New Challenges For The European Agriculture: Modelling Agricultural Reform Under The New WTO Proposals

Paper presented for the Conference ECOMOD 2003

Istambul, July 3-5, 2003

Authors: **Christine Wieck, Ignacio Perez Dominguez, Wolfgang Britz**
(no senior authorship)

Affiliation: Institute for Agricultural Policy, Market Research and Economic Sociology
Bonn University
Nussallee 21, D - 53115 Bonn, Germany
Internet: http://www.agp.uni-bonn.de/agpo/agpo_e.htm

New Challenges For The European Agriculture: Modelling Agricultural Reform Under The New WTO Proposals

Ignacio PEREZ, Christine WIECK, Wolfgang BRITZ[1]

Reform of agricultural policies remains a challenge in the actual WTO negotiations. Since 1992 the EU has partially faced the need of reform in an open agricultural market by moving from price to direct income support, not at least to comply with WTO commitments on subsidised exports. With the recent review of Agenda 2000, the CAP reform proposal 2003, the EU Commission goes a step further by introducing *partially decoupled payments*. A detailed impact analysis of the economic effects on EU welfare, market balances and prices is foreseen in this article. The 'CAP reform proposal 2003' is used as a reference scenario in the model and changes in trade policy as proposed by the EU 'WTO proposal' and the 'Harbinson proposal' conform two simulation scenarios to analyse.

The impact analysis underlines that welfare gains for the EU are possible, as consumers profit more from modest price reductions than what producers loose. Limited effects of reduced MFN tariff cuts relate to small import shares (imports vs. domestic sales) in the reference point for the analysed products, dampening together with the Armington assumption price pressure into domestic markets. Quota and duty free access for LDCs is modelled, but plays a minor role for the captured products. The increased import opportunities would mostly favour developed countries and developing countries in the Cairns group. The proposed expansion of TRQs in the Harbinson proposal increases slightly pressure and may trigger some further policy reforms.

Keywords: *WTO negotiations, Harbinson proposal, Agricultural sector model, Common Agricultural Policy*

1 Introduction

The European Union (EU) is one of the most important players in agricultural world markets, the largest importer of agricultural goods and as well as an important exporter of other agricultural commodities (e.g. cereals, milk products, pork meat). Especially Developing and Least Developed Countries (LDCs) depend on agricultural exports to European Markets, but some export oriented developed countries show high market shares for certain products (e.g. oilseeds, beef, sugar) in the EU (European Commission 2003), too.

Hence, when reforming agricultural policy in the EU, besides impacts on European farmer's income and market balances, repercussion to world markets and trade balances must be considered as well. Further CAP reforms like the proposal actually promoted by the EU Commission[2] (European Commission 2003) though focusing on domestic policies (e.g. the issue of decoupled direct payments) will have a clear impact on the scope and outcome of the agricultural negotiations within the Doha round.

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[1] Affiliation of the authors: Institute for Agricultural Policy, Market Research and Economic Sociology, Bonn University, Germany

[2] 'CAP Reform 2003' (January 2003), formerly named Mid Term Review Proposal (July 2002).

In December 2002, the EU Commission published a first draft proposal for agricultural modalities within the current WTO negotiations (European Commission 2002b) focusing on reduced import tariffs and export subsidies, and less trade distorting domestic support, and proposing similar modalities as applied in the Uruguay Round. Additionally, specific elements are introduced in favour of developing countries (market access and food security). In February 2003, the Chairman of the negotiations on agriculture, Stuart Harbinson circulated a "First draft of modalities for further commitments" as a comprehensive proposal for the negotiations[3] (WTO 2003a). Regarding proposed cuts in tariffs and exports subsidies, as well as quota free access and Tariff Rate Quotas (TRQs), Harbinson's paper differs clearly from the EU proposal.

Applying the CAPRI modelling system, the current paper analyses the impact of the recent EU 'CAP reform proposal 2003' on WTO commitments, budget, world markets and on the most important trading partners of the EU on agricultural commodities. Additionally, in two separate policy scenarios, the effects of the EU proposal for the agricultural WTO negotiations as well as the Harbinson proposal will be simulated and compared.

2 The CAPRI Modelling System

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

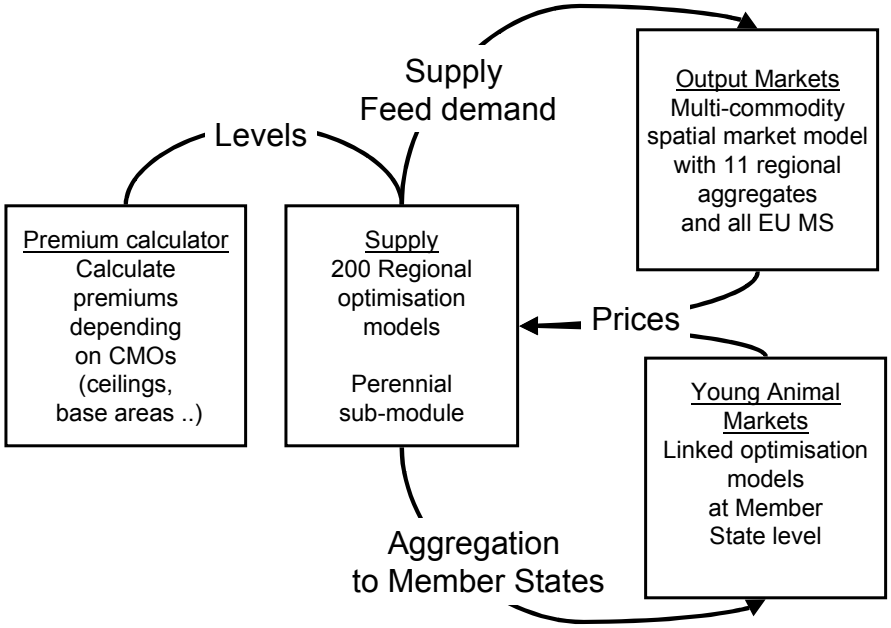
1. A *physical consistency framework*, building upon balances for agricultural area, young animals and feed requirements for animals as well as nutrient requirements for crops, realised as constraints in the regional supply models. The market model ensures that fat and protein comprised in the milk delivered 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 EAAs 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, TRQs, intervention purchases and subsidised exports.
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.

[3] A revised edition was published in March 2003 (WTO 2003b).

The model distinguishes a supply and a market module, iteratively 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 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.

The underlying methodology of supply for yearly crops and animals 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 exogenously determined 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 reflects the calculation of gross margins in farm management. In the *second stage*, the non-linear aggregate programming models define the profit maximising crop mix and animal numbers simultaneously with cost minimising feed and fertiliser mix. Availability of grass and arable land restrict production possibilities, with the crop mix influenced by set-aside obligations and the tow tier quota system for sugar beet. A cost minimised feed mix covers animals requirements (energy, protein etc.), whereas crop nutrient need is met by either organic or purchased fertiliser. 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 links animal processes to crop production and regional land availability. All other outputs and inputs can be sold and purchased at fixed prices, with milk bounded by quotas.

Graph 1. Link of modules in the CAPRI modelling system



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. The supply 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 reflects the difference between land reported as idling in national statistics and data from commission services on hectares in set-aside programs. Not at least, environmental indicators as N,P,K balances and output of gases linked to global warming are implemented in the system.

