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WTO Doha Round: Impact of an Agreement on Agriculture and the Importance of Sensitive Product Status

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Abstract

The Doha round of WTO negotiations has been ongoing since 2001. In the summer of 2008 the negotiations on the modalities for a new WTO agriculture agreement collapsed when seemingly on the verge of a successful conclusion. In this paper we present quantitative analysis of the impact of a new WTO agreement undertaken using a partial equilibrium model of Irish and EU agriculture. Results are presented on the agreement's impact on Irish and EU-27 agriculture markets and on Irish agricultural sector incomes. Our analysis highlights the importance of the Baseline counter-factual, and will illustrate that protection afforded by the conferral of sensitive product status differs from commodity to commodity. The paper will draw conclusions concerning the economic impact of an agreement on Irish agriculture and Ireland's likely future perspective on the conclusion of the Doha Round.

Keywords WTO, agriculture, policy analysis, partial equilibrium modelling, baseline, scenario analysis, tariffs, tariff rate quota, sensitive products

JEL codes: Q11, Q17, Q18

1 Introduction

By the time that the World Trade Organization (WTO) negotiations ground to a halt in July 2008, significant political and technical progress towards a deal had been made. Of the 20 or so key areas of discussion, agreement in principle was reached on all but two. An agreement in the near term is becoming more and more unlikely given the deepening international recession, the presence of a new US administration, an incoming European Commission in 2009 and upcoming elections in India. Nevertheless, when the negotiations broke down in July 2008 all parties to the agreement stressed that any future negotiations would resume from where they adjourned, rather than have them begin again *ab initio*. Thus, we would argue that, the prospective WTO modalities on agriculture that were on the negotiating table in July 2008, form a plausible basis for an assessment of the likely impact of a future WTO Agreement on agriculture.

The issues under negotiation in the WTO agriculture negotiations are grouped into three strands. Two of these strands, those relating to export subsidies and trade distorting domestic support, are of less relevance from an EU perspective. The EU is already winding down its export refund programmes, while WTO disciplines on trade distorting domestic support were addressed by the EU via the introduction of decoupled direct payments in the 2003 Common Agricultural Policy (CAP) reforms.[1] For all parties to the negotiations the situation with respect to the third strand, market access, remains critical. The market access issue relates to reduction in import tariffs which protect higher priced markets from competition with products sold at world prices. Associated with the negotiations on tariff levels are negotiations on a myriad of related issues, including sensitive products status and TRQ expansion. Market access was, and continues to be, the main sticking point in this and previous rounds of multilateral agricultural trade negotiations.

In this paper we present analysis of the impact of a WTO agreement on Irish and EU-27 agricultural markets and on Irish agricultural sector income. We examine a set of four scenarios: a no new policies Baseline where the Uruguay Round Agreement on Agriculture prevails until 2017 and the CAP as constituted prior to the November 2008 Health Check Agreement remains unchanged, a scenario where export subsidies are eliminated as per the text of the July 10th 2008 *Falconer Modalities on Agriculture* (WTO, 2008) and all agricultural tariffs are reduced by 70 percent with no commodities designated as sensitive, in the third scenario we analyse the impact of designating beef as sensitive, in the fourth scenario butter, SMP and cheese are designated as sensitive products. Our analysis highlights the importance of the Baseline (no new policy) counterfactual in assessing the impact of changes in agricultural trade policy. The paper illustrates the differential impact across commodity markets

[1] The recent re-introduction by the EU of export subsidies for dairy products illustrates that short run market weakness will see developments that run counter to previous expectations vis

of liberalising trade reforms and shows that the protection offered by the conferral of sensitive product status in the EU differs across commodity markets.

The next section of the paper briefly reviews the status of the WTO agriculture negotiations when they collapsed in July 2008. This is followed in section 3 of the paper by a discussion of the role of tariff rate quota (TRQ) and an exploration using a simple diagrammatic model of why the economic impact of an expansion of a TRQ, such as would be associated with the designation of a product as sensitive, can be expected to differ depending on prevailing levels of protection and trade for the commodities considered. In section 4 we briefly describe the FAPRI-Ireland model used in this analysis and define the four WTO reform scenarios analysed in greater detail. In section 5 we present the results of our analysis and some conclusions are drawn in section 6.

2 WTO Agriculture Negotiations July 2008

Ambassador Crawford Falconer, Chair of the WTO agriculture negotiations, issued a revised modalities paper on July 10th 2008 (WTO, 2008) in preparation for the 2008 WTO Ministerial meeting held in Geneva in the latter part of that month. Over the course of that Ministerial meeting, negotiations succeeded in reducing the number of differences between WTO members, and consensus was reached on some of the so called *square brackets* items. However, in the agriculture negotiations, WTO members could not ultimately resolve all of their differences and the Ministerial collapsed on July 30th 2008.

As noted in the introduction, issues in the WTO agriculture negotiations are grouped into three strands, trade distorting domestic support, export competition and market access. Elements of the modalities relating to market access caused the collapse of the negotiations in July 2008 and continue to arguably the most disputed area of the current modalities proposal.

Within the current agriculture modalities paper, tariffs have been categorised into four tiers according to their value with respect to world prices. The July 2008 Falconer modalities paper proposes a lower and upper range of possible percentage reductions for the highest tariff tier and specific percentage reductions for the other three tariff tiers. For bound tariffs in excess of 75 percent ad valorem equivalent (AVE), the exact percentage reduction in tariffs was the subject of negotiations at the 2008 WTO Ministerial meeting. The square brackets percentage reduction range in the July modalities paper was 66 to 73 percent and during the July 2008 negotiations it appears that “agreement” on a 70 percent reduction was reached within the context of an overall agreement on the modalities for agriculture and the modalities for another chapter of the negotiations namely non-agricultural market access (NAMA).

