

The Agenda 2000 CAP reform, world prices and URAA GATT-WTO export constraints

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1 Introduction

At the European Summit in Berlin, 26 March 1999, the EU Heads of States reached agreement on the Agenda 2000 package, which contains reforms of the European Common Agricultural Policy. This paper discusses whether and to what extent the reform package contributes to fulfilment of the EU's commitments on reduction of export subsidies made under the earlier GATT Uruguay Round Agreement on Agriculture. Furthermore, we obtain a quantitative assessment of the effects of alternative world market price developments – given the Agenda 2000 policy package - on these GATT commitments.

The European Union's Common Agricultural Policy (CAP) attempts to maintain stable, and virtually fixed, domestic prices for most farmgate products. The insulation of EU markets from world markets can only be achieved by restricting imports. In the past, the main instruments to achieve this goal have been variable import levies that bridge the gap between varying world prices and fixed domestic prices. In addition, variable export subsidies have been used to enable excess supplies to be disposed on world markets, and intervention purchases are used to remove further excess supplies from the internal market.

The Uruguay Round Agreement on Agriculture (URAA) in 1994 had a major impact on the EU's CAP policy, as domestic farm policies have become subject to international governance through the GATT. The set of rules established under the GATT limits the scope for domestic agricultural- and trade policies. Specifically, the agreement had implications in three areas: market access, export competition and domestic support. The constraints on the value of export subsidy expenditures and on the volume of subsidised exports are expected to become most binding and might induce another round of CAP reforms. Binding constraints on export subsidies imply that insulation of EU markets from world markets is more difficult because some

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excess supply cannot be disposed on world markets at reduced prices. The reduction of intervention prices under the Mac Sharry and Agenda 2000 reforms allow the EU to meet the exports constraints more easily (for a survey of Agenda 2000, see Veenendaal, et al., 2000).

The paper is structured as follows. Section 2 gives a summary of the Agenda 2000 reform package and it provides some data on the degree to which the Uruguay Round Agreement on Agriculture export subsidy reduction commitments are binding for the EU. Section 3 develops an analytical partial equilibrium framework on the working of Agenda 2000 and it discusses a price transmission mechanism between intervention prices and market prices. Sections 4 and 5 go beyond the theoretical partial equilibrium analysis and provide a numerical assessment of Agenda 2000 in a global applied general equilibrium setting. The implementation of Agenda 2000 in the GTAP model is discussed in section 4, and section 5 provides some quantitative numerical results. Finally, section 6 concludes.

2 Agenda 2000 reforms and export subsidy commitments

2.1 Agenda 2000 reforms

At the European Summit in Berlin 26 March 1999, the EU Heads of States reached agreement on the Agenda 2000 package, which contains reforms of the European Common Agricultural Policy. The Agenda 2000 reforms, which basically continue along the same lines as the earlier Mac Sharry reforms (1992), have been prompted by a combination of factors. First, the envisaged enlargement of the EU by a number of Central and East European Countries. Their relatively high share of agriculture in production would lead to unsustainable budget implications for the EU. In addition, given a large share of food in CEEC household expenditures, the current high EU food prices would bear severe consequences for households.

Table 2.1 Summary of Agenda 2000 reforms

Product	Measure	Implementation
Cereals	15% price decrease	2000 minus 7.5%; 2001 minus 15% Compensation increases from $\text{€} 54.34/\text{ton}$ to $\text{€} 63.00/\text{ton}$.
	Reduction of area set-aside	Compulsory set-aside from 15% to 10%, extraordinary set-aside abolished, voluntary set-aside maintained.
Oilseeds	A decrease of compensation payments	Compensation payments will be equal to those for cereals: a decrease from $\text{€} 94.24/\text{ton}$ to $\text{€} 63.00/\text{ton}$.
Milk	15% price decrease	2005 minus 5%; 2006 minus 10%; 2007 minus 15% Compensations for beef and milk price decreases.
Beef	1.5% increase of milk quota	In 3 years from 2005 onwards (0.5% a year).
	20% price decrease	2000 minus 6.7%; 2001 minus 13.3%; 2002 minus 20%. Compensations per head and slaughter premiums.

Second, the anticipation of a new round of trade negotiations under auspices of the WTO is expected to generate the need for further adjustments in the CAP. Third, and

foremost, without reforms, the EU would not be able to fulfil its earlier commitments made under the Uruguay round agreement. Specifically, surpluses in grains and beef have been expected to emerge, which could not be disposed on world markets without violation of the UR agreement.

Although Agenda 2000 in itself implies only minor changes it continues the fundamental swing of European agricultural policy set in motion by the 1992 Mac Sharry policy reform from market price support towards direct income support. Table 2.1 summarises the policy measures for the most relevant products.³

For *cereals*, the agreement specifies a reduction of the intervention price by 15% (to be achieved in two steps by 2001/2002). The price decrease will be partially compensated through direct payments to farmers. These payments are expected to compensate for about 50% of the income drop. This is achieved by area payments, which result from the multiplication of historic reference yields with fixed money amounts per tonne. The set-aside area is reduced from its Mac Sharry levels. Note that the policy measures do not differentiate between foodgrains and feedgrains, hence maintaining the practice of equalising the intervention price levels for both types of grains, whereas there is a clear price differential on international markets. For *oilseeds* and *protein crops*, which do not have a fixed intervention price, similar area payments continue to exist, but these payments are to be reduced over time. The compulsory set-aside of 10% of arable land is retained, and the compensation occurs according to identical rates for all arable crops. In addition, farmers can opt for voluntary set-aside. In the *dairy sector*, the intervention prices for skimmed milk powder and butter will be reduced by 15% in three steps from 2005/2006 onwards. The milk quota regime is extended to 2008, and the quota will be increased by 1.5% over three years in Member States from 2005/2006 onwards.⁴ To compensate for the fall in dairy prices, farmers receive payments related to their historic quota holdings. Additional compensation is offered through 'national envelopes' allocated to member states to compensate dairy farmers. Note that part of the quota increase precedes the fall in intervention prices, which implies that existing problems with regard to meeting the URAA constraints on subsidised dairy exports will only be harder to meet.⁵ The quota regime is due to be reviewed in 2003. The intervention price for *beef and veal* is to be reduced by 20% in three steps over the period 2000 - 2002. Compensatory premiums are related to the number of animals and there also are slaughter premiums. The total number of animals qualifying for special premium and suckler cow premium are limited to two (standard) livestock units per hectare. Additional premiums are granted if the number of livestock falls below 1.4 units per hectare.

³ We leave aside other elements of the reform package that deal with integrated rural development, -as the second pillar of the CAP, and we leave aside environmental and farm employment policy measures. A complete description of the agricultural chapter of Agenda 2000 is found in European Commission CAP 2000 series of the DG-Agri (<http://europa.eu.int/comm/dg06/index.htm>).

