	market	% dev. baseline 2006	Baseline	market	% dev. baseline 2007	Baseline	market	% dev. baseline 2009
area	37.2	36.6	36.0	-1.8%	36.6	36.0	-1.8%	37.4	36.8	-1.6%
yield (t/ha)	5.7	5.9	5.9	-1.5%	6.0	5.9	-1.8%	6.0	5.9	-1.4%
production	213.7	218.0	210.8	-3.3%	221.4	213.7	-3.5%	222.8	216.2	-3.0%
domestic use	191.1	195.8	197.9	1.1%	196.8	198.6	0.9%	195.8	197.0	0.6%
feed use	119.3	122.1	123.1	0.8%	122.4	123.3	0.7%	120.5	121.9	1.1%
marketable surplus	22.7	22.2	12.9		24.6	15.1		27.1	19.2	

The reduction of the intervention price for cereals from 101.31 EUR/t to 95.35 EUR/t would largely affect barley and rye. Wheat prices are projected to stay above current intervention price levels and increase to 116 EUR/t in the market scenario. Maize prices would continue to remain at levels of 117 EUR/t and slightly decline to 114 EUR/t in 2009. In the period between 2004 and 2008 maize prices would be higher than wheat prices. Despite this positive development of prices, production of wheat would be 2 mio. t and production of maize about 0.8 mio t lower than in the baseline.

Table 2.14. Market, EU-15 wheat balance (mio t)

Wheat	2002	2006			2007			2009		
	Baseline	Baseline	market	% dev. baseline 2006	Baseline	market	% dev. baseline 2007	Baseline	market	% dev. baseline 2009
area	17.8	17.9	17.8	-0.8%	18.0	17.8	-0.8%	18.6	18.5	-0.5%
yield (t/ha)	6.0	6.2	6.1	-1.0%	6.3	6.2	-1.0%	6.1	6.1	0.0%
production	106.1	110.6	108.6	-1.8%	112.7	110.8	-1.7%	113.7	113.1	-0.5%
domestic use	94.4	96.6	96.8	0.2%	98.2	98.0	-0.1%	98.1	97.3	-0.8%
feed use	43.8	44.5	43.8	-1.6%	45.5	44.7	-1.6%	44.8	44.1	-1.7%
marketable surplus	11.8	14.0	11.8		14.6	12.7		15.5	15.8	
EUR/t	112.4	116.4	116.5	0.1%	116.3	116.4	0.1%	116.1	116.2	0.1%

Barley production would fall by 2 mio. t in 2006 compared to the baseline, which would reduce marketable surplus. Barley prices are projected to remain largely between 100 EUR/t and 95 EUR/t. This result would remain fairly sensitive to changes of the exchange rates.

The biggest effect of the proposals for cereals would be on the production of rye, which is proposed to be taken out of intervention. Production would decline initially by 39% or 2.5 mio. t, basically removing the annual structural surplus. Production of rye then increases again from 3.9 mio t in 2006 to 4.5 mio t in 2009.

Table 2.15. Market, EU-15 barley balance (mio t)

Barley	2002	2006			2007			2009		
	Baseline	Baseline	market	% dev. baseline 2006	Baseline	market	% dev. baseline 2007	Baseline	market	% dev. baseline 2009
area	10.6	10.1	9.9	-1.9%	9.9	9.7	-1.8%	10.2	10.0	-1.5%
yield (t/ha)	4.5	4.6	4.5	-2.3%	4.7	4.6	-2.3%	4.6	4.5	-2.3%
production	48.3	46.7	44.8	-4.2%	46.3	44.4	-4.0%	46.4	44.7	-3.7%
domestic use	40.4	40.3	42.4	5.1%	38.2	40.0	4.9%	37.5	39.3	4.8%
feed use	30.4	30.2	32.1	6.3%	28.1	29.9	6.1%	27.4	29.1	6.2%
marketable surplus	7.9	6.4	2.4		8.1	4.4		9.0	5.5	
EUR/t	101.3	101.3	97.4	-3.9%	101.3	95.4	-5.9%	101.3	99.4	-1.9%

This result depends on the assumptions on how the accumulated stocks of about 7.7 mio. t would be reduced. In the simulations it is assumed that they were gradually reduced and exported at rate of less than 1 mio. t a year. This would be the capacity of world markets for rye in normal years. Therefore, no export refunds would be available to support the actual rye production.

Table 2.16. Market, EU-15 rye balance (mio t)

Rye	2002	2006			2007			2009		
	Baseline	Baseline	market	% dev. baseline 2006	Baseline	market	% dev. baseline 2007	Baseline	market	% dev. baseline 2009
area	1.1	1.3	1.0	-21.6%	1.3	1.1	-16.0%	1.3	0.9	-24.8%
yield (t/ha)	4.7	5.1	3.9	-22.6%	5.2	3.6	-30.5%	5.6	4.8	-13.0%
production	5.4	6.4	3.9	-39.3%	6.6	3.8	-41.6%	7.0	4.6	-34.6%
domestic use	3.5	3.8	4.1	7.6%	4.0	4.3	8.7%	3.9	4.6	18.2%
feed use	1.7	1.9	2.2	14.9%	2.1	2.5	16.4%	2.1	2.8	34.4%
marketable surplus	1.9	2.6	-0.2		2.6	-0.5		3.1	-0.1	
EUR/t	101.3	101.3	76.5	-24.5%	101.3	74.8	-26.2%	101.3	71.7	-29.2%

The effect of reducing cereal prices benefits pork production, which would be able to expand production by about 0.1 mio. t to 0.2 mio. t. The poultry industry would only be affected to a limited extent as prices for feed wheat and maize remain at high levels.

… and the EU-25

In the "**market**" scenario the general trends described for the baseline on the EU-25 remain valid. Barley prices would be 3 to 8 EUR/t higher because of the demand in the new Member States of about 2 mio. t. Prices would remain above the intervention price. A similar development takes place for maize for which the old Member States would have additional demand, however, average prices would be about 10 EUR/t lower than in the EU-15 alone. Prices for wheat would also remain slightly lower than in the non-accession scenario as additional marketable surplus of about 3 mio. t has to be exported

to world markets. Enlargement under proposed MTR market conditions would have a positive effect on the EU-25 as a whole and increase cereal production in the old Member States about 1 mio. t than in the relevant scenario without enlargement.

Table 2.17. Market, EU-25 cereals balance (mio t)

Cereals	2002 Baseline	2006 Baseline	market	% dev. baseline 2006	2007 Baseline	market	% dev. baseline 2007	2009 Baseline	market	% dev. baseline 2009
area										
EU-15	37.2	36.6	36.1	-1.5%	36.6	36.1	-1.5%	37.0	36.5	-1.3%
Laeken-10	16.0	15.9	16.2	1.7%	15.9	16.3	2.3%	16.2	16.3	0.7%
EU-25	53.3	52.6	52.3	-0.5%	52.6	52.4	-0.3%	53.2	52.8	-0.7%
yield (t/ha)										
EU-15	5.7	6.0	5.9	-2.4%	6.1	6.0	-2.6%	6.2	6.1	-1.7%
Laeken-10	3.6	3.9	3.6	-7.3%	3.9	3.6	-6.0%	4.0	3.6	-8.3%
EU-25	5.1	5.4	5.2	-3.8%	5.4	5.2	-3.7%	5.5	5.3	-3.3%
production										
EU-15	213.7	220.2	211.6	-3.9%	223.9	214.8	-4.0%	228.5	221.6	-3.0%
Laeken-10	57.6	61.5	58.0	-5.7%	61.5	59.2	-3.9%	64.1	59.2	-7.7%
EU-25	271.3	281.7	269.7	-4.3%	285.4	274.0	-4.0%	292.6	280.8	-4.0%
domestic use										
EU-15	191.1	195.8	198.6	1.4%	196.8	199.5	1.3%	199.9	201.0	0.5%
Laeken-10	50.9	54.8	54.0	-1.3%	54.8	54.5	-0.5%	56.4	54.5	-3.3%
EU-25	241.9	250.6	252.6	0.8%	251.6	254.0	1.0%	256.3	255.5	-0.3%
feed use										
EU-15	119.3	122.1	123.0	0.8%	122.4	123.4	0.8%	124.3	125.6	1.0%
Laeken-10	33.6	36.6	36.0	-1.5%	36.6	36.2	-0.9%	37.4	36.2	-3.1%
EU-25	152.8	158.7	159.1	0.3%	159.0	159.7	0.4%	161.7	161.8	0.0%
marketable surplus										
EU-15	22.7	24.3	13.1		27.0	15.3		28.5	20.6	
Laeken-10	6.7	6.8	4.0		6.8	4.6		7.8	4.6	
EU-25	29.4	31.1	17.1		33.8	20.0		36.3	25.3	

The proposals on changes of intervention of rye would improve the situation compared to Agenda 2000 policies in baseline. The accumulating high structural surpluses in the EU-25 under Agenda 2000 policies seem to dissolve in the "**market**" scenario. Moreover, the MTR proposal would mobilise the market for rye in the EU-25 such that the rye market would profit from the increased demand potential in the enlarged Union. In the early years this would lead to prices, which would be 7 EUR/t higher than without enlargement.

However, in 2009 surpluses would exceed 1.4 mio. t which would depress prices within the EU-25. In 2006 prices would be at 82 EUR/t, which would fall to 66 EUR/t in 2009. The reason for this development is the increasing conversion of arable and fallow land to cereal and oilseed area in the new Member States. This additional land is attracted by the increasing area premiums. Especially former potato area would be converted to rye production and would lead to steadily increasing production.

In conclusion the market measures proposed in the communication would solve the rye problem in the EU-15. However, the simulations show that in the EU-25 problems could remain to be present. Enlargement would add to the dynamics of the cereal market in the EU resulting in higher prices for some cereals after accession. The MTR proposals on prices would unveil some of these dynamics. The MTR proposal of 10% set aside

without the possibility to grow energy crops on the set aside land seem to restrict cereal production in the EU.

Table 2.18. Market, EU-25 barley balance (mio t)

Barley	2002	2006			2007			2009		
	Baseline	Baseline	market	% dev. baseline 2006	Baseline	market	% dev. baseline 2007	Baseline	market	% dev. baseline 2009
production										
EU-15	48.3	48.9	48.4	-1.0%	48.9	48.4	-0.9%	48.9	48.5	-0.7%
Laeken-10	9.5	9.1	8.4	-7.9%	9.1	8.5	-6.6%	9.4	8.5	-9.7%
EU-25	57.9	58.0	56.8	-2.1%	58.0	56.9	-1.8%	58.3	57.0	-2.1%
domestic use										
EU-15	40.4	40.3	40.3	0.1%	38.2	38.2	0.0%	39.3	39.2	-0.3%
Laeken-10	9.8	11.1	11.0	-1.3%	11.1	11.1	0.0%	11.6	11.1	-3.9%
EU-25	50.2	51.4	51.3	-0.2%	49.3	49.3	0.0%	50.9	50.3	-1.2%
feed use										
EU-15	30.4	30.2	30.1	-0.6%	28.1	28.0	-0.6%	29.1	29.0	-0.5%
Laeken-10	7.2	8.5	8.4	-1.2%	8.5	8.5	0.1%	8.9	8.5	-4.0%
EU-25	37.6	38.7	38.5	-0.8%	36.6	36.5	-0.5%	38.0	37.5	-1.3%
marketable surplus										
EU-15	7.9	8.6	8.1		10.7	10.3		9.5	9.3	
Laeken-10	-0.2	-2.0	-2.6		-2.0	-2.6		-2.2	-2.6	
EU-25	7.7	6.6	5.5		8.7	7.6		7.4	6.7	
EUR/t	101.3	106.3	106.5	0.2%	105.2	105.4	0.1%	103.0	103.1	0.1%

Table 2.19. Market, EU-25 rye balance (mio t)

Rye	2002	2006			2007			2009		
	Baseline	Baseline	market	% dev. baseline 2006	Baseline	market	% dev. baseline 2007	Baseline	market	% dev. baseline 2009
production										
EU-15	5.4	6.4	4.3	-32.8%	6.6	4.4	-33.7%	7.1	4.6	-34.5%
Laeken-10	6.3	7.7	7.2	-6.2%	7.8	7.5	-3.2%	8.2	8.2	-0.3%
EU-25	11.8	14.1	11.5	-18.3%	14.4	11.9	-17.1%	15.3	12.8	-16.1%
domestic use										
EU-15	3.5	3.8	4.1	7.2%	4.0	4.3	8.2%	4.0	4.4	10.5%
Laeken-10	6.1	6.7	6.7	-0.8%	6.8	6.8	-0.6%	7.0	7.0	-0.5%
EU-25	9.6	10.5	10.8	2.1%	10.8	11.1	2.6%	11.0	11.4	3.5%
feed use										
EU-15	1.7	1.9	2.2	14.1%	2.1	2.4	15.3%	2.1	2.5	19.6%
Laeken-10	2.8	3.2	3.2	-1.5%	3.2	3.2	-0.2%	3.3	3.3	-1.7%
EU-25	4.5	5.2	5.4	4.4%	5.3	5.6	6.0%	5.5	5.8	6.5%
marketable surplus										
EU-15	1.9	2.6	0.2		2.6	0.1	-97.7%	3.1	0.3	-91.9%
Laeken-10	0.2	1.0	0.5		1.0	0.8	-20.9%	1.2	1.2	0.7%
EU-25	2.1	3.5	0.7		3.6	0.8	-76.7%	4.3	1.4	-66.3%
EUR/t	101.3	101.3	84.1	-17.0%	101.3	87.9	-13.3%	101.3	77.2	-23.8%

Effects of Modulation in the EU-15……

The proposals for modulation in the communication foresees a 20% decrease of direct payments over a number of years for farms receiving more direct payments than the franchise. Taking into account the franchise and the capping about 67% of the direct payments for cereals, oilseeds and protein crops as well as beef and 56% of direct payments for milk would be affected by modulation. The regional differences of the extent of modulation have not been taken into account. In this scenario direct payments are assumed to remain coupled as in the market scenario. If decoupling would accompany modulation no effect on production could be expected, because the level of direct payments would be left out of consideration in the production decisions of the farmers.

The modulation of the coupled area payments for cereals, oilseeds, and protein crops foreseen in the communication of the Commission on the MTR proposals would add only little to the impact of market measures. Compared to the **"market"** scenario the cereal area would change only very little compared to the simulations of the pure market proposals. With the implementation of modulation in 2004, the gradual reduction of payments would lead in 2006 to shift of 40 000 ha from cereals and silage maize into oilseeds. Wheat area would be reduced by 270 000 ha and coarse grains by 70 000 ha. Voluntary set aside would slightly decrease as well by 80 000 ha, because the reduction of payments would be felt there as well.

Table 2.20. Modulation, EU-15 area use (mio ha)

	2002	2006					2007					2009				
	Baseline	Baseline	market	% dev. baseline 2006	modulation	% dev. baseline 2006	Baseline	market	% dev. baseline 2007	modulation	% dev. baseline 2007	Baseline	market	% dev. baseline 2009	modulation	% dev. baseline 2009
cereals	37.2	36.7	36.0	-1.8%	35.7	-2.7%	36.6	36.0	-1.8%	35.7	-2.7%	37.4	36.8	-1.6%	36.3	-2.7%
wheat	17.8	17.9	17.8	-0.8%	17.5	-2.4%	18.0	17.9	-0.8%	17.7	-2.4%	18.6	18.5	-0.5%	18.2	-2.4%
coarse grain	19.4	18.7	18.2	-2.7%	18.1	-3.1%	18.6	18.1	-2.7%	18.0	-3.1%	18.8	18.3	-2.6%	18.1	-3.1%
oilseeds	3.9	4.6	5.4	17.0%	5.4	17.8%	4.6	5.4	17.0%	5.5	17.8%	4.2	5.0	19.8%	5.2	18.0%
non-food	0.8	0.9	0.8	-2.2%	0.9	0.2%	0.9	0.8	-2.0%	0.9	0.2%	0.8	0.8	-0.8%	0.9	0.2%
soybeans	0.2	0.3	0.3	-0.8%	0.4	20.1%	0.3	0.3	-1.0%	0.4	20.1%	0.2	0.2	0.5%	0.3	20.1%
rapeseed	2.1	2.4	2.4	-1.8%	2.4	0.4%	2.4	2.4	-2.0%	2.4	0.4%	2.2	2.2	-0.4%	2.3	0.4%
sunseed	1.6	1.9	1.9	-0.9%	1.8	-6.0%	1.9	1.9	-1.0%	1.8	-6.0%	1.7	1.7	0.2%	1.7	-6.0%
set aside	5.7	5.9	5.9	0.3%	5.8	-1.1%	5.9	5.9	0.0%	5.8	-1.1%	6.0	5.9	-0.9%	5.9	-1.1%
of which regular	4.0	4.1	4.0	-3.0%	4.0	-3.0%	4.1	4.0	-3.0%	4.0	-2.7%	4.1	4.0	-4.5%	4.0	-2.7%
of which non-food oilseeds	0.8	0.9					0.9					0.8				
other	1.7	1.8	2.0	6.8%	1.9	2.3%	1.8	2.0	7.0%	1.9	2.3%	1.8	2.0	7.1%	1.9	2.3%

Table 2.21. Modulation, EU-15 cereal balance (mio t)

Cereals	2002	2006					2007					2009				
	Baseline	Baseline	market	% dev. baseline 2006	modulation	% dev. baseline 2006	Baseline	market	% dev. baseline 2007	modulation	% dev. baseline 2007	Baseline	market	% dev. baseline 2009	modulation	% dev. baseline 2009
area	37.2	36.6	36.0	-1.8%	35.7	-2.7%	36.6	36.0	-1.8%	35.7	-2.7%	37.4	36.8	-1.6%	36.3	-2.7%
yield (t/ha)	5.7	5.9	5.9	-1.5%	5.9	-0.2%	6.0	5.9	-1.8%	6.1	-0.2%	6.0	5.9	-1.4%	6.1	-0.2%
production	213.7	218.0	210.8	-3.3%	211.7	-2.9%	221.4	213.7	-3.5%	217.8	-2.9%	222.8	216.2	-3.0%	220.1	-2.9%
domestic use	191.1	195.8	197.9	1.1%	204.6	4.5%	196.8	198.6	0.9%	200.2	4.5%	195.8	197.0	0.6%	195.4	4.5%
feed use	119.3	122.1	123.1	0.8%	134.6	10.3%	122.4	123.3	0.7%	136.4	10.3%	120.5	121.9	1.1%	125.8	4.4%
marketable surplus	22.7	22.2	12.9		7.1		24.6	15.1		17.6		27.1	19.2		24.7	

The relative small impact of modulation on the use of agricultural area would imply only a relatively small impact on the production of cereals. Modulation would strengthen the trend to higher yielding crops such as soft wheat and maize, which explains the 3.9 mio. t. higher production than without modulation. At the same time domestic use, particularly feed use, would increase due to favourable price developments for feed grains. From 2006, however, the growth of domestic use would be smaller than the growth of production, i.e. marketable surplus would be higher than in the market scenario. The development in the cereal sector would have positive indirect effects on pork, poultry and egg production, which could slightly expand due to modulation effects in the cereal and oilseed sector.

Modulation would have a larger effect on beef production especially after 2009, because premiums make up a significant part of revenues of production. Since the beef premiums could be considered as being more coupled to production than the area payments, production would react negatively on the gradual decline of the premiums. In 2006 production would be about 0.2 mio. t. lower than in the market scenario and the declining production would reduce the marketable surplus of beef in the projected years. However, prices would appear to be slightly higher than in the **"market"** scenario and in the "**baseline**".

….and in the EU-25.

Until 2013 - as long as the direct payments would be phased in - it is assumed that direct payments would not be modulated in the new Member States. Therefore, modulation would have no direct effect on production in the new Member States. The only effect, which could influence production and domestic use in the new Member States, would be spillover effects from markets of the old Member States. Since, however, the projected effects would be mostly marginal in the old Member States, the projected effects are relatively small. However, as in the market scenario enlargement would be positive for cereal production in the old Member States. Compared to the market scenario above, the effects of modulation on cereal production in the EU-25 would be similarly marginal with enlargement: In 2006 production of cereals would be 0.3 mio. t higher than in the market scenario. In 2007 and 2009 cereal production would be slightly lower than in the market scenario.

Similarly as in the EU-15 pork production would be one of the indirect beneficiaries of modulation because feed prices of certain feed grains would become more favourable. Pork production would be about 100 000 t higher than without modulation. The slightly larger production of cereal based livestock contributes to the higher domestic use in the EU-25.

The production of beef would be relatively moderately affected. In the EU-25 some marketable surplus of beef of around 300 000t to 400 000 t would exist. Prices react relatively less than in the EU-15 because consumption in the new Member States reacts more to price changes than in the old Member States, where the demand is relatively inelastic. The proposed modulation of 3% per year would have a very limited effect on markets. However, it might be possible that those beef production systems which rely mostly on the premium for market revenues, e.g. very intensive maize based beef and suckler cows, might be relatively more affected.

Table 2.22. Modulation, EU-15 pork balance (mio t)

Pork	2002	2006					2007					2009				
	Baseline	Baseline	market	% dev. baseline 2006	modulation	% dev. baseline 2006	Baseline	market	% dev. baseline 2007	modulation	% dev. baseline 2007	Baseline	market	% dev. baseline 2009	modulation	% dev. baseline 2009
production	17.9	18.6	18.7	1.0%	18.7	0.8%	18.6	18.7	0.9%	18.7	0.9%	18.6	18.9	1.2%	18.7	0.2%
domestic use	16.8	17.4	17.6	1.0%	17.5	7.0%	17.4	17.6	9.1%	17.6	7.0%	17.5	17.7	1.3%	17.5	7.0%
marketable surplus	1.15	1.17	1.17		1.17		1.17	1.17		0.00		1.17	1.17	0.1%	1.17	
EUR/t	1 415.5	1 427.3	1 405.9	-1.5%	1 385.9	-2.9%	1 419.9	1 400.1	-1.4%	1 390.3	-2.1%	1 437.2	1 410.3	-1.9%	1 399.1	-2.7%

Table 2.23. Modulation, EU-15 beef balance (mio t)

Beef	2002	2006					2007					2009				
	Baseline	Baseline	market	% dev. baseline 2006	modulation	% dev. baseline 2006	Baseline	market	% dev. baseline 2007	modulation	% dev. baseline 2007	Baseline	market	% dev. baseline 2009	modulation	% dev. baseline 2009
production	7.6	7.7	7.7	0.4%	7.6	-1.5%	7.8	7.8	0.5%	7.7	-1.5%	7.8	7.9	0.5%	7.7	-1.5%
domestic use	7.4	7.4	7.5	0.4%	7.3	-1.5%	7.5	7.6	0.5%	7.7	-1.5%	7.6	7.6	0.5%	7.6	-1.5%
marketable surplus	0.17	0.25	0.25		0.25		0.25	0.25				0.25	0.25		0.1	
EUR/t	2 666.9	2 483.6	2 480.6	-0.1%	2 436.7	-1.9%	2 439.8	2 433.8	-0.2%	2 411.9	-1.9%	2 354.4	2 348.4	-0.3%	2 370.2	-1.9%

Table 2.24. Modulation, EU-25 cereal balance (mio t)

Cereals	2002	2006					2007					2009				
	Baseline	Baseline	market	% dev. baseline 2006	modulation	% dev. baseline 2006	Baseline	market	% dev. baseline 2007	modulation	% dev. baseline 2007	Baseline	market	% dev. baseline 2009	modulation	% dev. baseline 2009
area																
EU-15	37.2	36.6	36.1	-1.5%	36.0	-1.7%	36.6	36.1	-1.5%	36.0	-1.7%	37.0	36.5	-1.3%	36.3	-1.7%
Laeken-10	16.0	15.9	16.2	1.7%	16.2	1.8%	15.9	16.3	2.3%	16.3	2.3%	16.2	16.3	0.7%	16.3	0.7%
EU-25	53.3	52.6	52.3	-0.5%	52.2	-0.7%	52.6	52.4	-0.3%	52.3	-0.5%	53.2	52.8	-0.7%	52.6	-1.0%
yield (t/ha)																
EU-15	5.7	6.0	5.9	-2.4%	5.9	-2.2%	6.1	6.0	-2.6%	6.0	-1.1%	6.2	6.1	-1.7%	6.0	-2.2%
Laeken-10	3.6	3.9	3.6	-7.3%	3.6	-7.3%	3.9	3.6	-6.0%	3.6	-6.0%	4.0	3.6	-8.3%	3.6	-8.3%
EU-25	5.1	5.4	5.2	-3.8%	5.2	-3.6%	5.4	5.2	-3.7%	5.3	-2.6%	5.5	5.3	-3.3%	5.3	-3.8%
production																
EU-15	213.7	220.2	211.6	-3.9%	211.7	-3.9%	223.9	214.8	-4.0%	217.5	-2.8%	228.5	221.6	-3.0%	219.5	-3.9%
Laeken-10	57.6	61.5	58.0	-5.7%	58.0	-5.7%	61.5	59.2	-3.9%	59.2	-3.8%	64.1	59.2	-7.7%	59.2	-7.7%
EU-25	271.3	281.7	269.7	-4.3%	269.7	-4.3%	285.4	274.0	-4.0%	276.7	-3.1%	292.6	280.8	-4.0%	278.7	-4.7%
domestic use																
EU-15	191.1	195.8	198.6	1.4%	200.2	2.2%	196.8	199.5	1.3%	200.2	1.7%	199.9	201.0	0.5%	203.7	1.9%
Laeken-10	50.9	54.8	54.0	-1.3%	54.0	-1.5%	54.8	54.5	-0.5%	54.5	-0.6%	56.4	54.5	-3.3%	54.5	-3.4%
EU-25	241.9	250.6	252.6	0.8%	254.2	1.4%	251.6	254.0	1.0%	254.7	1.2%	256.3	255.5	-0.3%	258.1	0.7%
feed use																
EU-15	119.3	122.1	123.0	0.8%	123.5	1.2%	122.4	123.4	0.8%	123.9	1.2%	124.3	125.6	1.0%	128.0	2.9%
Laeken-10	33.6	36.6	36.0	-1.5%	36.0	-1.6%	36.6	36.2	-0.9%	36.2	-1.1%	37.4	36.2	-3.1%	36.2	-3.3%
EU-25	152.8	158.7	159.1	0.3%	159.5	0.5%	159.0	159.7	0.4%	160.1	0.7%	161.7	161.8	0.0%	164.2	1.5%
marketable surplus																
EU-15	22.7	24.3	13.1		11.5		27.0	15.3		17.3		28.5	20.6		15.9	
Laeken-10	6.7	6.8	4.0		4.1		6.8	4.6		4.7		7.8	4.6		4.7	
EU-25	29.4	31.1	17.1		15.5		33.8	20.0		22.0		36.3	25.3		20.6	

Table 2.25. Modulation, EU-25 pork balance (mio t)

Pork	2002	2006					2007					2009				
	Baseline	Baseline	market	% dev. baseline 2006	modulation	% dev. baseline 2006	Baseline	market	% dev. baseline 2007	modulation	% dev. baseline 2007	Baseline	market	% dev. baseline 2009	modulation	% dev. baseline 2009
production																
EU-15	17.9	19.7	19.9	0.7%	20.0	1.3%	20.0	20.1	0.7%	20.2	1.2%	20.4	20.6	0.8%	20.6	1.1%
Laeken-10	3.5	3.5	3.4	-4.3%	3.4	-4.3%	3.5	3.4	-3.8%	3.4	-3.9%	3.7	3.4	-6.6%	3.4	-6.7%
EU-25	21.4	23.3	23.3	-0.1%	23.4	0.4%	23.5	23.5	0.0%	23.6	0.4%	24.1	24.0	-0.3%	24.0	0.0%
domestic use																
EU-15	16.8	18.6	17.8	-3.9%	18.2	-2.1%	17.2	17.7	3.0%	20.2	17.2%	18.4	18.4	0.1%	18.5	0.3%
Laeken-10	3.5	4.2	4.1	-1.7%	4.1	-1.7%	4.2	4.2	-0.2%	4.2	-0.1%	4.4	4.2	-5.1%	4.2	-4.9%
EU-25	20.3	22.8	22.0	-3.5%	22.3	-2.0%	21.4	21.9	2.3%	24.4	13.8%	22.8	22.6	-0.9%	22.7	-0.7%
marketable surplus																
EU-15	1.1	1.2	2.0		1.8		2.7	2.4		0.0		2.0	2.2		2.2	
Laeken-10	0.0	-0.7	-0.7		-0.7		-0.7	-0.8		-0.8		-0.8	-0.8		-0.8	
EU-25	1.2	0.5	1.3		1.1		2.1	1.6		-0.8		1.2	1.4		1.4	
EUR/t	1 415.5	1 245.7	1 242.6	-0.3%	1 241.2	-0.4%	1 238.7	1 235.1	-0.3%	1 232.6	-0.5%	1 226.9	1 224.4	-0.2%	1 219.4	-0.6%

Table 2.26. Modulation, EU-25 beef balance (mio t)

Beef	2002	2006					2007					2009				
	Baseline	Baseline	market	% dev. baseline 2006	modulation	% dev. baseline 2006	Baseline	market	% dev. baseline 2007	modulation	% dev. baseline 2007	Baseline	market	% dev. baseline 2009	modulation	% dev. baseline 2009
production																
EU-15	7.6	7.7	7.7	-0.4%	7.6	-1.7%	7.8	7.7	-0.5%	7.6	-2.0%	7.8	7.8	-0.7%	7.7	-2.4%
Laeken-10	0.7	0.8	0.8	7.0%	0.8	7.0%	0.8	0.8	6.4%	0.8	6.4%	0.7	0.8	9.3%	0.8	9.4%
EU-25	8.3	8.5	8.5	0.3%	8.4	-0.9%	8.5	8.5	0.1%	8.4	-1.2%	8.6	8.6	0.1%	8.5	-1.4%
domestic use																
EU-15	7.4	7.5	7.5	-0.1%	7.3	-1.8%	7.5	7.4	-1.0%	7.6	1.2%	7.6	7.5	-0.3%	7.5	-0.2%
Laeken-10	0.7	0.7	0.7	-0.2%	0.7	-0.1%	0.7	0.7	1.3%	0.7	1.4%	0.7	0.7	-2.9%	0.7	-2.8%
EU-25	8.1	8.1	8.1	-0.1%	8.0	-1.6%	8.2	8.1	-0.8%	8.3	1.2%	8.3	8.2	-0.5%	8.2	-0.5%
marketable surplus																
EU-15	0.2	0.3	0.2		0.3		0.3	0.3		0.0		0.3	0.3		0.1	
Laeken-10	0.0	0.1	0.1		0.1		0.1	0.1		0.1		0.0	0.1		0.1	
EU-25	0.2	0.3	0.4		0.4		0.3	0.4		0.1		0.3	0.4		0.2	
EUR/t	2 666.9	2 383.0	2 384.8	0.1%	2 435.5	2.2%	2 348.9	2 353.8	0.2%	2 406.2	2.4%	2 306.9	2 319.8	0.6%	2 370.9	2.8%

The Effects of decoupling on the EU-15….

Decoupling would further reduce the area of cereals compared to the market. Particularly the less competitive cereals such as rye and hard wheat and partly also barley would be affected. Oilseed area would further increase by 200 000 ha, and set-aside would increase by 460 000 ha.

The relatively small increase of set aside under the MTR proposal with decoupling would be due to the average decrease of receipts of set aside from 290 EUR/ha COP payment under Agenda 2000 to an average of 221 EUR/ha. This reduction would, from a sector point of view, lower the attractiveness of set aside from the receipt side. Another important aspect is cross compliance, which would require farmers to keep the land in a certain condition. This involves costs of about 60-200 EUR/ha. Therefore, under these conditions set aside would become less attractive compared to cropping. However, it is important to note that the lower the standards of cross compliance would become, the more attractive set aside would be compared to other uses of the land.

With this adjustment soft wheat and maize would gain relative importance in cereal production, leaving total production higher than without decoupling. Decoupling will further contribute to the stabilisation of prices for barley and rye, both, which would experience higher producer prices of 6 to 10 EUR/t, compared to the situation without decoupling.

Decoupling would be particularly positive for beef production, where a production would drop by 5.7% compared to the baseline. This drop would be accompanied by price increases of 6.7%. The negative effect of decoupling on beef supply, therefore, would be offset by the relatively larger increase of prices.

According to FADN about 10% of beef farms in 1999 experience negative margins, i.e. farms use the premiums to (partly) cover costs. The reduction of beef production in the scenarios would be less than could be expected from this statistical information. One of the reasons for the lower than expected decline would be the positive response of markets. Regarding the continuing trends of declining per capita consumption of beef, markets would respond very positively on lower levels of supply. The relatively inelastic demand of beef would let prices increase by levels of 17% to 23%, which also might be an indication of higher quality produce on the markets from less intensive ways of production. In this respect positive income effects for beef producers could be expected, if export levels as in baseline could be maintained.

The price increase is sensitive to the future export policies. Lower level of exports as assumed for the scenarios would then let prices increase only at a lower rate of 5% to 7% compared to Agenda 2000 policies. However, in this case external trade with beef would be balanced.

In this case, the EU-15 would have to export fewer surpluses with decoupling than without decoupling. One should note however that export policies play an important role in this assessment.