The *market module* breaks down the world into 12 country aggregates[4] each featuring systems of supply, human consumption, feed and processing functions. The parameters of these functions are derived from elasticities of 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. The *processing stage of dairy products* for the EU Member states comprises balancing equations for fat and protein ensuring that processed products use up exactly the amount of fat and protein comprised in the raw milk. Production of processed dairy

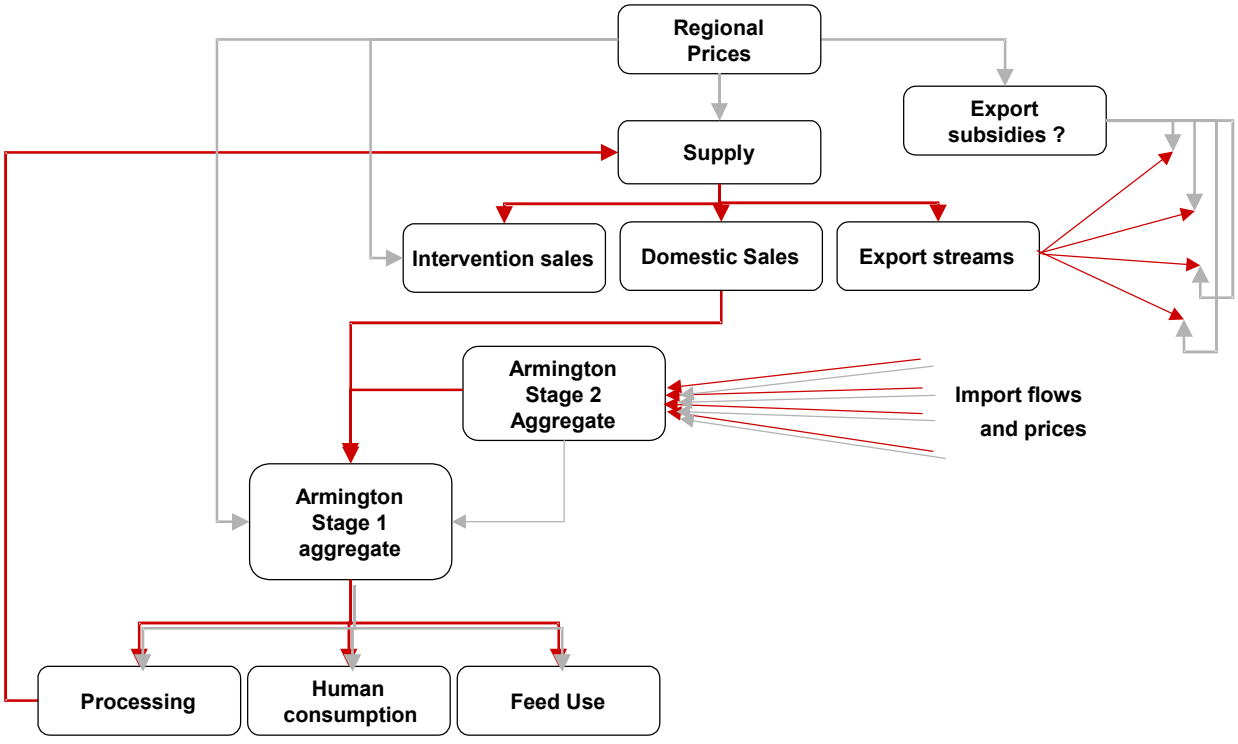
[4] EU, East European Candidate Countries, Mediterranean countries, U.S., Canada, Australia & New Zealand, Free trade developing countries, High tariff traders (as Japan), India, China, ACP countries, Rest of the World

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

Policy instruments in the market module include bilateral tariffs (ad-valorem and specific), Producer/Consumer Subsidy Equivalent price wedges (PSE/CSE) and important bilateral agreements[5] as well as globally or bilaterally allocated TRQs for the EU and the 12 country aggregates. Additionally, intervention sales and subsidised exports under WTO commitment restrictions are explicitly modelled for the EU.

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 flows*. The model comprises a two stage Armington system (see Graph 2): 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. Product markets for different regions are hence directly linked by import flows and prices, whern they were observed in the base year. Accordingly, no uniform world market price is found in the system. The resulting layout of a market for a country (aggregate) in the market module is shown in the following graph.

Graph 2. Graphical presentation for a regional market in the spatial market model



3 Scenario Layout

Three policy scenarios for the simulation year 2009 will be analysed in the following sub-chapters. The policy for the *status quo* scenario will be the so-called *CAP reform proposal 2003* of the European Commission which implements trade policy as agreed in the Uruguay round. Afterwards, both the *Harbinson WTO proposal* and the *EU WTO proposal* will be compared against the status quo scenario regarding their effects on EU markets and budget and world trade position.

3.1 CAP Reform Proposal 2003

In 22 January 2003, the European Commission published a draft legal text of a new CAP Reform Proposal building upon the so-called Mid-Term review proposal from summer 2002. The proposal addresses some problems expected to be not yet fully solved with the ongoing Agenda 2000 policy reform. The Commission stated as main objectives an equal distribution of agricultural income, promotion of good agricultural practices in marginal agricultural areas, and elimination of market distortions by changing economic incentives in highly protected sectors (European Commission 2002a). This section briefly presents the most important elements of the proposal from the perspective of the CAPRI Modelling System.

Price defending mechanism as market interventions (administrative prices and intervention purchases) as well as export subsidies are integrated in the market part of the modelling system. They are driven by *administrative prices* which have been effectively acting as floor prices for some products in the past years. The recent CAP Reform Proposal comprises a reduction of administrative prices beyond the level set in the Agenda 2000 package in important markets (cereals, beef, dairy products).

However, the key element of the proposal are *decoupled direct payments,* analysed by the *supply part* of the CAPRI system. A detailed modelling component 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 monetary terms. The following direct payments are included: 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 these premium schemes are restricted in reality and in the model by ceilings in value or maximum amounts of eligible hectares or heads defined at national or regional level. Premiums are therefore cut in the model if these ceilings are exceeded (overshooting not allowed). The premiums values per hectare

[5] Iincluding Double Zero Agreements with Central and Eastern European Countries and certain bilateral sugar quotas.

or head had been calculated according to the current legislation and then converted in a uniform premium per ha distributed over all eligible crops in one region as indicated in the 'CAP Reform Proposal 2003'[6]. Additionally, part of the payments were subject to "modulation", i.e. premium cuts depending on farm characteristics where resulting budget savings are used to increase rural development programs. This, as well as a detailed description of the calculation of the decoupled premium can be found in Britz, Wieck, Perez (2002).

A second policy variable affecting the supply responses of the model is the "***continuation of the individual historic set-aside obligation***". The now proposed set-aside rate of 10% is applied, corrected by national or regional small producer shares to base year levels in order to derive the necessary set-aside obligation at regional level, acting as floor in the regional supply models.

Milk *quotas* are supposed to increase by specific rates for each Member State, being the average for the EU a 2.4 % increase compared to the 1997-1999 base period. Percentages of regional under- and over-utilisation of quotas are kept constant at base year level. Sugar quotas remain untouched, but the system of A and B quotas and levies as well as production of C sugar is embedded in the analysis.

Further information introduced exogenously in the model is the *development of yields,* which are based on trend analysis at EU Member State level, covering the years 1980-1999. For cereals, they are harmonised with the latest DG Agri's Market Outlook.[7] Variable inputs are first shifted proportionally with yields and then reduced by input saving technical progress of -0.2 % p.a.. Exceptions are nutrient needs of crops (N,P,K) and animal requirements (energy, protein, fibre etc.) which are driven by yield dependent engineering functions. Crop budgets are included for two different yield levels for any one region so that endogenous shares of the two technologies allow to model yields endogenously.

The *demand system* for the EU is calibrated to observed member state data on per capita consumption, income and population levels[8]. Changes in demand behaviour not linked to these factors have to be based on assumptions and trend analysis and the baselines of the EU commission and FAPRI. *Inflation* is set to 1.9 % p.a. and nominal *GDP growth* for the EU to 2.7 % p.a. and is used as a proxy for consumers' available

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[6] The draft legal text proposes a premium uniform at farm level as the standard implementations scheme, and uniform regional premium as a second option in order to allow a more easier implementation of the package, especially for the new Accession Member States. A more in-depth analysis of the CAP reform 2003 package with the CAPRI modelling system used up to six different farm types per region to model the standard implementation scheme. For the trade policies questions at hand, the implementation details were deemed neglectable, and the model works with 200 regional model instead with arund 1000 farm type models.

[7] 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.