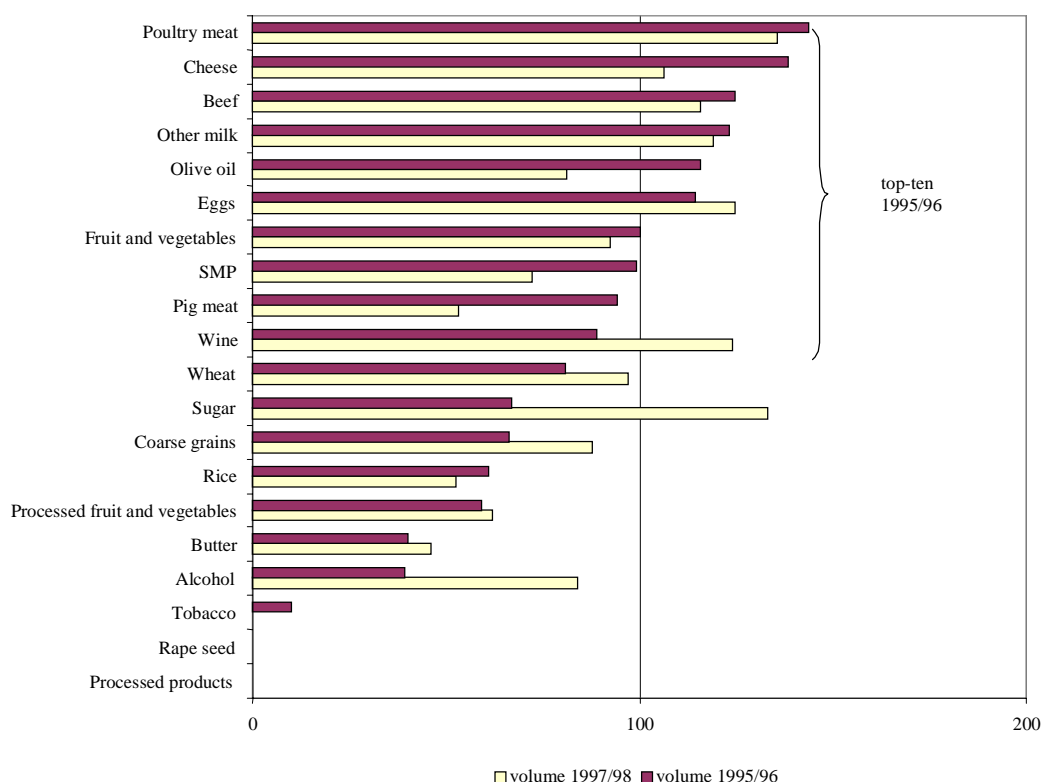
⁴ Except Italy, Greece, Spain, Ireland and Northern Ireland. For these countries, specific quota increases totalling 1.39 million tons are to be implemented in two unequal stages in 2000/01 and 2001/02 already. The two measures will lead at the end of the implementation period (over the next eight years) to a quota rise of approximately 2.4%.

⁵ In fact in the second half of the year 1999 EU milk prices already declined significantly due to the impossibility to dispose surpluses at subsidised prices on world markets.

2.2 The European Union's export subsidy commitments

Under the GATT-URAA in 1994, both a reduction in the value of export budget expenditures by 36% over 6 years, and a reduction on the volumes of subsidised export by 21% over 6 years have been agreed. Despite the positive effects of the 1992 CAP reforms, which led to lower EU domestic guaranteed prices, there is still ample reason for concern as far as the export subsidy constraints are concerned. If the market situation of 1997/98 were repeated in the year 2000, then the volume of subsidised exports for 7 commodities (Poultry meat, Cheese, Eggs, Beef, Other milk products, Wine and Sugar) would be beyond their year 2000 GATT bounds, while the export subsidy budget would be exceeded for 4 commodities (Processed products, Other milk products, Sugar and Alcohol). Figure 2.1 and figure 2.2 illustrate the urgency of reforms to fulfil the GATT commitments with respect to the export subsidies. It is apparent that many products are exceeding, or are close to, their year 2000 GATT bounds.⁶

Figure 2.1 EU volume of subsidised exports 1995/96 and 1997/98 as ratio to WTO commitments in 2000

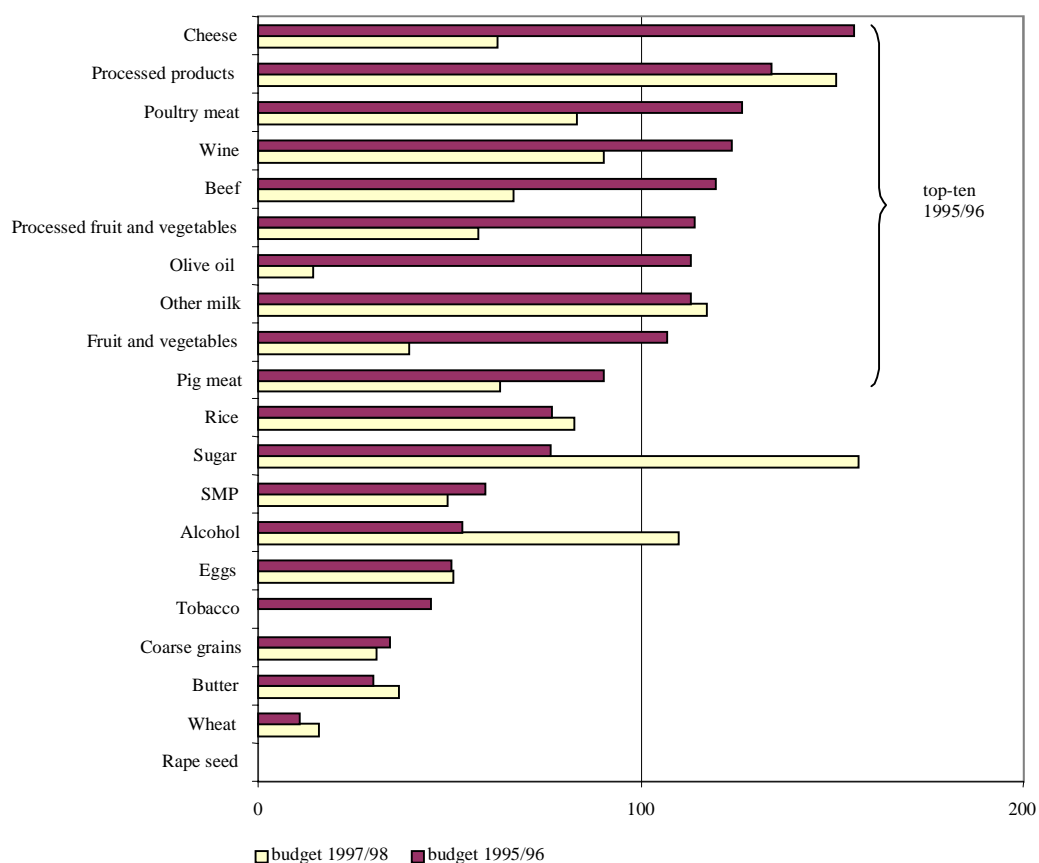


Source: WTO notifications.

⁶ It should be noted that upto the year 2000 it was possible to carry over unused subsidies and exports of the previous year. In the year 2000 this is not possible anymore.

These figures also reveal several other noteworthy phenomena. First, there is a large variability observed in both indicators. Both the volume and the value constraints have become less binding for a number of products, while other products have come dangerously close to the constraints, or are even exceeding it.⁷ Dairy products (especially cheese, but not butter) and Beef products, are clearly among the group of products for which export subsidy constraints are a problem. While wheat and coarse grains have stayed clear of both constraints over the period considered, the volume of subsidised exports has been increasing. As far as the budget constraint is concerned, this is a consequence of a diminishing gap between world prices and EU prices. While cereals world prices have been rather high, EU cereals prices had already declined substantially following the Mac Sharry reforms. It should also be noted that pig- and poultry meat, as well as fruit and vegetables are clearly reason for concern in terms of export subsidy commitments.