à vis European Commission behaviour with respect to export subsidisation. Our judgement is that in the medium term export subsidies will not be used.

The EU tariffs which are of interest to Irish agriculture generally fall into the highest of the four tariff tiers. The analysis produced later in this paper assumes a rate of reduction of 70 percent in top tier tariffs, where the product concerned is not accorded sensitive product status.

In the current draft modalities paper, it has been proposed that a WTO member could seek sensitive product status for a limited range of particular commodities (4 to 6 percent of tariff lines), where the absence of market protection would have the most serious consequences for domestic production. Sensitive product status would allow for a lower level of tariff reduction than would otherwise apply. A one third or two third *deviation* from the non sensitive rate of tariff cut could be sought. If a two thirds deviation were agreed, then in the case of the uppermost tariffs, this would mean that a reduction in the over-quota bound tariff of 23.3 percent (i.e. a two thirds deviation from 70 percent) would be required.

As a *quid pro quo* for a lower tariff reduction under sensitive product designation, a WTO member would be required to expand its existing TRQ, the volume of imports it accepts at low or no rate of tariff. The TRQ expansion would be determined by a reference level of domestic consumption of the product in question in the importing country, which in turn would be based on an average of consumption in a number of historical years. The TRQ expansion would take place gradually, with at least one quarter of the agreed TRQ expansion occurring immediately, while the other three quarters of the total expansion are added in three equal annual steps. The total TRQ that would operate over the duration of the Doha agreement would then be the sum of the pre-existing Uruguay Round Agreement on Agriculture (URAA) TRQ and the newly created Doha Round TRQ.

3 Sensitive product designation and TRQ

TRQ are a trade policy instrument that was introduced in the URAA. When the URAA was being negotiated, there were concerns that the agreed reductions in tariffs (which were to be based on an average of the binding tariffs in the period 1986-1988) would not lower barriers to trade sufficiently to allow for the achievement of the minimum access provisions of the URAA (WTO, 2001a, 2001b). TRQ were introduced primarily as a means of "guaranteeing" that the Agreement's minimum access provisions were satisfied, while also allowing for the incorporation of WTO Members' pre-existing preferential trade agreement import quotas (Abbott, 2002).[2]

In this section, we examine the impact of TRQ expansion using a diagrammatic supply and demand model (Skully, 1999). Using this model, we examine the impact of TRQ expansion in two cases. In the first case the *ex ante* volume of imports is in excess of the expanded TRQ,

[2] The history and operation of TRQ, and their economic impact, is well summarised by de Gorter and Sheldon (2001), Skully (1999, 2001). The operation of TRQ by the EU and their market access increasing impact is described by Bureau and Tangermann (2000).

while in the second case the *ex ante* volume of imports is less than or equal to the expanded TRQ. It is assumed that the importing country (the EU) is a price taker, so that world prices can be considered as exogenous. Also, it is assumed that the product of concern is homogeneous. It should be noted that in the FAPRI-Ireland model used in quantitative analysis of WTO reform presented later in this paper the EU is not a price taker, i.e. changes in EU agricultural and/or trade policy and other developments in EU production and supply of agricultural commodities affect the world prices of those commodities. In terms of the diagrammatic model used below, the reality is that given its size and importance in world trade the EU faces an upward sloping supply curve. However, the use of a horizontal supply curve simplifies the diagrammatic exposition of the impact of TRQ, but does not change the conclusions presented below.

In the diagrammatic exposition of the impact of TRQ expansion we do not focus on the impact of cuts to in and over-quota tariff rates. Depending on the commodity in question, the relative levels of world and EU prices and the level of tariff protection currently afforded different agricultural commodities, over-quota tariff cuts may or may not lead to trade creation and consequently lower internal EU prices. Given the generally very low level of in-quota tariff cuts, the reductions in these tariffs proposed in the current agriculture modalities paper can be expected to have negligible impacts on EU agricultural markets.

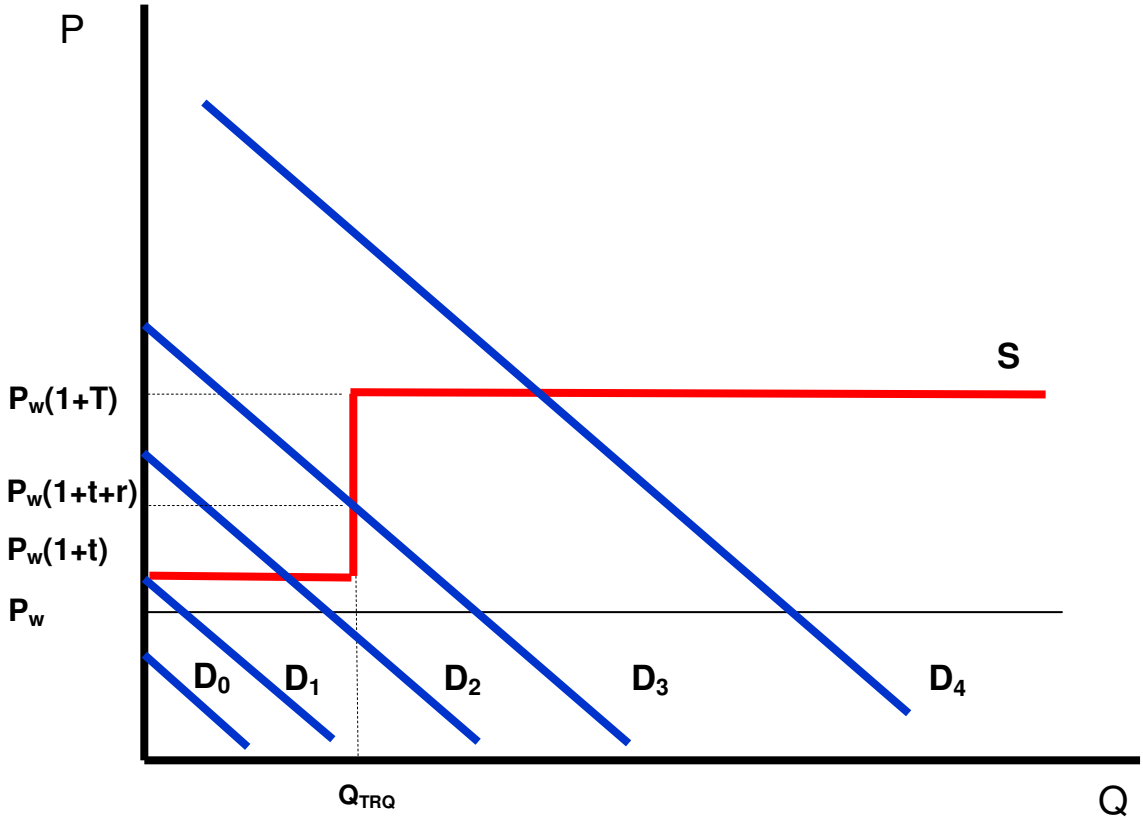
In the import supply and demand model outlined below, the importing country is a price taker, and the volume of imports is determined by the world price, the tariff on imports and the importing country's demand for the good. With our assumption of a price taking importer (the small country assumption), the supply curve can be represented as a horizontal line at the world price P_w. In this model increasing amounts demanded and supplied do not affect the market clearing price (see Figure 1). The imposition of a tariff shifts the effective import supply curve upwards, by an amount equal to the tariff (T), so that the import supply curve is a horizontal line at $P_w(1+T)$.