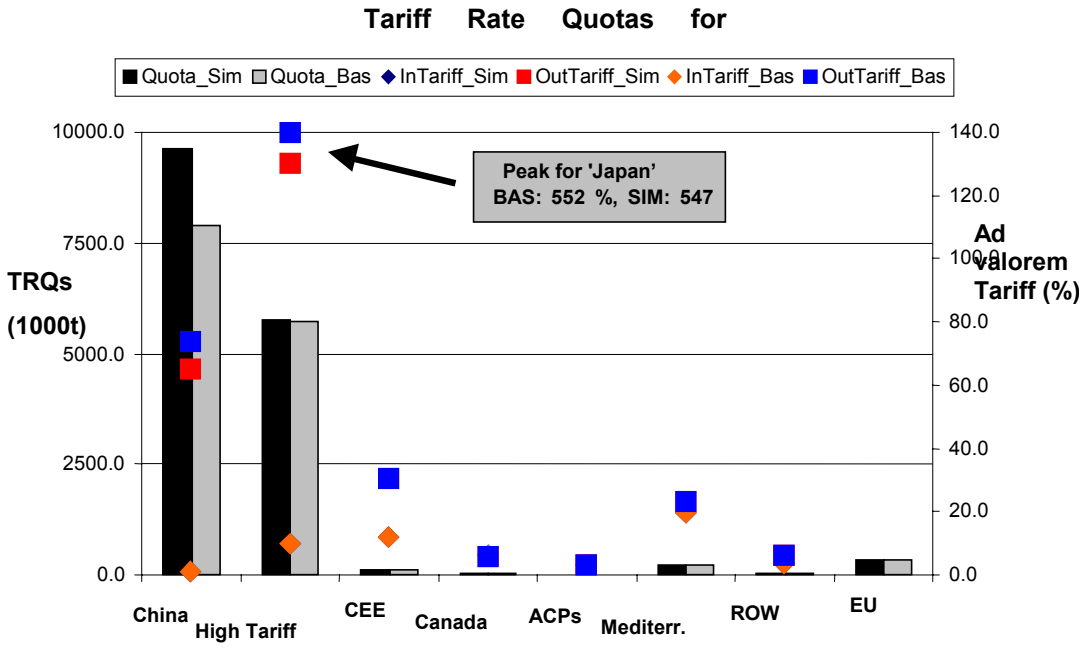
[8] In most cases in line with the data found in DG-Agri's publication "Prospects for Agricultural Markets 2002-2009".

income. The assumptions for the EU as a whole are taken over to the individual Member States. *Population growth* for the EU Member States stems from EUROSTAT.

The *price framework* in the market part of the model 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 FAPRI (FAPRI 2002) and the EU Commission (DG-Agri 2002). Developments of domestic prices are based on these world market price developments, border protection and domestic market policies. 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.

Data for *ad valorem* and *specific tariffs* (most favourite nations and preferential tariffs) as well as *TRQ information* stem from several sources: information on tariffs and TRQs for the EU is found in the legal text, WATSIM model and ZMP[9] reports; for OECD countries, they come mainly from the AGLINK Model[10]; and for non-OECD countries, national data originate from the AMAD data base[11] which were manipulated to get to the actual country aggregation used in the model.

Graph 3. Example for TRQs in the CAPRI model



[9] Zentrale Markt und Preisberichtsstelle, Bonn (1997)

[10] Thanks to the helpful information from the AGLINK team and OECD(2002).

Data relating to other world regions stem ex post from the WATSIM modelling system[12], and other sources like UNCTAD and national expert data. 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 (BRUINSMA 2003).

3.2 Changes in trade policy: Harbinson and EU proposals to the WTO

The WTO's Fourth Ministerial Conference was held in Doha, Qatar. Its final declaration (WTO 2001) relates to the continuation of the work already undertaken in the agricultural negotiations, confirms and elaborates their objectives, and sets the timetable until the next Ministerial Conference in Cancun, September 2003. Agriculture is part of the negotiations which are expected to end by January 2005. The relevant agricultural trade issues addressed in the Doha mandate were domestic support (different support boxes), market access (ad valorem and specific tariffs), TRQs (quotas and preferential tariffs) and special and differential treatment and food security for developing countries and LDCs.

The WTO developed in the last few months a draft for the proposed modalities regarding further commitments, the so-called "*Harbinson Proposal*" (February 2003), of which the following measures are included in the model:

- *Differentiated reduction of tariffs.* Harbinson proposes to cut in average by 60% tariffs providing an ad-valorem protection higher than 90%, by 50% the ones between 15% and 90%, and by 40% tariffs below 15% ad-valorem rate. Since the model also includes specific tariffs, the same rule is applied to set the cutting factor by comparing the specific tariff with import prices affected with the mentioned percentages.
- *Complete elimination of export subsidies* for at least 50% of the bound level for export subsidy commitments. That was mapped into a cut of 50% of quantity commitment level until 2009 for all products covered by the CAPRI market module.
- *Duty free and quota free access for imports coming from developing countries, while their own import tariffs are reduced according to the mentioned formula*[13]. The analysis is naturally restricted to the product coverage of the model, and developing countries are for simplicity captured by the so-called ACP countries.

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[11] Agricultural Market Access Database, available at: http://www.amad.org/files/ .

[12] A more detailed description of the modelling system can be found in Kuhn, Werheim (2002).

[13] This is a bilaterraly differentiated policy trade change, only possible with an spatial model (bilateral streams).

- *Expansion of TRQs to 10% of current domestic consumption and reduction of preferential tariffs according to the mentioned formula if the quota had a fill rate lower than 65% over the last three years.* The fill rates were calculated for 2009 in the reference run (CAP reform 2003 proposal).

Further elements of the proposal, regarding e.g. state trading enterprises, special and differential treatment of developing countries[14], as well as reduction of the AMS (Aggregate Measurement of Support) or Non-Trade Concerns and changes in the different support boxes are not covered by the analysis as they go beyond the current data and methodological coverage of the modelling system.

The *position of the EU Commission in the negotiations* as expressed in its latest proposal to the WTO clearly reflects current CAP policy. The EU still shields some key markets by rather high MFN tariffs, provides domestic support by coupled direct payment schemes under the current CAP and subsidises exports to increase competitiveness of EU agricultural exports. Almost all coupled blue box support measures would however be "greened" if the CAP reform proposal discussed above -with its decoupled payment scheme- is accepted. The EU Proposal to the WTO shows therefore noticeable differences to the Harbinson's paper: (1) less stringent rules for tariff reductions are proposed, following the Uruguay round procedure (average 36% and minimal 15% reduction), (2) a 45 % reduction of export subsidy commitments, (3) rules for domestic support not changed, (4) an expansion of TRQs as a mean to increase minimal market access is not mentioned in the EU proposal but "Special and Differential Treatment" is proposed by duty free and quota free access for imports from LDCs with 50% of imports from developing countries at zero duty, as well as the introduction of a "food security box".

Whereas limits for subsidised exports for the EU are explicitly modelled, and changes to domestic support as defined in the latest CAP reform proposal are captured in detail, the tariff reduction according to the proceeding during the URAA (Uruguay Round Agreement on Agriculture) has to remain sketchy. These rather flexible rules would leave the WTO members enough room to reduce 'water under the tariffs' where it would not hurt. How the members would distribute the average cuts over tariff lines is hard to foresee. Therefore, all tariffs are simply cut by 36%, thus almost securely overestimating the resulting liberalisation effect.

Regarding Special and Differential treatment of the LDCs, the same approach of duty and quota free access for the ACP countries as in the Harbinson proposal is simulated in the EU one, thus neglecting the effect of the proposed food security box and the 50% zero duty access for LDCs.

[14] Including differentiated tariff rate reductions for "strategic products" and longer implementation periods, as well as a new special safeguard. Differences in implementation periods are neglected as the analysis is compartive-static for 2009.

4 Results

Even if the modelling system allows for an analysis of global trade in major agricultural products, the following result section will concentrate on the EU. Firstly, the EU is certainly an interesting player in the agricultural world markets and WTO negotiations. It may therefore be interesting to learn how proposals could impact on EU markets, not at least to better understand the position of the EU in the negotiations Secondly, we certainly feel more comfortable with data, policy representation and impact analysis of the EU markets. Scarce resources have prevented to access data in a similar thorough manner for all world regions in the models, and results for other regions may hence be a little bit more shaky.