Figure 2.2 EU export subsidy budget 1995/96 and 1997/98 as ratio to WTO commitments in 2000



Source: WTO notifications.

⁷ Obviously, there are no reduction commitments with respect to processed products, but the value of subsidies is related to the subsidy content of the inputs used in processing.

Second, the volume constraints seem generally to be more 'sticky' than the budget constraints. The value constraints display a larger variation which can be attributed to the fact that the size of the budget depends on both a volume component (the volume of exports) and a price component (the price differential between the EU and the international export markets). The price component is clearly more volatile. The volume component of exports subsidies declines at a much slower rate, if at all, which is explained by slower adjustments of production levels.

Third, while the sugar sector remains outside the Agenda 2000 reforms, the amount of subsidised exports and the subsidy budget have both been rising beyond their year 2000 commitment levels.

3 Theory

3.1 Price insulation and export bounds

The Agenda 2000 reform package generates indirect effects on world markets, which will depend on a) the reaction of domestic demand to lower prices; b) the reaction of EU farmers to the policy package (lower intervention prices compensated by higher compensation payments and lower set-aside obligations), and c) the reaction of world markets to changed net supply from the EU. We illustrate the influence of Agenda 2000 on the GATT bounds on export subsidies using a simplified analytical partial equilibrium framework.

We begin by illustrating the mechanism of a variable export subsidy to maintain a fixed domestic intervention price, in the case of the EU being a net exporter. We then proceed by analysing the effects of a reduction in intervention prices. In the left panel of Figure 3.1 supply (S) and demand (D) on the EU market are shown. The intervention price p_i places a minimum price in the market (as long as GATT commitments are not binding). Here we make the simplifying assumption that the EU market price equals the intervention price. This assumption is relaxed later, where we introduce a transmission mechanism between intervention prices and market prices. At the intervention price p_i , EU supply Q_p exceeds domestic demand Q_c , which indicates that the EU is a net exporter of the particular commodity, and the amount of exports X equals the difference $Q_p - Q_c$.

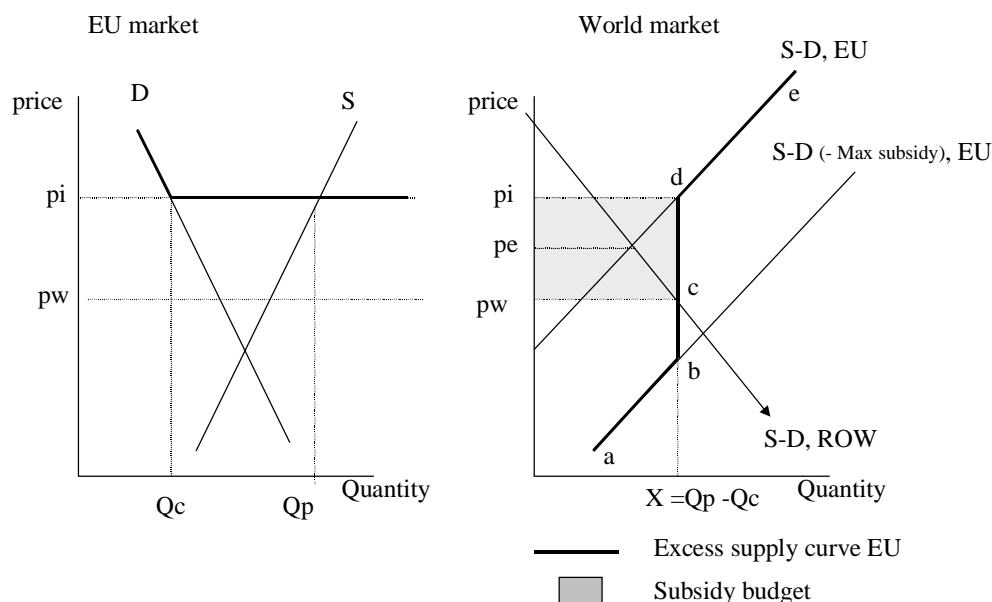
The right panel shows the world market. The net trade, or excess supply, schedules for the EU (S-D, EU) and the excess demand schedule for the Rest of the World (S-D, RoW) are explicitly shown in this panel. Without the EU intervention price, the world market equilibrium price would be equal to p_e . However, with the intervention price in place, the excess supply curve for the EU becomes vertical at all price levels below p_i . In this case, the world market price becomes p_w , and the variable export subsidy equals $p_i - p_w$ per unit to make up for the difference between the world market price and the domestic EU intervention price. The total amount of subsidies equals the grey area ($X \cdot (p_i - p_w)$). The domestic economy is insulated from the world market as long as the demand from RoW intersects on the vertical part of the excess demand curve of EU. Demand- or supply shocks in the Rest of World affect the S-D, RoW curve, but this does not translate into price changes on the EU market. Also note that EU

domestic shocks do not lead to price change on the domestic markets but have non-zero price effects on world markets.

The GATT-URAA commitment on export subsidies is introduced into the figure by placing a bound on the maximum export subsidy. For expositional convenience, the bound on export subsidies is introduced as a maximum subsidy per unit. This yields the line $S-D$ (-Max subsidy), EU which denotes the excess supply schedule inclusive of the maximum allowable subsidy.⁸ The excess supply curve for the EU therefore looks like abcde. Figure 3.1 depicts a situation where the GATT bound is not binding: the RoW excess demand schedule intersects with the vertical part of the EU excess supply schedule. If this bound is binding (intersection with $S-D$, RoW at the positively sloping ab part) then the EU market is not isolated anymore and domestic and foreign supply and demand shocks influence the EU market price.

Alternatively, the EU might use other policy elements to maintain the fixed internal price level. In the short run this can be achieved by stock accumulation, in the longer run a reduction in supply can be achieved by production control programmes, such as land set-aside. Such policy measures affect the position and slope of the domestic supply curve, and in fact the Agenda 2000 policy package is a combination of lower intervention prices and supply side measures.

Figure 3.1: Price insulation, GATT binding on export subsidies not limiting



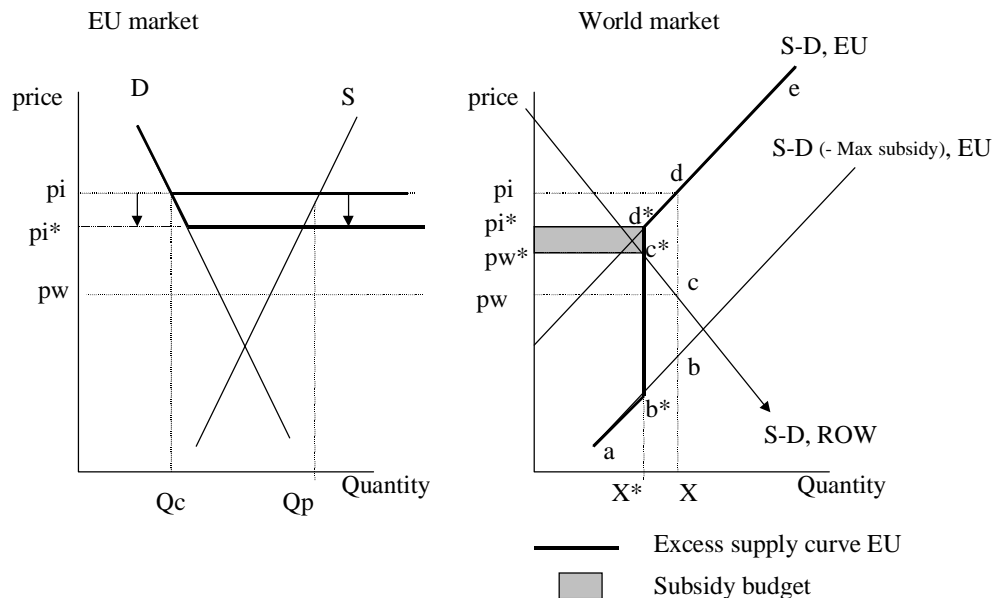
⁸ In the URAA agreement, bounds are placed on the export budget and export volume. In graphical terms this implies with regard to the volume reduction that the quantity exported, X , is bound to a maximum, which decreases over time (21% in 6 years) and with respect to the export budget that there exists a maximum grey area, which decreases over time (36% in 6 years).