Table 2.27. Decoupling, EU-15 area use (mio ha)

	2002	2006					2007					2009				
	Baseline	Baseline	market	% dev. baseline 2006	market + decoupl.	% dev. baseline 2006	Baseline	market	% dev. baseline 2007	market + decoupl.	% dev. baseline 2007	Baseline	market	% dev. baseline 2009	market + decoupl.	% dev. baseline 2009
cereals	37.2	36.7	36.0	-1.8%	34.7	-5.3%	36.6	36.0	-1.8%	34.6	-5.5%	37.4	36.8	-1.6%	35.4	-5.0%
wheat	17.8	17.9	17.8	-0.8%	16.9	-5.9%	18.0	17.9	-0.8%	16.9	-5.9%	18.6	18.5	-0.5%	17.6	-5.0%
coarse grain	19.4	18.7	18.2	-2.7%	17.8	-4.8%	18.6	18.1	-2.7%	17.7	-5.1%	18.8	18.3	-2.6%	17.8	-5.0%
oilseeds	3.9	4.6	5.4	17.0%	5.6	21.4%	4.6	5.4	17.0%	5.6	21.8%	4.2	5.0	19.8%	5.3	26.0%
non-food	0.8	0.9	0.8	-2.2%	0.9	4.0%	0.9	0.8	-2.0%	0.9	4.5%	0.8	0.8	-0.8%	0.9	5.7%
soybeans	0.2	0.3	0.3	-0.8%	0.4	30.4%	0.3	0.3	-0.7%	0.4	31.2%	0.2	0.2	0.5%	0.3	34.5%
rapeseed	2.1	2.4	2.4	-1.8%	2.5	4.2%	2.4	2.4	-1.7%	2.5	4.6%	2.2	2.2	-0.4%	2.4	7.1%
sunseed	1.6	1.9	1.9	-0.9%	1.8	-5.5%	1.9	1.9	-0.8%	1.8	-5.1%	1.7	1.7	0.2%	1.7	-3.2%
set aside	5.7	5.9	5.9	0.3%	6.1	4.1%	5.9	5.9	-0.2%	6.1	3.6%	6.0	5.9	-0.9%	6.2	3.2%
of which regular	4.0	4.1	4.0	-3.0%	4.0	-3.0%	4.1	4.0	-3.4%	4.0	-3.4%	4.1	4.0	-4.5%	4.0	-4.5%
of which non-food oilseeds	0.84	0.86					0.86					0.84				
other	1.7	1.8	2.0	6.8%	2.2	18.9%	1.8	2.0	6.8%	2.2	19.2%	1.8	2.0	7.1%	2.2	20.4%

Table 2.28. Decoupling, EU-15 cereal balance (mio t)

Cereals	2002	2006					2007					2009				
	Baseline	Baseline	market	% dev. baseline 2006	market + decoupl.	% dev. baseline 2006	Baseline	market	% dev. baseline 2007	market + decoupl.	% dev. baseline 2007	Baseline	market	% dev. baseline 2009	market + decoupl.	% dev. baseline 2009
area	37.2	36.6	36.0	-1.8%	34.7	-5.3%	36.6	36.0	-1.8%	34.6	-5.5%	37.4	36.8	-1.6%	35.4	-5.4%
yield (t/ha)	5.7	5.9	5.9	-1.5%	6.1	2.4%	6.0	5.9	-1.8%	6.2	3.4%	6.0	5.9	-1.4%	6.2	5.2%
production	213.7	218.0	210.8	-3.3%	210.2	-3.1%	221.4	213.7	-3.5%	214.8	-2.3%	222.8	216.2	-3.0%	219.5	-0.4%
domestic use	191.1	195.8	197.9	1.1%	190.7	-2.6%	196.8	198.6	0.9%	194.4	-1.2%	195.8	197.0	0.6%	195.8	6.7%
feed use	119.3	122.1	123.1	0.8%	129.2	5.8%	122.4	123.3	0.7%	128.4	4.9%	120.5	121.9	1.1%	139.9	16.1%
marketable surplus	22.7	22.2	12.9		19.6		24.6	15.1		20.4		27.1	19.2		23.7	

Table 2.29. Decoupling, EU-15 rye balance (mio. t)

Rye	2002	2006					2007					2009				
	Baseline	Baseline	market	% dev. baseline 2006	market + decoupl.	% dev. baseline 2006	Baseline	market	% dev. baseline 2007	market + decoupl.	% dev. baseline 2007	Baseline	market	% dev. baseline 2009	market + decoupl.	% dev. baseline 2009
area	1.1	1.3	1	-21.6%	1.1	-13.0%	1.3	1.1	-16.0%	1.0	-18.5%	1.3	0.9	-24.8%	1.0	-17.2%
yield (t/ha)	4.7	5.1	3.9	-22.6%	2.6	-48.9%	5.2	3.6	-30.5%	3.0	-41.4%	5.6	4.8	-13.0%	3.9	-30.3%
production	5.4	6.4	3.9	-39.3%	2.8	-55.6%	6.6	3.8	-41.6%	3.1	-52.2%	7.0	4.6	-34.6%	4.0	-42.3%
domestic use	3.5	3.8	4.1	7.6%	3.5	-7.0%	4.0	4.3	8.7%	4.0	0.1%	3.9	4.6	18.2%	4.4	12.1%
feed use	1.7	1.9	2.2	14.9%	1.9	0.0%	2.1	2.5	16.4%	2.5	18.1%	2.1	2.8	34.4%	2.6	22.9%
marketable surplus	1.9	2.6	-0.2		-0.7		2.6	-0.5		-0.8		3.1	-0.1		-0.4	
EUR/t	101.3	101.3	76.5	-24.5%	80.8	-20.2%	101.3	74.8	-26.2%	79.6	-21.4%	101.3	71.7	-29.2%	77.3	-23.7%

Table 2.30. Decoupling, EU-15 beef balance (mio. t)

Beef	2002	2006					2007					2009				
	Baseline	Baseline	market	% dev. baseline 2006	market + decoupl.	% dev. baseline 2006	Baseline	market	% dev. baseline 2007	market + decoupl.	% dev. baseline 2007	Baseline	market	% dev. baseline 2009	market + decoupl.	% dev. baseline 2009
production	7.6	7.7	7.7	0.4%	7.2	-5.9%	7.8	7.8	0.5%	7.3	-5.8%	7.8	7.9	0.5%	7.4	-5.7%
domestic use	7.4	7.4	7.5	0.4%	7.2	-3.7%	7.5	7.6	0.5%	7.3	-2.7%	7.6	7.6	0.5%	7.4	-2.6%
marketable surplus	0.17	0.25	0.25		0.07		0.25	0.25		0.00		0.25	0.25		0.00	
EUR/t	2 666.9	2 483.6	2 480.6	-0.1%	2 629.0	5.9%	2 439.8	2 433.8	-0.2%	2 573.5	5.5%	2 354.4	2 348.4	-0.3%	2 512.5	6.7%

…. and on the EU-25

Decoupling in the EU-25 would produce similar trends than in the EU-15. However, decoupling would lead in the new Member States to a different production structure. In the market scenarios farmers would produce – and invest into new capacities – for those production which is subject to direct payments. Market considerations might play a lower role for these decisions. This allocation of scarce resources – especially capital – would be avoided in the scenario with decoupled payments.

As in the EU-15, wheat and maize production in the new Member States would benefit from decoupling and would gain relative importance. In the EU-25, barley production would benefit, because of the better market conditions than without enlargement.

For rye decoupling would lead to an improved situation compared to non-decoupling in the EU-25 (see "**market**" and **"modulation"** scenarios). Decoupling would lead to less area flow from other crops and fallow land into arable land in the new Member States. Therefore, less rye would be produced but also more rye from the new Member States would find markets in the old Member States. Prices would be about higher than without decoupling. This shows that production would evolve better according to the relative competitiveness of markets in the different Member States.

For beef a similar positive situation as in the EU-15 could be expected by decoupling direct payments from production. Particularly the farmers in the new Member States would not have to invest into beef production in order to receive the beef premiums, if market prospects would not carry it. As in the past, beef consumption in the new Member States would develop relatively weaker despite significant increases in income compared to the old Member States. Therefore, with these underlying market developments less production of beef could be recorded in the old and new Member States than in the scenario with coupled payments.

Table 2.31. Decoupling, EU-25 cereal balance (mio. t)

Cereals	2002 Baseline	2006 Baseline	market	% dev. baseline 2006	market + decoupl.	% dev. baseline 2006	2007 Baseline	market	% dev. baseline 2007	market + decoupl.	% dev. baseline 2007	2009 Baseline	market	% dev. baseline 2009	market + decoupl.	% dev. baseline 2009
area																
EU-15	37.2	36.6	36.1	-1.5%	34.8	-4.9%	36.6	36.1	-1.5%	34.9	-4.8%	37.0	36.5	-1.3%	35.3	-4.6%
Laeken-10	16.0	15.9	16.2	1.7%	15.9	-0.5%	15.9	16.3	2.3%	15.9	0.0%	16.2	16.3	0.7%	15.9	-1.6%
EU-25	53.3	52.6	52.3	-0.5%	50.7	-3.6%	52.6	52.4	-0.3%	50.8	-3.4%	53.2	52.8	-0.7%	51.2	-3.7%
yield (t/ha)																
EU-15	5.7	6.0	5.9	-2.4%	6.1	1.1%	6.1	6.0	-2.6%	6.2	1.0%	6.2	6.1	-1.7%	6.2	0.9%
Laeken-10	3.6	3.9	3.6	-7.3%	3.8	-0.7%	3.9	3.6	-6.0%	3.9	0.6%	4.0	3.6	-8.3%	3.9	-1.9%
EU-25	5.1	5.4	5.2	-3.8%	5.4	0.3%	5.4	5.2	-3.7%	5.5	0.5%	5.5	5.3	-3.3%	5.5	0.0%
production																
EU-15	213.7	220.2	211.6	-3.9%	211.7	-3.9%	223.9	214.8	-4.0%	215.3	-3.8%	228.5	221.6	-3.0%	219.8	-3.8%
Laeken-10	57.6	61.5	58.0	-5.7%	60.8	-1.2%	61.5	59.2	-3.9%	61.9	0.6%	64.1	59.2	-7.7%	61.9	-3.4%
EU-25	271.3	281.7	269.7	-4.3%	272.5	-3.3%	285.4	274.0	-4.0%	277.2	-2.9%	292.6	280.8	-4.0%	281.7	-3.7%
domestic use																
EU-15	191.1	195.8	198.6	1.4%	198.6	1.4%	196.8	199.5	1.3%	199.3	1.3%	199.9	201.0	0.5%	202.2	1.1%
Laeken-10	50.9	54.8	54.0	-1.3%	54.7	-0.1%	54.8	54.5	-0.5%	55.2	0.9%	56.4	54.5	-3.3%	55.2	-2.0%
EU-25	241.9	250.6	252.6	0.8%	253.3	1.1%	251.6	254.0	1.0%	254.6	1.2%	256.3	255.5	-0.3%	257.4	0.4%
feed use																
EU-15	119.3	122.1	123.0	0.8%	125.0	2.4%	122.4	123.4	0.8%	125.2	2.2%	124.3	125.6	1.0%	126.7	1.9%
Laeken-10	33.6	36.6	36.0	-1.5%	36.6	0.0%	36.6	36.2	-0.9%	36.8	0.7%	37.4	36.2	-3.1%	36.8	-1.5%
EU-25	152.8	158.7	159.1	0.3%	161.6	1.8%	159.0	159.7	0.4%	162.0	1.9%	161.7	161.8	0.0%	163.5	1.1%
marketable surplus																
EU-15	22.7	24.3	13.1		13.1		27.0	15.3		16.0		28.5	20.6		17.6	
Laeken-10	6.7	6.8	4.0		6.1		6.8	4.6		6.7		7.8	4.6		6.7	
EU-25	29.4	31.1	17.1		19.2		33.8	20.0		22.6		36.3	25.3		24.3	

Table 2.32. Decoupling, EU-25 wheat balance (mio. t)

Wheat	2002	2006					2007					2009				
	Baseline	Baseline	market	% dev. baseline 2006	market + decoupl.	% dev. baseline 2006	Baseline	market	% dev. baseline 2007	market + decoupl.	% dev. baseline 2007	Baseline	market	% dev. baseline 2009	market + decoupl.	% dev. baseline 2009
area																
EU-15	17.8	17.9	17.7	-1.5%	16.9	-5.7%	18.0	17.7	-1.5%	17.0	-5.6%	18.5	18.3	-1.3%	17.6	-5.2%
Laeken-10	5.9	6.6	6.7	1.5%	5.9	-11.5%	6.6	6.8	1.8%	5.9	-10.9%	6.7	6.8	1.4%	5.9	-11.3%
EU-25	23.7	24.6	24.4	-0.7%	22.8	-7.3%	24.6	24.5	-0.6%	22.9	-7.0%	25.2	25	-0.6%	23.5	-6.8%
yield (t/ha)																
EU-15	6.0	6.2	6.1	-1.1%	6.4	4.2%	6.2	6.2	-1.1%	6.5	4.1%	6.2	6.3	0.9%	6.5	3.8%
Laeken-10	3.9	3.7	3.4	-8.0%	4.2	14.5%	3.7	3.5	-6.5%	4.3	16.2%	3.8	3.5	-8.9%	4.3	13.2%
EU-25	5.5	5.5	5.4	-2.7%	5.9	6.6%	5.6	5.4	-2.4%	5.9	6.8%	5.6	5.5	-1.1%	5.9	6.0%
production																
EU-15	106.1	110.6	107.7	-2.6%	108.7	-1.8%	112.3	109.5	-2.6%	110.4	-1.7%	115.5	115.1	-0.4%	113.7	-1.6%
Laeken-10	23.3	24.6	22.9	-6.6%	24.9	1.3%	24.6	23.4	-4.9%	25.4	3.5%	25.3	23.4	-7.6%	25.4	0.5%
EU-25	129.5	135.2	130.7	-3.4%	133.6	-1.2%	136.9	132.8	-3.0%	135.9	-0.8%	140.8	138.4	-1.7%	139.1	-1.2%
domestic use																
EU-15	94.4	96.6	97.2	0.6%	96.0	-0.7%	98.2	98.4	0.3%	97.4	-0.7%	100.0	98.8	-1.1%	99.1	-0.8%
Laeken-10	19.3	20.7	20.3	-1.7%	20.7	0.3%	20.7	20.5	-0.8%	20.9	1.3%	21.3	20.5	-3.8%	20.9	-1.7%
EU-25	113.7	117.3	117.5	0.2%	116.7	-0.5%	118.8	118.9	0.1%	118.3	-0.4%	121.3	119.3	-1.6%	120.1	-1.0%
feed use																
EU-15	43.8	44.5	43.5	-2.3%	44.0	-1.1%	45.5	44.4	-2.3%	44.9	-1.3%	46.2	45.1	-2.4%	45.5	-1.5%
Laeken-10	9.2	10.0	9.7	-2.5%	10.1	0.5%	10.0	9.8	-2.3%	10.1	0.9%	10.1	9.8	-3.8%	10.1	-0.6%
EU-25	53.0	54.5	53.3	-2.3%	54.1	-0.8%	55.5	54.2	-2.3%	55.0	-0.9%	56.4	54.9	-2.6%	55.6	-1.4%
marketable surplus																
EU-15	11.8	14.0	10.6		12.7		14.2	11.1		13.0		15.6	16.2		14.6	
Laeken-10	4.0	3.9	2.6		4.2		3.9	2.9		4.5		4.0	2.9		4.5	
EU-25	15.8	17.9	13.2		16.9		18.1	13.9		17.5		19.6	19.1		19.1	
EUR/t	112.4	114.3	114.5	0.2%	114.2	0.0%	113.4	113.6	0.1%	113.3	-0.1%	111.7	111.9	0.1%	111.6	-0.1%

Table 2.33. Decoupling, EU-25 rye balance (mio. t)

Rye	2002	2006					2007					2009				
	Baseline	Baseline	market	% dev. baseline 2006	market + decoupl.	% dev. baseline 2006	Baseline	market	% dev. baseline 2007	market + decoupl.	% dev. baseline 2007	Baseline	market	% dev. baseline 2009	market + decoupl.	% dev. baseline 2009
area																
EU-15	1.1	1.3	1.2	-3.8%	1.0	-24.2%	1.3	1.2	-3.7%	0.8	-35.4%	1.3	1.2	-3.5%	0.9	-26.1%
Laeken-10	1.6	1.6	1.6	3.3%	1.5	-1.7%	1.6	1.6	3.9%	1.5	-1.6%	1.6	1.6	2.4%	1.5	-3.0%
EU-25	2.7	2.8	2.8	0.1%	2.5	-11.8%	2.8	2.8	0.5%	2.3	-16.8%	2.8	2.8	-0.2%	2.5	-13.3%
yield (t/ha)																
EU-15	4.7	5.1	3.6	-30.1%	3.5	-31.5%	5.2	3.6	-31.1%	4.1	-21.5%	5.6	3.8	-32.1%	3.8	-32.3%
Laeken-10	4.0	4.9	4.5	-9.2%	4.7	-4.5%	5.0	4.7	-6.8%	4.9	-2.6%	5.2	5.0	-2.7%	5.1	-1.5%
EU-25	4.3	5.0	4.1	-18.3%	4.2	-15.3%	5.1	4.2	-17.5%	4.6	-9.6%	5.4	4.5	-16.0%	4.6	-14.2%
production																
EU-15	5.4	6.4	4.3	-32.8%	3.3	-48.1%	6.6	4.4	-33.7%	3.3	-49.3%	7.1	4.6	-34.5%	3.5	-50.0%
Laeken-10	6.3	7.7	7.2	-6.2%	7.2	-6.2%	7.8	7.5	-3.2%	7.5	-4.2%	8.2	8.2	-0.3%	7.8	-4.4%
EU-25	11.8	14.1	11.5	-18.3%	10.5	-25.2%	14.4	11.9	-17.1%	10.8	-24.8%	15.3	12.8	-16.1%	11.4	-25.6%
domestic use																
EU-15	3.5	3.8	4.1	7.2%	3.8	0.5%	4.0	4.3	8.2%	4.5	13.8%	4.0	4.4	10.5%	4.6	14.6%
Laeken-10	6.1	6.7	6.7	-0.8%	6.6	-1.2%	6.8	6.8	-0.6%	6.7	-1.4%	7.0	7.0	-0.5%	6.9	-1.6%
EU-25	9.6	10.5	10.8	2.1%	10.5	-0.6%	10.8	11.1	2.6%	11.2	4.2%	11.0	11.4	3.5%	11.4	4.3%
feed use																
EU-15	1.7	1.9	2.2	14.1%	1.9	0.0%	2.1	2.4	15.3%	2.6	24.6%	2.1	2.5	19.6%	2.7	27.4%
Laeken-10	2.8	3.2	3.2	-1.5%	3.1	-2.3%	3.2	3.2	-0.2%	3.2	-1.5%	3.3	3.3	-1.7%	3.2	-3.2%
EU-25	4.5	5.2	5.4	4.4%	5.1	-1.4%	5.3	5.6	6.0%	5.8	8.9%	5.5	5.8	6.5%	5.9	8.7%
marketable surplus																
EU-15	1.9	2.6	0.2		-0.5		2.6	0.1	-97.7%	-1.2		3.1	0.3		-1.0	
Laeken-10	0.2	1.0	0.5		0.6		1.0	0.8	-20.9%	0.7		1.2	1.2		0.9	
EU-25	2.1	3.5	0.7		0.1		3.6	0.8	-76.7%	-0.4		4.3	1.4		-0.1	
EUR/t	101.3	101.3	84.1	-17.0%	84.7	-16.4%	101.3	87.9	-13.3%	88.6	-12.6%	101.3	77.2	-23.8%	81.4	-19.7%

Table 2.34. Decoupling, EU-25 beef balance (mio. t)

Beef	2002	2006					2007					2009				
	Baseline	Baseline	market	% dev. baseline 2006	market + decoupl.	% dev. baseline 2006	Baseline	market	% dev. baseline 2007	market + decoupl.	% dev. baseline 2007	Baseline	market	% dev. baseline 2009	market + decoupl.	% dev. baseline 2009
production																
EU-15	7.6	7.7	7.7	-0.4%	7.2	-6.5%	7.8	7.7	-0.5%	7.2	-6.9%	7.8	7.8	-0.7%	7.3	-7.3%
Laeken-10	0.7	0.8	0.8	7.0%	0.8	-0.6%	0.8	0.8	6.4%	0.7	-2.1%	0.7	0.8	9.3%	0.7	0.5%
EU-25	8.3	8.5	8.5	0.3%	8.0	-5.9%	8.5	8.5	0.1%	8.0	-6.5%	8.6	8.6	0.1%	8.0	-6.6%
domestic use																
EU-15	7.4	7.5	7.5	-0.1%	7.2	-4.0%	7.5	7.4	-1.0%	7.2	-4.5%	7.6	7.5	-0.3%	7.3	-4.0%
Laeken-10	0.7	0.7	0.7	-0.2%	0.6	-3.9%	0.7	0.7	1.3%	0.7	-2.2%	0.7	0.7	-2.9%	0.7	-6.2%
EU-25	8.1	8.1	8.1	-0.1%	7.8	-4.0%	8.2	8.1	-0.8%	7.8	-4.3%	8.3	8.2	-0.5%	7.9	-4.2%
marketable surplus																
EU-15	0.2	0.3	0.2		0.0		0.3	0.3		0.1		0.3	0.3		0.0	
Laeken-10	0.0	0.1	0.1		0.1		0.1	0.1		0.1		0.0	0.1		0.1	
EU-25	0.2	0.3	0.4		0.2		0.3	0.4		0.1		0.3	0.4		0.1	
EUR/t	2 666.9	2 383.0	2 384.8	0.1%	2 584.7	8.5%	2 348.9	2 353.8	0.2%	2 537.4	8.0%	2 306.9	2 319.8	0.6%	2 494.3	8.1%

2.5   THE IMPACT OF THE DIFFERENT SCENARIOS ON AGRICULTURAL REVENUES IN THE EU-15…..

In the short-term the impact of market measures on agricultural income, measured in market revenues including and excluding direct payments, is slightly positive. However, the "market" scenario indicates that this income advantage gradually declines and would turn to be negative after 2008 compared to 2002. In 2009 the sector income is 2.8% lower than in 2002. One of the prime reasons for this development seems to be the income situation for cereals, which would appear to be squeezed by the permanent, set aside obligation of 10%. The competition with energy crops, which become eligible for the carbon credit, removes cereal area and cereal production, but would not offset the negative income effect of the removal.

Modulation on the other hand would produce only a very slight income effect compared to the **"market"** scenario. This income effect would be slightly positive for farms, when the impact of rural development measures are taken into account.

With decoupling, income initially is lower than without decoupling. However, the more sustainable production in the medium term produces more income than in the scenarios without decoupling. In 2009 the income in the EU-15 is about 4.2% higher than in the **"market"** scenario and 0.6% lower than in "baseline". **Taking into account the effects of rural development, farm income would be 0.3% higher than in baseline, i.e. than under Agenda 2000 policies.**

In conclusion, the MTR proposals would impose only slight effects on income. Especially decoupling would be a positive instrument in the medium-term, as both the income situation as well as the market situation would improve compared to Agenda 2000 policies as well as to the implementation of only parts of the MTR proposals.

…..and in the EU-25

With enlargement market dynamics would change. This would open new opportunities both for old and new Member States. These effects are visible in the scenarios. The MTR proposals will put agricultural policies and agricultural incomes on a more sustainable basis compared to Agenda 2000 policies.

Also in the EU-25 scenarios, agricultural income develops best in the scenario with decoupled direct payments, regarding the fact that possible market imbalances would not exist. Table 2.35 also displays the vivid fact that enlargement would have a large positive income effect on the new Member States. This effect would even be greater when the effects of rural and regional development policies are taken into account. Preliminary assessments of these measures on farm income for the new Member States would suggest that income could increase by additional 6% to 10%. However, this depends very much on the chosen measures and their implementation.

Table 2.35. EU-15; Agricultural income in different scenarios (2002=100)

	2002	2006				2007				2009			
	Baseline	Baseline	market	market + decoupl.	modul.	Baseline	market	market + decoupl.	modul.	Baseline	market	market + decoupl.	modul.
total agriculture	100	103.3	102.4	100.5	99.5	101.3	100.5	99.4	99.0	102.1	97.2	103.5	98.0
revenues including direct payments	100	102.7	102.8	100.4	102.8	100.4	100.4	99.5	99.4	101.7	97.7	102.9	98.7
of which													
cereals	100	103.7	98.4	102.6	98.4	105.1	98.1	104.7	98.5	105.3	99.9	99.7	96.3
oilseeds (incl. non-food)	100	121.4	118.3	138.9	118.3	118.9	117.6	127.1	128.6	116.4	125.4	123.3	132.6
beef	100	94.4	94.7	94.0	91.2	94.2	94.4	93.6	91.9	91.3	91.5	91.8	90.6
set aside revenues	100	104.0	110.0	114.0	101.5	105.0	110.0	114.0	108.3	106.0	110.0	114.0	108.8

Table 2.36. EU-25; Agricultural income in different scenarios (2002=100)

	2002	2006				2007				2009			
	Baseline	Baseline	market	market + decoupl.	modul.	Baseline	market	market + decoupl.	modul.	Baseline	market	market + decoupl.	modul.
market revenues*	100	102.4	100.6	101.5	100.4	101.3	99.4	100.1	99.0	102.0	100.0	100.3	99.5
revenues including direct payments*	100	101.9	100.5	101.2	100.4	101.0	99.5	100.1	99.4	101.4	99.9	100.2	99.6
of which new Member States*	100	124.0	118.8	121.5	118.9	125.1	119.8	122.4	119.9	130.0	124.4	127.3	124.3

* Accession countries valued in EU-15 prices in 2002 ** valued at current prices in 2002

References:

European Commission (2002 a), Analysis of the Impact on Agricultural Markets and Incomes of EU Enlargement to the CEECs. Brussels.

European Commission (2002 b), Prospects for Agricultural Markets 2002-2009. Update for EU markets. Brussels.

Münch (2002), Effects of EU Enlargement to the Central European Countries on Agricultural Markets. Peter Lang. Frankfurt.

FAPRI Analysis of the European Commission's

Mid-Term Review proposals

The Food and Agricultural Policy Research Institute (FAPRI)

at the University of Missouri

EXECUTIVE SUMMARY

In the Mid-Term Review (MTR), the European Commission proposes changes to the Common Agricultural Policy that would generally reduce the amount of support to EU agriculture that is contingent on agricultural production.

Using a structural model of EU agriculture that can be linked to larger models of world agricultural markets, the Food and Agricultural Policy Research Institute (FAPRI) estimates potential impacts of the MTR proposals on EU and world agricultural markets over the period 2004-2009. The estimates are based on a series of assumptions about how policies would be implemented and how economic actors are likely to respond to significant changes in marginal incentives.

Effects of the MTR proposals are evaluated by comparing estimated outcomes under the proposals to those that would result under a current-policy baseline. Key findings include the following.

- For most major commodities, the MTR proposals would result in a modest reduction in EU production.

- The total area harvested for nine major crops would be reduced by about 2 percent under the MTR proposals. The sharpest proportional reduction would be in rye, but the area devoted to durum wheat, oilseeds, rice, and barley would also decline.

- In the livestock sector, sharp reductions in marginal production incentives would lead to significant reductions in sheep and beef cattle inventories.

- Major changes in the market regimes for rice and rye lead to large reductions in market prices and carryover stocks for those commodities. Reduced intervention prices also lead to a small reduction in EU barley prices.

- For soft wheat, EU domestic prices are supported by world market prices and thus are largely unaffected by the proposed reduction in intervention prices.

- EU prices for beef cattle, sheep, and durum increase in response to the estimated reduction in production.

- Rice imports increase sharply in the current policy baseline, given planned import liberalisation from least developed countries. Under the MTR proposal, rice imports increase only slightly from current levels.

- After a short transition period, the MTR proposals would reduce EU net exports of most other commodities. As a consequence, there would be a slight increase in world market prices for a number of commodities.

3.1.   Introduction

The European Commission's Mid-Term Review (MTR) proposes a number of changes to the Common Agricultural Policy (CAP).

 In general, these reforms would reduce the amount of support to EU agriculture that is contingent on agricultural production.

The Food and Agricultural Policy Research Institute (FAPRI)[28] conducted an analysis of the MTR proposals to assess their potential impacts on EU and world agricultural markets. The analysis reflects information about the proposals provided by the Commission between July and September 2002. The starting point for the analysis is a set of baseline projections for EU agricultural markets that reflects the most recent information available in mid-2002.

As this analysis is prepared, a number of questions remain regarding specific implementation of the reforms if they were adopted as proposed. In some cases, these questions have important implications for the analysis. For example, what precisely is required of a producer to retain eligibility for "decoupled" payments? Depending on the answer, the new payment schemes may have significantly greater or smaller effects than indicated in this analysis.

Another source of uncertainty in the analysis is the outlook for world agricultural markets. Although the baseline used here is relatively recent, there have been a number of important developments in world markets since mid-2002. Perhaps most important is the sharp increase in world cereal and oilseed prices that has resulted from weather-induced reductions in 2002 production in the United States, Canada, Australia, and other countries. These developments have major implications for agricultural markets in 2002 and 2003, but it is our judgement that they do not seriously impact projections for subsequent years. While the baseline may continue to be appropriate to look at reform proposals taking effect in 2004, the experience serves as a reminder that events can cause sudden shifts in the market outlook, and all market projections should be treated as provisional.

3.2.   FAPRI models

FAPRI has developed an integrated set of non-spatial partial equilibrium models for major agricultural markets. Current FAPRI models cover world markets for cereals, oilseeds, meats, dairy products, cotton, and sugar. For each commodity, the largest exporting and importing countries are treated separately, with other countries included in regional groupings or a "rest of world" aggregate. In the case of wheat, for example, the 2002 version of the model includes 9 exporting countries, 12 importing countries, 7 regional groupings, and a small rest-of-world category. For most countries and commodities, the model estimates production, consumption, and trade; in many cases the model also estimates domestic market prices, stocks, and other variables of interest.

Where feasible and appropriate, parameters of the FAPRI model were estimated using econometric techniques applied to time series data. In some cases, however, data

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[28]   FAPRI is a joint institute of Iowa State University and the University of Missouri, created to provide objective, quantitative analysis of issues related to world agriculture. FAPRI collaborates with a number of other universities, government agencies, and other institutions in the United States, the European Union, and around the world. For each of the past 17 years, FAPRI has developed ten-year projections of world agricultural markets. FAPRI analysts use a system of linked models and the judgement of commodity and country specialists to estimate the supply, demand, and prices of major commodities under alternative sets of assumptions.

limitations, recent structural change, or resource limitations mean that econometric techniques cannot be used to determine model parameters. In these cases, the model uses assumed parameters that are taken from the literature or that are established based on analyst judgement and input from market specialists.

The model estimates both the area devoted to a particular crop and the yield per harvested hectare. Area is generally a function of output and input prices and government policies. Yield equations incorporate technical progress and price responses. For beef and pork, supply equations consider herd dynamics, where the key behavioural equations generally are those that determine breeding herd inventory, slaughter, and carcass weights. These meat supply equations are functions of livestock prices, feed and other input prices, and government policies. The dairy model estimates both cow numbers and milk yield per cow, and the supply equations are functions of milk prices, feed and other input prices, and government policies. In all supply equations, care is taken to ensure that the model reflects marginal incentives. As a result, a subsidy directly tied to production will have a larger effect on production, all else equals, than a more decoupled subsidy that provides the same level of producer income support. Because the models attempt to incorporate biological constraints and other dynamic factors, they are intended to reflect both short-run and long run supply behaviour.

Per capita consumer demand equations for cereals, oils, meats, dairy products, and sugar are a function of the price of the food in question, the prices of other foods, and income. Feed demand for cereals and oilseed meals depends on livestock production and feed prices. Oilseed crush demand is a function of relative oilseed and oilseed product prices. Allocation of milk to production of the various dairy products is a function of relative prices. End-of-period stocks generally are a function of prices and government policies.

The models close different markets in different ways, depending on the nature of the product and policies. In the simplest case, a relatively homogeneous good without insulating policies, domestic prices in each country are directly linked to a world market price. Net trade for each country is simply the difference between domestic supply and demand at this domestic price. The world market price is that which causes total world exports to equal total world imports, thus balancing global supply and demand.

For more heterogeneous goods (e.g., meats), trade is a function of relative prices and other variables, and domestic market prices are determined by equating total supply (production, changes in stocks, and imports) and demand in domestic markets. Where tariffs, quotas, support prices, and other government policies determine or influence market prices, the models attempt to incorporate these effects.

The EU components of the model explicitly represent important features of EU agricultural policy. Stocks accumulate when market prices fall to intervention levels. Set-aside reduces the amount of land devoted to production of cereals and oilseeds. Quotas limit milk production. Various payment schemes have production impacts that differ depending on the degree to which the payments affect marginal production decisions.

This analysis uses a model of EU agricultural markets developed by FAPRI-Missouri for research conducted jointly with colleagues at Teagasc in Dublin and Queens University in Belfast. The model provides country-level detail for France, Germany, Ireland, Italy, and the United Kingdom, while treating the other countries of the European Union as a group.

Market prices in the various member countries are linked, but domestic supply and demand conditions affect cross-country price relationships. Net export supply for the European Union is the sum of the net export supplies (production plus beginning stocks minus domestic consumption minus ending stocks) of the member countries at a given set of prices. Net export demand for the European Union is a behavioural function of EU and world prices that also attempts to incorporate WTO limitations and plausible behaviour by the European Commission in establishing export restitutions and other measures affecting EU trade and prices. Domestic EU market prices are those that equate EU net export supply and demand.

