Issues in examining the impact of WTO reform on the Beef and Dairy Sectors in the European Union

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ABSTRACT:

This paper uses a partial equilibrium commodity model of the EU agricultural market to examine the impact on the EU of two possible trade reform scenarios that could emerge under a World Trade Organisation (WTO) agreement. It explores the potential outcome up to 2017 under these scenarios, against a 2008 Baseline where trade policies are unchanged. A particular feature of the paper is that it explores the issue of sensitive product designation in some detail. It demonstrates the complexity of the operation of tariffs and tariff rate quotas in key commodity markets and highlights how these complexities may produce different outcomes for particular commodity sectors. It is found that sensitive product designation is of value to the EU beef sector in minimising the impact of tariff reductions and limiting the increase in beef imports. However, sensitive product status would be unlikely to be an attractive policy option in the case of the EU dairy sector. Despite the large reductions in tariffs applied to dairy products, remaining levels of tariff protection would be likely to provide protection for the EU market in excess of that afforded were dairy products designated as sensitive. This result is due to the increased volume of dairy imports that would occur with the expansion of tariff rate quota associated with sensitive product status

Keywords: Q11 Aggregate Supply and Demand Analysis; Prices

Q17 Agriculture in International Trade

Q18 Agricultural Policy; Food Policy

1 Context

This paper contrasts the impact on EU agriculture of two possible trade reform scenarios that could emerge under a World Trade Organisation (WTO) agreement. It demonstrates the complexity of the operation of tariffs in key commodity markets and shows how approaches which ignore these complexities can produce misleading outcomes. The policy scenarios developed and analysed largely reflect the texts of the February, May and July 2008 modalities papers (WTO 2008a, 2008b, 2008c). The outcome for the beef and dairy sectors is contrasted under the two scenarios. The scenario assumptions are detailed below.

WTO I Scenario – A WTO Agreement with beef as a sensitive product

- **Over-quota Tariffs:** Top tier tariffs cut by 70 percent.

  Beef tariffs cut by 23.3 percent – equivalent to a 2/3 derogation on the 70 percent reduction applying to all other products in the top tariff tier.

  All tariff reductions take place from 2009, over a 5 year period on a linear basis (i.e. no frontloading).

- **Tariff Rate Quotas (TRQ):** Increased annually on a gradual basis to 4 percent of average EU consumption (base period 2000 to 2002).
- **Export Subsidies:** Removed over the period 2010 to 2013, with a 50 percent frontloading of the cuts in 2010 and linear annual reductions thereafter.
- **AMS:** Reduction of 70 percent.
- **EU milk quota remain in place**

WTO II Scenario – A WTO Agreement with no sensitive products

- **Over-quota Tariffs:** No products are accorded *Sensitive Product* status. The top tier tariff is cut by 70 percent.

  All tariff reductions take place from 2009, over a 5 year period on a linear basis (i.e. no frontloading).

- **Tariff Rate Quotas:** TRQ remain at their existing Uruguay Round Agreement on Agriculture (URAA) levels.
- **Export Subsidies and AMS:** Same as WTO I Scenario
- **EU milk quotas remain in place**

2 Methods

In this section of the paper a theoretical approach is used to explore the impact of changes in tariffs. This discussion informs the approach we have used to examine the impact of WTO reform within a partial equilibrium commodity modelling framework. In particular the consequences of choosing sensitive product status, allowing for a smaller tariff cut and larger TRQ expansion are explored. The history and operation of TRQ, and their economic impact, is well summarised by de Gorter and Sheldon (2001) and Skully (2000, 2001). The operation of TRQ by the EU and their market access increasing impact is described by Bureau and Tangermann (2000).

Sensitive product status, within the WTO agriculture modalities, implies that the required tariff reductions are considerably smaller than in the case of non-sensitive products but an additional TRQ must be created equal to an agreed percentage of the domestic consumption of the product.