In Figure 3.2 the effects of the intervention price reduction of Agenda 2000 are shown. The lower internal price shifts the price line for the EU from pi to pi^* . The lower intervention price causes a decrease in production and increase in consumption, and therefore leads to lower net exports. The net-export curve for the EU changes from $abde$ to ab^*d^*e (above intervention price still original S-D, EU curve). The lower level of EU exports causes the world price to increase from pw to pw^* .

Without a change in the world price the reduction in export subsidy would be equal to $pi-pi^*$. The higher world price reduces the unit subsidy from $pi-pw$ to pi^*-pw^* . The export volume reduces from X to X^* and the export subsidy budget is reduced to the smaller grey area $pw^*c^*d^*pi^*$. Therefore both GATT constraints become less binding. It can also be seen in Figure 3.2 that with the old high intervention price the GATT constraint is much closer to become binding (intersection with S-D, RoW at lower part of vertical part of excess supply curve: bd) than with the lower price pi^* (intersection with S-D, RoW in upper part of b^*d^*).

A reduction of intervention prices beyond the non-distorted domestic market equilibrium level implies that the domestic market price becomes the relevant price on the EU market instead of the intervention price (In terms of Figure 3.2, the intervention price lies below the intersection of domestic demand and supply). This implies that reductions in the intervention price will only be transmitted to reductions of the market price until domestic market equilibrium is reached.

Figure 3.2: Price insulation: Agenda 2000 and GATT bounds on export subsidies



The set-aside obligations and area payments complicate the picture slightly, because the net effect on the EU supply response is ambiguous. Area payments dampen the supply response that follows a decrease in the institutional price. The supply curve

becomes less elastic (Swinbank, 1997), and the reduction in production is less than without such payments. An increase in area set-aside obligation, however, shifts the supply curve to the left and implies a reduction in production at each price level. The converse shift would occur if set-aside obligations were reduced, which is the policy that is actually followed under Agenda 2000 for grains, which lifts the set-aside obligation from 15% to 10% of the base area. The combined effect on production is indeterminate. In Figure 3.2 we implicitly assume that the net effect is to leave the supply function unaltered. This is certainly a drastic assumption, which is only made to simplify the graphical exposition. It is straightforward to introduce the effects of set-aside and area payments on the EU supply schedule into Figure 3.2.

The above partial equilibrium framework does not permit us to analyse yet another effect that is likely to play a role: resource shifts between alternative activities. For example, the changes in the relative profitability of land may induce shifts between alternative cropping and livestock uses.

This simplified analysis shows that changes in the world price play a crucial role in determining whether the GATT bound to become limiting or not. Models to investigate the impact of policy reforms or supply or demand shocks on GATT constraints should therefore treat world price endogenously. Furthermore, when the GATT constraint becomes binding the world price and the maximum export subsidy induce an EU policy response to curtail domestic production or increase domestic consumption. Such a policy response may consist of a) reduction of intervention price, and b) curtailing production by increasing set-aside or reducing production quota, and c) measures that affect input prices, such as compensation payments linked to land, animals or other inputs.

3.2 Cereals intervention prices and domestic market prices

The CAP regime for cereals has always been characterised by a multiple support price system. A minimum floor price has been installed to stabilise farm prices. The insulation of domestic prices from world markets could be achieved by variable import levies on the one hand, and disposal of excess supply on world markets at subsidised prices on the other hand, as indicated in the previous section. Under the old system of variable import levies, the difference between a threshold price and the world price determined the size of the levy. The threshold price was set high enough to discourage imports. Although the URAA implied a change in import regimes that abolished the system of threshold prices and variable levies, the EU is still able to effectively isolate its cereals markets from world markets (Swinbank 1997). Although under the new system, fixed tariffs per tonne are applied to imports, there exists a maximum import price equal to the intervention price plus 55%. The resulting maximum import price initially equalled the old abandoned threshold price. The import charges are determined by the EU on a 14-day basis for 6 types of cereals as follows: a reference price is determined taking prices on US grain markets and adding transport cost to Rotterdam. The import charge is then equal to the 1.55 x intervention price -/- the reference price. In practice this system means that the import tariffs are still variable.

One consequence of the import regime is that market prices for cereals have been fluctuating between a ceiling (pre-URAA: threshold price, post-URAA intervention

price x 1.55) and a floor (intervention price). Over the years (since 1976) the gap between these two prices has been widening, which has allowed market prices to be more responsive to market conditions. One empirical regularity is that market prices have been declining towards the intervention price level at times of increasing net exports.

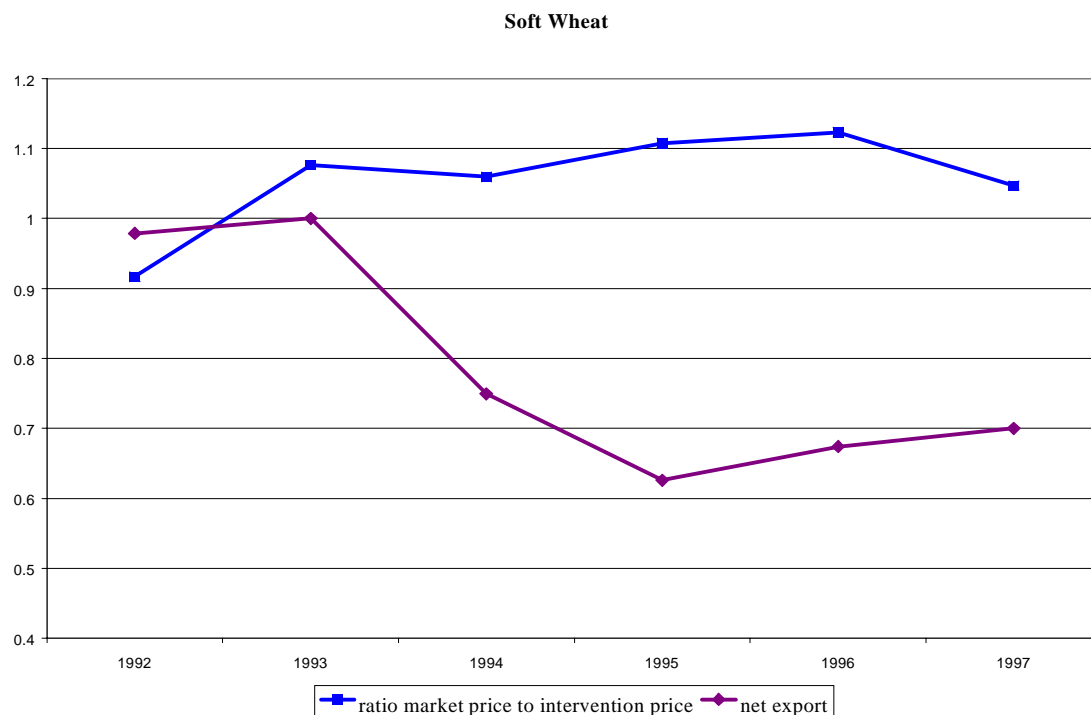
Many modellers assume a fixed relation between the intervention price pi and the market price pm , such as $pm = \beta pi$, with $\beta \geq 1$. Indeed empirical evidence shows that the market price has usually been higher than the intervention price, but the ratio is not fixed (see figure 3.3). In our implementation, we follow Surry (1992) in modelling the transmission endogenously as a function of net-exports in a varying-parameter model.