The basic FAPRI-Missouri model covers EU markets for soft wheat, durum, barley, maize, rapeseed, sunflowers, soybeans, beef, pork, poultry, sheep meat, milk, cheese, butter, skim milk powder, and whole milk powder. Researchers in 14 EU member states participating in the AG-MEMOD partnership are using this basic model as a starting point for a larger EU modelling effort. Binfield, et al. report detailed projections prepared using the model, based on information available in early 2002. Results of these earlier projections are generally similar to the baseline projections reported here.

The MTR proposes major changes to EU policies affecting the rice and rye sectors that could have important impacts on other commodity markets. To better estimate impacts of the proposal, the basic FAPRI-Missouri model has been expanded to incorporate EU rice and rye markets. The new model components should be seen as provisional and subject to further elaboration, but they do attempt to reflect important features of CAP policies affecting the rice and rye sectors.

3.3.   Scenario assumptions

The **baseline** assumes a continuation of current agricultural policies in the European Union and other countries. Agenda 2000 provisions are incorporated, including the planned 2005-2007 expansion of milk quotas and reduction of dairy intervention prices. Enlargement of the European Union, however, is not reflected in the baseline, as terms of accession have not been agreed. The Uruguay Round Agreement on Agriculture is included, but there has been no attempt to incorporate changes that might be made as a result of the ongoing World Trade Organisation negotiations. No resumption in UK cow slaughter for human consumption is assumed.

Assumptions for the **MTR** scenario are based on the communication from the Commission to the Council and the European Parliament, "Mid-Term Review of the Common Agricultural Policy." The document does not comprise legislation and thus there is scope for different interpretations of some of the proposed changes. Where this is the case, assumptions have been made that are set out below and summarised in Table 3.1.

3.3.1. Cereals and oilseeds

The cereals intervention price is reduced from 101.31 to 95.35 EUR per tonne from 2004/05 onwards, and monthly increments in intervention prices are abolished. The compensation payment for cereals and oilseeds is increased from 63 to 66 EUR per tonne.

Intervention is abolished for rye from 2004/05 onwards. Intervention stocks projected to exist at that time are released over a period of five years.

The specific supplement to producers of durum in traditional areas is reduced from 344.5 to 250 EUR per hectare over three years from 2004. A quality premium of 15 EUR per tonne is introduced, adjusted in each country to take account of the proportion of that country's durum production that goes for food rather than feed.

3.3.2. Rice

The safety net level is established at 120 EUR per tonne from 2004/05. Private storage would be used to reduce price fluctuations, but would not result in stocks being held for a year or more. Producers would receive an income payment of 102 EUR per tonne and a crop specific payment of 75 EUR per tonne, each multiplied by the reference yield.

Maximum guaranteed areas (MGAs) are set at the minimum of the 1999-2001 average area, or current MGA. The result is a net reduction in MGAs of 42 000 ha.

3.3.3. Set-aside and energy crops

Rotational set-aside is replaced with long-term set-aside, and the production of industrial and energy crops on set-aside is prohibited. These two changes may have offsetting impacts on the production of crops other than industrial and energy crops. On the one hand, long-term set-aside may have a slightly smaller effect on production than would the same level of rotational set-aside, as producers idle their least productive cropland. In some cases land idled in the long-term set-aside may be land that would not have been planted even in the absence of a set-aside requirement. With a rotational set-aside, it is slightly more likely that the land idled is land that would otherwise have been used for crop production.

However, prohibiting the planting of crops on set-aside reduces the amount of land available for crop production. The analysis assumes this displacement effect is marginally more important than the effect of shifting to long-term set-aside, and so in the model it is assumed that approximately 1 percent less land is available for crop production in the MTR scenario. The amount actually used for crop production depends, of course, on marginal production incentives.

For energy crops, the proposal provides aid of 45 EUR per ha, with a maximum guaranteed area of 1.5 mio ha. While energy crops are not modelled separately in the FAPRI system, it is assumed that the effects of the prohibition of production on set-aside and the energy crop-specific subsidies will largely offset each other, leaving production of energy crops near baseline levels.

3.3.4. Decoupling and cross-compliance

Cereal and oilseed compensatory payments, rice income payments, and the payments currently made in the beef and sheep sectors are decoupled from 2004 onward. Payments are provided in the form of a single farm payment. However, in the models it is assumed that the payments still retain some production-influencing effect. Specifically, it is assumed that the new payments will have 30 percent of the supply-inducing effect of the

more-coupled payments they replace. This is broadly consistent with FAPRI's treatment of U.S. farm program payments.

The MTR communication does not contain a great deal of detail regarding farm activity required to receive the decoupled payment. It is assumed that additional payments will be made that cover the cost of meeting food safety, animal welfare, and environmental requirements, and that these payments will be non-production distorting.

Most important for the work is the interpretation of "good farming practices." It has been assumed here that the land must be used for agricultural production, but that agricultural production is defined broadly enough to include very extensive production systems. It is also assumed that there cannot be large-scale shifts from pasture into crop production, or vice-versa.

3.3.5. Dynamic modulation

Direct aids are capped at 300 000 EUR per farm.

Starting in 2004, the new per-farm payments, the durum quality payment, and the rice specific crop payment are reduced by 3 percent a year to a maximum reduction of 20 percent (in 2010) for farms larger than a certain size. Adjustments will be made in the individual countries on the basis of information provided by the Commission.

It is assumed that both the money recouped from capping payments and from dynamic modulation does not return to the sector in a production-distorting manner.

3.3.6. Market management

It is generally assumed that the Commission will act in ways to avoid stock accumulation when possible. While WTO limits place a cap on subsidised exports, estimated export levels reflect a balancing of an assumed desire to support market prices and avoid stock accumulation by disposing of exportable supplies with an assumed desire to limit the budgetary costs of export restitution. As a result of this balancing assumption, the analysis indicates that subsidised exports often fall short of the WTO maximum levels, both in the baseline and in the MTR scenario.

Experience since implementation of the Agenda 2000 reforms suggests that market prices often fail to change by the same proportion as changes in intervention prices. In the model, changes in intervention prices have direct impacts on market prices when prices are at or below intervention levels and intervention is removing commodities from the market. On the other hand, small changes in intervention prices have little or no impact on market prices when baseline prices are well in excess of intervention levels and no intervention activity is occurring. For example, if world wheat market prices are high enough to support EU wheat markets well above intervention levels, a small change in the wheat intervention price will have little direct impact on EU market prices.

3.3.7. World markets

The baseline and scenario both assume world market conditions consistent with FAPRI projections. While the last FAPRI global baseline was prepared in January 2002 (FAPRI 2002a), an update for U.S. agricultural markets was prepared in June 2002 that incorporates effects of the 2002 U.S. Farm Security and Rural Investment Act (the 2002

U.S. farm bill). For this analysis, baseline world prices are consistent with those reported in the June 2002 study (FAPRI 2002b).

Given time and resource constraints, the global FAPRI system was not used to conduct the present analysis. Instead, the FAPRI-Missouri EU model utilised incorporates reduced-form equations that determine changes in world prices from baseline levels depending on differences between baseline and scenario levels of EU exports. If EU wheat exports exceed baseline levels, for example, this will slightly depress world market prices for wheat and other cereals, all else equal. The reduced-form equations are intended to mimic the behaviour of a dynamic global modelling system, but may not always precisely match results that would have been obtained by solving the full FAPRI system.

3.3.8. EU macroeconomic conditions

The baseline incorporates macroeconomic projections obtained from a variety of sources in mid 2002. The pace of economic growth is expected to pick up in 2003, with growth in real GDP averaging 2.6 percent per year between 2003 and 2009. Inflation is assumed to remain low, as the GDP deflator increases by less than 2 percent per year.

The euro has strengthened considerably against the dollar in 2002, and further strengthening is assumed for 2003 and 2004. The 2004 exchange rate of $1.03 per EUR is assumed to persist in all subsequent years.

3.4.   Model results

The decoupling of payments from production levels proposed in the MTR represents a major departure from current EU agricultural policies. Because the proposals would fundamentally change the incentives faced by producers, it is especially difficult to estimate likely consequences of the proposals using models based on historical relationships among prices, payments, and production. To obtain the results reported here, existing models were adapted using analyst judgement, and reviewer comments on preliminary results were incorporated in the final analysis.

3.4.1. Crop production

Compared to the current-policy baseline, changes in support prices and the decoupling of payments leads to a modest reduction in aggregate EU crop production (Table 3.2). For nine major crops, the total area harvested under the MTR scenario declines by approximately 2 percent each year relative to the baseline. Most of the decline is likely to occur among high-cost producers, particularly in regions where current participation in the voluntary set-aside program is restricted. The model does not provide explicit estimates of the area enrolled in voluntary set-aside, but the 800 000 ha reduction in area harvested for major crops implies a significant expansion of voluntary set-aside.

The largest proportional reduction in production occurs in the case of rye, where the elimination of intervention is estimated to result in significantly lower market prices. Area harvested also declines significantly relative to the baseline for durum and rice, as MTR policy changes reduce marginal incentives to produce those crops. Smaller production declines occur for oilseeds, barley, and maize. In general, reductions in area

harvested are partially offset by slight increases in average yields per hectare, given reduced plantings on low-yielding, marginal land.

Alone among the major crops, soft wheat production actually increases marginally relative to the baseline by the end of the evaluation period. EU soft wheat prices are supported by world market prices and so do not decline as much as do prices of other cereals when intervention prices are reduced. As a result, some producers expand soft wheat production at the expense of barley and other crops.

3.4.2. Crop sector stocks

The combination of reduced production and reduced intervention prices leads to lower cereal stocks. In the baseline, rye stocks increased between 2002 and 2009, but with the end of rye intervention in the MTR scenario, total rye stocks in 2009 are approximately one-fourth the baseline level. Baseline stocks are far less burdensome for other cereals, as even baseline market prices generally exceed intervention levels, especially for wheat. However, the baseline did reflect some intervention activity for both barley throughout the period and soft wheat at the beginning of the period, and so the reduction in intervention prices contributes to lower stock levels.

As with rye, rice stocks are dramatically lower in the MTR scenario than in the baseline. In the baseline, planned reductions in EU import barriers cause sharp increases in EU rice imports by 2009, given EU intervention prices fixed far in excess of world rice prices. As a result, an increasing proportion of EU rice production is added to EU intervention stocks each year in the baseline. The sharp reduction in support prices in the MTR scenario allows EU market prices to fall enough to discourage a large increase in import levels. As a result, rice stocks are only one-third of baseline levels in 2009.

3.4.3. Feed use

Estimated impacts of the MTR scenario on feed demand are relatively modest. The reduction in cattle and sheep numbers is partially offset by increased production of hogs and poultry. Sharply lower rye prices (especially in the early years of the analysis) lead to an expansion of rye feeding, but net changes in feed demand for other commodities are modest. Likewise, given only small changes in market prices for commodities other than rice and rye, the net effect on food and industrial demand for major field crops is also estimated to be relatively small.

3.4.4. Crop trade and prices

Estimated impacts of the MTR scenario on EU crop prices (Table 3.3) depend critically on the relationship between EU and world market prices, and on Commission market management strategies. In the baseline and in the MTR scenario, EU market prices for soft wheat and oilseeds are largely determined in world markets. In the case of soft wheat, reduced intervention prices in the MTR scenario initially lead to lower wheat stocks and greater EU exports, resulting in lower world and EU wheat prices. In later years, EU wheat exports continue to marginally exceed baseline levels, but EU exports of other cereals fall short of baseline levels, resulting in a net positive impact on world prices for all major cereals.

EU barley prices generally exceed world market levels for comparable products, and so most exports are only possible with the use of export subsidies (excepting times like the

present when world coarse grain prices are abnormally high). Even with a reduction in intervention prices, there is not a significant increase in commercial barley exports. Total barley exports actually fall relative to the baseline, as reduced barley production limits exportable supplies and as the Commission is assumed to set export refunds at levels resulting in market prices marginally below baseline levels, but above the new intervention prices.

In the case of maize, it is assumed that the tariff-rate quota largely determines net imports. MTR scenario maize prices are within 1 percent of baseline levels throughout the evaluation period, given offsetting effects of marginal reductions in maize production and substitution effects from lower priced barley and rye.

The reduction in durum production in the MTR scenario results in a significant increase in EU durum prices and a corresponding reduction in net exports. If the estimated effect on EU durum production is correct, it is possible that the change in EU durum trade could be even larger than estimated, given the estimated growing gap between world and EU durum prices (Canadian durum prices exceed baseline levels by about 1 percent in 2009, compared to an 11 percent increase in EU prices in the same year).

In contrast, the MTR scenario results in a sharp decline in rye prices. Only a steep price decline is sufficient to induce a sufficient reduction in production and increase in domestic and export demand for EU rye to absorb the intervention stocks that were building in the baseline. As markets adjust and stocks eventually reach more sustainable levels, rye prices do recover over time, but EU prices remain 9 percent below baseline levels in 2009.

In the case of rice, the sharp reduction in support levels allows a very large reduction in EU market prices. EU rice prices fall relative to the baseline by more than 41 percent in 2009, the year of greatest competition from imported rice. If the MTR policies were sustained beyond 2009, the analysis would show a modest price recovery, although prices would remain well below baseline levels. Reduced EU rice imports in the MTR scenario relative to the baseline result in lower world market prices for rice.

For oilseeds, reduced EU production results in an increase in net imports and a modest increase in EU and world prices. World rapeseed and sunflower market effects are proportionally larger than those for soybeans, given relative EU shares of world production.

3.4.5. Livestock production

In estimating MTR effects on the livestock sector, the biggest question is how much decoupling payments will affect production in the cattle and sheep sectors. Farm-level analysis suggest that many producers might rationally choose to liquidate herds if they could qualify for fully decoupled payments without retaining animals. Farm-level data suggests that variable production costs for cattle and sheep often exceed returns from the market, implying that under current policies, many producers retain animals only to qualify for payments. Indeed, some of the farm-level analysis suggests that cattle and sheep production effects could be even larger than estimated here.

Two factors contributed to a decision to moderate impacts implied by farm-level analysis. First, in the cattle industry there is evidence that at least some efficient producers find it rational to produce at market prices at the margin. In several countries, suckler cow

numbers exceed the number of animals eligible for suckler cow payments, implying that some producers earn positive net returns excluding suckler cow payments. While this does not consider the impacts of other cattle payments, it does suggest that at least some lower cost producers exist.

Second, a major policy change like the decoupling proposed in the MTR is certain to result in significant market restructuring. With market prices having a larger effect on production decisions, it seems likely that lower-cost producers would take up at least part of the gap left by higher-cost producers who reduce production. While stocking rates are likely to be reduced in some regions, it seems unlikely that prime grazing land will lie unused.

Given all these considerations, the estimated reduction in suckler cow numbers in the MTR scenario is approximately 5 percent in 2004, growing to almost 12 percent by 2009 (Table 3.4). Dairy cow numbers remain essentially unchanged, as it is assumed that the quota will continue to be the overwhelming factor driving milk production and cow numbers, even if payments are decoupled.

In the short run, the reduction in cow numbers means an increase in cow slaughter and reduced heifer retentions, both of which contribute to a temporary increase in cattle slaughter and beef production. In later years, the reduction in cow numbers results in fewer calves and fewer animals available for slaughter. By 2009, cattle slaughter is more than 3 percent lower than baseline levels, and the effect would be even larger in subsequent years if the analysis were extended.

A similar story applies to the sheep industry. In the short run, ewe liquidation results in a temporary increase in sheep meat production, but in the longer run, the decline in sheep numbers results in lower meat production levels. By 2009, sheep meat production in the MTR scenario is almost 5 percent below baseline levels.

3.4.6. Beef stocks and use

The baseline included no intervention stocks of beef after 2004, so the scenario has no effect on stock levels after 2004. Thus, the reduction in beef production must translate into changes in domestic consumption and exports. Given assumed Commission behaviour in managing export restitutions, almost half (100 000 tonnes) of the reduction in beef production in 2009 is reflected in reduced EU beef exports. That leaves approximately 120 000 tonnes of the reduction in 2009 beef production to be absorbed by reduced EU domestic beef consumption.

3.4.7. Livestock prices

The estimated effects of the scenario on EU livestock prices (Table 3.5) can be explained by the changes in beef and sheep meat production. Prices fall initially given short-term herd liquidation effects. In later years, cattle and sheep prices exceed baseline levels because of reduced production. By 2009, EU cattle prices exceed baseline levels by about 8 percent, and EU sheep prices exceed baseline levels by almost 12 percent.

With little change in feed prices, estimated changes in the pork and poultry sectors can be explained by changes in the beef and sheep meat sectors. Initial lower prices for beef and sheep meat result in reduced prices and production for pork and poultry. In the longer run, however, higher beef and sheep meat prices encourage increased consumption of

pork and poultry, resulting in marginal increases relative to the baseline in both prices and production levels for pork and poultry.

If the Commission were to manage beef export restitutions in a different way, scenario impacts could be significantly different. Suppose, for example, the Commission made even steeper reductions in the quantity of beef exports subsidised. The impact would be a smaller scenario impact on beef prices, and therefore smaller effects on the pork and poultry sectors as well. At lower prices, fewer producers would find it profitable to produce beef, and so cattle numbers and beef production would fall relative to the estimates presented here.

3.5.   Concluding comments

If adopted, the MTR proposals would represent a significant change in EU agricultural policy. In particular, decoupling payments would result in major changes in the marginal production incentives faced by producers.

The MTR is estimated to result in reduced EU production of several agricultural commodities. The steepest reductions are likely to occur for commodities that would be unprofitable for many existing producers were it not for current support prices and coupled payments. For example, production of beef, sheep meat, rye, and durum would all be likely to decline significantly if the proposals were adopted.

By reducing market support levels, the MTR proposals would result in steep reductions in stocks and market prices for rice and rye. Lower intervention prices have a mild negative effect on estimated EU barley market prices, but EU soft wheat prices are supported by world markets and differ only marginally from baseline levels. Reduced production would result in increased EU market prices for sheep, beef cattle, and durum.

After a transition period, the MTR proposals generally would reduce EU agricultural exports and/or increase EU imports. The result is estimated to be modest increases in world prices for most commodities. An important exception is rice, where the MTR is estimated to avert the large increase in imports that was expected to occur under a simple continuation of current policies.

The analysis depends on a series of assumptions about how markets are likely to evolve how policies would be implemented, and how economic actors would respond to change incentives. Actual outcomes could be very different from those projected here.

References

Binfield, Julian, Trevor Donnellan, Kevin Hanrahan, Kieran McQuinn, Pat Westhoff, and Robert Young II. 2002. "FAPRI-Ireland 2002 EU Baseline Briefing Book." FAPRI-UMC Technical Data Report #1-02. Food and Agricultural Policy Research Institute, University of Missouri, Columbia, Missouri, May.

Food and Agricultural Policy Research Institute. 2002a. "FAPRI 2002 World Agricultural Outlook." FAPRI Staff Report #1-02. FAPRI, Iowa State University, Ames, Iowa, January.

Food and Agricultural Policy Research Institute. 2002b. "FAPRI 2002 U.S. Baseline Briefing Book." FAPRI-UMC Technical Data Report #2-02. Food and Agricultural Policy Research Institute, University of Missouri, Columbia, Missouri, July.

Table 3.1.   Policy assumptions

	Baseline	MTR Scenario Effective 2004 Onwards
Cereals		
Intervention price	101.31 EUR/tonne, with monthly increments	95.35 EUR/tonne, with no monthly increments
Compensation payment	63 EUR/tonne	66 EUR/tonne
Set-aside	Predominately rotational	Long term
Rye	Intervention	No intervention
Durum	Supplementary payment of 344.5 EUR/hectare	Supplementary payment of 250 EUR/hectare* 15 EUR/tonne quality payment
Oilseeds		
Compensation payment	63 EUR/tonne	66 EUR/tonne
Rice		
Intervention price	298.35 EUR/tonne	120 EUR/tonne safety net
Direct payment	52.65 EUR/tonne	177 EUR/tonne (75 EUR/tonne as crop specific payment)
MGA	Current MGA	Minimum of current MGA and 1999-2001 area average
Energy crops	Currently grown on set aside	Cannot be grown on set aside
Decoupling	Payments coupled	All COP, beef, sheep, and rice payments decoupled from 2004 except rice crop specific and durum quality payment
Payment cap	No cap	Payment capped at 300,000 EUR
Modulation	Voluntary	Mandatory, new farm payment and crop specific rice and durum quality payment modulated 3% per year to 2010

* Phased in over three years from 2004

Table 3.2.   Crop sector supply and utilisation results

	2004 Baseline	2004 MTR	Change	2009 Baseline	2009 MTR	Change
Soft wheat						
Area harvested (mil. ha)	13.69	13.68	-0.1%	14.09	14.18	0.7%
Yield (tonne/ha)	7.08	7.09	0.2%	7.63	7.63	-0.1%
Production (mil. tonne)	96.92	96.98	0.1%	107.57	108.20	0.6%
Domestic use (mil. tonne)	80.34	80.54	0.2%	82.17	82.00	-0.2%
Net exports (mil. tonne)	13.85	15.50	11.9%	24.17	24.53	1.5%
Ending stocks (mil. tonne)	17.45	15.65	-10.3%	16.86	16.36	-3.0%
Barley						
Area harvested (mil. ha)	10.59	10.48	-1.1%	10.41	10.13	-2.7%
Yield (tonne/ha)	4.81	4.82	0.2%	5.07	5.08	0.3%
Production (mil. tonne)	50.95	50.47	-1.0%	52.79	51.51	-2.4%
Domestic use (mil. tonne)	45.12	45.62	1.1%	46.47	46.56	0.2%
Net exports (mil. tonne)	5.49	5.07	-7.7%	6.30	5.00	-20.5%
Ending stocks (mil. tonne)	9.95	9.39	-5.7%	10.45	8.74	-16.4%
Maize						
Area harvested (mil. ha)	4.29	4.27	-0.5%	4.22	4.20	-0.4%
Yield (tonne/ha)	9.40	9.41	0.1%	9.98	9.99	0.1%
Production (mil. tonne)	40.30	40.15	-0.4%	42.11	41.99	-0.3%
Domestic use (mil. tonne)	42.34	42.19	-0.3%	44.21	44.10	-0.3%
Net imports (mil. tonne)	2.13	2.12	0.1%	2.10	2.10	0.0%
Ending stocks (mil. tonne)	4.94	4.93	-0.1%	5.01	4.98	-0.5%
Durum						
Area harvested (mil. ha)	3.76	3.49	-7.2%	3.74	3.55	-5.0%
Production (mil. tonne)	9.57	8.98	-6.1%	10.00	9.62	-3.8%
Net exports (mil. tonne)	0.35	0.11	-68.8%	0.43	0.21	-51.0%
Ending stocks (mil. tonne)	0.83	0.75	-9.7%	0.87	0.77	-11.3%
Rye						
Area harvested (mil. ha)	1.16	1.02	-12.4%	1.10	0.93	-15.5%
Production (mil. tonne)	5.61	4.88	-12.9%	5.60	4.72	-15.6%
Domestic use (mil. tonne)	4.30	4.89	13.8%	4.28	4.49	5.0%
Net exports (mil. tonne)	0.82	1.00	21.9%	1.12	0.52	-53.4%
Ending stocks (mil. tonne)	6.82	5.32	-22.0%	8.57	2.28	-73.4%
Rice						
Area harvested (mil. ha)	0.40	0.39	-2.7%	0.40	0.38	-3.1%
Production (mil. tonne)	1.74	1.70	-2.5%	1.81	1.79	-1.2%
Net imports (mil. tonne)	0.46	0.65	40.8%	1.70	0.81	-52.1%
Ending stocks (mil. tonne)	0.65	0.69	6.8%	2.49	0.83	-66.7%
Oilseeds						
Area harvested (mil. ha)	5.63	5.37	-4.7%	5.57	5.36	-3.7%
Rapeseed prod. (mil. tonne)	10.47	10.06	-4.0%	10.92	10.61	-2.8%
Sunflower prod. (mil. tonne)	3.53	3.35	-5.1%	3.58	3.42	-4.4%
Soybean prod. (mil. tonne)	1.11	1.07	-3.2%	1.23	1.19	-3.8%
9-crop* area harv. (mil. ha)	39.52	38.67	-2.1%	39.53	38.75	-2.0%

*Soft wheat, barley, maize, durum wheat, rye, rice, rapeseed, sunflowers, and soybeans

Table 3.3.   Crop sector price results (EUR/tonne)

	2004	2005	2006	2007	2008	2009
EU soft wheat price						
Baseline	107.9	109.3	111.4	112.4	113.6	114.8
MTR	106.1	108.5	111.7	112.7	114.2	115.3
Difference	-1.7%	-0.7%	0.2%	0.3%	0.5%	0.5%
U.S. wheat Gulf price						
Baseline	133.4	134.5	139.0	141.2	144.4	147.0
MTR	131.5	134.6	139.7	141.5	145.0	147.6
Difference	-1.4%	0.1%	0.4%	0.2%	0.5%	0.4%
EU barley price						
Baseline	105.1	104.8	105.7	106.1	106.3	106.6
MTR	101.7	101.8	103.1	104.0	104.5	106.0
Difference	-3.2%	-2.8%	-2.5%	-2.0%	-1.7%	-0.5%
U.S. barley Portland price						
Baseline	114.2	117.0	118.5	120.1	121.7	123.8
MTR	115.0	118.6	121.1	123.1	124.9	126.4
Difference	0.7%	1.4%	2.1%	2.5%	2.6%	2.1%
EU maize price						
Baseline	122.5	121.9	123.4	123.5	122.9	122.9
MTR	121.9	121.1	123.1	123.7	123.4	123.8
Difference	-0.5%	-0.6%	-0.2%	0.2%	0.4%	0.8%
U.S. maize Gulf price						
Baseline	96.0	98.0	99.7	101.3	103.1	105.3
MTR	95.8	97.7	99.8	101.5	103.3	105.5
Difference	-0.2%	-0.3%	0.1%	0.2%	0.2%	0.2%
EU durum price						
Baseline	156.0	157.6	160.0	161.5	162.9	163.9
MTR	182.0	176.2	177.1	177.3	180.9	182.0
Difference	16.7%	11.8%	10.7%	9.8%	11.0%	11.0%
EU rye price						
Baseline	96.9	96.6	96.4	96.3	96.2	96.1
MTR	71.7	76.6	79.2	82.6	82.7	87.2
Difference	-26.1%	-20.7%	-17.9%	-14.2%	-14.0%	-9.3%
EU rice price						
Baseline	285.1	294.8	283.4	279.8	271.3	257.8
MTR	185.1	186.2	190.9	194.5	191.6	151.0
Difference	-35.1%	-36.9%	-32.6%	-30.5%	-29.4%	-41.4%
Hamburg rapeseed price						
Baseline	228.0	230.2	231.8	233.4	233.3	233.6
MTR	236.8	231.8	235.3	237.1	238.6	238.7
Difference	3.8%	0.7%	1.5%	1.6%	2.3%	2.2%
Rhine sunflower price						
Baseline	261.3	262.0	263.2	263.9	264.1	263.8
MTR	265.7	266.0	266.9	267.7	268.4	268.4
Difference	1.7%	1.5%	1.4%	1.4%	1.6%	1.7%

Table 3.4.   Livestock sector supply and utilisation results

	2004 Baseline	2004 MTR	Change	2009 Baseline	2009 MTR	Change
Cattle						
Suckler cows (mil. head)	12.40	11.82	-4.7%	12.43	10.97	-11.7%
Dairy cows (mil. head)	19.44	19.43	0.0%	18.50	18.50	0.0%
Slaughter (mil. head)	26.13	26.54	1.6%	25.75	24.93	-3.2%
Beef						
Production (mil. tonnes)	7.29	7.41	1.6%	7.21	6.99	-3.1%
Domestic use (mil. tonnes)	7.24	7.28	0.5%	7.06	6.94	-1.7%
Imports (mil. tonnes)	0.42	0.42	-0.2%	0.43	0.43	0.4%
Exports (mil. tonnes)	0.56	0.64	13.5%	0.58	0.48	-17.4%
Interv. stocks (mil. tonnes)	0.01	0.01	12.7%	0.00	0.00	n.a.
Pork						
Production (mil. tonnes)	17.87	17.86	-0.1%	18.23	18.32	0.5%
Domestic use (mil. tonnes)	16.54	16.52	-0.1%	16.82	16.92	0.5%
Imports (mil. tonnes)	0.06	0.06	0.0%	0.06	0.06	0.0%
Exports (mil. tonnes)	1.39	1.39	0.3%	1.47	1.47	-0.1%
Poultry						
Production (mil. tonnes)	8.59	8.57	-0.2%	8.97	9.03	0.6%
Domestic use (mil. tonnes)	8.03	8.00	-0.3%	8.40	8.46	0.7%
Imports (mil. tonnes)	0.47	0.47	-0.1%	0.50	0.50	0.0%
Exports (mil. tonnes)	1.04	1.04	0.6%	1.07	1.06	-0.7%
Sheep meat						
Production (mil. tonnes)	1.06	1.10	3.5%	1.05	1.00	-4.6%
Domestic use (mil. tonnes)	1.31	1.34	2.6%	1.31	1.27	-3.3%
Imports (mil. tonnes)	0.25	0.25	-1.3%	0.26	0.27	1.8%
Exports (mil. tonnes)	0.00	0.00	0.0%	0.00	0.00	0.0%
Milk						
Production (mil. tonnes)	120.13	120.15	0.0%	120.51	120.50	0.0%

Table 3.5.   Livestock sector price results (EUR/100 kg)

	2004	2005	2006	2007	2008	2009
EU cattle reference						
Baseline	114.5	118.6	116.4	113.4	111.3	110.9
MTR	110.9	116.9	117.5	116.8	117.0	119.9
Difference	-3.2%	-1.4%	1.0%	3.0%	5.2%	8.1%
EU pork reference						
Baseline	133.1	135.8	134.3	131.2	131.7	133.2
MTR	131.5	135.7	135.1	131.7	132.3	134.6
Difference	-1.2%	-0.1%	0.6%	0.4%	0.5%	1.0%
EU chicken						
Baseline	128.5	129.2	128.8	128.2	128.3	128.4
MTR	127.1	128.8	129.2	128.8	129.1	129.9
Difference	-1.1%	-0.3%	0.3%	0.4%	0.7%	1.1%
EU sheep reference						
Baseline	353.5	352.6	348.9	346.0	347.8	350.2
MTR	326.4	366.8	393.8	388.8	386.2	391.3
Difference	-7.7%	4.0%	12.9%	12.4%	11.0%	11.7%
EU milk						
Baseline	29.1	28.5	28.0	27.6	27.7	27.7
MTR	29.1	28.5	28.0	27.6	27.7	27.8
Difference	0.0%	-0.1%	-0.1%	0.0%	0.0%	0.0%

Mid-Term Review proposal impact analysis

with the

CAPRI modelling system

EuroCARE

University of Bonn

Department for Economics and Agricultural Policy

4.1. Executive Summary

4.1.1. Agenda 2000 Policy Scenario

Under the assumption of the continuation of Agenda 2000 developments in the 'Grandes Cultures' sector are mainly influenced by (1) an increased set-aside obligation compared to the base period 1997-1999, (2) a slight decrease in premiums for cereals in real terms, and (3) uniform premiums for oilseeds and pulses, coupled with decreases of output prices for all 'Grandes Cultures' in real terms.

Major effects in the crop sector simulated by the CAPRI modelling system are a reduction of acreage in 'Grandes Cultures' (Cereals –5.1 %, Oilseeds –17.1 %. Other arable crops -1.9 %), offset by an increase of vegetables and perennials (4.4 %) and set-aside and fallow land (19.4 %), the latter effect partly due to stricter set-aside obligations compared to the 1997-1999 average used as base year. Net trade surplus in cereals increases to 36.3 mio t as demand (7.3 % or 13 mio t) grows less than supply (8.8 % or 18.5 mio t), the latter driven by yield increases of 14.6 %. Domestic prices for cereals are close to intervention levels, and subsidised exports fall both in quantity and value terms compared to the base year with domestic prices nearer to world market ones. Supply developments in pig and poultry markets are lined up with the "Commission Services Market Outlook" by assuming strong technical progress so that supply grows by some 7 % for pigs and 8.2 % for poultry, following forecasted increases in per capita meat consumption. Beef production falls slightly (-3.4 %), mainly due to decreases in the number of dairy cows.

Budget outlays – as far as covered by the modelling system – fall slightly in real terms by -2.8 %, resulting from declining costs of market intervention and subsidised exports in combination with an increase in direct payments. Output values for crops (-1.4 %) and animal products (-12.9 %) decrease, while intermediate input costs are almost stable. Input costs for crops increase by 3.2 % whereas animal specific inputs decrease in value by -4.3 % due to reduced feed and young animal prices. Higher premiums cannot offset the loss in output value combined with increasing cost so that total agricultural income measured as Gross Value Added at Market prices decreases by –12.2 %[29] over the whole period. If agricultural labour force continues to decline according to past trends, income per AWU would increase in real terms. Consumers benefit from lower prices for agricultural products.

4.1.2. Mid-Term Review Proposal

The "Mid Term Review of the Common Agricultural Policy" proposes to decouple current support measures from production decisions and to decrease intervention prices for cereals. Due to a number of exemptions and some remaining coupled premiums, the scheme is however not fully decoupled. Furthermore the MTR package includes a modulation of payments over time in combination with a reallocation between first and second pillars of the CAP. The uniform premium increases competitiveness of crops, which were not eligible in Agenda 2000.

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[29] All percentages shown for monetary values relate to changes in real terms.