A TRQ is a trade instrument that grants duty free or reduced duty access to a certain quantity of a product (the quota). All imports of the good in excess of the quota are taxed at a tariff (T), which is greater than the in-quota tariff (t) levied on the in-quota import volume. Diagrammatically, as shown in Figure 1, the introduction of a TRQ changes the supply curve (S) by introducing a vertical discontinuity at the TRQ quantity (Q_{TRQ}), and all imports equal to or less than the TRQ are taxed at the in-quota tariff t ($t<T$) and all imports in excess of the TRQ are taxed at T, the higher over quota rate.

The intersection of the kinked import supply curve in Figure 1 with an import demand curve (D) determines the quantity imported and the domestic price. Depending on the location of the

import demand curve, a total of five situations can be envisaged and these are shown in Figure 1.

Figure 1: Impact on import supply curve of a introduction of a TRQ

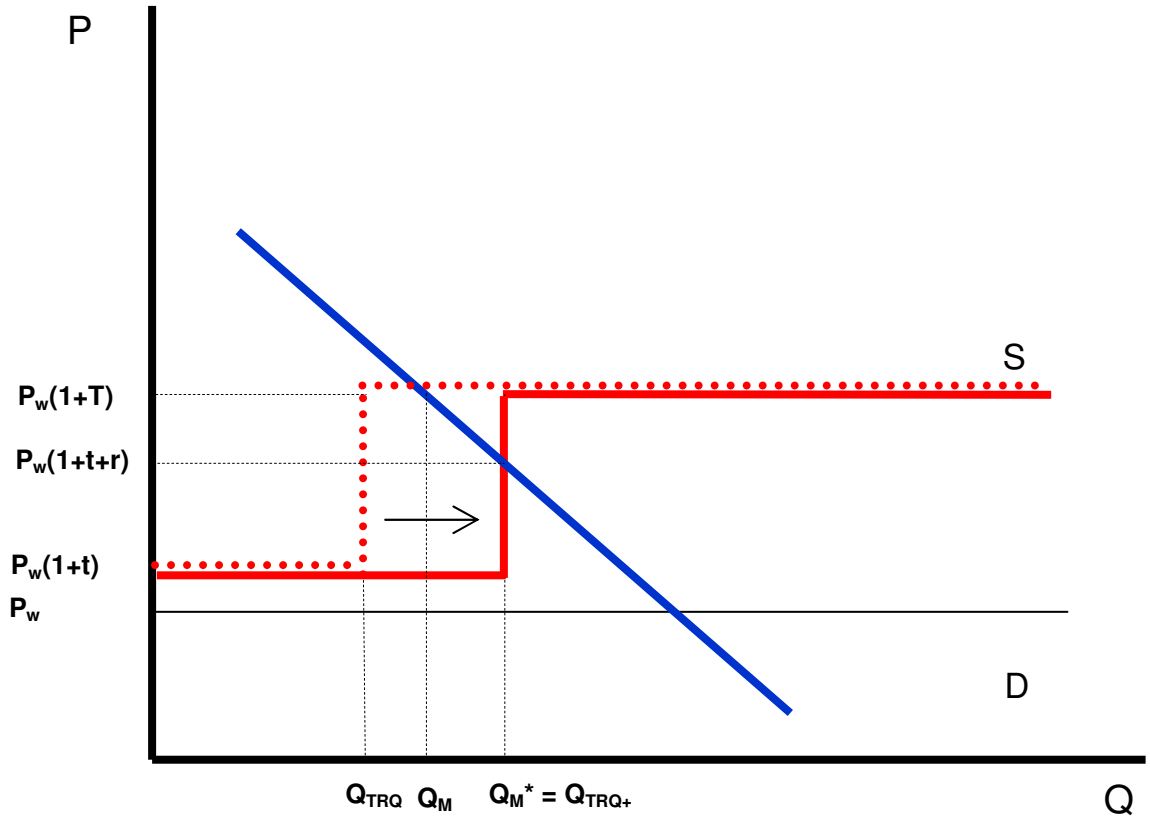


- In the first situation, the import demand for the good is represented by D_0, such that, even at world prices, the import demand for the good is insufficient to lead to trade, the TRQ is not binding and domestic demand is the binding constraint.
- In the second situation, where import demand is represented by D_1, trade would occur at the world price P_W but the imposition of the in-quota tariff rate t means that no trade takes place; here domestic demand remains the binding constraint.
- In the third situation, where import demand is represented by D_2, trade takes place and the price equals $P_W(1+t)$.
- In the fourth situation represented by D_3 the quota determines imports, i.e. the TRQ is binding, the import volume Q_{TRQ} is equal to the TRQ and the price is equal to $P_W(1+t+r)$, where r is the per unit quota rent equal to the price at which the good sells on the domestic market less the sum of the world price and the in-quota tariff rate t.
- The final situation is where over-quota imports occur and the over-quota tariff rate is the binding constraint. In this final case the price is $P_W(1+T)$, the in-quota volume of imports can be imported at $P_W(1+t)$ and sold for $P_W(1+T)$, thus total rents of $Q_{TRQ}(T-t)$ arise.