4.1 Impacts on EU Markets

Impacts of the trade liberalisation scenarios analysed in here are more easily understood after a short discussion of the situation of EU markets in the reference run. With the exemption of a few products – mainly oilseeds and their derived products - EU markets are influenced by a mixture of globally or bilaterally allocated TRQs or preferential agreements allowing for duty and/or quota free access. Only in a few cases, import prices are determined by the often rather high MFN tariffs. In the remaining cases, import prices either reflect in-quota tariffs in the case of quota underfill, quota rents if quotas are just filled or preferential tariffs under quota free access. (See tables in Appendix).

In 2009, the simulation year discussed in here, some preferential agreements impact on all markets, specially the "Everything but Arms" Agreement, the Cotonou-Agreement (European Union 2000) and the full membership of the former accession countries. The agreements are simply modelled as bilateral duty and quota free access between the ACPs and the EU, and the CEEs and the EU respectively.[15]

Under the Harbinson proposal, TRQs for barley, maize, cheese, beef, wheat, other cereals, poultry and pig meat, and skimmed milk powder are increased to allow for at least 10% of demand to enter under preferential tariffs. Bilateral agreements and quota and duty free access from LDCs were not counted under the 10% provision, whereas both current and minimal TRQs were expanded. In-quota tariffs for barley, eggs, wheat, poultry and pork were decreased according to the general formula in the Harbinson proposal as imports were below 65% of the TRQs.

[15] Thus, unfortunately, we are not able to quantify the additional effect of EBA beyond the Cotonou Agreement.

4.1.1 Cereals Markets

Under the URAA, represented in the CAP reform proposal scenario, *cereals markets* could be effectively insulated from imports by the high MFN tariffs shown in schedules. In opposite to most other markets, the EU Commission however applied only fractions of that MFN tariff in the years after the URAA as world market prices developed rather favourable. The applied tariff (import duty) is set as the difference between 155% of the EU intervention prices and a theoretical c.i.f. price in Rotterdam derived from US commodity price quotations. Starting in the late nineties, some East European grain exporters, especially Ukraine, offered grains well below these US commodity quotations, and were able even with the high imports tariffs imposed to export considerable quantities into the EU. The EU reacted to that situation by the introduction of new TRQs in spring 2003 for low and medium quality wheat as well as for barley with country allocations to the U.S. and Canada. The so-called "double-zero agreement" outside of that general regime allowed some accession countries duty free access for certain quantities.

As shown in the following table, the in-quota tariffs and bilateral quota allocations are the dominating instruments for wheat and barley markets in the reference run, whereas the non-allocated part of the quota is underfilled. The proposed reduction of the high MFN tariffs would hence not change the picture. LDCs are no major producers of grains, and hence not profiting from the export window opened by duty and quota free access. The barley market is in all situations steered by the in-quota tariff, as the TRQ is underfilled, so neither reductions in the MFN tariff nor a TRQ expansion will affect markets in the modelling framework. In the maize markets, the TRQ is the binding instrument in the simulation runs for 2009, however with rather low quota rents.

Table (1) Binding trade policy instruments and imports for selected markets[16]

Product	Base year	Reference	EU proposal	Harbinson proposal
Oilseeds, oils and cakes	MFN	MFN	MFN	MFN
Wheat	In quota tariff (12 €/ton) applied for non-bilaterally allocated quotas (not binding). Rest of TRQs binding	Binding bilateral TRQ allocation for USA and Canada with low quota rents, preferential imports from CEEs, non-allocated TRQ at 32% fill rate	Reference run + non allocated TRQ at 39% fill rate (mainly through increases in imports from ACPs and CEEs)	TRQ underfill for allocated and non-allocated, with TRQs almost tripled
Barley	In quota tariff (16 €/ton), underfilled TRQ, preferential imports from CEEs and little from ACPs	Underfilling of TRQ remains	Underfilled TRQ plus preferential imports from CEEs	Underfilled TRQ with slightly increased imports, stable imports from CEEs
Maize	Over quota imports	Binding TRQ with low quota rent	Binding TRQ with low quota rent	Imports follow expansion of TRQ, low quota rent
Sugar	Binding TRQs for ACP, India and some other (L)DCs	Binding TRQs for ACP, India and some other (L)DCs	Binding TRQs for India and some other (L)DCs, strong imports from ACP	Binding TRQs for India and some other (L)DCs, strong imports from ACP
Beef	Out of quota tariff (2381 €/ton)	Binding TRQ with relative low quota rent, small imports from CEEs and ACP	Binding TRQ with relative low quota rent, imports from ACP double to 20 kt, CEE imports drop	Imports don't follow quota expansion (due to low quota rent)
Butter	Binding bilateral TRQ for New Zealand plus binding non-allocated TRQ	Binding bilateral TRQ for New Zealand plus underfilled non-allocated TRQ	Binding bilateral TRQ for New Zealand plus underfilled non-allocated TRQ	New MFN tariffs undercuts old in-quota one, imports increase by 70%
Skimmed milk powder	Non-allocated TRQ plus duty free imports for certain CEEs	Binding TRQ plus preferential imports from CEEs	Binding TRQ plus somewhat reduced preferential imports from CEEs	Imports increase by 20%, but don't fill TRQ expansion
Cheese	Binding Non-allocated TRQ plus preferential imports from CEEs	Non Binding expanded non-allocated TRQ plus preferential imports from CEEs	Non Binding expanded non-allocated TRQ plus preferential imports from CEEs	

Note: Bilateral allocation is only modelled in some important cases.

Source: CAPRI modelling system

[16] Additionally, in the Appendix, tables with complete information on preferential, MFN and applied tariff as well as fill rates (in 1000t) for the TRQs are presented.

Producer prices in *cereal markets* stay rather stable with in-quota tariffs or TRQs as driving factors (CAP reform proposal). Under the EU proposal, the situation does almost not change, the fill rates of the TRQs are very slightly changing. Accordingly, neither producer or consumer prices change.

Import unit values for cereals are falling slightly between zero and three percent in the EU proposal which together with relative low import shares puts almost no pressure in domestic markets. Lower import tariffs for European grains exports increase their competitiveness, and reduce the market pressure further on. Producer prices fall hence very slightly in the EU.

Import shares for *maize* are stable under the EU proposal as determined by the filled TRQ[17]. Through the TRQ expansion in the Harbinson proposal this share increases from around 7% to 10%. As the *barley* TRQs were underfilled in the reference run, neither the reduction of the MFN tariff proposed in both proposals nor the expansion of the TRQs in the Harbinson proposal provoke any sizeable changes in import volumes. *Wheat* imports increase under the EU proposal by some 16% or 330 kt, and by 84% or 1400 kt in the Harbinson proposal. In the EU proposal, the higher imports stem from the CEEs and a higher quota fill for the non-allocated part of the TRQs. Under the Harbinson proposal, imports under formerly binding bilateral TRQs are expanding without completely filling the new quota quantities, with again increased imports from CEEs.

As prices are almost stable, the *market balance of cereals* is almost not affected, and productions remains around the 213 Mio t simulated in the reference run. Human consumption, accounting for around a quarter of total cereal demand, remains stable as firstly price elasticities for cereal based products (bread, pasta, cakes) are small. Secondly, consumer prices for cereals are insulated against changing farm gate prices of grains, as raw product costs only account for 15% of final product value. Feed demand for cereals in the EU drops in the EU proposal by not more then –0.2%, due to slight changes in component prices, with almost constant total meat output.

The drop in feed demand in combination with stable supply increases net exports of cereals from the EU by around 1 Mio t or 4.4% in the Harbinson proposal compared to +0.8 Mio t under the EU proposal. Market interventions or subsidised export for cereals are almost not existent in the reference run, and are not changing due to the WTO proposals. It should however mentioned that the reference run applies a US$ to € exchange rate of 1.1, and different rates could trigger market intervention by the EU again. Increasing net exports of countries with border protection may look somewhat astonishing on first glance. It should however be noted that the border protection in cereals depends either on TRQs or on in-quota tariffs, both

[17] Imports for Maize are only slightly below the TRQ, which is interpreted by the model as still binding (the quota rent is positive and the applied tariff remains over the preferential one).

not changed in the EU proposal. Lower import tariffs increase however competitiveness of EU grain imports. The resulting increased exports lead in part to increased imports under the quota – a typical results in an Armington model, where liberalisation scenarios tend to inflate all import and export streams, often with limited impact on demand and supply quantities.