Consequently, the simulation analysis with the CAPRI modelling system shows a shift of land use from cereals (-8.7 %) and oilseeds (–4.8 %) to set-aside and fallow land (5.5 %) and fodder production (4.2 %) compared to the Agenda 2000 reference run. This leads to extensification of fodder production. Set-aside increases (5.5%) as restrictions regarding maximal percentages on COP area (cereals, oilseeds crops, and protein crops) are removed.

Supply of cereals (-7.4 %) and oilseeds (-4.5 %) drops stronger than demand (-3.3 % and -0.7 %), reducing the position of the EU as net exporter on world markets. The number of cattle decreases (-7.3 %), mainly driven by reduced suckler cowherds (-17.5 %), as premiums are now decoupled from beef production. Poultry and pork meat remain almost unaffected.

Despite reduced budget outlays (-8.9% or –2468 mio EUR) under the first pillar, mainly caused by premium cuts under "Dynamic Modulation", agricultural income [30] remains almost stable (-0.14% or -200 mio EUR) due to increased allocation efficiency and higher market prices. The latter reduce somewhat consumers' welfare (-2139 mio EUR). Overall, results show a slight net benefit for the EU-15 of 129 mio EUR.

Compared to Agenda 2000, output of global warming gases and nutrient surpluses decline with reduced production of beef and crops with high demand for fertiliser. Further on, set-aside is now completely stationary. Strict control measurements are however necessary to ensure that idling land is kept in "good agricultural condition".

4.1.3. Conclusions

The proposal certainly leads to a higher market orientation of European farmers. Due to less coupled premiums, allocation efficiency increases with farming decisions closer linked to market prices. Additionally, the proposal reduces scope and frequency of market interventions, as intervention prices are further reduced below expected average world market prices. The effect on structural change in the farming sector is however not clear. Whereas increased allocation efficiency could speed up farm size growth, farm specific premium ceilings and exclusion of small farms from modulation and farm audits might counteract. The proposed scheme still deviates from a completely decoupled payment system: not all crops are eligible for support, and durum wheat, rice, protein and energy crops still receive additional coupled premiums.

4.2. The CAPRI modelling system

4.2.1. History of the model

The CAPRI modelling system was developed in the context of the Fourth Framework Project (FAIR3-CT96-1849, 1997-1999)[31], co-ordinated by the Institute for Agricultural Policy, University of Bonn, within a network of four main partners and sub-partners in almost all EU member states.

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[30] Agricultural income is defined as Gross Value Added at Market Prices according to the definition of Economic Accounts for Agriculture plus premiums.

[31] Final consolidated report with a detailed model description is available on the project web site: http://www.agp.uni-bonn.de/agpo/rsrch/capri/finrep.pdf.

The system was tested on an Agenda 2000 simulation run at the end of 1999, and the concept and main results were presented to DG AGRI.[32]

After a phase of consolidation, a new framework project titled CAP-STRAT (QLTR-2000-00394, 2002-2004) was initiated, aiming at a data base update, implementation of methodological improvements, a thorough validation of the complete system, and scenario analysis foreseen for 2004. The still intermediate outcome from this project feeds directly into this study as well as results obtained from a project for DG Environment (01/2001-12/2002).[33]

4.2.2. General system layout

The CAPRI modelling system is designed as a projection and simulation tool for the agricultural sector based on:

(1) A **physical consistency framework**, covering balances for agricultural area, young animals and feed requirements for animals as well as nutrient requirement for crops, realised as constraints in the regional supply models. The market model ensures that fat and protein comprised in the milk delivered to dairies is equal to the fat and protein comprised in the processed dairy products.

(2) **Economic accounting principles** according to the definition of the Economic Accounts for Agriculture (EAA). The model covers all outputs and inputs included in the national EAA for the Member States, with revenues and costs broken down consistently to regions and production activities.

(3) A **detailed policy description.** The regional supply models capture all relevant payment schemes with their respective ceilings as well as set-aside obligations and sales quotas. The market side covers tariffs, intervention purchases and subsidised exports. The policy of non-EU regions is based on OECD PSE/CSE data bank.

(4) **Behavioural functions** and allocation steering are strictly in **line with micro-economic theory**. Functional forms are chosen to be globally well behaved, allowing for a consistent welfare analysis.

The model distinguishes a supply and a market module, interactively coupled.

The *supply module* consists of aggregate programming models at NUTS II level, working with exogenous prices during each iteration. After being solved, the regional results of these NUTS II models – crop areas, herd sizes, input/output coefficients etc. – are aggregated into Member State level models, which are then calibrated to these results by using techniques borrowed from Positive Mathematical Programming. Young animal

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[32] In parallel, the German Agricultural Research Institute (FAL) employed the CAPRI modelling system in the context of a research project (FAIR-CT96-1794) to analyse the effects of a shift towards organic production.

[33] A further application of the CAPRI modelling system regarding milk market liberalisation was undertaken by the Swedish Institute for Food and Agricultural Economics (SLI), whose results were presented this year at the conference of the European Association of Agricultural Economists (Zaragoza 2002).

prices are then determined by linking these Member State models into a non-spatial EU model with market balances for young animals.

Afterwards, supply and feed demand functions of the *market module* are calibrated to prices and results from the supply module on feed use and production of the current iteration. The market model is then solved and the resulting producer prices at Member State level drive the next iteration with the supply models. Equally, in between iterations, premiums for activities are adjusted if ceilings are overshot according to the results laid down in the Common Market Organisations (CMO).

Agricultural ***supply of yearly crops and animal outputs*** in each region is modelled by an aggregated profit function approach under a limited number of explicit constraints – land, policy restrictions as sales quotas and set-aside obligations, and feeding restrictions based on requirement functions.

The underlying methodology assumes a two-stage decision process.

In the *first stage*, producers determine optimal variable input coefficients (nutrient needs for crops and animals, seed, plant protection, energy, pharmaceutical inputs, etc.) per hectare or head for given yields, which are determined exogenous by trend analysis. Nutrient requirements enter as constraints in the supply models, whereas all other variable inputs together with their prices define the so-called accounting costs. The proceeding mimics the calculation of gross margins in farm management.

In the *second stage*, the profit maximising crop mix and animal numbers are determined simultaneously with cost minimising feed and fertiliser mix in the supply models. Availability of grass and arable land as well as sales quotas restrict production possibilities and the crop mix is further on influenced by set-aside obligations. Animal requirements (energy, protein etc.) are covered by a cost minimised feed mix combination, whereas fertiliser needs of crops are met by either organic nutrients found in manure or purchased fertiliser.

Link of modules in the CAPRI modelling system
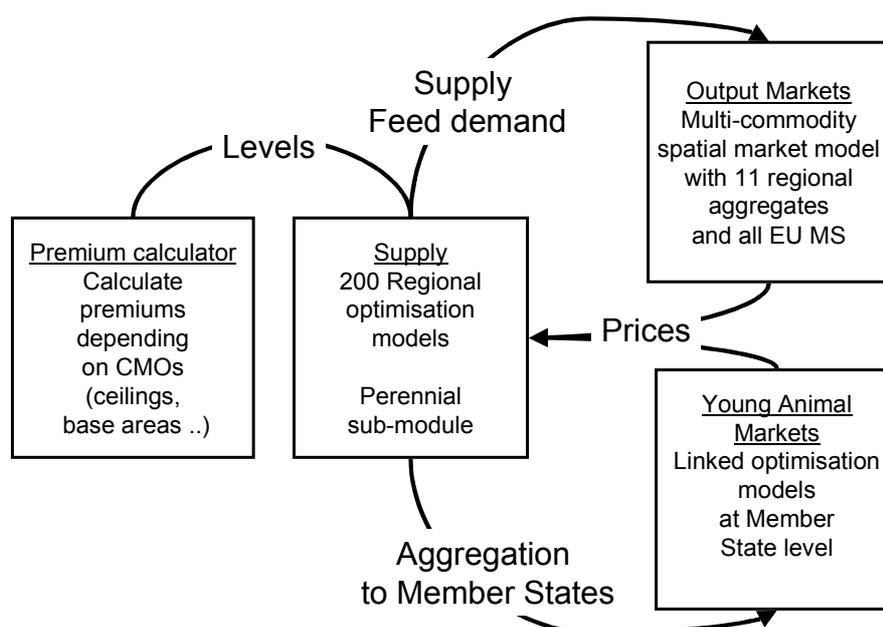
A cost function covering the effect of all factors not explicitly handled by restriction or the accounting costs – as additional binding resources or risk - ensures calibration of activity levels and feeding habits in the base year and plausible reactions of the system.

These cost function terms are estimated from ex-post data or calibrated to exogenous elasticity. Fodder (grass, straw, fodder maize, root crops, silage, milk from suckler cows or mother goat and sheep) is assumed to be non-tradable, and hence animal processes are linked to the crop production and regional land availability. All other outputs and inputs can be sold and purchased at fixed prices. Selling of milk cannot exceed the quota and for sugar production an A,B,C quota system is embedded.

The use of a mathematical programming approach has the advantage to directly embed compensation payments, set-aside obligations, voluntary set-aside and sales quotas, as well as to capture important relations between agricultural production activities. Not at least, environmental indicators as N,P,K balances and output of gases linked to global warming are implemented in the system.

The programming models described above are not well suited to handle crops with a different planning horizon than 'Grandes Cultures' and their competitors. All *perennial crops* are linked to long-term investment decisions not suitable within a programming framework of this type. Equally, some annual crops, as flowers require a completely different marketing and production chain.

For both type of crops a simultaneous econometric estimation of yields, activity levels as well as market balance positions is included in the analysis, with additional constraints ensuring closed market balances. The results are used unchanged in both the reference and the MTR run, and hence not further discussed.

The *market module* breaks down the world into 12 country aggregates[34], each aggregate featuring system of supply, human consumption, feed and processing functions.

The parameters of these functions are derived from elasticity borrowed from other studies and modelling systems, and calibrated to projected quantities and prices in the simulation year, where the choice of the *functional form* (normalised quadratic for feed and supply, Generalised Leontief Expenditure function for human consumption) and *further restrictions* (homogeneity of degree zero in prices, symmetry, correct curvature) ensure regularity.

Accordingly, the demand system allows for the calculation of welfare changes for the consumers. *Policy instruments* in the market module include (bi-)lateral tariffs and Producer/Consumer Support Estimate price wedges (PSE/CSE). Some important Tariff Rate Quotas (TRQs) as well as explicit modelling of intervention sales and subsidised exports under WTO commitment restrictions are implemented for the EU.

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[34] EU, East European Candidate Countries, Mediterranean countries, U.S., Canada, Australia & New Zealand, Free trade developing countries, High tariff traders (as Japan), India, China, ACP countries, Rest of the World

Special attention is given to the processing stage of *dairy products* for the EU Member states. First of all, balancing equations for fat and protein ensure that processed products use up exactly the amount of fat and protein comprised in the raw milk.

Production of processed dairy products is based on a normalised quadratic function driven by the difference between the dairy product's market price and the value of its fat and protein content. Lastly, prices of raw milk are equal to its fat and protein content valued with fat and protein prices.

The *Armington assumption* drives the composition of demand from domestic sales and the different import origins depending on price relations and thus determines *bilateral trade streams*.

The model comprises a two stage Armington system: on the top level, the composition of total demand from imports and domestic sales is determined, whereas the lower stage determines the import shares from different origins. The resulting layout of a market for a country/aggregate in the market module is shown in the following diagram.

Due to the Armington assumption, product markets for different regions are linked by import streams and import prices when they were observed in the base year. Accordingly, no uniform world market price is found in the system.

Graphic presentation for one region of a spatial market system
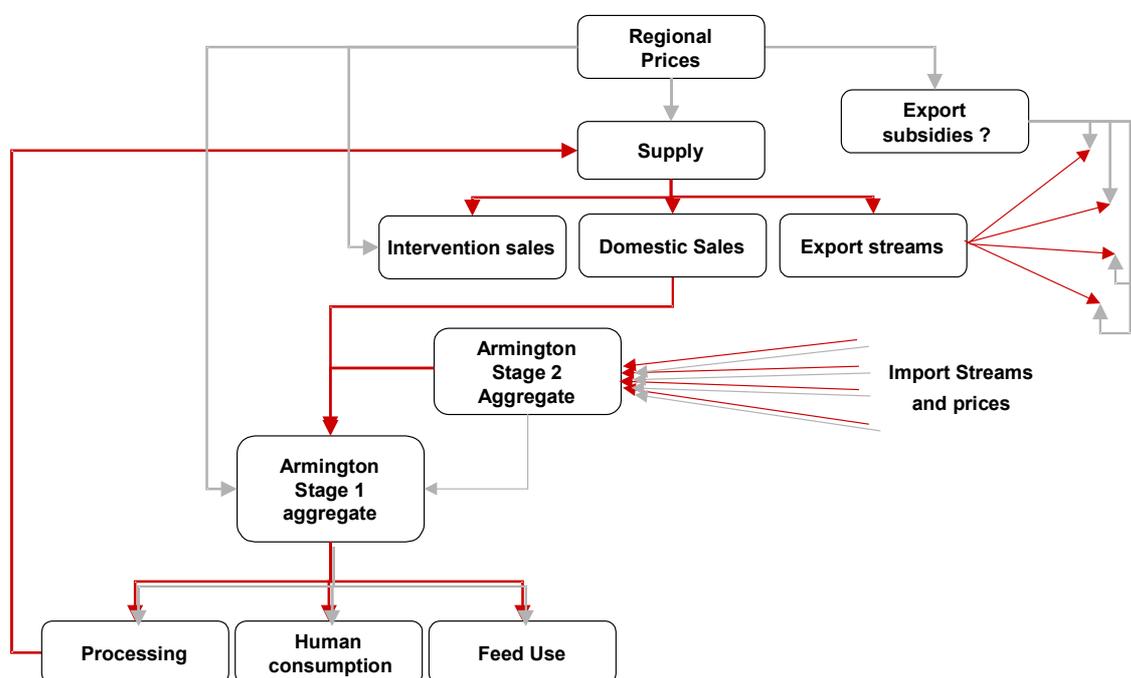
Main results of the system cover acreage and animal numbers at NUTS II level, which together with a set of input/output coefficients and prices allows to define income indicators for individual production activities and the region as a whole according to EAA definitions. Aggregation to Member State level reconstruct the EAA.

The derived *Agricultural Gross Value Added at market prices plus compensation payments* is the main indicator for *agricultural income*. The market model delivers bilateral trade streams between the EU and the regional aggregates, producer and consumer prices at Member State level, and production, human consumption, feed and processing quantities at Member State level. It simulates as well intervention sales to stocks and subsidised exports.

The *EAGGF budget outlays* are estimated from (1) the compensation payments integrated in the regional programming models and (2) the levels of subsidised export quantities and intervention sales simulated for the individual markets in the market module. Costs for intervention purchases per unit are calculated by dividing the outlays in the years 1997-1999 for intervention stocks for a product by the average stock level in these years. Costs for subsidised exports per unit are determined endogenously from price differences between domestic and export markets.

Consumer welfare is measured as "equivalent variation", expressing the real income effect equivalent to the utility change provoked by consumer price changes against the reference run. *Environmental indicators* cover Nitrogen, Potassium and Calcium balances at regional level (N,P,K), ammonia emissions, output of climate relevant gases (carbon dioxide, methane and nitrous oxide) and water balances.

4.3.   The reference run: Agenda 2000

The policy for the *status quo* scenario of the reference run reflects the Agenda 2000 policy extended to the year 2009. It is taken as the comparison point for the Mid term Review impact analysis. Therefore, it is necessary to reflect carefully that status quo policy representation, assumptions and exogenous shifters for this run as well as the most important results for different activity and commodity groups.

The CAPRI modelling system focuses on the EU, for supply even regionalised at NUTS II level. As the demand system is calibrated, not estimated, changes in demand behaviour not linked to income or prices changes have to be based on assumptions. In here, the demand systems for the EU Member States are calibrated to per capita consumption changes, income and population levels, in most cases in line with the data found in DG AGRI's publication "Prospects for Agricultural Markets 2002-2009"[35]. Inflation is set to 1.9 % p.a. and nominal GDP growth for the EU to 2.7 % p.a. GDP growth is used as a proxy for consumers' available income. The assumptions for the EU as a whole are taken over to the individual Member States. Population growth at Member States level is borrowed from Eurostat.

Exogenous development of yields are based on trend analysis at EU Member State level, including years 1980-1999. The assumptions are harmonised with the ones used in the CAPSIM modelling system. For cereals, they are taken over from the latest DG AGRI's Market Outlook.[36] Variable inputs are first shifted proportionally with the yields and then

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[35] http://europa.eu.int/comm/agriculture/publi/caprep/prospects2002/contents.pdf

[36] It should be noted that the DG-AGRI market outlook expect a cut in cereal yield growth rate between 2000-2009 of 50 % against the 1993-1999 period. This assumption, taken over in the current analysis, has considerable impacts on the development of cereals markets, as the difference between long term trends and the ones applied adds up to some 20 Mio t by the end of 2009

reduced by input saving technical progress of -0.2 % p.a.. Exceptions are nutrient needs of crops (N,P,K) and animals (energy, protein, fibre etc.) which are driven yield dependent engineering functions.

Data relating to other world regions are borrowed ex post from the WATSIM modelling system, shifted to the year 2009 based on results of other studies. The resulting data set is adjusted to fulfil consistency conditions, both in the base and the simulation year. Main data source for the shifters in supply and demand for non-EU regions is the @2030 framework of FAO's global perspective unit. The unit has a long-standing tradition in forecasting the global food system, integrating modelling results, expert judgements and a multitude of other studies. Results in the @2030 framework are checked for caloric balances, land and water availability as well as feed requirements.

The ***price framework*** is based on representative long-term time series for world market prices of major raw and processed agricultural products, which are trend forecasted. These trends had been compared and partially revised to medium term forecasts by OECD, FAPRI and the EU Commission. Developments of domestic prices are based on these world market price developments using domestic policy definitions. For Non-EU countries, total food consumption follows accordingly the assumptions underlying the @2030 framework, calibrated to domestic consumer prices derived from the price transmission functions of the model and world market developments borrowed from DG AGRI's Market Outlook.

4.3.1. Policy representation

Behavioural functions for intervention stocks and subsidised exports in the market model are calibrated to observed quantities and price relations between domestic, export and administrative prices for a three year average around 1998. The following table lists ***price floors*** for the base year situation used to calibrate these functions as well as the ones for the reference run.

Milk ***quotas*** are supposed to increase with Member States specific rates, for the EU as a whole by 2.4 % against the base year. Percentages of under- and over-utilisation of quotas at regional level are kept constant as observed in the base year. Sugar quotas are kept at base year levels, but the system of A and B levies as well as production of C sugar is embedded in the analysis.

The modelling system considers ***set-aside obligations*** as a constraint in the regional programming models. Official mandatory set-aside rates for the ex-post calibration and in the reference run (10 %) are corrected according to information of Commission Services in order to reflect the small producer scheme, at least at national level. They are trend forecasted for the simulation year. In some cases, data at regional level regarding small producer shares were available for early years of the McSharry reform and the resulting regional differentiation was kept unchanged over time. The following map shows the percentage of set-aside on Utilisable Agricultural Area (UAA) excluding non-food production on set-aside land in the base year.

Table 4.1.   **Prices triggering intervention and subsidised exports**

Product (group)	Price floor in reference year 2009 (EUR/t)	Price floor in base year 1998 (EUR/t)	Explanation
Cereals	101.5	119	Used as effective intervention price
Beef	2 224	2 780	Basic price (private storage possible at 103 % of that price), used as trigger for intervention
Butter	2 511	2 954	Intervention price
Skimmed milk powder	1 747	2 055	Intervention price
Cheese	3 975	4 314	Constructed from butter and skimmed milk powder intervention prices, using fat and protein content and reflecting processing margins
Rice	298	333	Intervention price for paddy rice

Map 4.1.   **Percentage of mandatory and voluntary set-aside area on UAA in the base period 1997-1999**
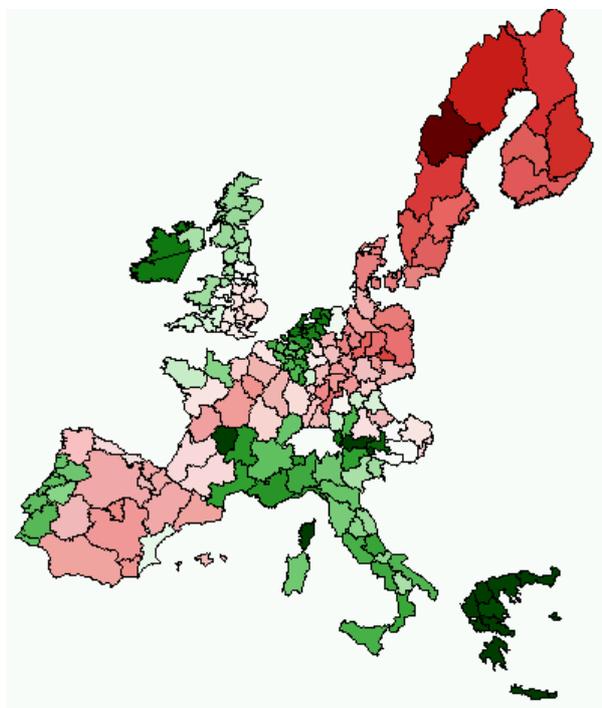
Note:
From dark green to light green: between 0 % and 2 %, white around 2 % and from light red to dark red between 5 % and 12 % set-aside. Comparison of set aside areas between regions (only base year scenario).

The programming models are calibrated to observed set-aside hectares, including voluntary set-aside, and non-food production on set-aside land is treated as a separate production activity. Fallow land not falling into set-aside programs reflects the difference between land reported as idling in national statistics and data from commission services on actual hectares in set-aside programs.

Due to its activity based layout, the CAPRI supply model is well suited to deal with *the compensation payment scheme*. A detailed modelling component, developed in co-operation with Torbjörn Jansson and Anders Bäckstrand - SLI, Lund -, allows for the definition of payment schemes linked to outputs (current or historic yields) or activity levels in combination with ceilings in physical and/or valued terms.

The following payments are included in the reference run: COP premiums for cereals, oilseeds, pulses and energy crops; traditional and established durum wheat premiums; direct income support for dairy cows; direct payments to sheep and goat; national envelopes for dairy cows, sheep & goat and bovine meat cattle; slaughter premiums for adult cattle and calves; and national premiums to dairy cows in northern Sweden and Finland.

Many of the listed premium schemes are restricted by ceilings in value and maximum amount on eligible hectares or heads defined at national or even regional level. Premiums are therefore cut in the model if these ceilings are exceeded.

4.3.2. Main results of the reference run

4.3.2.1 Development of crop aggregates

The growth in set-aside and fallow land areas reflects partially increased set aside obligations from 6.7 % in average 1997-1999 to 10 % assumed in 2009, combined with a decrease in the small producer share, as well as the loss of profitability of cereals and oilseeds. Prices for cereals are forecasted to remain stable in nominal terms, thus dropping in real terms by -20.7 %, whereas oilseed prices increase slightly in nominal terms (falling by -14.4 % in real terms though). Income losses in oilseed activities per hectares are nevertheless higher than for cereals, as yield growth is smaller and premiums are cut to cereal levels.

The reduction in hectares for other arable crops is due to: (1) falling sugar beet area with yields increasing by some 12.9 % and unchanged quota quantities, with an increase in "C sugar" production though, (2) drop of potatoes area with increased yields, as market opportunities are restricted, and (3) a small drop in the area of pulses.

Total cereal production is expected to increase by 8.8 %, as a result of the combined effect of yield growth (14.6 %) and a drop in cultivated area of -5.1 % The latter is partly due to an increase in set aside obligations and partly due to falling domestic prices. The price decline is provoked by growing surpluses putting pressure on internal market prices accompanied by falling world market prices in real terms. Average cereal prices are expected to drop from 142 EUR/t to 113 EUR/t in 2009. Net trade increases from 26 mio t to about 36 mio t, as demand is simulated to grow by 7.3 %.

Table 4.2.   **Crop aggregates: premium and income per hectare (nominal EUR 2009/ha), acreage (1000 ha), yield (kg/ha) and supply (1000 t)[37]**

European Union	Base year 1998					Agenda reference run 2009				
	Premium per ha	Income per ha	Hectares	Yield	Supply	Premium per ha	Income per ha	Hectares	Yield	Supply
Cereals	345	475	37 694	5 617	211 746	327	306	35 779	6 438	230 338
						-5.05%	-35.55%	-5.08%	14.60%	8.78%
Oilseeds	544	573	5 644	3 037	17 137	259	217	4 678	3 356	15 695
						-52.46%	-62.16%	-17.12%	10.50%	-8.41%
Other arable crops	102	2 627	7 970	33 173	264 398	78	2 389	7 818	35 873	280 469
						-23.76%	-9.06%	-1.90%	8.14%	6.08%
Permanent crops & vegetables		4 927	12 873	8 746	112 590		4 966	13 443	8 526	114 619
							0.78%	4.43%	-2.52%	1.80%
Fodder production	20	30	64 962	8 943	580 973	16	34	65 652	8 863	581 857
						-20.48%	11.59%	1.06%	-0.90%	0.15%
Set aside & fallow land	154	162	9 110	322	2 931	153	152	10 882	329	3 583
						-0.09%	-6.29%	19.45%	2.33%	22.24%

4.3.2.2 Development of cereals

With a net trade of about 19.8 mio t, **soft wheat** remains the biggest exported crop in Europe – mostly due to yield increases by 18.2 %. Soft wheat producer prices fall with 107 EUR/t near to administrative prices at 101 EUR/ton, having the model already started to defend market prices with a slight amount of intervention purchases (32 000 t). Net exports of **barley** are forecasted to grow by 1.8 mio t to 11.6 mio t, as yield increases by 13 % to an average of 5.2 t/ha. Demand and supply increase at rates of 7.2 % and 5.4 % each. Again, barley prices in the EU are around intervention price levels, with prices defended by some 147 000 t put into public stocks. The sharpest market pressure occurs in **rye**, a product showing a structural imbalance during the last years, with intervention sales at 253 00 t. The model expects the EU to become a net exporter of **grain maize** by 2009, resulting from yield increases and constant acreage. This is mostly due to higher producer prices compared to the ones for other cereals. **Durum wheat** shows a smaller yield increase with 7.3 %, and the acreage is simulated to drop by about -4.2 %.

The model predicts **subsidised exports** for all cereals: around 3.6 mio t for soft wheat, 0.3 mio t for durum wheat, 2.4 mio t for barley and 1.0 mio t for other cereals.

The simulated situation depends on the following underlying assumptions: (1) Yield estimates for rye, barley, other cereals and grain maize had been manually downward corrected – if the linear estimated trend from year 1985 onwards had been continued, market pressure would have been even higher, both by increased yields and hectares due to higher competitiveness. (2) Trends of world market prices and (3) the EUR/ $

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[37] Note that all monetary values for the base year are inflated to the simulation year 2009 for comparison purposes.

exchange rate is kept one to one. A stronger European currency or lower world market prices could require sharp increases in export subsidies paid to agriculture, as well as substantial interventions purchases to defend administrative prices when subsidised exports reach WTO limits.

Table 4.3.   Product balances for cereals (1000 t)

European Union	Base year 1998				Agenda reference run 2009			
	Supply	Intervention purchases	Net trade	Demand	Supply	Intervention purchases	Net trade	Demand
Cereals	211 746	5 454	25 873	180 419	230 338	435	36 307	193 596
					8.78%	-92.03%	40.33%	7.30%
Soft wheat	91 806	1 179	14 694	75 933	102 077	32	19 847	82 198
					11.19%	-97.30%	35.07%	8.25%
Durum wheat	8 441	108	135	8 198	8 678	3	-123	8 799
					2.81%	-97.51%	-191.04%	7.33%
Rye and meslin	6 181	2 097	1 389	2 695	6 482	253	3 211	3 018
					4.86%	-87.91%	131.08%	11.98%
Barley	52 372	2 069	9 816	40 487	55 189	147	11 639	43 403
					5.38%	-92.90%	18.58%	7.20%
Oats	7 281		895	6 386	7 404		745	6 659
					1.69%		-16.77%	4.28%
Grain maize	37 644		-615	38 259	41 899		1 492	40 407
					11.30%		342.74%	5.61%
Other cereals	5 298		-442	5 740	5 685		-505	6 190
					7.31%		-14.34%	7.85%
Paddy rice	2 722		0	2 722	2 924		1	2 923
					7.42%		500.81%	7.40%

The average *income in cereals* per hectare drops by about –35.6 % in real terms. Firstly, market revenues drop by about -8.8 %, a combined results of lower cereal producer prices (in real terms –20,7%) and yield increases (14.6%). Secondly, premiums stay relatively stable in real terms at 327 EUR/t compared to 345 EUR/t in the base year[38] and, thirdly, input costs grow in real terms by 11.8 %, following the yield increase.

4.3.2.3 Development of oilseeds

Only minor changes are forecasted for the demand in the oilseed sector (-1.3 %). Supply however drops by -8.4 % resulting from a reduction in acreage by –17.1 % as premiums are cut. The sharper drop compared to –5.1 % for cereals results from a more pronounced decrease in profitability, as premiums are cut more than half in real terms for oilseeds from 544 EUR/ha to 259 EUR/ha (-52.5 %). Different yield trends shift supply from the low yield oilseeds sunflower and soya to rapeseed.

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[38] All base year prices and valued positions had been inflated to Euro 2009.

Table 4.4.   Product balances for oilseeds (1000 t)

European Union	Base year 1998				Agenda reference run 2009			
	Supply	Intervention purchases	Net trade	Demand	Supply	Intervention purchases	Net trade	Demand
Oilseeds	14 948		-17 459	32 391	13 701 -8.34%		-18 264 -4.61%	31 965 -1.32%
Rape seed	9 919		247	9 669	9 671 -2.50%		507 105.04%	9 164 -5.22%
Sunflower seed	3 598		-2 023	5 611	2 936 -18.40%		-2 640 -30.46%	5 576 -0.62%
Soya seed	1 430		-15 683	17 112	1 094 -23.51%		-16 131 -2.86%	17 225 0.66%

4.3.2.4 Developments in the meat, cattle and dairy sector

Mainly by using the assumption of EU Medium Term Prospects regarding the development of per capita consumption for the different meat products, total meat demand is forecasted to grow by 6.2 % from 1998 to 2009. The sharpest increase is forecasted for **poultry meat** with 11.4 %, which combined with a production growing by around 8.2 % reduces somewhat EU position as a net exporter. The increase in production is calibrated to the expectations of DG AGRI by assuming that input saving technical progress for capital and labour was –2 % per annum. Growth in **pork meat** is less pronounced both in human consumption and supply, but leaves the EU with net exports of about 1.26 mio t, not much different from the base year. Again, increase of supply with falling output prices and moderately reduced feeding costs is only possible when assuming technical progress reducing labour and capital need with -1.5 % per annum. Net imports for **sheep and goat meat** are simulated to increase very slightly, as production falls by –1.1 %, and demand increases by 0.3 %. Demand for **beef** drops by -2.7 % reflecting a decrease in per capita consumption of 1 kg, based on own trend analysis and in line with the latest FAPRI base line, but countervailing EU Prospects which forecast stable consumption per capita. **Meat supply from cattle** decreases by -3.4 %, leaving the EU with net export of 0.4 mio t. The cattle and sheep & goat meat processes were assumed to profit from input saving technical progress of -1 % per annum. **Human consumption per capita of meat** increases from about 87 kg in 1998 to 90 kg to 2009, with 45 kg of pork, 23 kg of poultry, 17 kg of beef, 2 kg of veal and 4 kg of sheep and goat meat.

Total **cow and buffalo milk output** follows the quota expansion of 2.4 to about 125 mio t of fresh milk, whereas sheep and goat milk production drops by –2 % or 67 000 t. Dairy **cow** yields for low and high yielding cows are estimated to increase by 21.4 % from 1998 to 2009, reflecting technical progress.

The model predicts the process of shifting supply to more efficient cows to slow down – the number of high yield milk cows drops by –18.4 % compared to about –8.9 % for low yield milk cows. This shift is due to the reduction in milk prices combined with the pressure over the young animal markets. The total dairy cowherd is simulated to decrease by –13.6 % to an inventory of 18.6 mio dairy cows in 2009. The trend of growing suckler

cowherds observed in the last year continues up to a herd size of 13 mio heads (9.7 %) in 2009. The aggregated number of dairy and suckler cows thus decreases, falling calves as well as the level of raising processes. Income in the *cattle fattening processes* drops due to several factors. Prices for beef are forecasted at 2653 EUR/ton, equivalent to a drop in real terms of –26.4 %. Premiums for male cattle for fattening increase from 137 EUR to 261 EUR per head as premium ceilings are overshot. Due to the relative high share of silage and grass in the feed menu, falling prices for cereals and cereals substitutes reduce feed cost only by –4.5 % in real terms. The situation in heifers for fattening is even worse, as they receive only the slaughter premium of 75 EUR per head plus 10 EUR from national envelopes. In overall, as total fodder production remains stable and alternative uses of the factors employed in grassland based farms are restricted, total cattle herds drops by –4.8 %. The average slaughter weight is forecasted to increase, reflecting reduced calves availability.

Table 4.5.   Product balances for meat (1000 t)

European Union	Base year 1998				Agenda reference run 2009			
	Supply	Intervention purchases	Net trade	Demand	Supply	Intervention purchases	Net trade	Demand
Meat	35 011		2 302	32 708	36 577		1 844	34 732
					4.47%		-19.90%	6.19%
Beef	7 020		452	6 568	6 778		389	6 390
					-3.45%		-14.11%	-2.72%
Veal	788		59	728	674		-38	712
					-14.40%		-164.05%	-2.19%
Pork	17 318		1 335	15 983	18 537		1 256	17 281
					7.04%		-5.91%	8.12%
Sheep&goat	1 138		-255	1 393	1 125		-273	1 398
					-1.14%		-6.89%	0.33%
Poultry	8 746		710	8 036	9 462		510	8 952
					8.18%		-28.19%	11.39%

Will cereal feed use expand?