If an expansion of the TRQ occurs without any change in either the in-quota tariff t or the over-quota tariff T, this can be represented by a horizontal shift to the right in the vertical component of the supply curve. If either or both the in-quota tariff and the over-quota tariff are lowered, the horizontal components of the supply curve shift downwards.

One conclusion that can be drawn is that the economic impact of the introduction of a TRQ, or the expansion of a pre-existing TRQ, depends on the size of the TRQ introduced or expanded relative to the volume of imports that would occur in its absence. Assuming that the over-quota tariff rate is T and the in-quota tariff rate is t, t<T, and that these tariff rates do not change, we can distinguish two cases from the five situations described above. In Case I, following the expansion of the TRQ, the TRQ is binding on imports and in Case II (see Figure 3) the volume of imports is greater than the expanded TRQ, i.e. the TRQ is not binding.

Figure 2: TRQ Expansion Case I: Expanded TRQ is binding

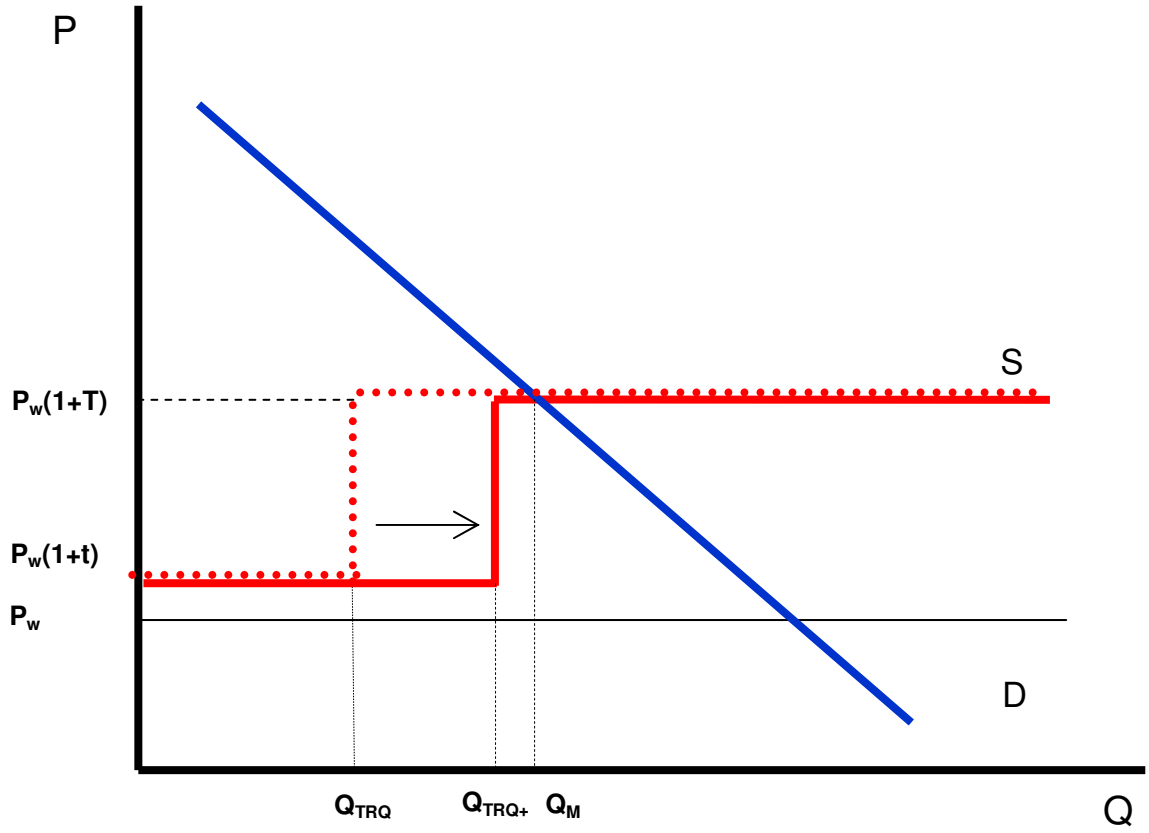


In Case I (Figure 2) an increase in the tariff rate quota from Q_{TRQ} to Q_{TRQ+} changes the import supply curve, with the supply curve following a TRQ expansion represented by the solid red line and the pre-TRQ expansion supply curve represented by the dotted red line.

Prior to the expansion of the TRQ, the intersection of the import demand curve D and the import supply curve S give a market clearing price of $P_w(1+T)$ and a volume of imports of Q_M. With the expansion of the TRQ, the vertical part of the supply curve S shifts horizontally to the

right to Q_{TRQ+}. The intersection of the import demand curve and the new import supply curve now occurs on the vertical part of the supply curve, so that the quantity imported is $Q_M^* = Q_{TRQ+}$ and the market clearing price is $P_W(1+t+r)$. The expansion of the TRQ creates new trading opportunities and causes a reduction in the domestic price from $P_W(1+T)$ to $P_W(1+t+r)$.