4.1.2 Meat Markets

The *beef market* in the base year is under the influence of the BSE crisis and shows out-of-quota imports despite rather high MFN tariffs. The reference run and the simulation of the EU proposal show the TRQ as the binding instrument, as in the case of the poultry market. The pig meat TRQ is characterised by a low fill rate in the reference run so that the in-quota tariff is the important instrument. The same holds for the TRQs for eggs and egg products.

With the *beef market* governed by unchanged in-quota tariffs in both proposals, beef producer prices drop solely by around –1%, whereas sheep and goat markets are under pressure from now duty free imports from ACP countries so that producer prices drop by –3.6%. Market prices for poultry and pork are not affected by the proposals. The lower producer and import prices for beef and sheep & goat meat decrease slightly consumer prices for meat based products, where market margins are considerably lower as in case of cereals, in average by some –0.2 %. Total meat consumption remains constant, with sheep & goat meat increasing by 1.4%, higher beef and veal consumption (+0.1%) but slight reduction in poultry and pork (around -0.1%). The shifts let the however small beef net exports of the EU decline, increase net imports of sheep & goat, and expand net exports of pork and poultry by around +2%.

4.1.3 Dairy Markets

The markets for *butter, skimmed milk powder and cheese* with their MFN tariffs show filled TRQs plus some preferential imports from CEEs in the base and reference situation. *Supply of dairy products* in the EU is determined by the milk quota system. Comfortable quota rents at farm level prevent strong reaction of raw cow milk output in the current scenarios. However, reduced sheep & goat meat prices affect non-cow milk production, which drops by –0.6% in the EU proposal. Reduced MFN tariffs for processed dairy products put some pressure in markets. At the same time, reduced protection of EU export markets favours cheese export. As a consequence, EU dairies slightly increase cheese output, reducing production of butter, skim milk powder and other milk products in the EU proposal. These shifts are determined by closed fat and protein balances and a cost function for dairy processing. Net imports of butter and skimmed milk powder increase very slightly, whereas cheese net exports increase by around +15% (EU proposal).

Under the Harbinson proposal, dairies shift their production from butter (-0.7%) and skimmed milk powder (-0.4%) – products with low profit margins and limited changes to build up trade marks – to the high valued product cheese (+0.8%). The changes in dairy supply are linked with changes in the price system. EU dairy product markets are protected by rather high MFN tariffs. Under the Harbinson proposal, these MFN tariff for cheese and skimmed milk powder are reduced by -50% and for butter by –60%[18]. The new MFN tariffs for butter and cheese undercut and thus replace the previous in-quota tariffs, so that the TRQ becomes obsolete. Butter imports increase by factor ten, cheese imports, starting from a higher import share, by 80 %. It should however be noted that the resulting price pressure in EU markets is dampened by several factors. Quota rents for butter and cheese were only in the range of 20% of the in-quota tariffs. The price pressure resulting from the MFN tariff reductions, which undercut slightly the previous in-quota tariff is dampened by increasing market prices of exporters of dairy products into the EU.

It should be noted that the EU still uses to a certain extent *export subsidies* for dairy products in all scenarios, mainly to promote cheese exports. Whereas the subsidised export quantities of cheese drop, subsidies per ton increase. Effectively, milk prices at the farm gate are not affected.

Cheese prices in *Australia/New Zealand* increase by around 6% and butter prices by around 1% in the Harbinson proposal. Cheese import unit values for the EU drop by –5% and for butter by –12%. For skimmed milk powder, quota rents were quite low. As skimmed milk powder prices of EU importers increase by around +5% and new export opportunities are opened, the 50% increased TRQ to reach the 10% market shares is not longer completely filled.

4.2 Welfare analysis

Compared to the base year situation, the introduction of the new almost completely decoupled payment scheme, together with a further decrease of administrative prices as indicated in the "CAP reform proposal", would reduce budget outlays under the so-called first pillar of the CAP by around -7.4%. Premiums received by farmers increase by some 1.8% despite the fact that premiums decrease up to a certain extent over time, and resulting savings increase the budget of rural development measures. Long-term price trends and adjustments of administrative prices decrease agricultural output (-9%) and input value (-3%), the latter especially as feed prices drop. Agricultural sector income decreases by around –14% from 1998 to 2009, still allowing for real income increase per agricultural labour unit given long-term trends of reduced labour input in the range of –2.5% in the EU.

[18] Tariff cut escalation proposed by Harbinson: a specific tariff for a certain product is cut by 50% if it falls between the import price times 0.9 and import price times 0.15

Table (2) Welfare analysis for EU (Mio Euro)

	Base year [1998]	CAP reform prop. [2009]	WTO EU prop. [2009]	WTO Harbinson prop. [2009]
Equivalent variation		38305	40347	40590
			2042.00	*2285.00*
CAP budget covered by model	28652	26531	26472	26482
		-7.40%	*-0.22%*	*-0.18%*
EAA Output	336190	305448	305356	305173
		-9.14%	*-0.03%*	*-0.09%*
EAA Input	194232	187793	187310	187429
		-3.32%	*-0.26%*	*-0.19%*
Premiums	25857	26314	26311	26315
		1.77%	*-0.01%*	*0.00%*
Agricultural income	167816	143969	144356	144059
		-14.21%	*0.27%*	*0.06%*
Total	139164	155744	158231	158176
		11.91%	*1.60%*	*1.56%*

Source: CAPRI Modelling System.

Budgets outlays cover only a limited list of products and excludes second pillar payments (rural development programs).

Both trade liberalisation proposals lead to positive welfare effects for the EU (see previous table) if compared to the CAP reform proposal with unchanged trade policies. Agricultural income is almost stable in both proposals, whereas consumer gain around +2,0 Bio € in the EU Proposal and 2,2 Bio € in the Harbinson Proposal from decreased import prices. The welfare gains for consumer are mainly linked to decreased prices for meat and sugar, but due to path dependencies in the calculation of the equivalent variation per product, product specific results are only indicative.

Market interventions and export subsidies do not constitute any significant share on the CAP budget in the simulations, keeping outlays fixed more or less to the costs of decoupled premium scheme at 26.3 Bio €.

5 Critical Points in the Quantitative Analysis

The results should be carefully interpreted in the light of the underlying assumptions and data sources. Compared to a net trade model, the Armington assumption differentiates by origin and hence introduces a certain rigidity in the results. The effect is twofold. Firstly, internal market prices are a weighted average between import and producer prices. Reducing import tariffs clearly reduces import prices, the effect on internal market prices is however depending on the import share. Highly protected markets in the base year lead to a situation of high degrees of self sufficiency and thus even drastic relative increases in the small imports quantities have hence a limited effect on internal market prices. Secondly, the import shares react

according to the assumed substitution elasticity. Even if the later is set to 12% for cereals (4-16% for the different products), effects are limited compared to many "classical" non-spatial multi-commodity models.

The analysis reveals that the way TRQs are modelled is a key issue in the analysis at hand. In our model with the Armington assumption driving the composition of demand from imports and domestic sales, price differences between domestically produced and import goods are possible and reflect consumer preferences. Equally, lowering a tariff does not lower domestic prices synchronously, but increases the share of imports, and expands total consumption as average prices fall.

Additionally, the implementation of TRQs suffer from aggregation problems. Whereas many TRQs relate to 4-6 digit HS codes, the product list of the model covers 2 and 3 digit codes. In certain cases, our data base hence indicates over quota imports as different (derived) product or specific product quantities are converted into raw product equivalents and aggregated, where in reality the situation is characterised by a binding or underfilled TRQ in combination with imports under a different tariff line. Our calibration point would in such situations apply the MFN tariff and calibrate to often rather high import price, and reducing the MFN tariff would provoke reactions in the market, whereas the real-world reaction would be probably limited only to the tariff lines not covered by the TRQ. Therefore, we have carefully checked and where necessary calibrated the reference run results for the EU to the URAA schedules to achieve a plausible picture of TRQ fill rates and quotas.