Compared to the results published in reports by FAPRI[39] and Commission Services[40] the forecasted increase in demand for cereals based on the CAPRI system seems conservative. For 2009/2010, FAPRI predicts a feed demand of 113.8 mio t for soft wheat, durum wheat, barley and grain maize. This implies 9 mio t more than the actual projections of CAPRI for these cereals in the reference run. Moreover, Commission Services forecast for 2009 total feed use of cereals at 124.4 mio , where CAPRI estimates are at 119 mio t.

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[39] FAPRI-UMC Technical Data Report 01-02

[40] "Prospects for Agricultural Markets 2002-2009, June 2002

The CAPRI projections are based on (1) constant feed efficiency – thus being fairly conservative in that respect, and (2) requirement functions per animal category for energy and protein, and other further nutrients, balanced with the available energy and protein in the base year including the fodder. Total feed need increases, mostly due to the increase in cow and buffalo milk production of about 2.6 % following the quota expansion and the increase in total meat output. However, the following points need to be taken into account.

Firstly, milk yield increase raises the feed efficiency in milk production, as the number of calves and heifers for raising can be reduced.

Secondly, the number of animals in fattening activities drops, freeing fodder resources which replace more expensive feeding products as cereals in the fattening processes -average cereal intake per bull and heifer for fattening is projected to fall slightly.

The countervailing force lays in increased cereal needs in pig and poultry, resulting from larger herds. Cereal use per head increases by 9.1% for pig fattening and 5.3 % for poultry, whereas energy rich fodder input drops per head by -35.8 % in pig fattening and -38 % in poultry production. The combined effects decrease average sector wide conversion rates from cereals to meat.

4.3.2.5 Impact analysis on agricultural income and EAGGF budget

As discussed above, almost all prices for agricultural outputs are forecasted to fall in real terms, following long-term trends.

Output value from agricultural production at EU level is forecasted to drop by −7.3 %, whereas input value decrease by −1.3 %, mostly due to falling prices for feeding stuff. Overall, gross value added at basic prices is simulated to be 146.7 bio EUR, a decrease in real terms of around −12.2 %. Given long term trends in the agricultural labour force, income per agricultural working unit (AWU) in agriculture increases in real terms.

4.4. Impact analysis of the Mid-Term Review Proposal

4.4.1. Introduction

The MTR proposal aims at (1) economic viability, (2) social balance, (3) environmental integration and animal health and welfare concerns as well as (4) rural development.

The following quantitative analysis based on the CAPRI modelling system compares developments of production, land use, demand, agricultural income and some environmental indicators projected for 2009 under the policy set of the MTR proposal to the results of the reference run shown above, which represent the full implementation of the Agenda 2000 proposal in the year 2009.

Critical points in the analysis are :

(1) De-coupled direct payments are assumed to be uniform at regional level. The proposal leaves up to a certain extent open how these payments have to be implemented by the Member States – uniform at farm – probably the most likely option -, regional or Member State level and the exact attachment of the premium to

the production factor. Clearly, a payment scheme deviating from the implementation system chosen in the modelling exercise could drive to different results.

(2) The uniform premium was calculated based on historical land use and herd patterns from a three year average around 1998. Shifts in production for the reference period chosen, probably 2001, as historical base would somehow affect premium values.

(3) Dynamic modulation was based on data provided by Commission services on latest available Farm Accounting Data Network results. Changes in farm structure and production patterns, as well as the introduction of the capping scheme at 300 000 EUR would affect the premium levels used in the analysis.

(4) As for the reference run, deviation in income growth, inflation and EUR / $ exchange rate could change results relating to domestic and world market prices and market interventions as well as subsidised exports.

(5) Some elements of the proposal, as compulsory farm audits cannot be modelled with the CAPRI system, but the effect on the results discussed below is deemed neglectful.

(6) The uniform premium scheme leads to more transparency of the CAP and reduces administrative costs, welfare gains that are not covered by the model.

(7) The analysis for the dairy sector is based on Option 1 of the Commissions proposal regarding possible future avenues for the development of the dairy sector. Hence, a continuation of the Agenda 2000 policy for the dairy sector is assumed.

4.4.2. Policy implementation in the MTR run

Cereals intervention prices were reduced by 7.5% - the combined effect of a drop by 5% to 95,35 EUR/t and the abolishment monthly reports. Further on, rye intervention was abolished and rice intervention prices reduced to 150 EUR/ton. In order to calculate the uniform premium, premiums from Agenda 2000 were modified according to the MTR proposal:

(1) an increase by 3 EUR/t of historic yield to 66 EUR/ton for 'Grandes Cultures' as a 50 % compensation of the cut in cereals intervention prices.

(2) A reduction of the supplementary payment in durum wheat to 250 EUR/ha in "traditional areas" bundled with an abolishment of the supplement in "established areas". Introduction of quality top-up of 15 EUR/t everywhere as a crop specific premium.

(3) Introduction of a income payment of 102 EUR/t in rice (177 EUR/t – 75 EUR/t remaining as a crop specific premium).

(4) Introduction of a premium of 45 EUR/ha for energy crops (coupled to non-food production activities), under the condition of a contract with a processor.

All other premiums were kept unchanged. Support to Nuts is not included in the runs, as well as direct payments for dehydrated or sun dried fodder.

Table 4.6.   Premium schemes included in the MTR runs

Premium type	Status
Direct payment to 'Grandes Cultures' (Cereals, soya, rape, sunflower seed, pulses, set-aside)	Amount of payment revised and decoupled
Traditional durum wheat premium	Amount of payment revised partly decoupled
Established payment to durum wheat	Abolished
Rice premium	Amount of payment revised partly decoupled
Suckler cow premium	Decoupled
Special premium to bulls and steers where all are assumed to be bulls	Decoupled
Direct income support to dairy cows	Decoupled
Direct payment for sheep and goat	Decoupled
National envelope for sheep and goat	Decoupled
National envelope dairy cows	Decoupled
National envelope bovine meat cattle (cows, bulls and heifers)	Decoupled
Slaughter premium for adult cattle (cows, bulls and heifers)	Decoupled
Slaughter premium for calves	Decoupled
National premium to dairy cows in northern Sweden and Finland	Unaffected

The calculation of the premiums is done as described below:

(1) The partially redefined premiums falling under the new uniform per farm premium and category labelled "decoupled", were applied to the three year average 1998 areas or herd sizes, and cut if respective ceilings were overshot.

(2) The premiums were "dynamically modulated" until 2009, i.e. six steps of -3 % cut from the original level to a final maximal cut of -18 %. As only payments above a certain ceiling –5 000 EUR per farm plus 3 000 EUR per AWU exceeding two AWU– are subject to the modulation, smaller reduction were applied for groups of payments according to information provided by Commission Services based on the European Farm Accounting Data Network. The data are not available at regional

level, what might not take into account some structural differences[41]. Further on, the proposed capping at 300 000 EUR per farm considered, error which would mainly affect Eastern Germany, some regions in Spain and some farms in the UK[42].

(3) Afterwards, the resulting premium sum at regional level is distributed over eligible hectares and converted into a regional specific uniform premium per ha in the MTR run. The resulting regional premium sum was introduced as a ceiling in values at regional level, so that regional premium per eligible hectare would be cut if a premium overshot takes place. The following top-up on the uniform premia are added: durum wheat (15 EUR/t), rice (75 EUR/t), protein (9.5 EUR/t) and energy crops (45 EUR/ha). According to the proposal, vegetable and fruits were not eligible, it was assumed that the same is valid for table olives and olives for oils, nurseries, flowers, vineyards and the so-called "other crops".

Set-aside obligations are defined as a "*continuation of the individual historic set-aside obligation*". That obligation was calculated at NUTS II level based on the regional crop mix in the base year and on an obligatory set-aside rate of 10 %, corrected by national or regional small producer shares. A constraint in the supply models ensured set-aside equal or above these regional ceilings.

The costs of *compulsory farm audits* on all relevant material flows and on-farm processes for all farm receiving more than 5000 EUR are *not included* in the study. The error is deemed not important, especially as financial support covering operation costs is eligible under Rural Development, and the dynamic modulation will increase budgets available under the second pillar. It can be expected that regional government will at least partially redirect the budgetary funds into new agri-environmental programs, especially the proposed "temporary and decreasing aid (max 200 EUR/ha) to farms to help them implementing statuary standards".

4.4.3. Main results of the Mid-Term Review scenario

4.4.3.1 Development of crop aggregates

Cereals (-8.7 %) and oilseeds (-4.7 %) areas are reduced against the reference as their premiums decrease by some -30 % and -18 % respectively. Fodder production increases in hectares by 4.2 %, with supply remaining constant. The model keeps grassland fixed – in line with the assumption that Member State legislation would prevent conversion of grass into arable land. In the arable fodder sector, fodder maize (-7.7 %) is replaced by other fodder on arable land (23 %) as it looses relative competitiveness - fodder maize premiums drop whereas fodder from arable land receives now the uniform regional premium. The increase in fodder on arable land with constant output quantities means an extensification of fodder production as shown by a drop in fodder yields by –4 %.

Fallow and set-aside areas increase by 5.5 %. This is under the assumption that all fallow land would be claimed for premiums, as costs of keeping fallow land in "good

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[41] The error will be especially high in Germany, where the difference in farm structure between East and West are pronounced.

[42] Readers are reminded that budget savings from modulation are proposed to be re-distributed inside the same region under the second pillar.

agricultural conditions" are far below the uniform premium –in average 50 EUR. Acreage of energy crops drops slightly (-1.8 %). Hectares of perennials and vegetables are fixed to the results from the reference run.

Table 4.7. **Crop aggregates: premium and income per hectare (nominal EUR 2009/ha), acreage (1000ha), yield (kg/ha) and supply (1000 t)**

European Union	Agenda reference run 2009					MTR unchanged dairy policy 2009				
	Premium per ha	Income per ha	Hectares	Yield	Supply	Premium per ha	Income per ha	Hectares	Yield	Supply
Cereals	327	306	35 779	6 438	230 338	229 -30.16%	216 -29.52%	32 678 -8.67%	6 526 1.36%	213 244 -7.42%
Oilseeds	259	217	4 678	3 356	15 695	213 -17.74%	186 -14.19%	4 455 -4.75%	3 392 1.07%	15 110 -3.73%
Other arable crops	78	2 389	7 818	35 873	280 469	188 141.64%	2 487 4.10%	7 798 -0.26%	37 079 3.36%	289 139 3.09%
Permanent crops & vegetables		4 966	13 443	8 526	114 619		4 966 0.00%	13 443 0.00%	8 526 0.00%	114 619 0.00%
Fodder production	16	34	65 652	8 863	581 857	191 1107.5%	218 541.69%	68 393 4.17%	8 506 -4.03%	581 728 -0.02%
Set aside & fallow land	153	152	10 882	329	3 583	165 7.81%	143 -5.58%	11 485 5.54%	332 0.93%	3 817 6.53%

4.4.3.2 Development of cereals and oilseeds

Supply of cereal decreases by –7.4 %, with the exception of durum wheat falling by – 19.5 % as premiums drop by -52 % compared to –30 % in average. The reduction in supply is rather pronounced in regions with very low yields and high share of direct payments in income for the reference run. Income crashes for example in Portugal for durum wheat by –75.5 %, leading to an acreage change of -60 %. Cereal yields increase slightly by 1.4 % as areas are reduced mostly for low productive cereals and in low productive regions. The abolition of rye intervention – aggregated in the market model with oats and other cereals – let prices of theses cereals drop by –0.9 %, contrary to soft wheat and grain maize (2.8 % and 1.8 % increase). The weighted producer price for cereals increases by 0.6 %, reflecting the overall decrease in supply.

Whereas human consumption of cereals is unaffected (consumer price changes are dampened by very high margins against the small increase in farm gate prices), feed use is reduced by –4.7 %. The latter reflects solely the reduction in beef meat supply, as number of cattle decrease, allowing for a higher share of fodder in the feed mix. Market interventions are not longer necessary to defend internal prices. The net trade of 36 mio t in cereals is reduced to 26 mio t, as the reduction in supply is more pronounced than in feed demand. The EU position as a net importer of *oilseeds* is only slightly affected by the MTR proposal (0.5 mio t), resulting from reduced oilseed production (-4.6 %) in combination with stable demand (-0.7 %). As for cereals, average oilseed yields increase (1.1 %).

**Table 4.8.   Product balances for cereals (1000 t)**

European Union	Agenda reference run 2009				MTR unchanged dairy policy 2009			
	Supply	Intervention purchases	Net trade	Demand	Supply	Intervention purchases	Net trade	Demand
Cereals	230 338	435	36 307	193 596	213 244 -7.42%	9 -97.92%	25 989 -28.42%	187 247 -3.28%
Soft wheat	102 077	32	19 847	82 198	96 481 -5.48%	0 -99.38%	16 319 -17.77%	80 162 -2.48%
Durum wheat	8 678	3	-123	8 799	6 986 -19.50%	0 -99.48%	-1 586 -1188.94%	8 573 -2.57%
Rye and meslin	6 482	253	3 211	3 018	6 006 -7.34%	-100.00%	3 047 -5.10%	2 959 -1.94%
Barley	55 189	147	11 639	43 403	50 029 -9.35%	9 -93.97%	8 365 -28.13%	41 655 -4.03%
Oats	7 404		745	6 659	6 673 -9.87%		285 -61.75%	6 388 -4.06%
Grain maize	41 899		1 492	40 407	38 880 -7.20%		241 -83.86%	38 640 -4.37%
Other cereals	5 685		-505	6 190	5 262 -7.44%		-684 -35.35%	5 946 -3.95%
Paddy rice	2 924		1	2 923	2 926 0.06%		2 104.67%	2 924 0.03%

4.4.3.3 Development of fallow land and set-aside

The modelling system distinguishes set-aside and fallow land, in order to allow for modelling of compulsory set-aside obligations and voluntary set-aside programs. By the introduction of a uniform premium paid to both activities, the model technically moves areas from set-aside to fallow land. The result for the MTR proposal should hence be interpreted for the aggregate of both.

The following map shows the change in the aggregate "fallow land and set-aside" in the MTR compared to the reference run. As the map reveals, the overall picture is not dramatically changed by the MTR proposal. On EU level, there is an increase of fallow land plus set-aside of about 5.5 %. Reductions are observed in Southern Sweden and Ireland, where idling arable land is now converted into low productive fodder production. Increases occur mostly in Southern Member States, but the absolute share on agricultural land is increasing by not more than 1-2 %.

Map 4.2.   Percentage of the aggregate "set-aside and fallow land" in total utilisable agricultural area: MTR simulation run versus Agenda 2000
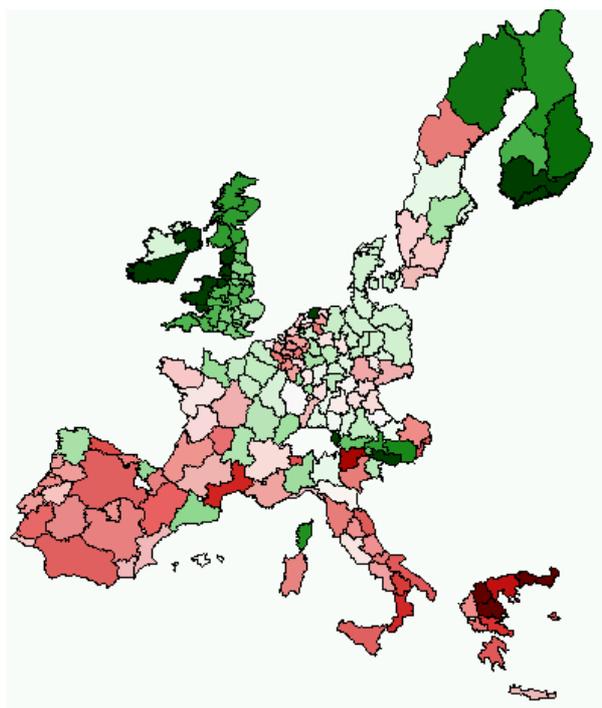
Note:
From dark green to light green: between -62 % and -13 %, white around -4 % and from light red to dark red between 3 % and 51 %.

4.4.3.4 Developments in the meat, cattle and dairy sectors

Table 4.9.   Product balances for meat (1000 t), MTR compared to Agenda 2000

European Union	Agenda reference run 2009				MTR unchanged dairy policy 2009			
	Supply	Intervention purchases	Net trade	Demand	Supply	Intervention purchases	Net trade	Demand
Meat	36 577		1 844	34 732	36 073		1 347	34 726
					-1.38%		-26.94%	-0.02%
Beef	6 778		389	6 390	6 327		-10	6 338
					-6.65%		-102.68%	-0.81%
Veal	674		-38	712	649		-57	706
					-3.70%		-49.14%	-0.87%
Pork	18 537		1 256	17 281	18 562		1 265	17 298
					0.13%		0.65%	0.10%
Sheep&goat	1 125		-273	1 398	1 058		-350	1 408
					-5.99%		-28.21%	0.68%
Poultry	9 462		510	8 952	9 476		500	8 977
					0.16%		-2.04%	0.28%

In the comparison with the reference run, supply of beef (-6.6 %), veal (-3.7 %) and sheep and goat meet (-6 %) are expected to drop, whereas pork and poultry meat remain stable. A slight drop in meat consumption (-0.02 %) results from increased consumer prices (0.8 %). Whereas pork and poultry meat consumer prices are stable, reduced supply from the cattle chain raises farm gate prices for beef by 5.6 % and consumer prices by 2 %. The price shift is accompanied by a consumption shift from beef and veal (-0.8 %) to pig (0.1°%) and poultry (0.3°%).

Table 4.10.   Supply details for cattle activities, MTR compared to Agenda

European Union	Agenda reference run 2009					MTR unchanged dairy policy 2009				
	Premium per head	Income per head	Hectares/ Herd size	Yield	Supply	Premium per head	Income per head	Hectares/ Herd size	Yield	Supply
All cattle activities	121	409	80 541	2 039	164 189	4 -97.10%	325 -20.54%	74 693 -7.26%	2 152 5.57%	160 755 -2.09%
Other cows	191	237	12 925	419	5 410	-100.00%	68 -71.08%	10 660 -17.53%	419 0.22%	4 471 -17.35%
Heifer breeding		138	6 800	1 000	6 800		46 -66.49%	6 337 -6.81%	1 000 0.00%	6 337 -6.81%
Fattening male calves	45	-51	3 163	122	385	-100.00%	-43 14.64%	3 184 0.67%	122 0.19%	388 0.86%
Fattening female calves	46	35	2 016	144	290	-100.00%	1 -97.47%	1 725 -14.44%	152 5.49%	262 -9.74%
Raising male calves		185	10 502	1 000	10 502		120 -34.97%	9 510 -9.45%	1 000 0.00%	9 510 -9.45%
Raising female calves		107	11 038	1 000	11 038		72 -32.93%	10 408 -5.71%	1 000 0.00%	10 408 -5.71%
Dairy cows low yield	157	758	9 793	4 133	40 478	9 -94.41%	630 -17.00%	9 692 -1.04%	4 133 0.00%	40 059 -1.03%
Dairy cows high yield	258	1 983	8 772	9 642	84 584	20 -92.20%	1784 -10.02%	8 809 0.42%	9 642 0.00%	84 938 0.42%
Male adult cattle low weight	262	41	5 448	257	1 400	-100.00%	-86 -312.29%	4 795 -11.99%	258 0.55%	1 239 -11.50%
Male adult cattle high weight	262	150	5 422	385	2 089	-100.00%	40 -73.50%	5 081 -6.29%	387 0.39%	1 965 -5.93%
Heifers fattening low weight	86	-25	2 353	209	491	-100.00%	-71 -179.43%	2 217 -5.77%	209 0.22%	463 -5.57%
Heifers fattening high weight	86	65	2 308	313	722	-100.00%	34 -47.45%	2 276 -1.39%	314 0.17%	713 -1.22%

The assignment of premiums to land, previously attached to animals, leads formally to a drastic drop in income per activity unit, both for milk cows and cattle fattening processes. However, the biggest part of this shift will be offset by direct income payments to grass land used for cattle production. Inside of the cattle chain, activities which draw a higher part of their income from direct payments are affected most. Accordingly, suckler cows drop by some −17.5 %, and milk production is intensified by a shift to higher milk output per cow. These developments interact with reduced herd sizes in the fattening chain, as well as with an increase of average slaughter weights. The latter is due to the fact that, in

the reference run, animals with low final weights draw a higher percentage of income from direct payments in. The number of cows is reduced by -7.3 %. *Farm specific premiums* might change the picture, as probably a higher part of the direct support paid to cattle would be redirected to grass land compared to uniform regional payments at NUTS II level. The results are coupled to the assumption that grassland cannot be converted to set-aside. Dairy cows are still competitive after removal of direct payments, keeping milk output unchanged at quota levels. A reduction of sheep and goat milk by about −3.2 % leads to slight changes in output of processed dairy products in the 0.1°% range which are produced both from cow and sheep and goat milk. Slight changes occur for human consumption as well, partly due to cross price effects from changes in meat and crop prices. Net trade of processed dairy products is slightly reduced.

4.4.3.5 Impact analysis on agricultural income and EAGGF budget

Table 4.11.   Economic welfare analysis for EU 15 (mio EUR)

Item		Agenda reference run 2009	MTR Proposal 2009
Consumer welfare (equivalent variation)	1	33 265	31 126 -6.43%
FEOGA budget outlays first pillar	2	27 666	25 198 -8.92%
EAA Output	3=4+5+6	308 466	304 448 -1.30%
EAA Output crops	4	159 019	157 971 -0.66%
EAA Output animals	5	149 447	146 477 -1.99%
EAA Output rest	6		
EAA Input	7=8+9+10	189 132	182 997 -3.24%
EAA Crop specific inputs	8	35 874	34 651 -3.41%
EAA Animal specific inputs	9	101 447	97 333 -4.05%
EAA Other inputs	10	51 812	51 013 -1.54%
Premiums	11	27 399	25 082 -8.46%
Agricultural income	12=3-7+11	146 733	146 533 -0.14%
Total	13=1-2+12	152 332	152 461 0.08%

The table shows that total premium payments decrease by -8.5°%. Agricultural income nevertheless stays stable, as input drop some –3.2°% in value whereas output value falls by –1.3°% only as prices increase.

The decrease of the premium amount results from the combination of increasing premiums as described above in combination with the degressive modulation system. Compared to the 18°% modulation, the overall cut is smaller as (a) part of the premiums e.g. national envelopes are not included in the modulation and (b) farm specific ceilings prevent a full cut for included ones. A more detailed view on the EAGGF budget positions shows a shift in the compensation payments from cereals and oilseeds to fodder crops on arable land.

The MTR proposal foresees the transfer of budget savings of the modulation from the first to the second pillar As far as farmers benefit from increased rural development programs, that could offset income losses from the modulation.

The following map shows the changes in premium payments per hectare at NUTS 2 level for the EU. It can be seen that regions with high levels of permanent grass land and cattle production achieve higher premium payments per hectare. Past experiences with the compensation payments indicate increased rent prices, and thus income distribution effects depending on land ownership.

Map 4.3.   Comparison of changes in total premium payments per hectare of MTR against Agenda 2000
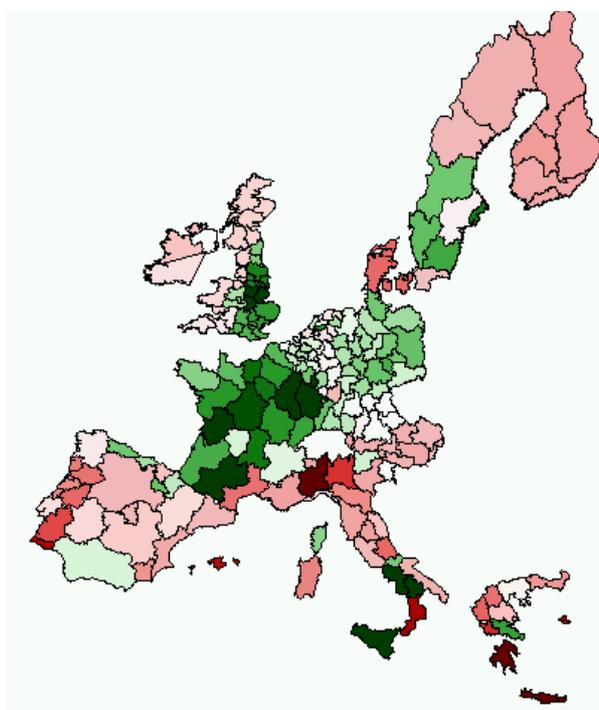
Note:

From dark green to light green: between –21°% and -10°%, white around -9°% and from light red to dark red between –2°% and 37°% income per hectare. Percentage changes with respect to Agenda 2000 reference run.

4.4.3.6 Impacts on environmental indicators

Global Warming emissions are measured as CO_2 equivalents and linked to mineral fertiliser use, methane emissions from ruminants and carbon dioxide linked to energy

use. All these different Gases (methane, carbon dioxide and nitrous oxide) are weighted according to its global warming effect in the stratosphere[43]. The map below shows a decrease in global warming potentials compared to Agenda 2000 of -5%, due to a drop in production for cereals coupled with an expansion of set aside and fallow land, and reductions in cattle production (high methane emissions).

Nutrient balances are calculated in the model by considering mineral and organic fertiliser application rates, biophysical data at a regional level on atmospheric deposition of nitrogen, biological fixation of nitrogen (as percentage of crop uptake) and share of minerals taken up by crop. By aggregating supply of nitrogen in the system and demand from crops, nitrate surpluses are calculated at regional level. Parallel to the drop in greenhouse emissions, the implementation of the MTR Proposal implies an average reduction of Nitrate Surpluses of -3.4% for the EU.

Map 4.4.   Change in Global Warming Emissions of MTR run against Agenda 2000
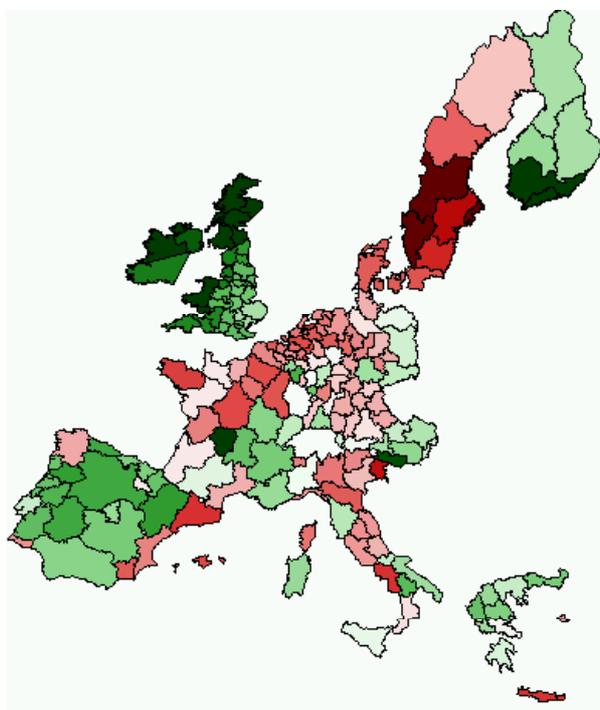
Note:
From dark green to light green: between –11.72 % and –5 %, white around -4.3 % and from light red to dark red between –2.82 % and 0.34 % (percentage changes with respect to reference run).

4.5.   Conclusions

The proposal certainly leads to a ***higher market orientation*** of European farmers. Due to less coupled premiums, allocation efficiency increases with farming decisions closer linked to market prices. Additionally, the proposal reduces scope and frequency of market interventions as intervention prices are further reduced below expected average world market prices. However, a stronger European currency or temporary imbalances in world markets could still provoke a built up of intervention stocks.

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[43] These coefficients are regularly updated by the Intergovernmental Panel on Climate Change (IPCC)

The continuation of the CAP reform path of shifting from price to direct income support further detaches budget outlays from market developments and stabilises the EAGGF budget as direct support is bounded to value ceilings.

The results show a **net economic benefit** at EU level of 129 mio EUR compared to the Agenda 2000 reference run with almost **stable agricultural income** (-0.14% or – 200 mio EUR measured as Gross Value Added plus premiums) and reduced budget outlays (-8.9% or -2468 EUR) mainly coming from modulation. Consumer welfare (-2139 mio EUR) decreases slightly.

It should be noted that increases in the area of crops now eligible for the uniform premium, especially potatoes, negatively affect the income of producers specialised in these crops as the market responds with lower prices. Higher cereal prices in the EU markets reduce slightly incomes for pig and poultry fattening farms. Income effects at farm level depend further on the implementation of the payment scheme. Premiums fixed at farm level would probably lead to a picture quite similar to the one shown in here with uniform premium at regional level in combination with regional models. Uniform premiums at Member State level would provoke a redistribution from more productive regions – with higher historic yields and hence higher premiums per hectare - to less productive ones. Further on, the number of eligible hectares of arable land exceeds the current area under COP payments. Hence, any scheme where the amount of payments is not fixed at farm level could re-distribute premiums between farms. This effect becomes even stronger with an identical premium for grass and arable land. Regional comparisons show that regions specialising in beef production often receive higher premiums per hectare of grassland than per hectare of arable land from the COP scheme. In those regions, an identical premium shifts support towards arable crops. Experience since the McSharry reform shows that at least parts of the premiums are transferred into land rents – provoking distribution effects in between farmers, and between farmers and non-agricultural land owners depending on land ownership. An analysis of such income distribution effects goes however beyond the scope of the current analysis. Cutting payments at certain ceilings could however threaten economic viability of farms where larger parts of the current COP premiums cover the cost of land rent contracts.

The effect on **structural change in the farming sector** is **not clear**. The decoupling of premiums increases allocation efficiency, and hence could speed up farm size growth. However, certain parts of the proposal might countervail: (1) farm specific premium ceilings and (2) the exclusion of small farms from modulation and farm audits. Farm size growth in combination with specialisation in production contributed in the past to increased competitiveness and higher farm incomes. Farm size specific exemptions and ceilings should therefore be considered carefully.

Even if the model does not feature back- and forward linkages with other sectors of the economy, it should be noted that both agricultural output in quantities and values as well as input use are reduced (-3.2 % in value), somewhat affecting **rural economic activities** linked to agriculture, but counteracted by higher budgets for rural development under the second pillar resulting from modulation.

Reduced input use and smaller cattle herds contribute to some "**greening effects**", as output of global warming gases and N,P,K surpluses decrease. Further positive effects can be expected from mandatory farm audits proposed as part of the MTR package. Benefits for the environment from the simulated increase in idle land (26 %) are coupled

to strict control measures to ensure that the land is indeed kept in "good agricultural condition". The shift from rotational to stationary set-aside should increase environmental viability.

However, the proposed scheme still ***deviates from a completely decoupled payment system***: not all crops are eligible for support, and durum wheat, rice, protein and energy crops still receive additional coupled premiums. Both facts question if the scheme could be defended in a new WTO round. Further on, even if administrative costs are clearly reduced compared to the Agenda 2000 situation, farmers are still required to report yearly their crop allocation and even this simplification might be offset by the introduction of mandatory farm audits.

References

Commission of the European Communities (2002a): Mid-Term Review of the Common Agricultural Policy, Communication from the Commission to the Council and the European Parliament, 10.7.02, COM(2002) 394, Brussels.

European Commission Directorate for Agriculture (2002): Prospects for Agricultural Markets 2002-2009, Luxembourg: Office for Official Publications of the European Communities.

European Commission Directorate for Agriculture (2000): Agenda 2000 CAP Reform decisions - Impact Analyses, Luxembourg: Office for Official Publications of the European Communities.

FAPRI-UMC Technical Data Report 01-02

The CAP-reform Proposal

of the Mid-term Review:

Decoupling with strings attached

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EXECUTIVE SUMMARY

The Mid-term Review (MTR) has evaluated the agricultural policies of Agenda 2000, and proposes a series of adjustments in the commodity regimes. These measures are designed to improve the competitiveness of cereals, and present a solution to the problems in the rye and rice regimes, where substantial surpluses are currently building up. The MTR also changes the way in which support is being provided: area and animal premiums are replaced by a historical entitlement per farm and given as a transfer, independently from production decisions. Moreover, the payment is reduced gradually by a certain percentage, which is transferred to the rural development funds. Thus, the MTR reorients the support away from production incentives to a mode that is compatible with the objectives of the European Model of Agriculture (EMA), which seek to maintain viability of the countryside, to promote animal welfare, to preserve nature and landscapes, and to enhance food safety and quality.

Yet, despite this decoupling, the support is subject to a variety of constraints and requirements. First, farmers are only entitled to payments on given eligible land that covers the major part of the arable crops and grassland. Second, farmers should maintain some form of management of the land that is not used for commercial production. Third, cross compliance requirements place restrictions on the production method and intensity, to meet environmental goals and to enhance animal welfare. Thus, payment rights become conditional, and in fact turn into rights to subsidized production, with subsidy rates that are to a large extent harmonized across eligible crops. Fourth, these rights are further tied to land through restrictions on their transfer among farmers, which is only permitted jointly with the transfer of land property. Finally, other restrictions limit the concentration of premium eligibility per hectare, and per farmer, as well as the eligibility of non-farmers. In short, the decoupling has many strings attached that re-couple the payments to cultivation.