Figure 3: TRQ Expansion Case II: Imports exceed the Expanded TRQ volume



In Case II, illustrated in Figure 3, we examine the impact of exactly the same increase in tariff rate quota, but here the volume of the ex-ante imports at the over-quota tariff rate price is in excess of the increased tariff rate quota. With the initial quota of Q_{TRQ} and the in-quota and over-quota tariff rates of t and T unchanged from Case I above, the quantity of imports demanded in Case II is Q_M, with Q_M significantly greater than the initial TRQ, Q_{TRQ}. With the expansion of the tariff rate quota from Q_{TRQ} to Q_{TRQ+} the quantity demanded is still unchanged at Q_M. Despite the expansion in TRQ and the resultant outward shift of the vertical portion of the import supply curve, the point of intersection of the import demand and import supply curves does not change and consequently the domestic import price does not change either, remaining at $P_W(1+T)$. In this case the per unit rent r is equal to (T-t).

Cases I and II illustrate the importance of the relative magnitudes of the ex ante import demand and the expanded TRQ volumes. In Case I because the shift of the import supply curve, that results from the TRQ expansion, changes where the demand and supply curves intersect, the expanded TRQ leads to increased market access and lower domestic prices. In

Case II, because the ex ante import demand at the full tariff rate is in excess of the initial and expanded quota, the outward shift of the supply curve does not change the market clearing quantity imported or the price, which remains at $P_W(1+T)$. In Case II the expansion of the TRQ to Q_{TRQ+} leads to a reduction in tariff revenue equal to $P_W(T-t) *(Q_{TRQ+}-Q_{TRQ})$ with all of the reduction in the tariff revenue transferring to rents. In Case I the expansion of the TRQ also creates rents equal to $P_W(r)*(Q_{TRQ+}-Q_{TRQ})$.

The two cases presented can be used to understand why it is likely that TRQ expansion will differentially affect internal EU market balances and prices for agricultural commodities that might be designated as sensitive products. Where the current or future projected imports of a commodity are significantly in excess of existing TRQ amounts, an expansion of TRQ volumes alone is unlikely to change the future internal market balance that determines domestic prices. However, if imports into the domestic market are currently close to or equal to existing TRQ, any expansion of TRQ is likely to lead to additional imports and lower internal EU prices.

The impact of TRQ expansion in the diagrammatic models (Figures 1, 2 and 3) has abstracted from the impact of changes to in-quota and over-quota tariff rates on domestic prices and import volumes. The reduction of the over-quota tariff in Case I and Case II, in conjunction with expansion of the TRQ, would in both cases have the effect of increasing market access and reducing domestic prices. In Case I existing tariff levels are largely successful in excluding over-quota imports while in Case II existing tariff levels are not successful in excluding significant over-quota imports.

Case I where the volume of the good imported was close to the existing TRQ and existing tariff levels were largely successful in excluding over-quota imports from the domestic market, may be thought of as representing EU dairy product markets. It illustrates the downside of sensitive product designation. Where a product is designated as sensitive, the increased EU TRQ offers WTO partners the opportunity of a guaranteed quantity of exports to the EU at preferential tariff rates, and additionally may offer an opportunity for increased imports outside of that TRQ due to the (albeit lower) reduction in the over-quota tariff than in the non sensitive product case. For many dairy commodities, given existing tariff levels and depending on world price levels, a cut of 70 percent can leave the EU markets with more protection than would be afforded by sensitive product status with its expanded TRQ and 23 percent tariff cut.

There are, however, EU product markets where Case II is more relevant. For such products, the EU is already importing volumes of goods significantly in excess of the URAA TRQ. The case of beef is an obvious example. EU beef imports in 2007 exceeded 500 thousand tonnes significantly above the existing TRQ of 200 thousand tonnes and assuming that the sanitary and phytosanitary problems with imports of beef from some South America countries are resolved will once again exceed the likely magnitude of any expanded TRQ that could result

from a WTO agreement. In such instances, and where internal EU prices are significantly higher than world prices (indicating high over-quota tariff rates), sensitive product status may still be preferable from the perspective of the protectionist minded EU importer. This is because TRQ expansion, and limited over-quota tariff cuts, may inhibit the degree to which "increased" market access contributes to an actual increase in trade. In such instances the TRQ expansion, when considered in isolation, leads largely to the re-designation of over-quota imports as TRQ imports, lower tariff revenue and expanded quota rents, rather than any expansion in actual volumes of imports and associated negative impacts on domestic prices.

4 Definition of Scenarios Analysed and Methods Used

In this paper the EU-GOLD model, that includes within its structure the FAPRI-Ireland partial equilibrium model of Irish agriculture, is used. The EU GOLD model is described in Hanrahan (2001), the EU-GOLD model has been used previously to analyse trade policy reform questions (Binfield *et al.*, 2004), as well as CAP reform proposals (Binfield *et al.*, 2003; Binfield, Donnellan and Hanrahan, 2008a) and changes in the CAP (Binfield *et al.*, 2004).

The Baseline and scenario projections in this paper are for the period 2008 through to 2017, the research on which this paper is based was conducted in 2008 and consequently does not incorporate the most up to date world agricultural price projections from FAPRI (FAPRI, 2009) or updated macroeconomic projections. Also the analysis does not incorporate the impact of the CAP Health Check Agreement that was reached in November 2008. In particular the impact of the expansion and elimination of the EU milk quota in 2015 is not incorporated in this analysis.

Under the Baseline agricultural policies and agricultural trade policies (URAA) are assumed to remain unchanged for the projection period 2008 to 2017, see Binfield *et al.* (2008b) for full details. These baseline projections are contrasted with projections generated under specific alternative agricultural trade policy (WTO) assumptions. The impact of the trade reforms on Irish and EU agriculture is then inferred from the difference between the projections under the Baseline and under each alternative WTO scenario.