6 Lessons for Trade Policy

The analysis shows that both proposals would lead to few changes in EU markets. First, it should be noted that the EU Commission "made its homework". The reduction of administrative prices for cereals, and to a certain extent for meat and dairy products as well, will limit in most cases costly market interventions or subsidised exports. EU exports are hence able to profit from trade liberalisation elsewhere in the world, and production costs differ not longer dramatically from world market prices. Two important exemptions are the dairy and sugar sectors, where quota systems increase artificially internal prices. However, these markets are also heavily protected in other major production regions as well, and world market are small and volatile.

Border protection in key agricultural markets of the EU reflects the status of CAP policies at the time of the URAA, and provides a shield partially not longer required. Access to most markets is limited to the imports under TRQs and preferential agreements as rather prohibitive MFN tariffs circumvent further market access. Especially for dairy products, even in-quota tariffs are high. Further on, the EU uses almost entirely specific tariffs which relative protection increases over time with EU and world market prices decreasing in nominal terms.

Our simulation of the EU proposals left the in-quota tariffs untouched. Consequently, the resulting market pressure from the EU proposal for EU markets is quite limited, as TRQ quantity and in-quota tariffs are fixed. Similar results hold for markets under comparable regimes in other countries. Leaving developing countries aside, which could benefit in both proposals from increased market access, the EU proposal would continue to shield agricultural key markets in many developed countries by the existing TRQs and not contribute to increased access into these markets. Markets already now open to imports under non-prohibitive MFN tariffs would however contribute with a further decrease of MFN tariffs to improved market access and thus to a higher integration of agricultural world market. A rather disturbing effect would be that countries with prohibitive MFN tariffs would experience no or very low price pressure in their markets, but could gain import opportunities into partner markets or safe budget outlays for subsidised exports by increased world market prices.

The Harbinson draft proposes an expansion of TRQs to 10% of demand, and accordingly, market access into the EU would expand. Additionally, Harbinson proposes reduction of in-quota tariffs in cases where quota fill was less then 65% over a three-year-average. For the EU, that rule would affect solely the TRQs of barley, wheat, eggs and pork meat. It results, that imports for these products with reduced preferential tariffs can be doubled, but still they are far below the TRQ limit and would not affect European markets.

7 Conclusions

The impact analysis of the Harbinson and EU proposal regarding further trade liberalisation underlines that welfare gains for the EU are possible, as consumers profit more from modest price reductions than what producers loose. The limited effect of price changes on producer income is partly due to direct income support, which is held constant in all scenarios and provided as decoupled payments according to the latest CAP reform proposal by the EU Commission. The little effect of MFN tariff cuts relates to small import shares in the reference point for the products analysed, which together with the Armington assumption dampens price pressure into domestic markets. Quota and duty free access for LDCs is modelled, but plays a minor role for the captured products. The increased import opportunities would mostly favour developed countries and developing countries in the Cairns group. Given that TRQs provide typically preferential access for some percent of total market appearances, the simulated expansion provokes little price or policy reform pressure.

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Appendix

Appendix 1 and 2: Overview on Tariff and TRQs in the Model for Selected Products

PREF	Preferential Tariff
MFN	MFN tariff
APPL	applied tariff in model run (endogenously calculated)
TRQ	in 1000t
Imports	in 1000t

- First line for each product category refers to not- allocated TRQs, next lines show tariffs and fill rates for TRQs under preferential agreements.
- All Tariffs are Specific ones.

Source: CAPRI Modelling System

	CAP reform prop. [2009]					WTO EU prop. [2009]					WTO Harbinson prop. [2009]				
	PREF	MFN	APPL	TRQ	Imports	PREF	MFN	APPL	TRQ	Imports	PREF	MFN	APPL	TRQ	Imports
Wheat	**12**	**95**	**12**	**2371.6**	**1077.22**	**12**	**60.8**	**12**	**2371.6**	**1292.65**	**7.2**	**47.5**	**7.2**	**6342.17**	**2502.69**
	0%	-19%	0%	0%	3%	0%	-36%	0%	0%	20%	-40%	-50%	-40%	167%	132%
CEE		**95**		**pref**	**363.55**		**60.8**		**pref**	**428.96**		**47.5**		**pref**	**543.11**
		-19%			34%		-36%			18%		-50%			49%
ANZ	**12**	**95**	**14.23**	**38**	**37**	**12**	**60.8**	**13.15**	**38**	**36.95**	**12**	**47.5**	**12**	**101.62**	**36.83**
	0%	-19%	-73%	0%	-4%	0%	-36%	-8%	0%	0%	0%	-50%	-16%	167%	0%
USA	**12**	**95**	**14.29**	**572**	**557.15**	**12**	**60.8**	**13.61**	**572**	**558.2**	**12**	**47.5**	**12**	**1529.65**	**621.88**
	0%	-19%	-73%	0%	-4%	0%	-36%	-5%	0%	0%	0%	-50%	-16%	167%	12%
ACP		**95**			**20.06**		**60.8**		**pref**	**54.82**		**47.5**		**pref**	**56.22**
		-19%			49%		-36%			173%		-50%			180%
CAN	**12**	**95**	**14.31**	**38**	**37.02**	**12**	**60.8**	**13.66**	**38**	**37.09**	**12**	**47.5**	**12**	**101.62**	**41.38**
	0%	-19%	-73%	0%	-4%	0%	-36%	-5%	0%	0%	0%	-50%	-16%	167%	12%
Barley	**16**	**93**	**16**	**350**	**140.5**	**16**	**59.52**	**16**	**350**	**115.17**	**8**	**37.2**	**8**	**4014.88**	**350.76**
	0%	-19%	0%	0%	-43%	0%	-36%	0%	0%	-18%	-50%	-60%	-50%	1047%	150%
CEE		**93**		**pref**	**54.9**		**59.52**		**pref**	**46.15**		**37.2**		**pref**	**49.36**
		-19%			-21%		-36%			-16%		-60%			-10%
ACP		**93**			**0.67**		**59.52**		**pref**	**6.6**		**37.2**		**pref**	**4.61**
		-19%			-21%		-36%			886%		-60%			590%
Maize		**94**	**5.18**	**2831**	**2778.05**		**60.16**	**5.2**	**2831**	**2791.89**		**37.6**	**2.36**	**3798.32**	**3732.55**
		-48%	-96%	42%	25%		-36%	0%	0%	1%		-60%	-54%	34%	34%
CEE		**94**		**pref**	**208.14**		**60.16**		**pref**	**213.09**		**37.6**		**pref**	**188.46**
		-48%			191%		-36%			2%		-60%			-9%
Sugar		**510**					**326.4**			**6635.93**		**204**			**8325.38**
		-19%					-36%					-60%			
CEE		**510**	**510**	**pref**			**326.4**	**326.4**	**pref**			**204**	**204**	**pref**	
		-19%					-36%	-36%				-60%	-60%		
IND	**83.3**	**510**	**357.79**	**20**	**20.32**	**83.3**	**326.4**	**195.41**	**20**	**20.17**	**83.3**	**204**	**191.18**	**20**	**20.63**
	0%	-19%	165%	0%	3%	0%	-36%	-45%	0%	-1%	0%	-60%	-47%	0%	2%
ACP		**510**	**338.56**	**1618.7**	**1646.01**		**326.4**			**6635.93**		**204**			**8325.38**
		-19%	171203%	0%	9%		-36%	-100%	-100%	303%		-60%	-100%	-100%	406%
ROW	**98**	**510**	**363.78**	**82**	**83.31**	**98**	**326.4**	**203.02**	**82**	**82.69**	**98**	**204**	**188.01**	**82**	**84.25**
	0%	-19%	74%	0%	2%	0%	-36%	-44%	0%	-1%	0%	-60%	-48%	0%	1%