The paper describes these decoupling and re-coupling mechanisms, and quantifies their effect through scenario simulations with CAPMAT, a general equilibrium model of EU agriculture designed to evaluate CAP reform. A previous version of the model has been used for impact studies of Agenda 2000. The present version comprises supply models at member state level that incorporate the various conditions of the MTR-proposal and shows its impact on farm outputs, inputs as well as on the trade and budget of the EU.

The main finding from the scenario assessment is that the re-allocation effects of the reform are mitigated by the condition and the fact that the sugar and the dairy regime remain in place. The response might, however, become stronger, if the eventual legislative text is more flexible with respect to the tradability among farmers, and if quotas for sugar and dairy are relaxed.

Over the years, the CAP has by and large maintained an anchoring on cropping patterns through a relatively fixed distribution of net revenues over major agricultural activities, so as to keep production patterns relatively fixed. The quotas on sugar and milk strengthen this anchoring mechanism, which would be removed altogether under full decoupling. This would increase output and price volatility but also permit faster restructuring. The conditions of the MTR proposals effectively replace this anchor, and may also be engaged to meet the objectives of the EMA .

5.1.   Introduction

In its Agenda 2000, the EU established a new set of policies. For agriculture, the Agenda determines over a seven-year period of Financial Perspectives the budgetary ceilings of agricultural policies and continued the earlier reforms. The decisions moved the Common Agricultural Policy further into the direction of a system of direct support given through area and head-age payments that gradually replaced the system of price support. Agenda 2000 also stipulates that the CAP will be subject to a mid-term review (MTR), and a Communication to this effect was issued in July 2002 (CEC, 2002). The review aims to present a broad evaluation of the Agenda 2000, in particular of the progress made in pursuance of the objectives of the European Model of Agriculture (the EMA, see Fischler, 2002), and more specifically the working of the major commodity market organizations (CMO). Based on this evaluation, a number of reform measures are put forward.

The MTR proposes various technical adjustments in the commodity regimes. Most important among these are the lowering of the intervention price of cereals, with compensation via higher area premiums. Rigorous steps are also taken to curb surpluses in rice and rye. The rye intervention regime is to be abolished completely, and the support price of rice is halved, again with compensation payments, in anticipation of the expected increase of imports from developing countries after 2005, and in response to the already high and rising stock levels. Payments for durum wheat, nuts, and dried fodder are modified. Options for changing the dairy regime have been analyzed extensively, but substantive measures must await the completion of the adjustments under Agenda 2000 that runs until 2007. Similarly, the intervention regime for beef is maintained that now runs with support to private storage when the market situation demands it, triggered at the price levels set by the Agenda 2000 decisions.

The proposed adjustments would constitute a fairly normal change in the CMO of the CAP to accommodate market and budgetary pressures, were it not that the MTR comprises the novel element of *decoupling* of the direct payments. Through this, the Commission reshapes the mode of agricultural support much in the spirit of the U.S. with the FAIR Act of 1996. The basic aim is to give agricultural support in a way that does not affect production, primarily to ensure that it does not affect international trade, so as to gain its qualification under the Green Box of WTO, as opposed to the Blue Box where it currently resides. This clearly is a new and remarkable element of the MTR-proposals, on which this paper will focus.

Specifically, the MTR proposes to consolidate, per farm, the area and head-age premiums in a certain base year into a single historical entitlement for support. While the current direct payments are linked in all detail to a specific crop or animal type of a certain age and gender, farmers will now enjoy almost unlimited "freedom to farm", that is freedom to determine their preferred production patterns. Only the sugar beet under the subsidized quotas, the dairy cows, for which the quota system is continued, and fruits and vegetables are non-eligible for support. Yet, the proposal imposes further condition on top of these, relatively mild, eligibility constraints. Land should be kept in good agricultural condition (maintenance requirement) and production practices must obey environmental and animal welfare requirements (cross-compliance requirements). Payment rights are thus tied to land management requirements, and their incidence is still on a per hectare basis. Also, animal premiums become in fact area premiums. Thus, there will be decoupling but not too much. In fact, full decoupling might be undesirable, as it would conflict with policies that seek to

safeguard and promote the objectives of the EMA and typically impose restrictions on production methods and intensities.

Furthermore, the proposal recognizes that the historical entitlements can be seen as payment rights, which might change hands, and can thus accumulate or leave the agricultural sector. It considers this an undesirable outcome, and by linking the payments to land transactions it seeks to avoid extreme concentration or outflow. This is understandable from a political economy perspective, as some might find it hard to defend a publicly funded buyout system that eventually pays a rent to any EU citizen as a sort of interest on treasury bonds, even though such buyouts are made every day. Therefore, these conditional payment rights actually become production rights, which are only tradable jointly with land transactions. Specifically, they are rights to cultivate and sell in accordance with specified standards, up to a given maximum of support. Through the linkage to land, regional agronomic conditions to a large extent will determine the production patterns. For example, sheep production will continue on Northern pastures that would presumably remain fallow if the payment rights were fully tradable, but are now subject to cross-compliance constraints. Thus, as for almost any other type of support, it is hard to argue that the payments have no impact on production and international trade.

Apart from the condition, payments are also subject to modulation. They are reduced by three per cent every year and the proceeds are returned to the agricultural budget, to be used in particular for rural development. Farmers with less than two workers, in full-time equivalent, who receive less that 5000 EUR annually, are exempted from this reduction, with an additional franchise for every other worker. The proposal in this way meets one of the objections, often raised against the CAP that the bulk of the support is targeted to a small minority of large farms. Thus, the modulation operation also contributes to the distributive objectives of the EMA.

We note that the principle of decoupling has its foundation in the welfare theoretic result that lump sum transfers are the best way to achieve distributive objectives without creating distortions. As payments that are purely based on past activities fall in this category, they qualify as non-distortion measure in terms of the Agreement of Agriculture of the WTO. But theory also points out that this only holds when all markets are perfectly competitive (no use of entitlement to transfer as collateral for loans), and the new regulation comes by surprise (no announcement effect). Furthermore, the restrictions imposed to fulfill the EMA-objectives have welfare value of their own.

However, until the legislative texts are completed, it remains hazardous to give a precise interpretation of the MTR. It is clear that the direct payments become historical payments and thus (conditional) payment rights tied to land and although the linkage to (official) land transactions is most likely, the tradability requirement has not been spelled out in full. At any rate, the effectuation of this requirement will be problematic because many land transactions, such as lease, rent, and share cropping contracts, do not pass the notary.

In short, as decoupling comes with many strings attached, and some of these are yet to be defined, it is hard to predict the combined effect of all regulations. This also makes it difficult to incorporate the proposals in a simulation model. In this respect, the CAPMAT-model used in our study has the advantage that its agricultural supply module at member state level has the form of a mathematical program, with explicit land balances, yields per hectare and animal, feed balances per animal type, including grass land. This makes it possible to express, say, the conversion of animal premiums into hectare premiums for

grassland, and to impose various eligibility and cultivation requirements of the MTR. Yet, as CAPMAT consists of national models and does not distinguish farm types, it can only accommodate trade in land and payment rights in a simplified way.

The remainder of this report proceeds as follows. In section 2, to clarify how the condition interacts, and possibly interferes, with decoupling, we represent the regulations within a programming model of agricultural supply. Section 3 briefly describes the CAPMAT model and the outcomes of a reference scenario. Section 4 discusses the implementation of the MTR and compares the outcomes with those of the reference run. Section 5 concludes.

5.2.   Decoupling theory

Decoupling in its pure form refers to the idealized situation where support measures do not affect production. Even a direct payment without condition can create distortions. This may occur because it affects the individual decision to stay in agriculture and to continue producing (Rude, 2000, Benjamin, 1992). There may also be an announcement effect whereby farmers anticipate on the information about future transfers being contingent on actual cultivation (Young and Westcott, 2000). Finally, the impact on the collateral value of land (Phimister, 1995), and the income and insurance effects (see Hennessy, 1998) may be significant. Nonetheless, such effects are seldom recognized as creating important distortions on international trade.

While the WTO in its Agreement on Agriculture requires that support should have "no, or at most minimal, trade-distorting effects or effect on production" (Article 6 of the Agreement of Agriculture, WTO 1995), the agreement is not explicit on the meaning of "minimal". Within the WTO, support through direct transfers that are not linked to specific products tends to meet this requirement and hence to qualify for the Green Box classification. Various attempts have been made to make this concept work further. Cahill (1997) proposes a pragmatic definition that permits to test econometrically how much the support affects production, and computes rates of decoupling for various EU support policies (see also OECD 2000) for an alternative definition).

To clarify the notion of decoupling and to introduce some of the complexities of the MTR, we now discuss how the measures enter a static micro-economic model of the farm. This model is cast as a mathematical program that maximizes farm revenue of a single cropping season, subject to technological and policy constraints. Annex I presents a series of such programs in order of increasing complexity.

In the first, most simple case (see also P.1 in Annex I) a farmer can cultivate his land according to a given production technology. The land resource is in fixed supply. The farmer may choose to leave it idling but if there is at least one crop with positive net revenue after deduction of all variable costs, this will not be optimal. He now chooses the cropping pattern that yields highest revenue. The transfer is fully decoupled: it is given on a per hectare basis, but without any maintenance requirements, hence on the fixed supply of land, be it cultivated or not. Since this is a constant, the payment does not affect the cropping pattern. Similar properties would apply for payments to any fixed factor, for instance also for immobile labor.

As soon as payment rights become conditional on the fulfillment of specific requirements, they are no longer purely decoupled. Suppose (as in P.2) that a maintenance requirement is imposed. The farmer now faces a conditional payment right as he is only entitled to the

payment if he also performs minimal management activities, say, keeping ruminants on a pasture. He now has to decide how much land to leave idle and thus faces an additional constraint reflecting the maintenance requirement. This creates a rent that will affect the area allocation if the constraint is binding.

Crop eligibility is the next policy element to be considered (in P.3). The proposal specifies that payment rights only hold for eligible crops. In the MTR this is a rather mild condition as most of the arable crops (sugar beet can only be grown under quotas) and grassland are eligible, but the position of dairy cattle (also under a quota regime but grass-based) and the non-eligibility of fruits and vegetables (the latter partly in rotation with arable crops) is a complicating factor. Clearly, the payment subsidizes the other crops to the detriment of the non-eligible crops, and thus affects the production pattern.

When we also consider the livestock sector (in P.4), the situation becomes more complicated, because the MTR converts the current head-age premiums into eligibility rights on pastures. Since this is done on the basis of past production from ruminants of every farm, the hectare premiums may vary significantly among farms. Moreover, the (environmental) requirements on cattle farming translate into livestock density constraints on grassland. Finally, ruminants may serve to fulfil maintenance requirements of grassland, which translates into some sort of technological condition linking eligible cropping activities, in particular those producing green fodder, to eligible livestock activities, in particular ruminants, as in P.4. While such a condition lacks a clear interpretation and maybe also motivation, it definitely does not decouple payments. Again, every such requirement creates a new constraint at farm level, that may carry its own rent and makes the allocation less decoupled.

The impact of decoupling is especially ambiguous for grass-based livestock activities. We elaborate on this by considering a few situations that may be relevant in practice. First, suppose that a farm operates on grazing land that has no alternative agricultural use. In this case, the payments already were and remain largely decoupled. Apart from the dynamic (wealth) effects, production will be unaffected. Second, on a farm whose livestock premiums are at their maximum, livestock ceilings and density requirements are likely to constrain production in the pre-MTR situation.

After the release of these constraints, the farmer may now decide to expand the scale of his livestock production, since it has become more attractive to supply green fodder, which now receives a production subsidy. This may actually be associated to an increase of the surfaces used for grazing and thus be compatible with extensification. Hence, despite its intention to achieve the opposite effect, the MTR may introduce a change that promotes a shift away from arable crops to the favor of pastures. Clearly, cross-compliance conditions could limit these effects by re-establishing ceilings on livestock densities, but these are not included so far. Thirdly, decoupling might also lead to diversification, for instance inducing farmers to combine extensive ruminant production with other (non-agricultural) activities, which may become especially attractive if zoning restrictions are relaxed, and more land is given a non-agricultural vocation. Also, for a farm with a high livestock intensity the area premium would be high and the farmer may then opt for renter behavior, cashing the payments while only fulfilling the bare maintenance requirements. In this case ruminant production will fall. Therefore, the interactions are complex and the effect on production is ambiguous and hard to predict.

In a quantitative analysis at EU-level like the present one, the price effect will be seen to dominate the outcomes, but the result could be different in an exercise for a smaller region that can account more explicitly for various environmental, demographic and social characteristics of the farms under study.

Furthermore, the MTR introduces cross compliance as a general notion to preserve landscape values, and to meet animal welfare and environmental conditions. This might in practice lead to a wealth of additional requirements, on top of the restrictions on area shares and livestock densities. And therefore, the payments those are conditional upon them, and imposed in the implementation of the EMA, operate as subsidies on specified activities, to the detriment of other practices.

Finally, the tradability of payments rights is an important issue. In the absence of other constraints, tradability improves efficiency, and decoupling. By contrast, the MTR links trade in payment rights to officially registered land transactions. This is to prevent concentration of rights among farmers as well as among regions and member states. Yet, as mentioned in the introduction, implementation of this rule is problematic because of informal transactions and sharecropping agreements. Also, for mixed farms, for grassland under "commonage" and for areas with rough grazing, concentration of payment rights on a small part of the farm could become an attractive option.

We return to this point in the next section when we discuss implementation of the MTR, but here it is important to note that every farm in the EU will in principle have a different payment right per hectare. Hence, the MTR enters uncharted territory, also for modeling as this, and all the other highly farm-specific restrictions make it difficult to assess the production effects at national level, not to mention the difficulties in monitoring these subsequently.

5.3.   Scenarios

The CAPMAT-model, the CAP Modeling and Accounting Tool that is used here for scenario simulation, incorporates the CAP rules and farmers' behavioral response to policy changes via agricultural supply models for every member state, embedded in a general equilibrium framework.

This is a Revised Version of the model used earlier for the assessment of Agenda 2000 proposals (CEC, 1998) and decisions (CEC, 2000). The major improvement as compared to the earlier version is that the farm supply model now uses a more flexible specification of the mathematical program that can account for the various conditions. Also, unlike the previous version that still drew on modules of the ECAM-model (Folmer et al., 1995), CAPMAT now operates as a stand alone model with its own modules, which nonetheless, closely follow the ECAM-specification. It covers the full agricultural sector, distinguishing 40 activities per Member State, treats the non-agriculture sector in a highly stylized way, and links 14 national models (with Belgium-Luxembourg as one unit).

The model focuses on CAP market and price policies, and distinguishes prices at border, producer, market, and consumer level of the raw commodity. Commodities fall in one of three market regimes, depending on the applicable CAP regulation.

The first regime is that of strong CAP commodities, whose intra-EU prices follow intervention prices, provided storage is possible. For simplicity, stock levels are kept fixed

in the scenario simulations and we suppose that the full market surplus is actually exported, with subsidies when necessary.

The second regime is that of pigs and poultry, whose markets are to clear within the EU, for given net exports. This implies that supply follows consumption, and the intra EU-price adjusts. In view of their limited international tradability, potatoes are also taken to fall under such a regime. The third is for tradable commodities whose price basically follows the world market price. Permanent crops and oilseeds belong to this category.

5.3.1. Assumptions

The scenarios require assumptions on the growth of production factors in agriculture. Total available agricultural land is taken to fall in accordance with a country-specific historical trend of around 0.3 per cent per year on average. Livestock is constrained by the livestock capacity whose evolution also exhibits a modest decrease but is scenario dependent.

Yields per hectare and production per animal grow at rates that are considered technically realistic and not exceeding current biological ceilings. Fertilizer use per kg and feed requirements per animal are kept fixed. Hence, any technological progress is assumed to be embodied in the yield increase.

A reference or base scenario, with autonomous developments and unchanged policy, is taken as a reference against which the alternative scenarios that characterize the MTR are compared. It can be described as follows.

World market prices are exogenous. For the short-term, up to two years, we use projections by the AIECE (2001). For the longer term, we make our own projections based on historical trends, and force a transition to the long-term trend over a period of 10 years. These projections generally agree rather closely with those of the World Bank (2000), FAPRI (2001) and OECD (2001), which all portray a similar picture: a modest recovery after the historical low of around the millennium change. For oilseeds, it is assumed that the world price in real terms will in 2009 be higher than in 2003 (almost 6 per cent), which is similar to the difference for wheat (+7 percent). For both commodities, world market prices determine domestic price ratios, and the oilseeds-wheat price ratio, which thus shows little variation, determines the ratio of the corresponding areas, which may, therefore, be expected to be rather stable. However, coarse grains could disturb this picture as its price still is determined by the intervention price (falling in real terms, since nominally fixed) or, when the market is in autarky, by the domestic clearing price. This autarky regime occurs if exports vanish, while imports are costly because of import tariffs.

World market prices are usually expressed in US Dollars, and thus the development of the exchange rate between dollar and euro is of importance. The euro has devaluated by some 30 per cent since its introduction in 1999. Consequently, prices on the world market, expressed in euro have increased and this had a favorable impact on the EU-budget because it reduced the level of export subsidies. We keep the EUR-Dollar exchange rate fixed at one dollar per euro throughout the simulations. One major implication is that the EU wheat price remains slightly below world market levels in most of the years of the simulation period, in particular after 2004. This means that the growing exports of wheat can be sold on world markets and that the ensuing downward pressure on world prices is insufficient to stop the case of unsubsidized wheat exports. In view of the future demand of food and feed (FAO 2002; Keyzer et al., 2001), this seems plausible.

The development of the general domestic price level in the EU is also an important determinant of agricultural income and EU-budget outlays. Since intervention prices and the premiums are fixed in nominal terms, inflation means that real incomes deteriorate and the budget improves. We have specified a modest inflation at a rate of 1.6 per cent per year up to 2005 and 1 per cent afterwards (FAPRI: 1.9 per cent, OECD: 1.8 per cent). Inflation is expressed via the nominal price level of the non-agricultural commodity.

Current CAP-policies are in place: sugar and dairy quotas, mandatory and voluntary set-aside, and stabilizers on most budgetary outlays. This implies that when a reference area, a ceiling on livestock numbers or a maximum guaranteed quantity number is exceeded, the per-unit premium is scaled down proportionally. In addition the scenario incorporates in detail the policies of the Agenda 2000 package on intervention prices, premiums, set-aside and quotas.

5.3.2   Scenario Outcomes

5.3.2.1 Volumes

Table 5.1 presents a summary of the developments of volumes of agricultural products in the EU-15 as resulting from the reference run, referred to as *base run*. Starting year for the simulation is 1999; in the MTR-run the reform measures will be introduced in 2004 and 2009 is the last year of the simulation.

For most crops, a modest growth of total production is found with wheat somewhat more buoyant due to its superior yield growth and better prospects on the world markets. Total production of feed products decreases as the livestock sector as a whole stagnates due to weak consumer demand. Moreover, because of the yield increase per cow, the number of dairy cows falls (the modest increase of the quotas does not reverse this). Since cows have relatively high feed requirements for maintaining their metabolism, this reduction in numbers significantly reduces feed demand.

Specifically, milk production increases due to extension of quotas in 2005 by 1.5 per cent, while high relative profitability of milk production ensures that production fills the quotas. Growth in milk yields causes the dairy herd to decline, which has a negative effect on beef production because of the natural complementary abilities. In principle this could be compensated by an increase in the numbers of meat cattle, but the beef and veal sector is confronted with sharp price cuts. The limited substitutability of grassland for other use within agriculture prevents strong adjustments in production. In the period 2000-2004 beef production declines by 300 thousand t to recover in 2009 to the level of the base year. The lower prices trigger a modest increase in consumption, which is a break with the declining trend of the past years. The growth of consumption of pig meat and poultry is modest as well, but still stimulated by a real decline in prices of about 1 à 1.5 percent per year. Typically for these products, since the options for trade are limited, production growth equals consumption growth.

Table 5.1.   Base run: average annual growth of volumes, EU-15, over the period 1999-2009 (percentage)

	Production	Consumption	Feed use
Wheat	1.7	0.7	0.2
of which: durum wheat	0.9		
Coarse grains	0.2	0.8	1.4
of which: rye	0.1		
Rice	0.7	0.7	-0.4
Vegetable oils and fat	1.0	0.4	-1.2
Protein feed	0.7		-1.7
Carbohydrates	-1.1		-3.4
Milk: fat component	0.2	0.7	-1.6
Milk: protein component	0.2	0.8	-1.9
Beef & veal	-0.1	0.3	
Pig meat	0.6	0.6	
Poultry	0.8	0.9	

Keeping the CAP subsidies fixed in nominal term means that the relative profitability of crops can only change little, preventing a substantial reallocation in areas. Table 5.2 shows the results for the areas of competing crops.

The area under grassland and fodder plants decreases faster than total area, which is in line with past trends. Furthermore, changes in area allocation are minor, but hide larger variability at member state level. The largest change in area is found for sugar beets, which is caused by the fact that sugar production is constrained by quota and yields increase. Fallow land, which mainly occurs in Spain and Portugal, refers to fallow land other than the set-aside schemes, and has been "*endogenized*" to reflect additional land outflow when prices fall or support is decoupled. Total COP-area decreases at about the same rate as the total availability of agricultural land.

5.3.2.2 Trade

Small differences in the developments of domestic use and domestic supply lead to larger differences in the volumes of external EU-trade. Table 5.1 already indicates that exports of wheat will increase and exports of coarse grains will decrease. For most products a decrease of the volume of net exports is observed. In the case of butter (which can be derived by applying a fixed transformation coefficient to milk fat), the EU turns into a net importer whereas it was a modest exporter before. Similarly, exports of cheese and SMP can be computed, which are then declining but at a slow rate.

Table 5.2.   Base run: cultivated areas (mio ha) and average annual change, 1999-2009 (percentage)

	1999	2009	Annual growth rate
Wheat	17.8	18.3	0.3
of which: durum wheat	3.6	3.8	0.4
Coarse grains	20.9	19.3	-0.8
of which: rye	1.7	1.6	-0.6
Rice	0.4	0.4	0.6
Pulses	2.3	2.6	1.3
Potatoes	1.6	1.6	-0.2
Sugar beets	2.1	1.9	-1.1
Oilseeds	4.9	4.8	-0.1
Grasses and grazings	51.6	49.3	-0.5
Fodder plants	12.6	12.0	-0.5
Mandatory set-aside	3.8	3.8	0.0
Voluntary set-aside *	2.0	2.0	0.0
Fallow land	5.9	6.1	0.4
COP-area	54.2	52.9	-0.3
Total area	148.3	144.3	-0.3

* Note: voluntary set aside is specified "*exogenously*" in the base run.

Table 5.3.   Base run: net exportable surplus, EU-15 (mio t) and average annual change, 1999-2009 (percentage)

	1999	2009	Annual growth rate
Wheat	22.2	37.2	5.3
Coarse grains	8.9	-0.8	
Vegetable oils and fat	-6.2	-5.8	-0.7
Protein feed	-11.7	-9.1	-2.5
Carbohydrates	-8.5	-5.0	-5.2
Milk: fat component	0.1	-0.1	
Milk: protein component	7.1	6.4	-1.0
Beef & veal	0.2	0.1	-4.4

Following the production developments and modest but still positive trends in consumption, quite a few commodities move back to self-sufficiency. This also holds for coarse grains where a re-balancing effect leads to increases in feed demand, as coarse grain prices are kept fixed nominally and wheat prices improve over the simulation period in real terms following world market prices. In a scenario modeling setup, these results cannot be considered as projections, yet it shows that the EU under quiet realistic scenarios could lose much of its international market position.

Also for other products the difference with world market prices is reduced. An important reason is the fact that the intervention prices are fixed in nominal terms, and that, given our assumptions on EU inflation and deflated world price, the gap between EU and world prices narrows. In addition, the Agenda 2000 policy package contains price cuts for cereals, butter and SMP (effective from 2005) and for beef and veal.

5.3.2.3 Agricultural income

The reduced price support which is only partially compensated by increased or new hectare and livestock premiums takes its effect on total agricultural income. For the EU as a whole an average annual decrease of real income of 0.5 percent is observed. As an annual outflow of labor of about 2.2 per cent is found, this implies that per capita income still grows at an annual rate of 1.7 per cent, which is slightly less than the assumed growth of the non-agricultural sector of 2.1 per cent.

Table 5.4.   Base run: farmers' income (1999-prices, bio EUR), farm labour ('000) and annual growth rate (percentage)

	1999	2009	Annual growth rate
Value added crops	69.8	70.0	0.0
Value added livestock	49.2	40.9	-1.8
Direct payments	23.0	24.1	0.5
Total income	142.0	135.2	-0.5
Farm population ('000)	7 294	5 863	-2.2
Farm income per capita ('000 Euro)	19.5	23.1	1.7

Note: Value added reported here without area and head-age premiums

5.3.2.4   EU budget

The two major CAP reforms, MacSharry and Agenda 2000, led to a reduction in the share of agricultural expenditure in the total EU-budget. This trend will continue in the Base run. Within the agricultural budget, five major developments can be observed, see Table 5.5, where data for 1992 were included to illustrate the importance of several budget items before the MacSharry reform.

Table 5.5.   Base run: EU-budget, in nominal prices (bio EUR)

	1992 [1]	1999	2009 [2]
EU-budget	58.9	79.7	116.9
Agriculture	32.1	39.9	44.5
CAP (excl. rural development)	32.1	37.3	39.3
Export refunds	9.5	6.1	2.3
Area and headage premiums		23.0	28.0
Other FEOGA outlays		6.7	7.1
Storage cost	5.3	1.6	1.9
Rural development	0.0	2.6	5.0

[1] Budget for EC-12, amounts are in bio ECU.
[2] EU-budget and rural development based on Financial Perspectives, kept at level of 2006 in real terms.

First, the combination of a falling gap between world market prices and internal EU-prices and decreased exports makes for a significant fall in export subsidies. The EUR/US Dollar rate shows up as a key element in the price difference. Second, total expenditures on direct support in 1999 have surged due to the MacSharry reform but the rise of the new premiums under Agenda 2000 has only a relatively minor effect. This is essentially because reference areas, stabilizers and budgetary ceilings are effective means to constrain budget outlays. If activities fall below their maximum, direct payments may even drop. The total of premiums still rises between 1999 and 2009 due to the implementation of the Agenda 2000 decisions, to compensate for the price cuts for cereals, beef and dairy. Third, in the early nineties intervention purchases were needed for surplus disposal, causing rising storage costs. Since the MacSharry reform, the problems with high stocks and the accompanying costs are resolved. We have noted that stocks are kept constant in the simulations, as all surpluses are supposed to exported within the year, with rice as only exception, where the implication of the EBA agreement is taken into account. Fourth, CAP market measures and directs aids in 2009 are still below the ceilings set in the Financial Perspectives 2000-2007, but the cost of premiums for the new EU members is not considered here. Finally, within the CAP a shift can be observed from the traditional market policy to rural development policy. The effects of this shift of funds towards the second pillar on production, productivity and factor input are not considered in the model, as there is little evidence on the magnitude of these effects.

5.4.   The MTR scenario

Since the MTR links the decoupled premiums to land, the payments still operate as flat area premiums or a combination of lump sum transfers with a (lower) flat area premium. This principle provides the basis for the implementation of the MTR-scenario within the CAPMAT-model, and since the producer model in CAPMAT also is a mathematical program, there is in this respect no gap between principles and practice.

However, the producer model in the CAPMAT application is more involved than the theoretical models for two reasons. First, it considers 14 national farms that produce crops

as well as livestock. This introduces various interactions, in particular because under the MTR pasture and roughage land become eligible for premiums, but with a maintenance requirement for which grazing by ruminants would be the natural mode of operation.

Secondly, the heterogeneity of farmers is to be accounted for, since due to the linkage in trade of payment rights to land transactions, the current vocations will only change slowly. In a national farm model, the replacement of current area premiums by a flat area payment on eligible crops would amount to assuming immediate adjustment with free, unlinked trade in payment rights. However, as the trade is linked to land transactions, and in practice, less than 5 per cent of total land changes hands annually, fast adjustment is excluded.

Specifically, the "*degressivity*" in payments implies that COP area will fetch a lower area premium, while grassland that previously only received the premium via the ruminants grazing on it now also becomes eligible directly. Yet, for the individual farms with a high degree of specialization, the changes are far less pronounced. For example, on an arable farm growing COP crops only, nothing changes in the short run, as the payment rights remain on the farm and the scope for venturing into new crops is limited. Similarly, the pasture-based sheep or cattle farm will receive the former animal premiums in the form of area premiums and has no incentive to change its ways.

The heterogeneity of farms is represented in CAPMAT by insertion of additional constraints that limit deviations in the premium payments over the eligible activities. The constraints can be interpreted as budgetary flexibility constraints, which place bounds on the distribution of premiums over eligible activities. Such bounds are imposed for COP-crops on the one hand, and grassland on the other, where sheep and cattle must take a specified minimal share out of the total grassland payments.

We note the physical aspects of heterogeneity already enter the aggregate model through the limited substitutability between activities, while the flexibility bounds reflect the specific elements of the non-tradability of payment rights. It would be desirable to validate our farm model that is specified at national level on the basis of farm specific information but this is beyond the scope of our study. Therefore, the tightness of the flexibility constraint had to be established on the basis of numerical experimentation, and remains arbitrary to some extent.

5.4.1. Scenario implementation

Once the constraints that reflect the conditions are in place, parameter values can be assigned in the actual implementation of the MTR-scenario, which takes place in a series of steps.

Specific adjustments must be made in the CMO. The intervention price of cereals is lowered by 5.88 per cent with a partial compensation in area premiums. The premium is now 63 EUR per ton times the regional yields and becomes 66 EUR per tonne. Rye intervention is abolished, the rye prices are taken to fall by some 40 per cent to reach world market level, and the rye area to decline sharply to the benefit of other coarse grains, in particular barley of the same quality. The intervention price of rice is halved. This will only have a modest production effect, since most paddy fields are irrigated or located in swampy deltas and have no alternative use. The paddy is expected to return to the level of early nineties, when the strong increase in area planted started.

There are also some minor adjustments in the remuneration for dried fodder and nuts, which will not affect area allocations, since ceilings on guaranteed area or quantities are effective.

Durum wheat premiums are scaled back to 250 EUR/ha and apply now to the traditional areas only. A quality premium of 15 EUR/t is added, but ignored in the implementation, as the precise quality requirements were not stated as yet. Sugar quotas remain in place and dairy quotas follow what has been agreed under Agenda 2000. Payments for dairy cows are unaffected by the MTR.

As discussed earlier, the MTR-decoupling comes with eligibility restrictions and condition, and the decoupled payments can to some extent still be considered to operate as area premiums.

When implementing the scenario we assign part of the payments as area premiums and part as lump sum transfers. The historical entitlements are based on the base run model results for 2003, after re-computing the new MTR area and head-age premiums while excluding the monthly increments for cereals in both scenarios. The entitlements are divided by the eligible area, which results in an EU-average flat area premium of about 220 EUR per hectare. These flat premiums vary by Member State. They are split according to a single share into a flat area premium (with a top up for durum wheat to match the MTR proposal) and lump sum transfers. This division matters for the results and was subject of some sensitivity analysis. Under the MTR conditions, however, through the eligibility conditions, the presence of sugar and dairy quotas, and the fact that COP area premiums were already harmonized over the regions, the outcomes appear to be fairly robust with respect to this assumption. Hence, we do not present the results from the variants.

The constraints on decoupling are implemented by means of two eligibility constraints, one for arable crops (excluding the sugar beet under the quotas, fruits and vegetables and permanent crops) and one for grassland, and two budgetary flexibility constraints. The eligibility constraints also account for the fact that some farmers do no qualify for support and that some very large farms with direct payments over 300 000 EUR are capped.

Flexibility constraints ensure that the constraints on individual farms find expression in the national model. The bounds on the eligible area are initialized at their base year level (minus 10 per cent, to reflect that initially the imposed condition cannot be expected to have full compliance). Eligibility constraints decrease at the same rate as the total area, while the initial reduction is eliminated.

Furthermore, the decline in total farm area, which can be seen as outflow to non-agricultural destinations must also be taken to apply to the eligible area, since the payments are linked to the land on which they were given, and we assume that the eligible area falls at the same rate as the total. Consequently, a significant fraction of total payments (some 25 per cent) still acts as premiums on sheep and goats and non-dairy cattle via the grassland payments.

The modulation and the franchise are derived from FADN data on farm structure. We calculate per Member State the share of farm income that is exempted from modulation. This share is kept fixed over the simulation period. Funds that are released by modulation fill the rural development funds, and are taken not to return to farmers, which might not be realistic and cause underestimation of income from farming.

The MTR abolishes the stabilizers of the CAP. This holds for the stabilizer on outlays to beef and sheep (when animal stocks exceed their ceiling, head-age premiums are scaled back proportionally). It also holds for the reference area of the COP crops.

Hence, mandatory set-aside can no longer be maintained. Instead the mandatory set-aside area is replaced by non-rotational environmental set-aside, which is kept constant over the simulation period. Also the area for voluntary set-aside is kept constant. Yet, it is expected that farmers will still find idling an attractive option, and this is represented by the "*endogeneity*" of fallow land. Under the MTR scenario, this fallow land increases faster than under the base run, due to the decoupling effects, by some 0.5 mio ha in 2009. This can also be interpreted as an increase of the voluntary set-aside or as abandonment.

We include the energy crops program, which seems to be an attractive option, phasing it in "*exogenously*" to reach almost 0.7 mio ha in 2009. This is less than the industrial oilseeds area since the bonus is lower (45 EUR/ha) and the arrangement requires contracts with processors.