We assume that the market price pm is a weighted average of the intervention price and the threshold price pt (the latter equals 1.55 x the intervention price in the new system):

$$pm = \alpha pi + (1-\alpha) pt, \text{ with } 0 \leq \alpha \leq 1$$

$\alpha = 1$ implies perfect price transmission with $pm = pi$.

Figure 3.3: Relation between net exports and the ratio of market price to intervention price



Source: European Commission, Agricultural Situation in the EU, report 1991-1998.

The key idea is that α is a function of net exports (or excess domestic supply), $Nexp$. Surry (1992) has proposed the logistic function:

$$\alpha(Nexp) := \frac{1}{1 + \exp[-(\phi_0 + \phi_1 \cdot Nexp)]}$$

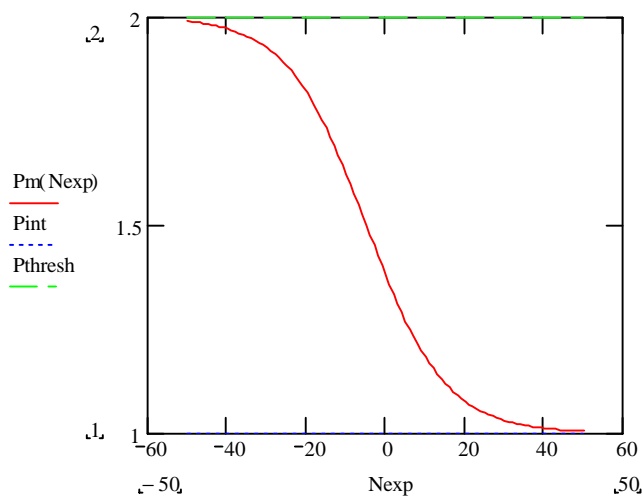
This function bounds α between 0 and 1, specifically:

$\alpha \rightarrow 1$ when N_{exp} is very large
 $\alpha \rightarrow 0$ when N_{exp} is small or negative

This implies that full price transmission ($p_m = p_i$) is a special case in our formulation, and will occur in a situation of massive excess domestic supply. This is for example relevant in the EU beef sector, which is also characterised by a system of intervention prices, but excess supply in this sector has been of such magnitudes that lower intervention prices are fully transmitted into lower market prices.

The parameters ϕ_0 and ϕ_1 can be estimated econometrically using time series data, and they determine the slope of the curve, and hence the degree to which market prices are responding to a reduction of intervention prices. An example path of p_m is provided in Figure 3.4. Note that an increasing net export position pushes the market price towards the intervention price, while a net import position pulls the market price towards the threshold (import) price. Introducing such a function in a GE model might appear as an ad-hoc treatment which is not founded micro economically. However, Surry (1992) rationalises his formulation as the outcome of a decision problem by a central price setting agent. The logistic function is used in the empirical implementation because of its convenience in econometric estimations.⁹

Figure 3.4: Price transmission



4 Implementation

Standard GTAP model features

Our Agenda 2000 implementation uses the GTAP multi-sector multi-region AGE model. See Hertel (1997) for a comprehensive discussion. Here we confine ourselves to a brief description of the standard model's major features and the deviations from the standard model to include the main mechanisms of the CAP. The choice of a multi-sector model is motivated by inter-sectoral effects that are induced by CAP reforms, such as resource movements between activities. The choice of a multi-region

⁹ The approach is similar in spirit to the method followed in the WATSIM partial equilibrium trade model (Lampe, 1999).

model is motivated by likely inter-country effects, since the CAP reform influences demand and supply on the world market and therefore world market prices, and hence will affect trade flows and welfare. Endogenous world market price play a crucial rule for GATT bounds (see section 3.1).

Our implementation of the GTAP model uses an aggregation that divides the world into three regions, each with eighteen sectors (see Annex). Each single region in GTAP is modelled along relatively standard lines of multi-sector AGE models. All sectors are producing under constant returns to scale, and perfect competition on factor markets and output markets is assumed. Firms combine intermediate inputs and primary factors (land, labour and capital). Intermediate inputs are used in fixed proportions, but are themselves CES composites of domestic and foreign components. In addition, the foreign component is differentiated by region of origin (Armington assumption), which permits the modelling of bilateral (intra-industry) trade flows, depending on the ease of substitution between products from different regions. Primary factors are combined according to a CES function. Regional endowments of land, labour and capital are fixed. Labour and capital are perfectly mobile across domestic sectors. Land, on the other hand, is imperfectly mobile across alternative agricultural uses, hence sustaining rent differentials. Each region is equipped with one regional household which distributes income across savings and consumption expenditures according to fixed budget shares. Consumption expenditures are allocated across commodities according to a non-homothetic CDE expenditure function.

The model is calibrated to the GTAP version 4 database. A distinguishing feature of this data set is the inclusion of bilateral trade flows and protection data based on WTO data on pre-Uruguay round protection. A drawback for CAP analysis is that all actual input subsidies are treated as output subsidies in the database.

CAP essentials

To incorporate the main features of the CAP we include the following deviations from the standard model. First, the domestic market is insulated from world price changes through a variable import tariff.¹⁰ Second, a price transmission mechanism between intervention and market price is introduced as described in section 3.2. Price transmission from intervention to market price is dependent on net-export position (extra-EU trade position). Third, a variable export subsidy is introduced to dispose excess supply on the world market. Fourth, some alteration to the database have been made to reflect the fact that subsidies to agriculture are a combination of input subsidies and output subsidies. The changes to the database are highlighted below.

Agenda 2000

The Agenda 2000 reforms, as summarised in table 2.1, are implemented as follows:

Cereals (food and feed grains):

A price transmission mechanism is implemented between market and intervention price. The intervention price is lowered from $\text{€}119.19$ per tonne to $\text{€}101.31$ per tonne.

¹⁰ Introduction of variable import tariff and fixing the ratio of the domestic market price to the price of the import composite foreign prices on order to eliminate substitution effects between domestic products and imported products.

Area payments are taken out from the output subsidy figures in the original GTAP (v4) database and implemented as a subsidy to value added.¹¹ In the Agenda 2000 simulation the intervention price is reduced with 15% and compensations payments to inputs are increased to compensate 50% of the income reduction. Furthermore, the set aside rate is reduced from 15 to 10%. Set aside reduction is implemented as a positive factor-neutral productivity shock.