Our analysis of the impact of a WTO agreement is partial in two important respects. Firstly, we examine the impact of reforms adopted in the EU alone, i.e. we do not consider the impact on world markets of the adoption of similar reforms by other WTO members, and this means that we implicitly assume that the EU is engaged in a unilateral reform. Of course the WTO negotiations are about a multilateral reform process and reform in the trade regimes of the EU WTO partners would be expected to affect world trade and world prices. Secondly, we only examine the impact of changes in trade policy as they relate to agricultural product markets. We do not consider the impact of reform in NAMA, nor do we consider traded services.

The three alternative agricultural trade policy scenarios differ only in their definition of the changes in market access provisions. Under all the alternative trade policy scenarios EU trade distorting domestic support (AMS) is reduced by 70 percent, and all export subsidies are eliminated over the period 2010 to 2013, with a 50 percent frontloading of the reduction in 2010, with the remainder reduced linearly over the period 2011 to 2013. The differences between the three trade policy scenario's market access elements are summarised in Table 1.

Table 1 WTO Scenario and Related Policy Assumptions

WTO-I	All top tier tariffs reduced by 70 percent Tariff reductions implemented linearly over a 5 year period beginning in 2009 No products designated as sensitive, no change in TRQ
WTO-II	Beef Designated as a sensitive product Beef tariffs reduced by 23.3 percent (two-thirds deviation) All other top tier tariffs reduced by 70 percent All tariff reductions implemented linearly over a 5 year period beginning in 2009 Beef TRQ increased by an amount equal to 4 percent of EU beef domestic use All other TRQ remain unchanged.
WTO-III	Butter, cheese and SMP designated as sensitive Tariffs on these products reduced by 23.3 percent All other tariffs reduced by 70 percent All tariff reductions implemented linearly over a 5 year period beginning in 2009 Butter, cheese and SMP TRQ increased by an amount equal to 4 percent of EU domestic use of these products All other TRQ remain unchanged

5 WTO Trade Reform Scenario Results and Discussion

The analysis of the impact of the WTO reform scenarios begins with the generation of a baseline outlook for period to 2017. Full details of that baseline outlook are contained in Binfield *et al.* (2008b). A very brief summary is presented below to provide a frame of reference for the WTO scenario outcomes.

EU and Irish agricultural commodity prices are, under the Baseline, projected to be higher than they have been for much of recent history. Milk and dairy commodity prices decline from the high level observed in 2007, but are projected to remain considerably above their 2006 levels. Meat prices are generally projected to increase between 2008 and 2017 under the Baseline. Cereal prices decline from the high prices observed in 2007, but by the end of the projection period, grain prices are projected to be well above the intervention price levels which largely determined EU market prices for grain in the early years of this decade.

Over the projection period total Irish agricultural output value under the Baseline declines from the historically high level observed in 2007. This decline is largely due to reductions in the value of the dairy and cereals sectors. The value of output from the Irish beef and poultry sectors is projected to increase under the Baseline, while the value of output from the pig and sheep sectors declines, due to lower production volumes. By 2017, the value of Irish agricultural output is projected to be over 2 percent lower than in 2007. Reduced agricultural activity levels are associated with reduced volumes of input usage. However, declining usage levels are offset by increases in agricultural input prices and aggregate input expenditure, which under the Baseline is projected to increase by over 2 percent over the period 2007 to 2017. Total agricultural subsidy receipts are projected to increase over part of the projection period due to the introduction of the Suckler Cow Welfare Scheme.[3] With declining output value and rising costs and expenditure on employee compensation, under the Baseline Irish agricultural sector income is projected to decrease over the period 2007 to 2017 by almost 11 percent.

Table 2: 2017 EU and Irish prices: Impacts of WTO Reform Scenarios

	Baseline	WTO-I	%Δ	WTO-II	%Δ	WTO-III	%Δ
Beef				€/100 Kg			
EU	335.1	263.0	-21.5	312.9	-6.6	263.4	-21.4
Ireland	295.1	235.9	-20.1	276.8	-6.2	236.2	-20.0
Dairy Products				€/100 Kg			
Butter	257.0	215.7	-16.1	218.6	-14.9	214.7	-16.5
Cheese	399.5	386.9	-3.2	395.5	-1.0	381.3	-4.6
SMP	261.0	266.6	2.1	273.0	4.6	261.3	0.1
Milk				€/100 Kg			
EU	28.8	27.7	-3.8	28.2	-2.1	27.4	-4.9
Ireland	26.6	25.7	-3.4	26.25	-1.3	25.28	-5.0

Note: Percentage changes are relative to the Baseline level in 2017 under each WTO scenario.
Source: FAPRI-Ireland Model (2008).

The impact on EU and Irish beef, milk and dairy commodity prices under the Baseline and each of the three trade policy reform scenarios in 2017 is presented in Table 2. As expected the WTO reform scenarios have a negative impact on the prices. Under each of the trade reform scenarios analysed EU prices of beef and butter, and cheese decline, while SMP prices

[3] Officially this is called the Animal Recording, Welfare and Breeding Scheme. Over the next 5 years this scheme, subject to satisfaction of certain criteria and limited by the exchequer funds available (€235m.), will provide a coupled direct payment to scheme participants based on their suckler cow numbers.

increase due to reduced protein availability caused by an increase in cheese production that arises because of the projected increase in cheese prices relative to butter prices.