Fruits, vegetables and horticulture are not eligible for support both before and after the MTR, and as discussed earlier, this might create some (distortion) incentive to limit their areas in the pre-MTR situation. However, the MTR is unlikely to generate a significant expansion, since horticulture is generally not seen as competing with field crops, because of its higher capital and labor intensity, and the fact that its products tend to be demand constrained. Permanent crops are not likely to show a pronounced reaction to the short run changes in the CAP. Yet, some substitution effect is likely to take place in practice, which is neglected in our scenario-run.

Finally, since decoupling is motivated by efficiency considerations, we allow for an expansion of the scope of farming activities. For this, we assume that the decoupling will permit more non-agricultural use of agricultural land, through tourism-related activities and possibly less restrictive zoning rules. This expands agricultural land devoted to these activities from 72 thousand ha in the base run to 282 thousand ha in the MTR-scenario.

The MTR scenario operates under an exogenous assumption on livestock capacity and labor productivity. Partial decoupling leads to diversification of investments and since there are no essential changes in the quotas and set-aside schemes, we may expect agricultural investments to fall, which leaves less capacity for the livestock sector, that consequently has a lower growth rate in the MTR scenario.

As decoupling also broadens employment opportunities, we also assume an increase in labor productivity in the MTR scenario, which also amounts to faster labor outflow.

5.4.2. Scenario outcomes

5.4.2.1 Volumes

The MTR scenario shows modest changes in production over the simulation period, see Table 5.6. Policy effects are mitigated by the eligibility and flexibility constraints and also because a considerable part of the non-eligible crops are permanent or belong to horticulture, which are treated as non-substitutable with arable crops. The reform causes wheat, coarse grains and oilseeds to lose due to more fallow, energy crops, and the slight substitution in favor of grassland. The rye reform is implemented but it hardly has any effect on the total, since rye can be replaced by other low yielding varieties of coarse grains that are still eligible for intervention.

Table 5.6.   EU-15 production in 2003 and 2009 (mio t)

| | Base | | MTR |
	2003	2009	
Wheat	104.9	121.2	112.0
of which: durum wheat	11.0	11.3	9.8
Coarse grains	113.0	109.4	108.3
of which: rye	9.1	8.4	4.5
Rice	1.6	1.7	1.2
Vegetable oils and fat	7.9	9.3	8.8
Protein feeds	3.1	3.7	3.6
Carbohydrates	12.4	11.4	11.3
Milk: fat component	4.8	4.9	4.9
Milk: protein component	110.1	111.2	111.4
Beef & veal	7.7	8.0	7.5
Pig meat	17.0	17.5	17.5
Poultry	8.5	8.8	8.8

It is important to note that the limited effect on coarse grains is due to the fact that this market reaches autarky towards the end of the MTR scenario, which causes internal prices to recover, as imports are penalized prohibitively through tariffs. Because of this, the coarse grains price in 2009 is higher than in the base run, which explains that after the initial drop in 2004 the coarse grains area regains some of its lost area share.

The combination of the adjustment in set-aside area, the introduction of energy crops, the overall fall in total area, the substitution with grass land, and the autonomous productivity trends, makes that the crop allocation changes are not easily traced back to simple price trends.

In fact, it appears that grassland and fodder plants area gain somewhat at the expense of COP-area. The gain is limited but noticeable, nonetheless, and attributable to the premium on grassland. Total area cultivated also declines more than total area available. The change is modest, and reflects that with the lowered area premium some land (for instance in Finland) will be left idle. A similar effect is seen through the increase in fallow land, which exceeds the base run level by 8 per cent in 2009.

Table 5.7.   Cultivated areas EU-15 in 2003 and 2009 (mio ha)

| | Base | | MTR | |
	2003	2009	2009	Difference (%)
Wheat	17.5	18.3	17.0	-8
of which: durum wheat	3.8	3.8	3.3	-4
Coarse grains	21.0	19.3	18.6	-4
of which: rye	1.7	1.6	0.9	-45
Rice	0.4	0.4	0.3	-26
Pulses	3.0	2.6	2.9	10
Potatoes	1.6	1.6	1.6	2
Sugar beets	2.0	1.9	1.9	1
Oilseeds	4.0	4.8	4.4	-8
Grasses and grazings	50.8	49.3	49.7	1
Fodder plants	12.4	12.0	11.8	-1
Mandatory set-side	3.8	3.8		
Environmental set-aside			3.8	
Voluntary set-aside	2.0	2.0	2.0	
Fallow land	5.8	6.1	6.6	8
Energy crops			0.7	
COP-area	53.6	53.5	50.9	-4
Total area	146.7	144.3	144.1	0

Note: voluntary set aside is specified "*exogenously*".

In all, changes in the area allocation are minor, which is in part due to the short time horizon of the simulation and also a consequence of the linkage maintained via the various conditions. As yields are exogenous, and sugar and milk quotas are maintained, this also implies that changes in production are small.

Since only cereal (including rice) prices change significantly, the effects on consumption are small and the impacts on trade are minor as well and only wheat shows marked effects, that determined by the committed gross and net trade flows (which apparently add up to -0.8 mio tonne). It may be noted that after decoupling the regional reference areas for high-yielding (irrigated) maize may no longer be binding, and that maize production will increase, making the EU again net exporter. This has also policy implications, as the policy aims for the maize regime may be lost under the MTR. Our model with only national reference areas and nationally averaged maize yields does not reflect these aims. Finally, we note that under the MTR the EU becomes a small net importer of beef again, which is fully caused by the drop in production.

Table 5.8.   Net exportable surplus, EU-15 in 2003 and 2009 (mio t)

	Base		MTR
	2003	**2009**	
Wheat	17.8	34.3	25.7
Coarse grains	8.3	-0.8	-0.8
Vegetable oils and fat	-6.9	-5.8	-6.2
Protein feeds	-11.0	-9.1	-9.3
Carbohydrates	-5.7	-5.0	-5.0
Milk: fat component	0.06	-0.06	-0.06
Milk: protein component	8.1	6.4	6.8
Beef & veal	-0.2	0.1	-0.1

5.4.2.2 Agricultural income

Table 5.9.   Agricultural income EU-15 (1999-prices, bio EUR) and farm labour ('000)

	Base		MTR	
	2003	**2009**	**2009**	**Difference (%)**
Value added crops	68.0	70.0	71.2	1.8
Value added livestock	44.1	40.9	40.9	0.0
Direct payments	24.0	24.1	22.8	-5.2
Total income	136.2	135.2	136.2	0.8
Farm population ('000)	6 689	5 863	5 720	-2.4
Farm income per capita ('000 Euro)	20.4	23.1	23.8	3.3

Note: Value added reported here without area and head-age premiums

The fact that premium outlays are not being curtailed in the short run implies, jointly with the small effects on volumes and prices that farm incomes vary little between the base run and the MTR, as shown in Table 5.9. Yet, some efficiency effects can be pointed to, especially in the crop sector where, with slightly less land, income rises with slightly over one bio EUR (1999 prices). This also includes the revenues due to the assumption in the MTR scenario that more freedom for farmers offers them to undertake non-agricultural activities such as tourism.

Prices for pig meat and eggs rise somewhat (almost two per cent) but poultry prices fall by a similar amount, so that the net effect on value added from livestock activities happens to be zero. Finally, total direct payments are seen to decline, due to the modulation from 2004

onwards. Another cause is the assumption that payments leave the sector when agricultural land leaves agriculture.

In sum, the effect is that outlays for direct support decrease by about one percent per year, see Table 5.10.

Table 5.10.   Selected FEOGA items, 1999-prices (bio EUR)

	Base 2003	2009	MTR 2009	Difference (%)
Refunds on trade	3.6	2.0	1.9	-4
Direct support	24.0	24.1	22.8	-6

5.4.2.3 Welfare comparison

We perform a welfare comparison on the basis of equivalent variation (see Annex II for the definition of concepts used). Between the base run and the MTR scenario we have assumed identical development of non-agricultural value added. Hence, no change in this component can be recorded. As can be inferred from Table 5.9, the MTR scenario shows a gain in agricultural income of 1.01 bio EUR, despite a fall in direct support for agriculture of 1.24 bio EUR. The latter is a gain for the taxpayers. A further gain for the taxpayers, of 30 mio EUR, is due to reduced price subsidies, such as the export refunds. Conversion to base run prices (the "price effect") amounts to a small negative correction.

Table 5.11.   Welfare comparison EU-15 in 2009, 1999-prices (bio EUR)

	MTR welfare gains
Equivalent variation	2.23
Agricultural income	1.01
Reduction tax payments	1.27
Price effect	-0.05

5.5.   Conclusion

The Communication on the MTR enriched the existing CAP-apparatus with the new element of decoupled payments under conditions of various sorts. Whereas pure decoupling through lump-sum payments is a straightforward concept in theory, in the practice of the CAP its full implementation is problematic because this would cause European agriculture, that was so far firmly anchored through dairy and sugar quotas and harmonized premiums, to break adrift.

We have analyzed the theoretical and numerical implications of the various rules and conditions imposed under the MTR and found that one by one, they create new anchors, some light, other heavier. First, the tying of the trade in payment rights to official land transactions presumably is the heaviest of all, since in large parts of the EU this effectively links payment rights to specific outputs such as sheep and beef. Second, there is condition

via cross compliance; although the specific details have not been published yet, it seems likely that livestock densities will have to be introduced; animal welfare will constrain farming practices and limit the transport of live animals. Third, the modulation with franchise could induce farmers to adjust the scale of their operations in order to remain below the thresholds. Finally, there is the condition via the crop eligibility. This is probably the weakest anchor, as 80 per cent of agricultural land is eligible, but it nonetheless penalizes the important alternative of cultivating vegetables on arable land.

In this report, we have only studied the effects until 2009, which is far too short to identify the long-term implications of the proposed reform. Looking farther ahead would be difficult, because the MTR introduces significant changes, especially in the grass-based livestock sector. In the short to medium term, the effects of these changes are mitigated by the continued presence of dairy quotas. These capture much rent and keep the number of dairy cows on a mildly downward trend in response to increased yields per animal, but otherwise maintain a relatively stable composition of a large fraction of the cattle herd associated to it through livestock demography, and even controls the numbers of other ruminants on the pastures. Especially in regions with mountain farming, rough grazing or less favored areas, where the link between livestock intensity and grassland is hard to establish, the present MTR regulations might in the long run offer scope for concentration of payment rights, which would be conducive to further intensification. For the crop sector, the exclusion of horticulture and permanent crops is bound to have longer term effects, and the same holds for the substitution possibilities between starchy (eligible) and consumable (non-eligible) potatoes. Since entitlements are defined on a historical basis and per farm, the premium per hectare will be different between every pair of farms, and over time, after land transactions have taken place, even within farms. Whether the aims of the EMA will be achieved through the MTR very much depends on the details of the legislative texts, especially, on the tightness of the cross-compliance requirements, and the reliability with which their effectuation will be monitored.

In sum, for the short to medium term the old anchors of stable net revenues are still being preserved under the MTR, this time not via administered prices and stock keeping, but via condition, eligibility, limited tradability of payments rights, and by the decision to postpone the elimination of the considerable quota rents in the sugar and dairy regimes. In the longer term, policies moving towards a higher degree of decoupling will relax the quotas, and broaden the eligibility. This will increase the efficiency of agriculture, but possibly also create new output and price volatility. And clearly, the EU enlargement will have an impact that dominates all others.

Finally, it must be mentioned that the heads of state at their special meeting in Brussels agreed to freeze the ceiling on expenditures on CAP market measures and direct aids until 2007 and to let it increase by 1 per cent until 2013. Since the agreement is made specifically for the ceiling on expenditures and not for the actual outlays (which are 2.6 bio lower for the draft 2002 budget), this creates some room for the phasing in of the direct payments of the Candidate Countries after 2004. The most recent proposal to shift resources from the structural funds to the additional funding of direct payments would create even more room, and the rationale of such a proposal becomes greater when payments are more decoupled. Yet, new policies that would be necessary to complete the decoupling, in particular for sugar and dairy, and the various other CMO scheduled for review, may also lead to changes that draw on the budget. Upcoming international negotiations will also create pressure for change. Although the progress reported so far on the Doha agenda of the WTO is modest, the incentive to shift as much support as possible to the Green Box seems obvious and

decoupling is essential for this. Similarly, and despite its limited impact so far, the Everything-but-Arms agreement could also become instrumental in forcing further access for sugar imports, as the least-developed countries have been granted duty-free access on gradually increasing import quotas. Thus, the recent agreement has fixed the budgetary room for CAP-reform, which is yet far from complete. The signal to the farm sector is that it will have to rely on new sources of revenue in the future, in particular by developing its multifunctional services and by promoting further product differentiation.

References

AIECE (2001), 'World Commodity Prices 2001 - 2003', Working Group Report.

Benjamin, D. (1992), 'Household composition, labor markets and labor demand: testing for separation in agricultural farm-household models', *Econometrica,* 60: 287-322.

Cahill, S.A. (1997), 'Calculating the rate of decoupling for crops under CAP/oilseeds reform', *Journal of Agricultural Economics*, 48: 349-378.

CEC (1998), 'CAP reform proposals. Impact Analyses', CAP reports, October 1998, CEC (DG VI), Brussels.

CEC (2000), 'Agenda 2000. CAP reform decisions. Impact Analyses', CAP reports, February 2000, CEC (DG Agriculture), Brussels.

CEC (2002), 'Communication from the Commission to the Council and the European Parliament. Mid-term Review of the Common Agricultural Policy', COM(2002) 394 final, Brussels.

FAO (2002), *World agriculture: towards 2015/30. Summary Report*. FAO, Rome.

FAPRI (2001), 'U.S. and World Agricultural Outlook 2001', CARD, Iowa

Fischler, F. (2002), 'Sustainable agriculture for Europe', Speech NFU Annual Conference, London.

Folmer, C., M.A. Keyzer, M.D. Merbis, H.J.J. Stolwijk, & P.J.J. Veenendaal (1994), 'Common agricultural policy reform and its differential impact on member states', *European Economy*, 4-1994.

Folmer, C., M.A. Keyzer, M.D. Merbis, H.J.J. Stolwijk, & P.J.J. Veenendaal (1995), *The Common Agricultural Policy beyond the MacSharry Reform*. Amsterdam: North-Holland.

Ginsburgh, V., & M.A. Keyzer (1997/2002), *The structure of applied general equilibrium models*. Cambridge MA: MIT Press (2002, pocket edition).

Hennessy, D.A. (1998), 'The production effects of agricultural income support policies under uncertainty', *American Journal of Agricultural Economics*, 80: 46-57.

Keyzer, M.A., M.D. Merbis & F. Pavel (2001), 'Can we feed the animals? Origins and implications of rising meat demand', SOW-VU Working Paper 01-05, Centre for World Food Studies, Amsterdam.

OECD (2000), *Decoupling: a conceptual overview*. Paris, OECD.

OECD (2001), *Agricultural Outlook 2001 - 2006*, Paris, OECD

Phimister, E. (1995) 'Farm household production in the presence of restrictions on debt: theory and policy implications', *Journal of Agricultural Economics*, 46: 371-380.

Rude, J. (2000), 'An examination of nearly Green programs: case study for Canada', *American Journal of Agricultural Economics*, 82: 755-761.

Young, C.E. & P.C. Westcott (2000), 'How decoupled is the U.S. agricultural support for major crops?', *American Journal of Agricultural Economics*, 82: 762-767.

Varian, H.R. (1984), *Microeconomic Analysis*, second edition, Norton, New York.

World Bank (2000), 'Global Commodity Markets', World Bank, April 2000.

ANNEX I. Models for Decoupling

Some notation is needed. For expositional reasons, only a crop allocation model is considered, where it is assumed that capital and labor are un-constraining (explained outside the allocation) and that agricultural land is the fixed resource.

K capital

L labor

$\overline{A}$ agricultural land resource, in fixed supply

A agricultural land prepared for cultivation

a_h cultivated land under crop h

a crop vector $(a_1,...,a_n)$

ρ_h net revenues per hectare of crop h

$F(.;.)$ transformation function specifying the technology by which resources K, L
                  and A are used as inputs for the cropping pattern $(a_1,...,a_n)$

σ area premium per hectare

P1.   Freedom to farm (or not)

The farmer has a fixed resource of non-cultivated agricultural land for which he receives a fixed premium, without any further conditions. He can decide whether to use this for farming or otherwise. In farming he prepares his land for cultivation, and decides which cropping pattern yields highest revenue. This can be represented as follows (shadow prices in parentheses)

$$max_{a_k,A \geq 0} \ \sum_h \rho_h a_h + \sigma \overline{A}$$

subject to

$$F(a;-K,-L,-A) \leq 0$$

$$A \leq \overline{A} \ .$$

Irrespective of whether land will be brought into cultivation or not, the premium is given on the fixed resource $\overline{A}$. Since the amount paid is constant, it cancels from the first-order conditions. Support is entirely decoupled and can be seen as lump sum transfer.

P2.   Maintenance requirements

Farmers receive payments under the condition that they prepare their land for cultivation or maintain it as such. This means that the payments rights become conditional on a specific requirement. As it is natural to assume that land prepared for cultivation will indeed be used

for some purpose, the sum of cropped area can be taken equal to the prepared area. Thus, we have

$$max_{a_k,A\geq 0} \ \textstyle\sum_h \rho_h a_h + \sigma A$$

subject to

$$F(a;-K,-L,-A)\leq 0$$

$$A \leq \overline{A}$$

$$\textstyle\sum_h a_h = A.$$

If the farmer decides to abstain from any maintenance activity he receives no transfer ($\sigma A = 0$). If he farms all his land, he receives his full historical entitlement. The requirement that land must be maintained carries a rent that affects the area allocation and the transfer may become effectively coupled.

P2.   Maintenance requirements

In the MTR not all crops are eligible for payments. This could be part of a transitory regime or reflect structural aspects such as the occurrence of permanent crops. We therefore distinguish between eligible crops and non-eligible crops. Policy determines which crops are eligible, a pure subset of {1,..,n}, and which is the total (reference) amount of eligible land.

Notation

a_h^e cropping activity h eligible for payments, $h \in I^e$

$\overline{A}^e$ total land eligible for payments

I^e index set of eligible crops

The supply model can be extended to accommodate this, as follows

$$max_{a_h,a_h^e,A\geq 0} \ \textstyle\sum_h \rho_h a_h + \sum_{h\in I^e} \sigma a_h^e$$

subject to

$$F(a;-K,-L,-A)\leq 0$$

$$A \leq \overline{A}$$

$$\textstyle\sum_h a_h = A.$$

$$\textstyle\sum_{h\in I^e} a_h^e \leq \overline{A}^e$$

$$a_h^e \leq a_h , \ h \in I^e$$

If an eligible crop is grown, it fetches eligibility rent which is equal for all active eligible crops to the area premium minus the rent of total eligible area. This rent affects the area allocation: additional condition reduces decoupling.

P4.   Crop livestock model with livestock maintenance requirements

Notation

ρ_h^c net revenues per hectare of crop h

ρ_l^l net revenues per animals for livestock activity l

s_l animal stocks of livestock activity l (head)

s_l^e eligible livestock activity

θ_{hl} livestock maintenance coefficient (ha/head)

I^r index set for ruminants that fulfill the maintenance requirements

Note that in P4 the transformation function F is understood to produce both cropping and livestock activities.

$$max_{a_h,a_h^e,s_l,s_l^e,A\geq 0} \ \sum_h \rho_h^c a_h + \sum_{h\in I^e} \sigma a_h^e + \sum_l \rho_l^l s_l \ \ s.t. \ \ F(a,s;-K,-L,-A)\leq 0$$

$$A \leq \overline{A}$$

$$\sum_h a_h = A.$$

$$\sum_{h\in I^e} a_h^e \leq \overline{A}^e$$

$$a_h^e \leq a_h, \ h\in I^e$$

$$s_l^e \leq s_l, \ l\in I^r$$

$$a_h^e = \theta_{hl}s_l^e, \ h\in I^e, l\in I^r$$

The relation between eligible crops (green fodder crops) and eligible livestock activities (ruminants) reflects the maintenance requirements, which is in fact a technological condition that couples areas to livestock. Clearly, farmers can resort to mechanical ways to resolve the maintenance requirements, but this is either more expensive, or not feasible due to soil conditions or steep slopes.

ANNEX II. Decomposition of Equivalent Variation

Since consumer demand in the model is derived from explicit utility maximisation, and the model covers the accounting of the entire economy, utility-based welfare measures can be constructed that assess the overall impact of the change. We evaluate the Equivalent Variation measure that can be constructed at member state level and is expressed in value terms and hence can be aggregated to EU-15 level. The measure compares a reference situation (the base run) and an alternative situation (the MTR-scenario) that has different prices and utility levels. Equivalent Variation is the minimal change in income, at the prices of the reference situation, that would make the consumer just as well off (i.e. equivalent) as in the alternative situation. This measure expresses the change in utility that results from the MTR-scenario, in monetary terms, using the common base run prices for comparison. Hence a positive value of the measure implies a welfare gain. The mirror image of Equivalent Variation is Compensating Variation, which uses the prices of the alternative situation, and we also refer to this measure (see for instance Varian, 1984).

Let $e(p,u)$ denote the minimal consumer expenditure required to achieve utility u at prices p. When utility u and prices p correspond to the same situation, this minimal expenditure is equal to the actual expenditure h of that situation. Actual expenditure h equals income minus savings minus taxes. Using superscripts 0 for the reference, and 1 for the alternative situation, we can define the two concepts as follows.

$$EV = e(p^0,u^1) - e(p^0,u^0), \qquad CV = e(p^1,u^1) - e(p^1,u^0), \text{ or}$$

$$EV = e(p^0,u^1) - h^0, \qquad CV = h^1 - e(p^1,u^0)$$

The tabular presentation below will decompose the EV welfare measure so as to attribute the change to underlying changes in income and changes in prices. For this, we rewrite its expression as:

$$EV = \{ h^1 - h^0 \} + \{ e(p^0,u^1) - h^1 \}, \text{ implying}$$

$$EV = \{ h^1 - h^0 \} + \{ e(p^0,u^1) - e(p^1,u^1) \}$$

The first term in brackets is the difference in income between the alternative and the reference scenario, the second is the minimal change in income to achieve the utility of the alternative situation at the two different price vectors. The latter term is a measure of the re-allocation effect. Thus the welfare measure has an income part and a re-allocation part that applies a correction for the change in prices.

The welfare measure can be broken down further by using the budget equation, which gives the different sources of income. We identify three sources. First, there is the value of endowments ($p\omega$), which in our model only applies for non-agriculture. Second, there is profit income (Π); in our model represented by agricultural income. And finally there are tax payments (T), since the consumers are taxed to finance the government budget.

$$h = p\omega + \Pi - T$$

In sum, we distinguish four components of welfare change.

$$EV = \quad p^1\omega^1 - p^0\omega^0 \quad : \qquad \text{change in non-agricultural income}$$

+ $\Pi^1 - \Pi^0$:   change in agricultural income

-    $T^1 + T^0$:   change in tax payments

+ $e(p^0,u^1) - e(p^1,u^1)$:   price effect

Impact Analysis

of the European Commission's proposal

under the Mid-Term Review of the CAP

using the CAPSIM model

EuroCARE

University of Bonn

EXECUTIVE SUMMARY

In Mid 2002 the EU Commission published the "Mid Term Review of the Common Agricultural Policy" which includes a proposal to decouple current support measures from production decisions in view of increased economic efficiency. However, this basic idea has been watered down to some extent by a number of exceptions and specific stipulations in view of perceived disadvantages of the pure decoupling strategy. Furthermore the MTR package includes a modulation of payments aiming at a reallocation between first and second pillars of the CAP. This rather complex reform proposal has been analysed with the modelling system CAPSIM.

In the crop sector we observe that the package of certain market measures and, presumably most important, decoupling removes the former distortion of incentives in favour of particular crops (cereal area: -4%, especially for durum wheat) which benefits those receiving little or no support in the reference run (arable fodder production +6%). The proposals greatly reduce the direct support for beef production in general, but especially so for male adult cattle and suckler cows. Consequently beef supply decreases (-9%) but the decline is moderate in magnitude, partly due to increasing beef prices, which are predicted for all meat markets. These price increases may be influenced by market management with deliberate steering of the level of subsidised exports.

Increasing meat prices also limit the decrease in agricultural net value added at factor costs to -0.9% or 1164 mio EUR in nominal terms against the Agenda 2000 reference situation in the year 2009 or even less (138 mio EUR) with higher subsidised exports. A second contribution to rising incomes comes from increased efficiency: producers can reallocate the product mix and save costs without loosing premium entitlements, which are reduced to some extent (-8.2%) in favour of the second pillar of the CAP.

The cut in premiums stemming from dynamic modulation would imply savings for EAGGF of 6.5% or 2765 mio EUR, but these savings would disappear to the extent that modulated funds are transferred into the second pillar. This crucial component of the MTR is beyond the scope of our current analysis, however. Increasing prices on meat markets would reduce consumer welfare (- 479 mio EUR), but the overall balance appears to be clearly beneficial for the EU-15 with an overall welfare gain of 1123 mio EUR if the EU largely abandons subsidised exports of beef. Higher subsidised exports would increase losses to consumers (- 1535 mio EUR) and decrease first pillar CAP expenditure savings (2572 mio EUR) and reduce the overall gain to 899 mio EUR.

As usual, the above quantitative results rest on a number of quantitative assumptions and choices in model specification, which are explained in some detail in the study. Most important is certainly that the area voluntarily set aside would increase only by about 500 000 ha on the EU level after the implementation of the MTR proposals, an assumption appearing reasonable but which could not be verified within the model used.

6.1.   Introduction

In Mid 2002 the EU Commission launched the "Mid Term Review of the Common Agricultural Policy" (EU Commission 2002a) into the political arena. This Mid-Term Review (MTR) includes a proposal to decouple current support measures from production decisions in view of increased economic efficiency. Given this main thread it

may be expected that activities heavily supported in the Agenda 2000 framework will loose in profitability against formerly less supported activities which will expand against the former in turn. However, this idea has been watered down (or amended) to some extent by a number of exceptions and specific stipulations in view of perceived disadvantages of the pure decoupling strategy. Furthermore the MTR package includes a modulation of payments aiming at a reallocation between first and second pillars of the CAP.

Overall the proposals are sufficiently complex and potentially effective to require quantitative modelling for an impact assessment, especially when the political balance hinges critically not only on signs of impacts but also on their magnitude.

This report gives an analysis of the Mid-Term Review of the Common Agricultural Policy (MTR) based on the modelling system CAPSIM. CAPSIM is a straightforward partial equilibrium-modelling tool with behavioural functions for activity levels, input demand, consumer demand and processing. Together with an assumption of exogenous yields they result in a complete set of market balances for 31 agricultural raw products covering the complete Economic Accounts for Agriculture (EAA). Currently either trade prices or quantities are considered exogenous. In terms of policy representation the system incorporates both border measures (tariffs, flexible levies/export subsidies, WTO constraints) as well as domestic support measures for agriculture (payments per ha or head, public intervention) and associated quantity restrictions (milk quota, sugar market regime, ceilings on payments).

The system was designed in view of later use by Commission services[44] such that, apart from methodological quality, transparency, flexibility, coverage and user-friendliness had to be taken into account as well which tend to suggest pragmatic solutions. CAPSIM is developed on behalf of the EU Commission in a contract with Eurostat, but the development is not yet finalised such that the version used for these simulations is an intermediate version (see Appendix 1).

The first main section explains in detail the assumptions underlying the analysis. The second main part includes the modelling results on the EU level. In our presentation we will focus on activity levels, market impact, income, budget and consumer welfare effects.

6.2.   Scenario assumptions

6.2.1. Scenario assumptions: reference run

The reference situation is based on the full implementation of the Agenda 2000 package, which is not yet implemented in our base period 1997/99. The most crucial **policy parameters** are reproduced in table 6.1 below. In more detail this involves the following:

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[44]   However it should be noted that the system is still developed and operated under the sole responsibility of the model builders who seized the opportunity to use the system in a policy relevant application. Consequently the views and interpretations expressed as well as assumptions made are those of EuroCARE and rely on communication with Commission services only where indicated in the text.

- Administered *prices* for *cereals, beef*[45] *and milk products* fall in accordance with the Berlin decisions by 15%, 20% and 15% respectively.

- Per-hectare *premiums* for cereals increase to compensate for the decline in price support, with no change on the durum wheat premium. Special increases in Finland, Spain and Italy are also taken into account (see European Commission 2000, pp 33). Premiums for pulses and oilseeds are declining due to the partial or complete unification with the cereal sector. The special male premium and the suckler cow premiums are increased in line with the Berlin summit decisions. National envelopes are topping up the slaughter premium. A dairy premium is introduced. Table 6.4 below reproduces the total increase in premiums per head for the cattle sector.

- The obligatory *set-aside* rate for professional producers is set to 10 %.

- Milk *quotas* increase in line with the Berlin decisions for the EU by 2.7% against our base period[46]. The increase is in most countries 1.5% and higher in four of them (EL, IT, IR, ES).

Yields are projected in an econometric estimation preventing predicted yield growth to become negative and to deviate between Member States by more than one percentage point. In the following table we reproduce the trends for selected crops which have been used in this study.

It has to be mentioned that the trends of cereal yields resulting from our standard estimation routine would have been stronger in general[47]. To achieve some consistency with our use of other exogenous information from the DG AGRI "Prospects for Agricultural markets 2002-2009" (European Commission Directorate for Agriculture 2002) we adjusted our early estimates of yield growth for cereals to that source. The assumed yield growth is evidently crucial for the magnitude of net exports of cereals in the reference run.

For **world market prices** we assumed the changes of Table 6.2, mainly in view of FAPRI projections if these were available. The above projections imply a constant EUR/Dollar exchange rate. Administrative prices, international prices and EU market prices have been expressed for a uniform quality and may be compared directly therefore. For cereals, beef, and skimmed milk powder, for example, we can read off immediately that the gap between EU prices and international prices has disappeared (for soft wheat, barley, maize) or narrowed down considerably (for beef, skimmed milk powder and other cereals) according to these projections which might be considered somewhat optimistic therefore. For the aggregate other cereals (including oats, rye, other cereals and paddy) we have to acknowledge furthermore that the current problems with supply control on the rye and rice market cannot be analysed appropriately at the current level of dis-aggregation in CAPSIM.

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[45] For beef this is the change from the pre Agenda intervention price to the basic price in the Agenda 2000 setting.

[46] Only 2.4% are due to the Agenda 2000 decision, the rest is due to small increases before the year 2000.

[47] For example, our first estimates in terms of growth rates were 1.7% for soft wheat, 1.1% for barley, and 1.7% for maize.

Table 6.1.   **EU crop yields [kg/ha] and yearly growth [% per year] in CAPSIM (1998-2009)**

	97/99	2 009	yearly growth
Soft wheat	6 622	7 538	1.19%
Durum wheat	2 517	2 921	1.36%
Barley	4 609	4 919	0.59%
Maize	8 949	10 444	1.41%
Other cereals	4 377	5 118	1.43%
Rape	3 162	3 491	0.90%
Sunflower	1 624	1 685	0.34%
Soy/other oils	6 247	6 958	0.98%
Fodder maize	42 070	44 959	0.61%
Other arable fodder	8 723	8 804	0.08%
Grassland	6 320	6 594	0.39%

The widening of the gap between EU and international prices for pork, poultry, and sheep meat is an endogenous result given the assumed changes in **exogenous net trade volumes** depicted in the following table. In a certain way they are a counterpart to the international price assumptions above. A sensitivity analysis with lower net imports of beef (MTR2) has been run which is discussed in the section on meat markets[48].

Furthermore the following assumptions on **other variables** are important:

- Nominal growth in *consumer expenditure* (2.7% per year) and *inflation* (1.9% per year) has been specified as in the "Prospects for Agricultural markets 2002-2009" publication (applying the GDP growth rate to final consumer expenditure) which has been mentioned above.

- While agricultural prices on the EU level are usually specified as derived from international markets or determined on domestic markets we have chosen to use exogenous trend estimates for some less important or difficult to model agricultural

- outputs[49]. Prices of non-agricultural inputs were assumed to rise according to the inflation rate.

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[48]   We thank Pierre Bascou for this and other suggestions.

[49]   This holds for olives, wine, textiles, the "other crop" aggregate and the "other animal" aggregate.

Table 6.2.   Selected EU prices and world market prices in the base year and in the reference situation in CAPSIM [EUR/t]

	World market	Administered 97/99	EU market	World market	Administered 2009	EU market
Soft wheat	101	114	114	112	97	112
Barley	90	110	110	103	94	103
Maize	107	121	121	118	103	118
Other cereals	97	130	130	109	110	110
Rape	194		194	195		195
Sunflower	209		209	225		225
Soy/other oils	77		77	78		78
Beef	2 019	2 929	2 929	2 321	2 343	2 343
Pork	1 197		1 272	1 392		1 633
Sheep meat	3 252		3 963	3 252		4 897
Poultry meat	989		1 224	1 089		1 527
Butter	2 040	3 758	3 758	2 445	3 194	3 194
Skimmed milk powder	1 524	2 092	2 092	1 753	1 935	1 935
Cheese	2 430		4 710	2 908		4 557

- The demand component *industrial use* is developing according to trends estimated on the CAPSIM database.

- *Population* growth is proceeding according to trend estimates for EU Member States, on the EU average by 0.34% per year. Given rather small income elasticity this is a non-negligible demand shifter.