Dairy:

We make a distinction between raw milk and dairy products. CAP policies apply to raw milk, which is essentially non-tradable, whereas trade policies apply to dairy products. A quota system is introduced in the raw milk sector. Output is fixed and a quota rent is introduced which is accounted as an income flow in the regional household income equation. In the Agenda 2000 simulations quota are increased with 1.5%. No new policy measures are introduced in the dairy sector.

Cattle/beef:

A price transmission mechanism is implemented between market and intervention price, which drops from €3475 per tonne (carcass weight, type R3) to €27870 per tonne. The intervention price is introduced in the cattle sector, rather than in the beef sector, because the intervention price applies at the very unprocessed meat level. We assume a perfect transmission between intervention and market price, as beef market prices have historically been on par with intervention prices. Headage payments are partly netted out from the output subsidy in the original database and are implemented as a subsidy to capital. Slaughter premiums are considered as output subsidy, while suckler cow premiums are introduced as capital subsidy in the cattle sector. In the Agenda 2000 simulation the intervention price is decreased with 17.4%.¹² and the compensation payments are increased to obtain 100% compensation. Furthermore, we assume that output development in the beef sector has a one-to-one relation with output in the cattle sector because of complementarity in production.

Sugar and Oilseeds:

For Oilseeds compensation payments to land are reduced by 33% and for Sugar there is no influence from Agenda 2000.

Finally, we created a short run model by introducing sluggish primary production factors. Both land and labour are considered to be imperfectly mobile across sectors, but not completely sector specific.

5 Results

In this section we report a quantitative assessment of the effects of the Agenda 2000 policy package on EU exports and on the bindings of GATT commitments regarding subsidised exports and the export subsidy budget. While section 2 discussed a partial equilibrium analytical framework, our numerical estimates are based on a modified

¹¹ The value of area payments is equal to 10389 million US\$ (13506 million ECU, source: European Commission, report 1996). This amount is larger than total land costs in GTAP for all kind of cereals. Therefore we have introduced area payments as subsidies to value added, and not to land.

¹² Because sheep represent 13% of bovine production, the intervention price is reduced with $87\% * 20\% = 17.4\%$.

version of the general equilibrium model of the Global Trade Analysis Project (GTAP) model (Hertel 1997), using version 4 data.

Figure 5.1: Price transmission between intervention and market prices under Agenda 2000, % change

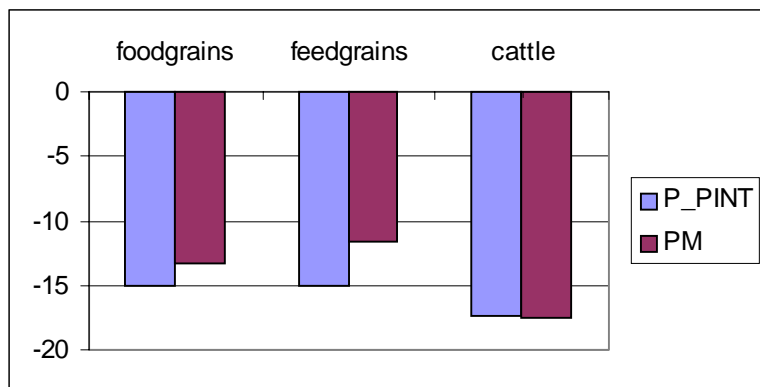


Figure 5.1 illustrates the Agenda 2000 effects of the price transmission mechanism as introduced in section 2.2. The 15% reduction of the intervention price leads to a decrease of the market price by 13.3% for food grains and 11.6% for feed grains. A full price transmission is obtained for cattle. The positive trade balance for grains and cattle induces a high degree of price transmission.

Figure 5.2: Simulated Agenda 2000 effects: EU output and exports, % change relative to 1995 base

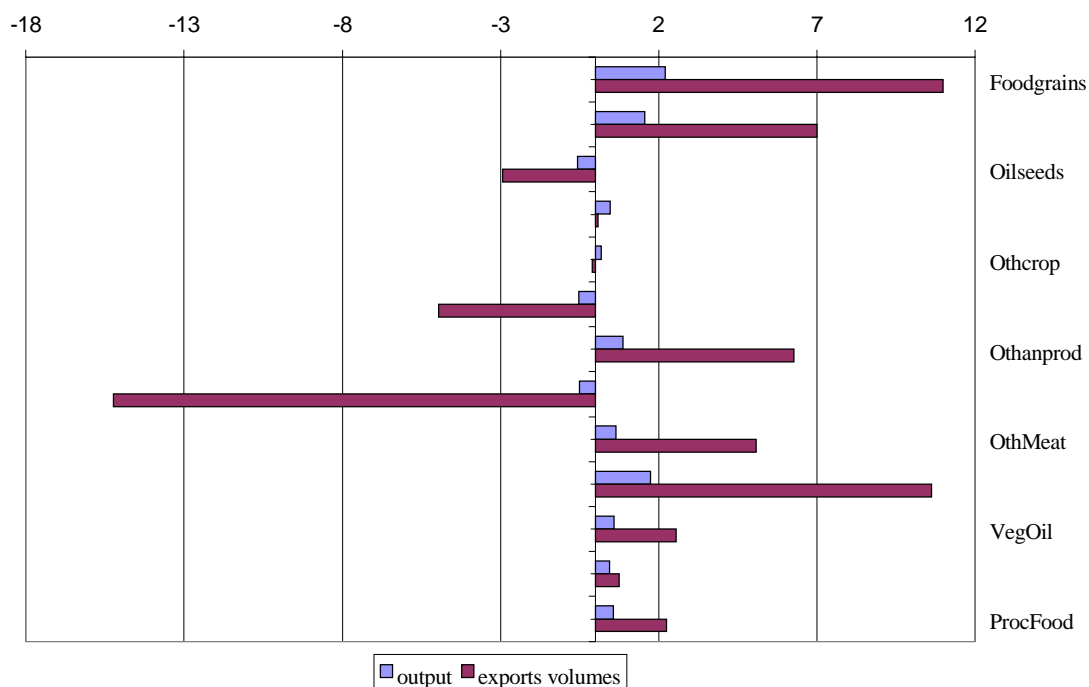


Figure 5.2 shows simulated Agenda 2000 effects on output and export volumes of agricultural products in the EU15. Especially noteworthy are the expected positive output effects for grains and dairy products. This positive output effect seem to run counter to intuition from the partial equilibrium model of section 2.1. How can this be explained?

One of the key elements to understanding the positive output effects of Agenda 2000 is the income compensation to farmers which is linked to land (or livestock), and does not induce a drop, but rather an expansion, of production. This compensation for land is not complete, so we still expect an output decline. However, grain output is expected to grow due to an increase in cropped area. First, the policy package reduces compulsory area set-aside and, second a shift of land from other sectors (e.g. oilseeds) into grains production is expected due to a decline of relative profitability of land in these sectors. Furthermore, domestic feedgrains consumption increases at the expense of imported feedgrain substitutes. The dairy sector expansion follows the increase of production quota for raw milk, despite a drop in prices by about 9%. Production of livestock (cattle) diminishes slightly.