Source: CAPRI Modelling System

	CAP reform prop. [2009]					WTO EU prop. [2009]					WTO Harbinson prop. [2009]				
	PREF	MFN	APPL	TRQ	Imports	PREF	MFN	APPL	TRQ	Imports	PREF	MFN	APPL	TRQ	Imports
Beef	112	1855	199.57	245.4	240.57	112	1187.2	148.74	245.4	239.57	112	742	112	733.7	248.27
	-34%	-37%	-92%	-1%	-45%	0%	-36%	-25%	0%	0%	0%	-60%	-44%	199%	3%
CEE		1855		pref	6.36		1187.2		pref	5.36		742		pref	5.34
		-37%			37%		-36%			-16%		-60%			-16%
ACP		1855			8.23		1187.2		pref	15.37		742		pref	15.8
		-37%			4%		-36%			87%		-60%			92%
Pork meat	304	727	304	89.4	21.98	304	465.28	304	89.4	22.18	152	363.5	152	1610.06	60.27
	0%	-34%	-19%	97%	-51%	0%	-36%	0%	0%	1%	-50%	-50%	-50%	1701%	174%
CEE		727		pref	21.72		465.28		pref	19.21		363.5		pref	13.44
		-34%			-4%		-36%			-12%		-50%			-38%
ACP		727			0.11		465.28		pref	2.18		363.5		pref	1.59
		-34%			10%		-36%			1888%		-50%			1354%
Poultry	205	410	205	29.9	26.82	205	262.4	205.02	29.9	27.76		205			28.14
	0%	-48%	-68%	0%	-97%	0%	-36%	0%	0%	4%	-100%	-50%	-100%	-100%	5%
CEE		410		pref	46.17		262.4		pref	52.12		205		pref	59.67
		-48%			8%		-36%			13%		-50%			29%
Cheese	755	1510	1004.3	102.2	102.49	755	966.4	966.4	102.2	114.35		755			187.77
	0%	-53%	2%	201%	204%	0%	-36%	-4%	0%	12%	-100%	-50%	-100%	-100%	83%
CEE		1510		pref	9.15		966.4		pref	9.13		755		pref	11.62
		-53%			-20%		-36%			0%		-50%			27%
ACP		1510			0.11		966.4		pref	1.3		755			1.43
		-53%			12%		-36%			1060%		-50%			1172%
Butter and cream	948	1986	1153.94	10	9.96	948	1271.04	1177.82	10	10.19		794.4			128.09
	0%	-45%	-3%	0%	1%	0%	-36%	2%	0%	2%	-100%	-60%	-100%	-100%	1186%
CEE		1986		pref	0.05		1271.04		pref	0.05		794.4		pref	0.03
		-45%			-87%		-36%			-1%		-60%			-44%
ANZ	868.8	1986	1131.23	76.7	76.55	868.8	1271.04	1080.36	76.7	77.55		794.4	794.4		97.87
	0%	-45%	-41%	0%	-1%	0%	-36%	-5%	0%	1%	-100%	-60%	-30%	-100%	28%
Skimmed milk powder	475	1188	476.6	68	64.49	475	760.32	476.97	68	65.27	475	594	475	100.16	71.24
	0%	-35%	-20%	71%	64%	0%	-36%	0%	0%	1%	0%	-50%	0%	47%	10%
CEE		1188		pref	16.69		760.32		pref	16.01		594		pref	15.4
		-35%			17%		-36%			-4%		-50%			-8%

Source: CAPRI Modelling System

Appendix 3: Cereals Market Balance (1000t) for European Union

European Union	CAP reform prop. [2009]				WTO EU prop. [2009]				WTO Harbinson prop. [2009]			
	Supply	*Intervention*	*Net trade*	*Demand*	*Supply*	*Intervention*	*Net trade*	*Demand*	*Supply*	*Intervention*	*Net trade*	*Demand*
Cereals	212545	8	24168	188370	212754	9	24672	188073	212751	9	23996	188746
	0.38%	*-99.86%*	*-6.59%*	*4.41%*	*0.10%*	*21.49%*	*2.09%*	*-0.16%*	*0.10%*	*24.58%*	*-0.71%*	*0.20%*
Soft wheat	96335	0	16410	79925	96727	0	16848	79878	96979	0	17016	79963
	4.93%	*-99.99%*	*11.68%*	*5.26%*	*0.41%*	*-21.01%*	*2.67%*	*-0.06%*	*0.67%*	*-33.62%*	*3.69%*	*0.05%*
Durum wheat	6556	0	-1918	8473	6576	0	-1896	8472	6582	0	-1896	8478
	-22.34%	*-99.99%*	*-1518.41%*	*3.36%*	*0.31%*	*-21.08%*	*1.12%*	*-0.01%*	*0.41%*	*-33.79%*	*1.14%*	*0.06%*
Rye and meslin	5786		2938	2848	5796		2945	2850	5815		2959	2856
	-6.40%	*-100.00%*	*111.42%*	*5.68%*	*0.17%*		*0.26%*	*0.08%*	*0.51%*		*0.75%*	*0.27%*
Barley	52393	7	10101	42285	52314	9	10067	42238	52294	9	9928	42357
	0.04%	*-99.64%*	*2.91%*	*4.44%*	*-0.15%*	*22.25%*	*-0.34%*	*-0.11%*	*-0.19%*	*25.62%*	*-1.71%*	*0.17%*
Oats	6734		305	6430	6745		319	6427	6769		323	6445
	-7.51%		*-65.97%*	*0.69%*	*0.16%*		*4.56%*	*-0.05%*	*0.51%*		*6.15%*	*0.24%*
Grain maize	37160		-2413	39573	37091		-2362	39453	36696		-3084	39780
	-1.28%		*-292.48%*	*3.44%*	*-0.19%*		*2.10%*	*-0.30%*	*-1.25%*		*-27.83%*	*0.52%*
Other cereals	4584		-1266	5850	4591		-1258	5848	4608		-1261	5869
	-13.46%		*-186.30%*	*1.92%*	*0.14%*		*0.62%*	*-0.03%*	*0.52%*		*0.38%*	*0.33%*

Source: CAPRI Modelling System

Appendix 4: Cereals Prices (€/t) for European Union

European Union	CAP reform prop. [2009]			WTO EU prop. [2009]				WTO Harbinson prop. [2009]			
	Consumer price	*Producer price*	*Admin.price*	*Consumer price*	*Producer price*	*Unit value imports*	*Unit value exports*	*Consumer price*	*Producer price*	*Unit value imports*	*Unit value exports*
Soft wheat	2100	111	92	2101	111	151	134	2101	111	144	132
	-1.43%	*-19.58%*	*-22.50%*	*0.03%*	*0.44%*	*-2.84%*	*-2.63%*	*0.05%*	*0.76%*	*-7.52%*	*-4.36%*
Durum wheat	1742	178	92	1743	179	151	134	1743	179	144	132
	-1.75%	*-9.59%*	*-22.50%*	*0.04%*	*0.20%*	*-2.84%*	*-2.63%*	*0.06%*	*0.34%*	*-7.52%*	*-4.36%*
Rye and meslin	2994	85	92	2994	85	81	68	2995	85	81	67
	-1.68%	*-30.18%*	*-22.50%*	*0.00%*	*0.06%*	*0.13%*	*-1.60%*	*0.04%*	*0.79%*	*0.27%*	*-3.17%*
Barley	2312	100	92	2311	100	113	130	2311	100	108	125
	-1.53%	*-24.06%*	*-22.50%*	*-0.03%*	*-0.37%*	*-0.19%*	*-1.21%*	*-0.03%*	*-0.42%*	*-5.06%*	*-5.16%*
Oats	2369	84	92	2369	84	81	68	2370	85	81	67
	-2.11%	*-30.22%*	*-22.50%*	*0.00%*	*0.09%*	*0.13%*	*-1.60%*	*0.05%*	*0.82%*	*0.27%*	*-3.17%*
Grain maize	2152	122	92	2152	121	92	127	2149	119	89	124
	-1.55%	*-17.67%*	*-22.50%*	*-0.03%*	*-0.45%*	*-0.30%*	*-2.16%*	*-0.14%*	*-2.05%*	*-3.86%*	*-4.19%*
Other cereals	2538	93	92	2538	93	81	68	2539	93	81	67
	-1.96%	*-30.34%*	*-22.50%*	*0.00%*	*0.07%*	*0.13%*	*-1.60%*	*0.04%*	*0.81%*	*0.27%*	*-3.17%*