- *Total area and exogenous areas* such as grassland have been partly specified according to trend estimates in the reference run (total area, grassland, olives, wine, textiles, other crops) and partly based on deliberate assumptions for the scenarios (set aside, fallow land, non food), which will be addressed in more detail in section 4.

6.2.2. Scenario assumptions: MTR run

As mentioned in the introduction the main thrust of the MTR proposals is about decoupling support from production decisions. Because the implementation of this policy in the model is crucial for the results we will explain the specification of premiums in some detail:

1. The premiums for arable crops in the Agenda 2000 run have been aggregated with those for cattle and sheep to a total available premium volume

Table 6.3.   Selected exogenous EU net trade volumes [1000 t] in the base year and in 2009

	Base 1997-1999	Reference run 2009	MTR run 2009	MTR2 run 2009
Other cereals*	1 843	1 210	1 000	1 000
Beef*	512	155	-400	-200
Veal	74	-7	-7	-7
Pork	1 341	1 176	1 176	1 176
Poultry meat	736	-42	-42	-42
Sheep meat	-234	-292	-292	-292
Cheese	256	0	0	0
Other milk products	1 021	0	0	0

* Net trade is an exogenous estimate only in the two MTR runs

2. This premium volume has been increased to reflect the 50% compensation for the price cut in cereals (-7.5% including the value of abolished monthly increments). Subsequently it has been decreased according to the drop in the durum wheat premium for traditional areas to 250 EUR/ha.

3. The premiums of different types (arable, beef, dairy, and sheep) have been reduced according to the modulation proposal by 18% for that part of the premium volume, which is affected by modulation. This part has been estimated in the Commission based on FADN data and is on average about 66% such that the premiums have been reduced by about 12% due to modulation.

4. This reduced premium volume has been converted into a uniform premium for eligible "MTR crops" which are all crops with a number of exceptions: Fruit and vegetable areas have been explicitly classified to be not eligible for the new "decoupled" premiums, and we assumed the same for olives, wine and "other crops" including nurseries.

5. Due to the latter exceptions farmers would loose entitlements if they grew more vegetables, for example. Therefore the uniform premiums are not decoupled in the strictest sense. On the other hand, historically based entitlements cannot be increased by *reducing* vegetables in favour of cereals, for example. Therefore we put the eligible area under a ceiling, comparable to the Agenda 2000 "base area" for cereals, oilseeds and protein crops.

6. The importance of cross compliance requirements is difficult to assess. However, we assumed that it would prevent the conversion of former grassland into fallow land or set aside such that the grassland area has been taken to be unaffected by the MTR proposals.

Our procedure implies that the decoupling content of the MTR proposals is not introduced beforehand, for example by adding the MTR premiums after the model run to

agricultural income. Instead the decoupling effect will emerge endogenously because almost all crops receive the same premium. Table 6.4 collects the important policy parameters used in the simulations.

Table 6.4.   Policy parameters and important exogenous assumptions for the simulations

	Base 1997-99	Reference 2009	% Change Ref.- Base	MTR run* 2009	% Change: MTR – Ref.
Crop sector					
Cereal intervention price	119	101	-15.0%	94	-7.5%
Premiums [€/ha] for					
Soft wheat	256	300	17.3%	222	-25.9%
Durum wheat	400	419	4.9%	184	-56.1%
Barley	216	265	22.4%	201	-24.0%
Maize	267	315	17.9%	194	-38.5%
Other cereals	205	250	22.0%	214	-14.3%
Pulses	319	284	-11.0%	230	-18.9%
Set aside	304	361	18.6%	196	-45.9%
Non food	385	447	16.1%	284	-36.4%
Soya/other oilseeds	455	249	-45.2%	197	-20.9%
Rape seed	416	332	-20.3%	240	-27.6%
Sunflower	315	223	-29.1%	166	-25.6%
Fodder maize	215	250	16.1%	238	-5.0%
Premiums only in MTR:					
Sugar beet, potatoes, textiles,					
fallow and grassland,					
"other" arable fodder	0	0		182	
No premiums in MTR:					
Olives, vegetables, fruits					
wine and "other crops"	0	0		0	
Set aside rate	0.07	0.10		(0.10)	
Animal sector					
Administered price floor					
[€/t] for:					
Beef	2780	0	-100.0%	0	
Butter	2954	2511	-15.0%	2732	8.8%
SMP	2055	1901	-7.5%	1901	0.0%
Total premiums [€/hd] of					
Dairy	0	194		0	-100.0%
Bulls fattening	119	287	140.6%	0	-100.0%
Fem. calves fattening	0	50		0	-100.0%
Male calves fattening	0	50		0	-100.0%
Suckler cows	140	214	53.5%	0	-100.0%
Heifers	0	101		0	-100.0%
Sheep & goats fattening	17	17	0.1%	0	-100.0%
Milk quota	115764	118906	2.7%	118906	0.0%

* See the text for our approach to express the "decoupled" premiums on a per ha basis

A number of comments on Table 6.4 are in order here:

- The premiums are given per ha or head before any scaling due to the ceilings.

- Most of the differences between premiums for different crops are caused by crop specific weights of the Member States. While the "decoupled" premiums differ between Member States (depending on earlier specialisation) all crops receive the same premium within Member States except for

- Non food oilseeds which benefit from energy credits of 45 EUR/ha,

- Protein crops which retain their preferential premiums,

- Durum wheat which receives a quality premium of 15 EUR/t, assumed to apply to all durum wheat[50].

On administered prices note that

- they are reproduced before any scaling due to quality differences, in contrast to Table 6.2,

- the cereal price drop has been increased to 7.5 % to reflect the abolition of monthly increments,

- the effective support price for skimmed milk powder is assumed to decline only by 7.5% (rather than the 15% drop of intervention prices) because demand growth for milk products is projected to convert the EU to an important net importer (see below). Export subsidies would become irrelevant then and the EU could support prices simply by restricting imports. This would imply that the drop in intervention prices will not be fully effective for skimmed milk powder.

6.3.   Simulation results

This section explains the simulation results both in the reference run as well as in the MTR run for a number of key items on the EU level.

6.3.1. Activity levels

Crop Sector

The development of areas is driven by the development of revenues per ha and input prices. Revenues in turn are mainly influenced by:

- the exogenous yield growth (Table 6.1),

- international prices (Table 6.2), and

- policy variables, most importantly the premiums (Table 6.4).

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[50]   In the latter case, though, the preferential premiums are not as visible in the EU average as those are for non-food oilseeds because the main durum producers receive a decoupled premium below the EU average, given their historical product mix.

Further influences are coming from the development of total area, grassland, fallow land, and set aside and non-food oilseeds:

Table 6.5.   Assumptions on important special cases in area use [1000 ha] for EU15

	Base 1997-1999	Reference run 2009	% Change Reference Base	MTR run 2009	% Change MTR-Reference
Total area	138 509	134 641	-2.8%	134 641	0.0%
Grassland	49 617	47 533	-4.2%	47 533	0.0%
Arable area	88 891	87 108	-2.0%	87 108	0.0%
Fallow land	4 065	4 065	0.0%	4 065	0.0%
Set aside	3 998	5 417	35.5%	5 893	8.8%
Non food	644	695	8.0%	673	-3.2%

Total area and grassland are projected by trend estimates on the Member State level. In several Member States these trends appeared not very robust and have been set to zero such that the availability of arable land is forecasted to decline on average by 2%, but with some marked differences between Member States. Fallow land (idled land outside of the base area) would have declined in the reference run according to these trends but given that these trends did not appear very reliable as well they have been set to zero. In the MTR run we kept this constant as well, assuming that the essential substitution will take place on former base area land.

Set aside and non food oilseed area is rising due to the rise of the obligatory set aside rate from 7% to 10% and due to the trend in small producer shares. For the reference run development we incorporated the forecasts from the DG AGRI "Prospects". In the MTR run, obligatory set aside must not be reduced, consequently we assumed it to be constant even though it has to be non-rotational now. Voluntary set aside on base area land may be expected to increase because market net returns of cereals are declining and because quantitative limitations are abolished. Overall this is assumed to increase total set aside (obligatory + voluntary) on base area land by 9%. We expect a modest decline of non-food oilseeds as the energy credits are likely to compensate only incompletely for the Agenda 2000 support granted through acknowledgement as mandatory set aside.

In the **reference run** there is some downward tendency on all crop areas coming from reduced availability of arable land (see above). Furthermore, non-agricultural input prices are rising according to inflation by 22% over the simulation period. Relative changes between crops are in general driven by the development of revenues net of land costs. We included an exogenous shifter for durum wheat because the most recent data (1999-2002), suggesting a strong growth, were not yet included in our database (1997/99)[51]. Apart from this exception the relative changes within cereals, in particular the decline of

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[51]   We owe this incorporation information of very recent to the Commission.

barley, are evidently related to relative changes in profitability. This is in turn influenced by yield trends and the different base period gaps of EU prices to international prices which are decisive for the price drop caused by the reduction of cereal intervention prices in the reference run.

Oilseeds profitability decreases in the reference run first due to the unification of premiums (Table 6.4). Furthermore, yields are rising somewhat slower than those of cereals in general (Table 6.1 above), in particular sunflower yields. This difference contributes to rape area declining only moderately. The reference run development for soyabeans and other oilseeds is strongly influenced by certain peculiarities at the MS level[52]. Fodder prices are declining in the reference run due to a shrinking size of the cattle sector (see below) which reduces demand and profitability of fodder production.

In the **MTR run** all cereals loose in profitability because the premiums are modulated and distributed over a larger set of crops, but durum wheat is likely to be affected most. Because sunflower area is expanding strongly in Italy[53] it also expanding at the EU level. For other oilseeds we observe a similar reduction in area as for cereals. In the bottom part we may observe that the reduced cereal area, and a part of former fodder maize is reallocated towards other arable fodder which becomes eligible for premiums in the MTR run. This is exactly what was to be expected: decoupling removes the former distortion of incentives in favour of particular crops (e.g. cereals) which benefits those receiving little or no support in the reference run.

Animal Sector

For dairy cows we observe in the **reference run** a strong decline of the herd size which is enforced by increasing yields and given milk quotas which are expanding only by 2.7% according to the Berlin decisions. This decline in the herd size corresponds to declining shadow revenue in the reference run. The decline of the dairy herd causes calves prices to rise which triggers an increase of the suckler cow herd. Declining beef prices reduce the profitability of beef production. Fattening of calves is reduced to comply with the balances of male and female calves. The development of pork and poultry activities is strongly influenced by assumptions on changes in demand and net trade (see section 4.2). The decline in cattle production lowers fodder prices, as mentioned above, which stimulates in turn the small increase in the ewes herd size in the reference run. Otherwise the sheep herd would have declined as the 13% revenue increase for sheep is counteracted by the inflation of 22% over the 11 years considered.

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[52]   About 90% of the decrease in soya / other oils area originates in ES which experience increasing land prices due to a declining arable area. Rising land costs hit in particular those crops such as soya beans with moderate profitability and hence high shares of land costs in gross revenues.

[53]   This is due to the fact that about 180 000 ha of land become available only due to the decrease in durum wheat area in Italy which have to be reallocated to some other crops.

Table 6.6.   Simulation results on activity levels [1000 ha] and revenues [EUR/ha] for selected crops for EU-15

	Base 1997-1999	Reference run 2009	% Change Reference-Base	MTR run 2009	% Change MTR-Reference
Cereals area	**37694**	**35614**	**-5.5%**	**34198**	**-4.0%**
Wheat area	**17217**	**17095**	**-0.7%**	**16069**	**-6.0%**
Soft wheat net revenue	*553*	*598*	*8.2%*	*558*	*-6.7%*
Soft Wheat area	13864	13374	-3.5%	13238	-1.0%
Durum wheat net revenue	*394*	*393*	*0.0%*	*280*	*-28.7%*
Durum wheat area	3354	3721	11.0%	2831	-23.9%
Coarse grains area	**20477**	**18519**	**-9.6%**	**18129**	**-2.1%**
Barley net revenue	*400*	*364*	*-8.9%*	*334*	*-8.3%*
Barley area	11362	9945	-12.5%	9776	-1.7%
Maize net revenue	*701*	*775*	*10.6%*	*727*	*-6.1%*
Maize area	4206	4131	-1.8%	4078	-1.3%
Oilseeds area	**5553**	**4935**	**-11.1%**	**5010**	**1.5%**
Rape seed net revenue	*572*	*487*	*-14.9%*	*440*	*-9.7%*
Rape seed area	2687	2549	-5.2%	2533	-0.6%
Sunflower net revenue	*321*	*158*	*-50.6%*	*152*	*-4.3%*
Sunflower area	2019	1704	-15.6%	1805	5.9%
Soya/other net revenue	*472*	*313*	*-33.6%*	*318*	*1.4%*
Soya/other area	847	683	-19.4%	672	-1.5%
Arable fodder area	**15765**	**15223**	**-3.4%**	**16092**	**5.7%**
Fodder maize net revenue	*546*	*417*	*-23.7%*	*395*	*-5.1%*
Fodder maize area	3843	3655	-4.9%	3461	-5.3%
Other arable fodder net revenue	*219*	*173*	*-20.8%*	*280*	*61.8%*
Other arable fodder area	11922	11568	-3.0%	12631	9.2%

The **MTR proposals** greatly reduce the direct support for beef production in general, but the decoupling of premiums is particularly effective on the male adult cattle size and the suckler cowherd. Fattening of heifers is less affected because the earlier support (only slaughter premium) was moderate. MTR impacts on pork and poultry are rather small, being channelled mainly through the demand side (see below). Sheep loose their premiums but the decline in fodder prices partly compensates for this and limits the decline to 3.1%.

Table 6.7.   Simulation results on activity levels [1000 head] and revenues [EUR/head] for EU-15 of selected livestock activities

	Base 1997-1999	Reference run 2009	% Change Reference-Base	MTR run 2009	% Change MTR-Reference
Dairy cow shadow revenue	*1511*	*1092*	*-27.7%*	*1012*	*-7.4%*
Dairy cows herd size	21491	18323	-14.7%	18323	*0.0%*
Suckler cows revenue	*429*	*484*	*12.8%*	*293*	*-39.5%*
Suckler cows herd size	11783	12649	7.4%	10209	*-19.3%*
Male adult cattle revenue	*900*	*842*	*-6.5%*	*635*	*-24.6%*
Male adult cattle herd size	11017	10463	-5.0%	9164	*-12.4%*
Heifers revenue	*591*	*555*	*-6.2%*	*446*	*-19.6%*
Heifers herd size	4724	4399	-6.9%	4202	*-4.5%*
Calves for veal revenue	*308*	*314*	*1.8%*	*273*	*-13.0%*
Calves for veal herd size	6037	5511	-8.7%	5576	*1.2%*
Pork revenue	*112*	*143*	*28.4%*	*144*	*0.5%*
Pork herd size	197410	210380	6.6%	210801	*0.2%*
Poultry revenue	*2184*	*2715*	*24.3%*	*2730*	*0.5%*
Poultry herd size	4770	4948	3.7%	4959	*0.2%*
Sheep revenue	*90*	*102*	*13.1%*	*87*	*-14.5%*
Sheep (ewes) herd size	78646	78975	0.4%	76550	-3.1%

6.3.2   Markets

Crop Sector

The main results are collected in Table 6.8.

In the **reference run**, yield growth rates of Table 6.1 would increase production for all cereals except barley where the area effect is dominating. Total domestic use of wheat is increasing by about 6%, about equal in human consumption and feed use. Feed demand is increasing stronger for barley, which partly substitutes for other cereals due to relative price changes. Barley prices are declining stronger because the base period difference of EU prices to international prices is higher than for soft wheat or maize (Table 6.4). The assumptions on international price developments imply that subsidised exports would only be required for "other cereals" which includes oats, rye, other cereals, and paddy. As mentioned above, the specific market situation of rye cannot be depicted appropriately at the current aggregation level of CAPSIM and the heterogeneity of the aggregate renders

interpretation difficult. Significant net exports are arising for maize, in spite of rather moderate yields.

Table 6.8.   **Simulation results on cereal markets for EU-15 [1000 t]**

		Base 1997-1999	Reference run 2009	% Change Reference-Base	MTR run 2009	% Change MTR-Reference
Wheat	Production	100247	112286	12.0%	108674	-3.2%
	Total domestic use	85418	90414	5.8%	89448	-1.1%
	Excess supply	14829	21872	47.5%	19226	-12.1%
Soft wheat	*Producer price*	*114*	*112*	-1.7%	*112*	0.1%
	Production	91806	101417	10.5%	99858	-1.5%
	Total domestic use	77112	81596	5.8%	80910	-0.8%
	Excess supply	14694	19820	34.9%	18949	-4.4%
Durum wheat	*Producer price*	*163*	*160*	-1.8%	*159*	-0.4%
	Production	8441	10869	28.8%	8816	-18.9%
	Total domestic use	8306	8817	6.2%	8539	-3.2%
	Excess supply	135	2052	1418.0%	277	-86.5%
Coarse grains	Production	111498	115515	3.6%	112598	-2.5%
	Total domestic use	100454	107109	6.6%	105702	-1.3%
	Excess supply	11044	8406	-23.9%	6895	-18.0%
Barley	*Producer price*	*110*	*103*	-6.8%	*103*	0.3%
	Production	52372	49436	-5.6%	47779	-3.4%
	Total domestic use	42557	45658	7.3%	45085	-1.3%
	Excess supply	9816	3777	-61.5%	2694	-28.7%
Maize	*Producer price*	*121*	*118*	-2.2%	*118*	-0.1%
	Production	37644	43179	14.7%	42622	-1.3%
	Total domestic use	38259	39760	3.9%	39421	-0.9%
	Excess supply	-615	3419	-656.2%	3201	-6.4%

In the **MTR run**, the changes in levels from table 6.6 directly translate into changes in production, because yields are assumed exogenous, apart from composition effects on the EU level. The decline in durum wheat area implies a marked drop in supply whereas supply of barley, wheat and maize is declining only little. Demand is decreasing in line with a certain decline of beef production (see below).

For our residual aggregate "other cereals" we have implemented a small additional price drop (-1%) through assumptions on reduced net exports (-33%, see Table 6.3) to reflect the abolition of rye intervention. Nonetheless our analysis of these cereals is hampered by the chosen aggregation level. The decline in rice prices (essentially down to world market

level) spurs human consumption (+ 23%) but paddy production is unfortunately included in the "other cereals" aggregate such that the rice market cannot be analysed appropriately.

Meat markets

For beef, the **reference run** reflects the decline in activity levels shown in Table 6.7 above on the supply side. Demand growth has been aligned with the DG AGRI "Prospects"[54]. Given these projections the net exports of beef from the EU would decrease from about 500 000 t to 150 000 t.

The veal market is modelled with net trade volume set to −7 000 t. Based on this assumption veal prices are almost constant in nominal terms. Pork, poultry and sheep meat are technically treated as veal: net trade is "*exogenously*" specified and prices are adjusting correspondingly. The development of human consumption and net trade has been forecasted approximately as in the DG AGRI "Prospects". This results in consumer prices, which are developing quite similarly and lag somewhat behind general inflation (22% over the period).

MTR impacts are especially important for the beef market. If EU authorities let the market price fall as the drop in support price might suggest, the EU would turn into a significant net importer of beef, with no exports and imports even beyond existing market access commitments. However, as has been argued for skimmed milk powder, it is very likely that EU prices will be held above administrative prices as soon as support does not require export subsidies anymore. Consequently net exports have been fixed "*exogenously*" at a level of −400 000 t assuming that additional imports beyond those covered by existing market access commitments would be blocked off at EU borders. In this case the EU beef market would clear at a price somewhat above the basic price level (see Table 6.2). This price increase compared to the reference run will also stabilises beef supply, yielding an equilibrium supply reduction of 9%. The same effect operates on the veal and sheep meat markets where decoupling reduces supply, which increases market prices. Pork and poultry prices rise because consumers will partly switch to these meats.

The left part of the table shows the sensitivity of results to the assumed net exports. If some subsidised exports were maintained[55] such that net imports were only 200 000 t (hence the acronym MTR2 in the table), consumer prices would increase by 1.7 percentage points, while consumer demand would decrease. These price increases would spread to other meat markets (Table 6.9), with minor effects also on milk and cereal markets (not shown). Different price changes would also result if market management maintained the same level of net exports, but demand growth in the reference run would have been slightly higher or lower than assumed in the table. These different price

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[54]   More precisely we adopted the average yearly growth rate of human consumption. Technically this was implemented by a residual specification of a corresponding taste shifter which has been fixed in the subsequent MTR simulation. This procedure has been chosen because the demand system in CAPSIM is not yet estimated on the basis of time series data and may fail to capture the influence of other time varying factors beyond prices and income.

[55]   Net exports of about −200 000 t would result for example with subsidised exports of 200 000 t and imports remaining at 400 000 t, given existing commitments.

developments have predictable consequences for producer and consumer welfare (see Table 6.11 below).

Table 6.9.   Simulation results on meat markets for EU-15 [1000t or EUR/t]

		Base 1997-1999	Reference run 2009	% Change Reference-Base	MTR run 2009	% Change MTR-Reference	MTR2 run 2009	% Change MTR2-Reference
Beef	*Consumer price*	*5773*	*5425*	-6.0%	*5486*	1.1%	*5576*	2.8%
	Production	7020	6872	-2.1%	6236	-9.3%	6305	-8.2%
	Total domestic use	6508	6718	3.2%	6636	-1.2%	6505	-3.2%
	Excess supply	512	154	-69.9%	-400	-359.5%	-200	-229.8%
Veal	*Consumer price*	*6078*	*6154*	1.2%	*6211*	0.9%	*6259*	1.7%
	Production	788	728	-7.6%	722	-0.8%	717	-1.5%
	Total domestic use	713	735	3.1%	729	-0.8%	725	-1.4%
	Excess supply	74	-7	-110.0%	-7	0.0%	-7	0.0%
Pork	*Consumer price*	*3942*	*4712*	19.5%	*4719*	0.2%	*4728*	0.4%
	Production	17318	18478	6.7%	18516	0.2%	18555	0.4%
	Total domestic use	15977	17303	8.3%	17340	0.2%	17380	0.4%
	Excess supply	1341	1175	-12.3%	1176	0.0%	1175	0.0%
Poultry	*Consumer price*	*3821*	*4489*	17.5%	*4497*	0.2%	*4505*	0.3%
	Production	8746	9063	3.6%	9083	0.2%	9097	0.4%
	Total domestic use	8010	9105	13.7%	9125	0.2%	9139	0.4%
	Excess supply	736	-42	-105.7%	-42	0.0%	-42	0.0%
Sheep meat	*Consumer price*	*6251*	*7542*	20.7%	*7743*	2.7%	*7765*	3.0%
	Production	1138	1167	2.5%	1131	-3.1%	1131	-3.1%
	Total domestic use	1381	1459	5.7%	1423	-2.5%	1424	-2.5%
	Excess supply	-243	-292	20.3%	-292	0.0%	-292	0.0%

Milk products

Reference run results on markets for milk products are first determined by the quota increase which determines a small aggregate increase in production of milk products. Which milk products are increasing is determined by demand growth and assumptions on net trade in CAPSIM. Regarding human demand growth we specified growth rates for skimmed milk powder, butter and cheese approximately as in the DG AGRI "Prospects" and assumed a medium yearly growth rate (0.5%) for the residual "other milk products". Because demand for cheese and other milk products is projected to rise strongly in this way the increasing production of cheese and other milk products causes some scarcity of fat and protein which is resolved by a matching decline of butter and skimmed milk powder production. In spite of declining supply the EU is likely to remain in the net export position for butter, in contrast to skimmed milk powder where we should see net imports. Precisely because we predict that the EU would become an important net importer of skimmed milk products we have assumed that the Agenda 2000 drop in intervention prices (-15%) would not become fully effective for skimmed milk powder.

Therefore consumer prices are declining only by about 6% here. Furthermore we assume that net exports of cheese and other milk products vanish, otherwise the projected decline in skimmed milk powder production would have been stronger. Higher exports for cheese and other milk products would have implied higher EU market prices, which was considered unlikely.

Table 6.10.   Simulation results on milk markets for EU-15 [1000t or EUR/t]

		Base 1997-1999	Reference run 2009	% Change Reference-Base	MTR run 2009	% Change MTR-Reference
Cow milk	*Consumer price*	*395*	*344*	-13.0%	*344*	0.2%
	Production	121941	125371	2.8%	125371	0.0%
	Total domestic use	121941	125371	2.8%	125371	0.0%
	Excess supply	0	0		0	
Butter	*Consumer price*	*4689*	*4180*	-10.9%	*4180*	0.0%
	Production	1888	1888	0.0%	1883	-0.3%
	Total domestic use	1884	1846	-2.0%	1848	0.1%
	Excess supply	4	43		36	-16.5%
Skimmed milk powder	*Consumer price*	*2610*	*2463*	-5.6%	*2463*	0.0%
	Production	1109	924	-16.7%	914	-1.1%
	Total domestic use	1021	981	-3.9%	976	-0.5%
	Excess supply	89	-57		-62	9.0%
Cheese	*Consumer price*	*6549*	*6479*	-1.1%	*6486*	0.1%
	Production	6635	6939	4.6%	6943	0.1%
	Total domestic use	6379	6939	8.8%	6943	0.1%
	Excess supply	256	0		0	0.0%
Other milk products	*Consumer price*	*1025*	*1013*	-1.2%	*1013*	0.1%
	Production	43686	45065	3.2%	45103	0.1%
	Total domestic use	42666	45065	5.6%	45103	0.1%
	Excess supply	1021	0		0	0.0%

The **MTR package** has little only moderate effects on milk markets, which feed in mainly through the demand side.

6.3.3   Welfare

The next table summarises the MTR impacts on major determinants of welfare, that is agricultural income, consumer welfare and the EU agricultural budget (EAGGF), more precisely the first pillar expenditure. Results for the base year are reproduced only for the sake of completeness. The evaluation of differences to the base year would require some

discussion of inflation, labour outflow and non-agricultural incomes which is omitted here in favour of the MTR impacts. For these impacts the alternative scenario ("MTR2" in the table) differs from the basic MTR scenario in that it assumes lower net imports of beef (see Table 6.9 above), for example due to differing EU market management.

Table 6.11.   Simulation results on welfare effects for EU-15 (mio EUR)

	Base 1997-1999	Reference run 2009	MTR run 2009	MTR-Reference	MTR2 run 2009	MTR2-Reference
Agriculture	250 589	276 911	273 768	-1.1%	275 134	-0.6%
Total output	130 822	143 483	138 748	-3.3%	139 090	-3.1%
Total intermediate input	119 767	133 428	135 020	1.2%	136 044	2.0%
Gross value added	25 792	33 666	30 911	-8.2%	30 911	-8.2%
Subsidies allocated to products	10 957	10 957	10 957	0.0%	10 957	0.0%
Subsidies other	3 931	3 931	3 931	0.0%	3 931	0.0%
Taxes	12 831	14 977	14 977	0.0%	14 977	0.0%
Depreciation	117 518	135 228	134 065	-0.9%	135 089	-0.1%
Net value added at factor costs				-1 163		-138
NVAF, absolute difference						
Consumers						
Food expenditure	509 076	612 728	613 107	0.1%	613 959	0.2%
Equivalent variation				-479		-1 535
Budget						
FEOGA expenditure	39 033	42 788	40 023	-6.5%	40 216	-6.0%
absolute difference				-2 765		-2 572
Welfare				1 123		899

In terms of market income (GVA) the MTR proposals turn out to be quite favourable for agriculture (+1.2%) in our basic MTR simulation. This result follows partly from the small predicted price increases on meat markets which can be traced back to our assumption that net imports will be constrained by EU border protection, once the EU has arrived at a level of 400 000 t of net imports. Furthermore there are cost savings on intermediate inputs reflecting the fact that production was distorted towards supported activities. Abandoning expensive activities without loosing premium entitlements will increase efficiency and income. However, subsidies (premiums) are declining strongly (-8.2%), because the effect of dynamic modulation more than offsets the 50% compensation for the final 5% drop in administered cereal prices. At the bottom line there is a small decrease in net value added at factor costs (-0.9%). The left part of the table shows that even these losses could be eliminated if EU authorities maintained more subsidised exports and consequently lower net imports and higher prices. Note that both MTR scenarios do not yet reflect the income generating effects of modulation funds once they will be channelled back to rural development over the second pillar of the CAP.

Consumers would loose according to our simulations because the drop in rice prices is more than compensated by the increase in meat and milk product prices, giver their importance in food expenditure. It may be read off from the left part of Table 6.11 that the quantity of net imports entering the EU would be a crucial determinant for these losses[56], putting a lot of decision power on the redistribution from consumers to producers in the hands of market management authorities.

The savings for EAGGF given in Table 6.11 correspond with declining premiums for agriculture from dynamic modulation. Again it has to be kept in mind that they are savings only in terms of expenditure on first pillar instruments because it is foreseen to redirect these funds to rural development and environmental measures. However because the benefits of these measures are difficult to asses we prefer to stop in the welfare analysis before considering the alternative uses of modulation funds. The left part of the table shows that first pillar EAGGF savings would decrease only moderately with more subsidised exports of beef, given our assumed international beef price of 2300 EUR/t.

We are refraining from any consideration of environmental impacts or administrative cost here. Confining our assessment therefore to the "orthodox" welfare impacts we may read off from table 6.11 that the proposals are very likely to be beneficial for EU-15 as a whole. Furthermore we see that a more open stance of market management towards net imports of beef would tend to increase these gains (1123 mio EUR or only 899 mio EUR).

6.4.   Concluding remarks

For a full assessment of the MTR proposals we would have to take the quantitative welfare gain of the previous section as a starting point and address at least in a qualitative manner the issues left out so far. In the scope of this study this cannot be accomplished in a thorough way but we like to mention at least those points deserving additional consideration:

- Environmental impacts are likely to be positive for different reasons. Support for intensive production is reduced in several cases (bulls and steers, fodder maize). Cross compliance obligations may provide further benefits to the environment, but these obligations and their costs have been neglected in our analysis.

- Administrative burden may have been released in some respect but the full benefits of simplification will only be felt when the last exceptions are abolished (pulses, fruits and vegetables…). In addition the planned farm audits for larger farms would increase the administrative burden.

- Equity within the farming community is likely to be improved but modulation and the capping of premiums at 300 000 EUR[57] will discriminate against larger farms, calling into question the long run benefits of the proposals in terms of economic efficiency.

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[56]   In both MTR scenarios the price increases would be somewhat smaller if CAPSIM allowed for a more flexible modelling of trade than in the current version.

[57]   Note that the proposed capping has not been implemented in the quantitative analysis.

- Food quality may be improved if the announced amendments will be made to EU regulations, but it is beyond the scope of our analysis to assess these impacts or their practical effectiveness.

- The transfer of modulated premiums will strengthen the second pillar but it will also imply some redistribution between Member States, which are difficult to assess, however.

- Finally there are important benefits of the MTR proposals for the negotiating position of the EU in the current Doha round.

References

Commission of the European Communities (2002a): Mid-Term Review of the Common Agricultural Policy, Communication from the Commission to the Council and the European Parliament, 10.7.02, COM(2002) 394, Brussels.

European Commission Directorate for Agriculture (2002): Prospects for Agricultural Markets 2002 - 2009, Luxembourg: Office for Official Publications of the European Communities.

European Commission Directorate for Agriculture (2000): Agenda 2000 CAP Reform decisions - Impact Analyses, Luxembourg: Office for Official Publications of the European Communities.

Witzke, H.P. (2002): CAPSIM intermediate version - Methodology, Working Paper, Eurocare, Bonn.

Appendix

Basic information on CAPSIM

Objective
Impact analyses for CAP scenarios on agriculture (area allocation, market balances, income), consumers in EU Member States and on the EU Budget
Methodology
• Partial equilibrium model
• Supply side:
• Based on behavioural functions for activity levels (yields are assumed exogenous) and input demands
• Currently: Generalized Leontief profit function (globally well behaved)
• Activity levels comply with balances on land, male and female calves
• Demand: Generalised Leontief indirect utility function (globally well behaved)
• Processing: Behavioural functions based on prespecified parameters. Special solutions for sugar and milk.
• Trade: Currently either exogenous trade volumes or exogenous international prices. Incorporation of a revised trade component (net trade functions mimicking the WATSIM) foreseen.
Policy instruments
• Border measures: Tariffs (specific or ad valorem), flexible levies / variable export restitutions, WTO constraints on subsidized exports
• Domestic market support: Intervention will be triggered (up to a prespecified upper bound) if there is a support price but WTO constraints are binding. Subsidies per unit of current output are possible but irrelevant in the CAP
• Payments: Different premia (grand cultures, durum wheat, suckler cows, special male, slaughter) are implemented. Ceilings are met, if necessary, by proportional scaling of payments per activity.
• Set aside is implemented based on an elasticity of the effective set aside with respect to the obligatory set aside rate.
• Quotas
♦ For milk implemented as a quota on total sales .
♦ For sugar implemented with an incentive revenue function which depends on A, B, C revenues and on the A and B quotas
Data sources
♦ Eurostat gives data on market balances (ZPA1), economic accounts values (COSA) and a number of EU producer prices (PRAG), if they cannot be derived as unit values.
♦ Completeness and consistency of these series is the result of a major modelling effort on its own (COCO module) by a joint effort with the CAPRI team
♦ International prices are derived from the FAO, FAPRI and WATSIM data
♦ Supplementary information on missing variables is coming from different sources (DG Agri, FAO, USDA, ILO, national statistical agencies)
Results
♦ Activity levels, market balances and income (NVAF) in agriculture per EU Member State, per capita and per ha
♦ Consumer welfare: given as equivalent variation.