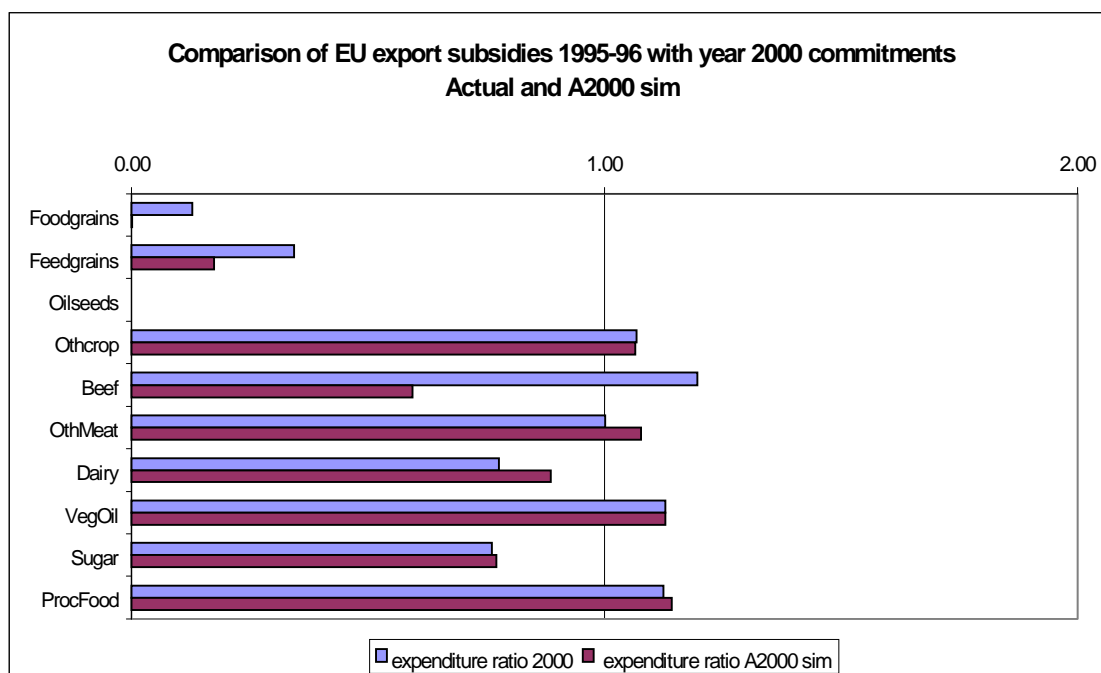
It is seen that the Agenda 2000 effect on EU export volumes is actually positive for most products except for oilseeds, other crops (mainly fruit & vegetables), cattle and Beef. The negative export growth in cattle and beef corresponds to the mechanisms outlined in section 2.1: the decline in internal prices stimulates domestic consumption, which reduces EU's export supply. For food- and feed grains the exports increase because of output increases.

Figure 5.3 and figure 5.4 show the estimated effects on the GATT export subsidy commitments, both in volume terms and in budget terms. These figures show the simulated change with respect to their year 2000 commitment levels. This reveals that the Agenda 2000 package is expected to almost eliminate the need for export subsidies in foodgrains, hence achieving one of the goals of this CAP reform. Substantial reduction is expected to occur for feedgrains and beef. In the dairy sector, export subsidies will remain on the agenda.¹³ There is also some reason for concern in the Other Crop, Vegetable oil, Other Meat (mainly pig and poultry meat) and processed food products, since for these products the export subsidies commitments are binding. With respect to export volume commitments no export subsidy commitment is binding. Except for beef, the influence of Agenda 2000 is that all products move closer to the 2000 commitments.

It is important to recognise that aggregation from commodity level (figures 2.1 and 2.2) to the GTAP level can hide that certain commitments are binding at a more disaggregated level.

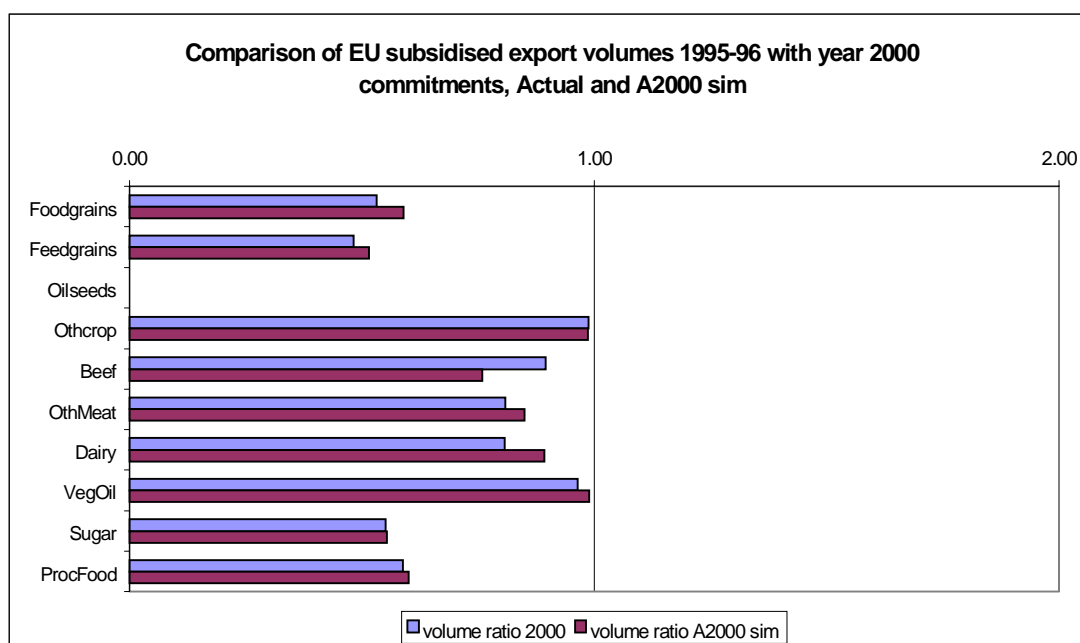
¹³ It should be noted that the simulation exercise only assumed an increase in production quota for raw milk, and did not specify a fixed intervention price. This leads in the GTAP model to a simulated price change for raw milk of about -9%, or about 2/3 of the proposed decrease of EU intervention prices. This shows that the scheduled review of the EU dairy policy in 2003 is certainly worthwhile.

Figure 5.3: Simulated Agenda 2000 effects: EU export subsidy expenditures bounds



Source: WTO notifications, author's calculations

Figure 5.4: Simulated Agenda 2000 effects: EU export volume bounds



Source: WTO notifications, author's calculations

Simulated effects on export subsidies are contingent on assumptions on world price developments. Since the base year 1995 witnessed high international cereal prices, the export subsidy commitment was not constraining the CAP. However, low world market prices (as in 1998/99) immediately put upward pressure on the export subsidy budget, even if the Agenda 2000 package had been implemented. This is illustrated by

conducting another experiment where, a bumper cereals harvest in North America is simulated to occur, which leads to a drop in world prices. It is assumed here that North American output of food- and feed grains increases by 10% due to favourable conditions that affect total factor productivity. The EU is assumed to implement Agenda 2000, maintains its intervention price levels, and keeps a variable export subsidy to bridge the gap between world prices and domestic intervention prices. It is seen from table 5.1 that a bumper harvest in North America limits the reduction of the export subsidy budget that was achieved under Agenda 2000. For feed grains the reduction in export subsidy budget is only 15% with a bumper harvest and agenda 2000, while it was 49% with the default Agenda 2000 assumptions. For food grains the reduction diminishes from 99% to 86%. If there is a bumper harvest, when only 75% of the price cuts of Agenda 2000 have been effected, then there is no reduction in the export subsidy budget for feedgrains, but still 66% reduction in the export subsidy budget for foodgrains. Although the drop in world cereal prices following favourable harvest is of the same magnitude in both cases, the additional budget burden for the EU is higher if the price reductions of Agenda 2000 have not been fully implemented.