Comparison of the projections under scenarios WTO-I and WTO-II (Table 3) illustrates the importance of sensitive product designation to the EU and Irish beef sector. If beef is not designated as sensitive (WTO-I) the tariffs protecting EU beef markets are reduced by 70 percent over a 5 year period. Given that under the Baseline full duty paid imports of beef into the EU are projected to grow between 2007 and 2017 by over 30 percent, cutting the tariff these barriers further is expected to lead to significant increases in imports. The results in Table 3 suggest that in this respect sensitive product status and the 23 percent tariff cut rather than the 70 percent tariff cut under the WTO-I scenario reduces the scale of increase in beef imports to the EU that would occur and consequently the negative price and output effects on the EU and Irish beef industry.

Table 3 Impact of WTO-I and WTO-II scenarios on EU and Irish Beef Markets

	Baseline		WTO-I	% Δ	WTO-II	%Δ
	2008	2017	2017		2017	
EU27			'000 t			
Production	8,159	7,790	7,475	-4.0	7,692	-1.3
Use	8,519	8,533	9,115	6.8	8,661	1.5
Imports	376	771	1,672	116.9	998	29.4
			Euro/100 kg			
Price	344.6	335.1	263.0	-21.5	312.9	-6.6
Ireland			'000 t			
Production	537	507	491	-3.2	502	-1.0
Use	96	108	116	7.4	109	0.9
Exports	480	442	421	-4.8	437	-1.1
			euro per 100 kg			
Price	302.9	295.6	235.9	-20.2	276.8	-6.4

Note: Percentage changes are relative to the Baseline level in 2017 under each WTO scenario.
Source: FAPRI-Ireland Model (2008).

Under the WTO-I scenario EU beef imports grow dramatically, with 2017 import volumes over 116 percent higher than the levels projected under the Baseline. As a result of this large increase in imports EU and Irish cattle price are projected to decline by 21 percent and 20 percent respectively. In response to this large decline in prices, EU beef production and beef cow numbers (not shown in Table 3) are projected to by 4 and 11 percent.

Under the WTO-II scenario beef is designated as sensitive and tariffs are cut by only 23 percent while new TRQ for beef equal to 4 percent of domestic use are created. Under this scenario the increase in imports, at 29 percent in 2017, is significantly smaller than that projected under the WTO-I scenario. The increase in TRQ does not increase market access since the expanded TRQ is less than the Baseline level of beef imports; all of the growth in beef imports arises as a result of the 23 percent cut in tariffs. With the growth in imports under the WTO-II scenario, cattle prices in the EU and in Ireland decline relative to the Baseline. By 2017 EU cattle prices are projected to be 6.6 percent lower than under the Baseline, Irish cattle prices decline by 6.4 percent. In response to the decline in prices, beef cow numbers and beef production in the EU are projected to decline, with beef cow numbers declining by 3 percent and beef production 1 percent lower than under the Baseline.

The relative impact of the WTO-I and WTO-II scenarios on Irish agricultural sector income is dramatic. Under both scenarios Irish agricultural sector income is lower than under the baseline, however, our results suggest that the designation of beef as sensitive under scenario WTO-II, by leaving the EU beef market with more tariff protection than under the WTO-I scenario is preferable from the perspective of the Irish agricultural sector. Under the WTO-I scenario Irish agricultural sector income is projected to be 13.2 percent lower than under the Baseline, this contrasts with the projected outcome under the WTO-II scenario (where beef is designated as sensitive) where the reduction in sector income is 5.3 percent. This amounts to a difference of €190 m in 2017 alone.

The results of scenarios WTO-I and WTO-II strongly suggest that for the beef market sensitive product status, by reducing the magnitude of the tariff cut required and surrendering increased preferential access through increased TRQ creation is to be preferred from the perspective of the agricultural industry. Does the same story emerge when dairy commodities are designated as sensitive? Given that at world prices under the Baseline and existing tariff levels, full-duty paid imports of dairy commodities to the EU are negligible our prior expectation is that the designation of dairy commodities as sensitive will not reduce, and may increase, the impact on EU and Irish dairy markets of a WTO agreement.

Comparison of the results (see Table 4) for EU and Irish dairy markets under scenarios WTO-I and WTO-III (where butter, cheese and SMP are designated as sensitive) suggests that designation of dairy commodities as sensitive does not confer protection to EU markets over and above that which they would be left with under scenario WTO-I where the full tariff cut of 70 percent is imposed. EU and Irish milk prices under WTO-III are projected to be lower than under the WTO-I scenario. By 2017 under the WTO-I scenario EU and Irish milk prices are 3.8 and 3.6 percent lower than the level projected under the Baseline. Under the WTO-III scenario EU and Irish dairy prices also decline, with the level in 2017 lower than under the WTO-I

scenario; the EU and Irish milk prices are projected to decline by 4.9 and 5.1 percent respectively.

Table 4 Impact of WTO-I and WTO-II scenarios on EU and Irish Dairy Markets

	Baseline		WTO-I	%Δ	WTO-III	%Δ
	2008	2017	2017		2017	
EU27			million t			
Milk Production	149.04	146.37	146.97	0.4	146.10	-0.2
Butter			thousand t			
Production	2,137	2,084	2,039	-2.2	2,023	-2.9
Use	1,956	1,929	1,997	3.5	1,999	3.6
Imports	88	88	88	0.0	157	78.4
Exports	262	237	124	-47.7	175	-26.2
Cheese						
Production	9,025	9,674	9,784	1.1	9,649	-0.3
Use	8,621	9,452	9,546	1.0	9,588	1.4
Imports	104	127	127	0.0	342	169.3
Exports	499	345	362	4.9	399	15.7
SMP						
Production	1,042	750	697	-7.1	669	-10.8
Use	761	698	687	-1.6	690	-1.1
Imports	22	22	22	0.0	53	140.9
Exports	318	75	32	-57.3	32	-57.3
EU27						
Prices			euro per 100kg			
Milk	29.8	28.8	27.7	-3.8	27.4	-4.9
Butter	268.8	257.0	215.7	-16.1	214.7	-16.5
Cheese	412.4	399.5	386.9	-3.2	381.3	-4.6
SMP	240.6	261.0	266.6	2.1	261.3	0.1
Ireland			euro per 100kg			
Milk price	26.97	26.66	25.70	-3.6	25.31	-5.1

Note: Percentage changes are relative to the Baseline level in 2017 under each WTO scenario.