Source: CAPRI Modelling System

Appendix 5: Meat Market Balance (1000t) for European Union

European Union	CAP reform prop. [2009]			WTO EU prop. [2009]			WTO Harbinson prop. [2009]		
	Supply	*Net trade*	*Demand*	*Supply*	*Net trade*	*Demand*	*Supply*	*Net trade*	*Demand*
Beef	6369	106	6263	6354	86	6268	6357	89	6268
	-9.27%	*-76.54%*	*-4.64%*	*-0.24%*	*-19.17%*	*0.08%*	*-0.19%*	*-15.85%*	*0.07%*
Veal	661	-37	698	660	-38	699	661	-38	698
	-16.14%	*-162.53%*	*-4.20%*	*-0.03%*	*-2.47%*	*0.10%*	*0.00%*	*-1.73%*	*0.10%*
Pork meat	18999	1620	17379	19031	1666	17365	19049	1686	17363
	9.71%	*21.30%*	*8.74%*	*0.17%*	*2.86%*	*-0.08%*	*0.27%*	*4.09%*	*-0.09%*
Sheep and goat meat	1052	-302	1354	1036	-336	1372	1037	-335	1372
	-7.62%	*-18.36%*	*-2.87%*	*-1.50%*	*-11.36%*	*1.37%*	*-1.36%*	*-10.80%*	*1.36%*
Poultry meat	9519	533	8986	9521	546	8975	9520	543	8977
	8.83%	*-24.97%*	*11.82%*	*0.02%*	*2.36%*	*-0.12%*	*0.01%*	*1.88%*	*-0.10%*

Source: CAPRI Modelling System

Appendix 6: Meat Prices (€/t) for European Union

European Union	CAP reform prop. [2009]			WTO EU prop. [2009]				WTO Harbinson prop. [2009]			
	Consumer price	*Producer price*	*Admin.price*	*Consumer price*	*Producer price*	*Unit value imports*	*Unit value exports*	*Consumer price*	*Producer price*	*Unit value imports*	*Unit value exports*
Beef	6234	2833	2224	6202	2802	2231	2730	6204	2805	2188	2664
	-12.21%	*-21.35%*	*-20.00%*	*-0.51%*	*-1.12%*	*-4.82%*	*-3.66%*	*-0.48%*	*-1.00%*	*-6.66%*	*-5.99%*
Veal	6608	3035	2224	6576	3000	2231	2730	6578	3004	2188	2664
	-11.61%	*-21.06%*	*-20.00%*	*-0.49%*	*-1.14%*	*-4.82%*	*-3.66%*	*-0.45%*	*-1.01%*	*-6.66%*	*-5.99%*
Pork meat	4496	1221		4500	1225	1402	1309	4501	1226	1322	1284
	-7.27%	*-21.94%*		*0.08%*	*0.28%*	*-0.49%*	*-2.58%*	*0.11%*	*0.40%*	*-6.13%*	*-4.47%*
Sheep and goat meat	7232	4283		7093	4127	1750	3535	7096	4130	1752	3553
	-5.95%	*-12.14%*		*-1.92%*	*-3.65%*	*-3.94%*	*-7.02%*	*-1.88%*	*-3.58%*	*-3.85%*	*-6.55%*
Poultry meat	4391	1189		4391	1189	1054	872	4390	1187	1048	870
	-6.57%	*-21.02%*		*0.00%*	*-0.06%*	*-0.72%*	*-0.66%*	*-0.03%*	*-0.18%*	*-1.35%*	*-0.92%*

Source: CAPRI Modelling System

Appendix 7: Dairy Product Balance (1000t) for European Union

European Union	CAP reform prop. [2009]			WTO EU prop. [2009]			WTO Harbinson prop. [2009]		
	Supply	*Net trade*	*Demand*	*Supply*	*Net trade*	*Demand*	*Supply*	*Net trade*	*Demand*
Butter	1898	15	1883	1896	8	1888	1891	-6	1897
	0.52%	*254.63%*	*0.05%*	*-0.14%*	*-47.47%*	*0.25%*	*-0.38%*	*-139.95%*	*0.75%*
Skimmed milk powder	906	-28	933	901	-32	933	899	-36	935
	-18.33%	*-131.10%*	*-6.85%*	*-0.53%*	*-16.98%*	*0.00%*	*-0.77%*	*-29.95%*	*0.15%*
Cheese	7640	327	7313	7674	379	7295	7691	399	7292
	15.15%	*27.61%*	*14.65%*	*0.44%*	*15.89%*	*-0.25%*	*0.67%*	*22.17%*	*-0.29%*

Source: CAPRI Modelling System

Appendix 8: Dairy Prices (€/t) for European Union

European Union	CAP reform prop. [2009]		WTO EU prop. [2009]			WTO Harbinson prop. [2009]		
	Consumer price	*Admin.price*	*Consumer price*	*Unit value imports*	*Unit value exports*	*Consumer price*	*Unit value imports*	*Unit value exports*
Butter	4348	2133	4308	3054	2375	4216	2735	3022
	-24.61%	*-35.00%*	*-0.93%*	*-1.73%*	*47.67%*	*-3.05%*	*-12.00%*	*87.95%*
Skimmed milk powder	2550	1695	2612	2049	2544	2646	2076	2458
	-20.57%	*-17.50%*	*2.43%*	*3.14%*	*-2.01%*	*3.75%*	*4.51%*	*-5.31%*
Cheese	6797	4967	6856	3593	4491	6870	3445	4332
	-15.61%	*-9.93%*	*0.86%*	*-0.40%*	*-3.01%*	*1.06%*	*-4.49%*	*-6.45%*

Source: CAPRI Modelling System

Appendix 9: FEOGA Table (Mio. €)

European Union	CAP reform prop. [2009]				WTO EU prop. [2009]				WTO Harbinson prop. [2009]			
	FEOGA budget outlays first pillar	*Intervention purchases*	*Premiums*	*Exports subsidies*	*FEOGA budget outlays first pillar*	*Intervention purchases*	*Premiums*	*Exports subsidies*	*FEOGA budget outlays first pillar*	*Intervention purchases*	*Premiums*	*Exports subsidies*
Total output	26531		26314	216	26472		26311	161	26482		26315	167
	-7.40%		*1.77%*	*-91.58%*	*-0.22%*		*-0.01%*	*-25.56%*	*-0.18%*		*0.00%*	*-22.78%*
Cereals	8326	8	8261	65	8314	9	8268	46	8324	9	8276	47
	-43.60%	*-99.86%*	*-40.64%*	*-90.15%*	*-0.13%*	*21.49%*	*0.09%*	*-28.25%*	*-0.02%*	*24.58%*	*0.19%*	*-26.82%*
Oilseeds	1136		1136		1139		1139		1141		1141	
	-66.69%		*-66.69%*		*0.28%*		*0.28%*		*0.47%*		*0.47%*	
Other arable field crops	1275		1275		1259		1259		1254		1254	
	49.62%		*49.62%*		*-1.25%*		*-1.25%*		*-1.65%*		*-1.65%*	
Veg. + Perm. Crops	355		355		355		355		355		355	
					0.02%		*0.02%*		*0.03%*		*0.03%*	
Fodder crops	14696		14696		14698		14698		14698		14698	
	954.85%		*954.85%*		*0.01%*		*0.01%*		*0.01%*		*0.01%*	
All other crops	325		325		325		325		325		325	
					0.03%		*0.03%*		*0.04%*		*0.04%*	
Meat	86			86	58			58	52			52
	-96.79%		*-100.00%*	*-92.69%*	*-32.40%*			*-32.40%*	*-39.63%*			*-39.63%*
Other Animal products	267		267		267		267		267		267	
	-89.29%		*-89.29%*		*0.00%*		*0.00%*		*0.00%*		*0.00%*	
Milk products	65	0		65	56	0		56	67	0		67
	-90.54%	*-99.36%*		*-90.28%*	*-13.93%*	*-66.95%*		*-13.87%*	*3.34%*	*-82.17%*		*3.45%*

Source: CAPRI Modelling System