Table 5.1: Changes relative to 1995 base (%) under alternative scenarios

		Foodgrains	Feedgrains
Full Agenda 2000	World price index (f.o.b. weights)	-3	-2
	Export subsidy budget	-99	-49
	Export volume	11	7
	Change of export subsidy rate ^(a)	-12	-14
	(new ad valorem % rate)	(0.5)	(30)
Bumper harvest North America after full implementation of Agenda 2000	World price index (f.o.b. weights)	-6	-12
	Export subsidy budget	-86	-15
	Export volume	7	10
	Change of export subsidy rate ^(a)	-9	0.5
	(new ad valorem % rate)	(4)	(45)
Bumper harvest North America after 75% implementation of Agenda 2000	World price index	-6	-12
	Export subsidy budget	-66	0
	Export volume	5	8
	Change of export subsidy rate ^(a)	-6	5
	(new ad valorem % rate)	(7)	(49)

(a) This is the ordinary change of the ad-valorem subsidy rate in percentage points.

Also note that the EU's policy of equal intervention prices for food- and feedgrains implies a higher export subsidy for feedgrains, as there is a positive price differential between the two on international markets. For feedgrains, the EU is even forced to *increase* slightly the export subsidy rates (from 44% to respectively 45% and 49%) if

world prices drop in order to sustain the Agenda 2000 intervention price level. In this sense, the Agenda 2000 price fall is insufficient, especially for feedgrains.

These simulations show that situations on the world market strongly influences the export subsidy budget of the EU and therefore whether or not the export subsidy constraints may become binding.

6 Concluding remarks

Agenda 2000 is a small step, which is mainly directed towards alleviating future problems with regard to EU enlargement and fulfilment of existing URAA commitments. At the same time, Agenda 2000 sets the stage for the imminent WTO negotiations. In this context it can be regarded as a modest opening bid which leaves some room for further concessions.

As far as international trade is concerned, the main effects of Agenda 2000 are expected to occur in those markets where EU exporters face international competition from its main competitors, i.e. North American Grains and Beef, Dairy and Beef from Australia & New Zealand. As far as export competition is concerned, this paper shows that the Agenda 2000 package certainly continues the move in the direction of further liberalisation, with EU and world prices of main export products moving closer towards each other. This paper also show that there is reason to temper the optimism. Even with the full Agenda 2000 implemented, the successful reduction of export subsidies depends crucially on world market developments.

The multi-sector, multi-region modelling approach employed in this paper highlights the importance of taking into account world market linkages, even for a modest reform as Agenda 2000. The incorporation of price insulation, the *sine qua non* of the CAP, into the standard GTAP framework is an important methodological contribution of this paper. Without a proper treatment of price insulation (through intervention floor prices and variable import tariffs and export subsidies) the EU market and world market effects of Agenda 2000 can only be imperfectly captured. Without fixed intervention (floor) prices incorporated into the modelling exercise, price effects will be underestimated, especially in a constant returns GE framework.

The framework employed here already incorporates some of the instruments that EU policy makers are able to manipulate: floor prices, compensation payments and land set-aside. A fruitful area for future research will be the modelling of endogenous bindings of export subsidy constraints, which may lead to policy adjustments in 4 areas: a) formation of intervention stocks, b) lowering intervention prices, c) measures affecting production, such as production control (quota, set-aside) and reduction of input subsidies, and finally d) abolition of domestic price insulation.

Even without endogenous bindings, the incorporation of intervention stocks (a) is certainly a relevant exercise, as this is an additional policy instrument available to the EU. However, this is more relevant if the model is cast in a dynamic setting, which would also allow for phasing of the policy package.

Obviously, a further regional disaggregation beyond will reveal more useful information on the production and trade effects of Agenda 2000 on the EU's trading partners. Specifically, Central and Eastern Europe, Food exporting and food importing developing countries and the major agricultural exporters.

7 References

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Annex A:

The 18 sectors are:

1	Foodgrains	& Wheat & Rice
2	Feedgrains	& Feedgrains
3	Oilseeds	& Oilseeds
4	SugCB	& Sugar cane, sugar beet
5	O thcrop	& Other crops
6	Rmilk	& Raw milk
7	Cattle	& Cattle
8	Othanprod	& Other animal products
9	Beef	& Beef
10	OthMeat	& Other meat
11	Dairy	& dairy products
12	VegOil	& vegetable oils and fats
13	Sugar	& Sugar
14	ProcFood	& Processed food
15	Extract	& Natural res & extraction
16	Tex	& Textiles and wearing
17	Manu	& Manufacturing
18	Svces	& Services
	!	

original GTAP v4 sector		new sector
pdr	Paddy rice	& Foodgrains
wht	Wheat	& Foodgrains
gro	Cereal grains nec	& Feedgrains
v_f	Vegetables, fruit, nuts	& Othcrop
osd	Oil seeds	& Oilseeds
c_b	Sugar cane, sugar beet	& SugCB
pfb	Plant-based fibers	& Othcrop
ocr	Crops nec	& Othcrop
ctl	Bovine cattle, sheep and goats	& Cattle
oap	Animal products nec	& Othanprod
rmk	Raw milk	& Rmilk
wol	Wool silk-worm cocoons	& Othanprod
for	Forestry	& Extract
fsh	Fishing	& Extract
col	Coal	& Extract
oil	Oil	& Extract
gas	Gas	& Extract
omn	Minerals nec	& Extract
cmt	Bovine cattle, sheep and goat,	& Beef
omt	Meat products nec	& OthMeat
vol	Vegetable oils and fats	& VegOil
mil	Dairy products	& Dairy
pcr	Processed rice	& ProcFood
sgr	Sugar	& Sugar
ofd	Food products nec	& ProcFood
b_t	Beverages and tobacco products	& ProcFood
tex	Textiles	& Tex
wap	Wearing apparel	& Tex
lea	Leather products	& Tex
lum	Wood products	& Manu
ppp	Paper products, publishing	& Manu
p_c	Petroleum, coal products	& Manu
crp	Chemical, rubber, plastic prod	& Manu
nmm	Mineral products nec	& Manu
i_s	Ferrous metals	& Manu
nfm	Metals nec	& Manu
fmp	Metal products	& Manu
mvh	Motor vehicles and parts	& Manu
otn	Transport equipment nec	& Manu
ele	Electronic equipment	& Manu
ome	Machinery and equipment nec	& Manu
omf	Manufactures nec	& Manu
ely	Electricity	& Manu
gdt	Gas manufacture, distribution	& Manu
wtr	Water	& Manu
cns	Construction	& Manu
t_t	Trade, transport	& Svces
osp	Financial, business, recreatio	& Svces
osg	Public admin and defence, educ	& Svces
dwe	Dwellings	& Svces
!		

The regional aggregation attempts to distinguish the main trading partners of the EU and major developing regions.

The 3 regions are:

- 1 EU15 & EU15
- 2 NorthAm & USA & Canada
- 3 ROW & all other countries