Source: FAPRI-Ireland Model (2008).

Under the WTO-I scenario the tariff protection that remains in place following the implementation of the 70 percent cut is sufficient to effectively exclude imports of dairy commodities from EU markets. The reductions in prices that are projected under WTO-I arise largely as a result of the elimination of export subsidies by 2013. Under scenario WTO-III the expansion of the TRQ for butter, cheese and SMP, when combined with the elimination of export subsidies, is projected to reduce the farm gate milk price and most dairy commodity prices. By 2017 EU cheese and butter prices are projected to be 4.6 and 16.5 percent lower than under the Baseline and the declines are in excess of those projected to occur under scenario WTO-I.

The impact of designating dairy commodities as sensitive on agricultural sector incomes does not ameliorate the negative impact of the WTO reform on the value of output from the Irish dairy sector or on Irish agricultural sector income. Under the WTO-III scenario the value of the Irish agricultural sectors operating surplus (income) is projected to be almost €336 million (13.9 percent) lower than under the Baseline, the reduction in operating surplus in 2017 under the WTO-I scenario is marginally smaller at €318. Thus, our results strongly suggest that sensitive product status does for dairy commodities not accord any protection over and above that which remains when a 70 percent tariff cut and the elimination of export subsidies occurs. Given the limitation on the number of tariff lines that can be designated as sensitive under the current proposed agriculture modalities texts, sensitive product designation is better used, from the perspective of providing tariff protection to Irish and EU agriculture, on other agricultural commodities.

Table 5 Impact of WTO Scenarios on Irish Agricultural Output Value, Input Costs and Income

	Baseline		WTO-I	Δ%	WTO-II	Δ%	WTO-III	Δ%
	2007	2017	2017		2017		2017	
Cattle	1,477	1,489	1,112	-25.3	1,370	-8.0	1,114	-25.2
Milk	1,668	1,421	1,367	-3.8	1,399	-1.6	1,345	-5.3
Goods Output†	5674	5,546	5,095	-8.1	5,369	-2.7	5,076	-8.5
Input Costs	3,926	4,011	3,895	-2.9	3,968	-1.1	3,896	-2.9
Income‡	2702	2410	2092	-13.2	2282	-5.3	2076	-13.9

Note: Percentage changes are relative to the Baseline level in 2017 under each WTO scenario.

Source: FAPRI-Ireland Model (2008).

† Goods output at producer prices.

‡ Income includes subsidies on products and subsidies on production

The results of our WTO reform analysis also highlight the importance of the counterfactual or Baseline projections used in assessing the impact of a trade reform agreements and the impact of decisions on sensitive product designation. The Baseline projections in this paper are more fully outlined in Binfield *et al.* (2008b), policy, macroeconomic projections and world price projections used condition the analysis results. Changes in underlying CAP policy assumptions and/or changes in macroeconomic aggregates such as currency exchange rates and GDP growth rates could alter the outcomes of the WTO analysis presented here.

The baseline projections used in this paper do not incorporate the expansion of, and then ending of the EU milk quota system in 2015. Research has shown that this now agreed reform will lead to lower EU milk and dairy commodity prices than would pertain in the absence of the agreed reform (Binfield, Donnellan and Hanrahan, 2008a, Bouamra-Mechemache, Jongeneel, and Requillart, 2008). Lower EU commodity prices would probably mean that the impact of a trade reform agreement on EU dairy markets would be reduced when compared with the analysis presented in this paper.

The Baseline used in this paper was generated in the third quarter of 2008 and does not take into account of the recent sudden and sharp decline in international economic growth. Updated projections incorporating revised projections for both macroeconomic aggregates and international agricultural commodity markets have recently been produced by FAPRI (FAPRI, 2009). The forthcoming FAPRI-Ireland 2009 Baseline projections will incorporate these projections as well as revised projections for macroeconomic growth, inflation and population growth for Ireland from the Economic and Social Research Institute (ESRI). In general, lower rates of economic growth internationally, particularly in the short term will lead to lower agricultural commodity prices as demand contracts relative to supply. A Baseline counter factual with lower international agricultural commodity prices could alter the impact of the tariff reductions analysed in this paper. For example even with a 70 percent tariff cut, under the Baseline used in this paper, the remaining tariff protection is sufficient to effectively prevent duty-paid imports of dairy products in the EU. With lower world prices this outcome may not be so clear cut, in that imports of butter and cheese could be competitive with EU prices with full duty paid.

6 Conclusions

WTO reform will negatively affect Irish agricultural sector income. The magnitude of the negative impact will depend on a number of factors. The analysis presented in this paper suggests that sensitive product status for beef could significantly reduce the impact of a WTO agreement on EU beef market balance and consequently reduce the negative consequence for the Irish beef industry and by extension the Irish agricultural sector. In contrast to our finding that sensitive product status is important in the beef market our results suggest sensitive product status does not reduce the impact of a WTO agreement on EU dairy product

market balance. By increasing the volume of dairy products that can enter the EU at effectively tariff-free rates (TRQ), the designation of butter, cheese and SMP as sensitive would lead to lower EU farm gate milk prices than if tariffs on dairy products were reduced by 70 percent and no expansion of TRQ are agreed.

As we have noted, different world market conditions, different currency exchange rates and different agricultural policy assumptions would alter our conclusions. Future research will examine to what extent the downward revisions of international economic growth, changed paths for currency exchange rates and the recent reform of the CAP would alter our conclusions on the impact of a WTO agreement on Irish and EU agriculture.

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