We now examine the impact of TRQ expansion using a diagrammatic supply and demand model under cases where the ex-ante volume of imports is in excess, 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.

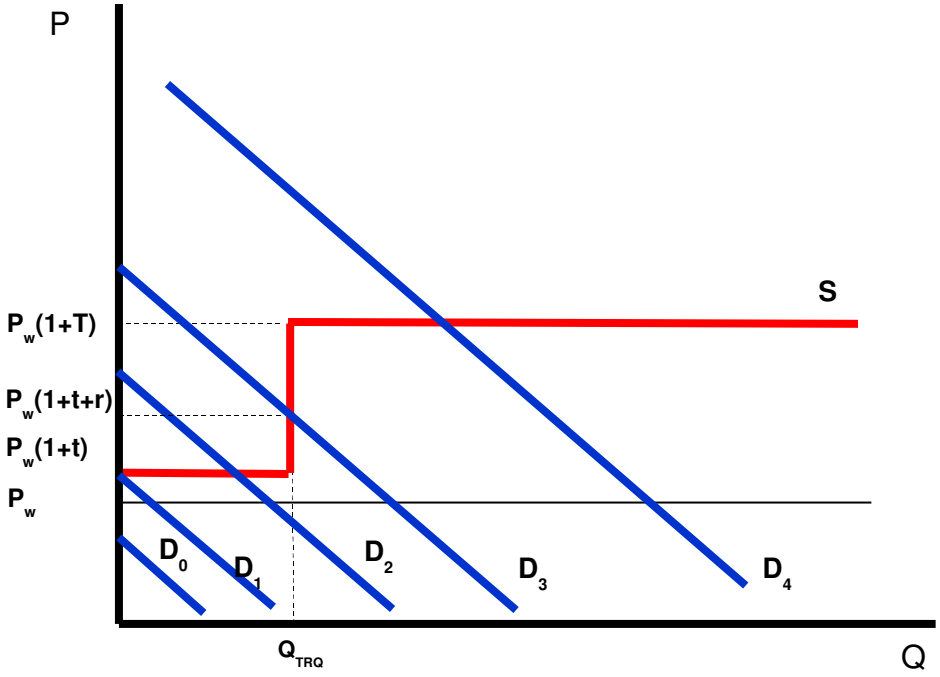
In our empirical model the EU is not a price taker, i.e. changes in EU agricultural and/or trade policy and other developments in EU production and supply of agricultural commodities affect the world price of those commodities. In terms of the diagrammatic exposition used below, the EU faces an upward sloping import supply curve. The use of a horizontal supply curve in Figures 2-1, 2-2 and 2-3, simplifies the analysis of the impact of TRQ but does not change the essential results.

Where the importing country is a price taker, the volume of imports is determined by the world price, the tariff on imports and the importing country's demand for the good, and the supply curve can be represented as a horizontal line at the world price P_w (see Figure 2-1). 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 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 2-1, the introduction of a TRQ changes the supply curve (S) by introducing a vertical discontinuity at the TRQ quantity (Q_{TRQ}), and all imports volumes 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 (S) in Figure 2-1 with an import demand curve (D) determines the quantity imported and the price. Depending on the location of the import demand curve, a total of five situations can be envisaged, and these are shown in Figure 2-1.

Figure 2-1: Impact on import supply curve of an introduction of a TRQ



The five situations are distinguished by the location of the import demand curve:

- 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.
- D_1, where 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 is the binding constraint.
- D_2, where trade takes place and the price equals $P_W(1+t)$.
- D_3, where 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.

- D_4, 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, say to Q_{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. However, to allow a focus solely on the impact of changes in the TRQ, changes in tariff rates are not considered in these examples.

One can conclude that the economic impact of the introduction of a TRQ, or the expansion of a pre-existing TRQ, depends on the size of TRQ 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 just described. In the first case the ex-ante volume of imports is less than or equal to the TRQ and in the second case the volume of imports is greater than the TRQ.

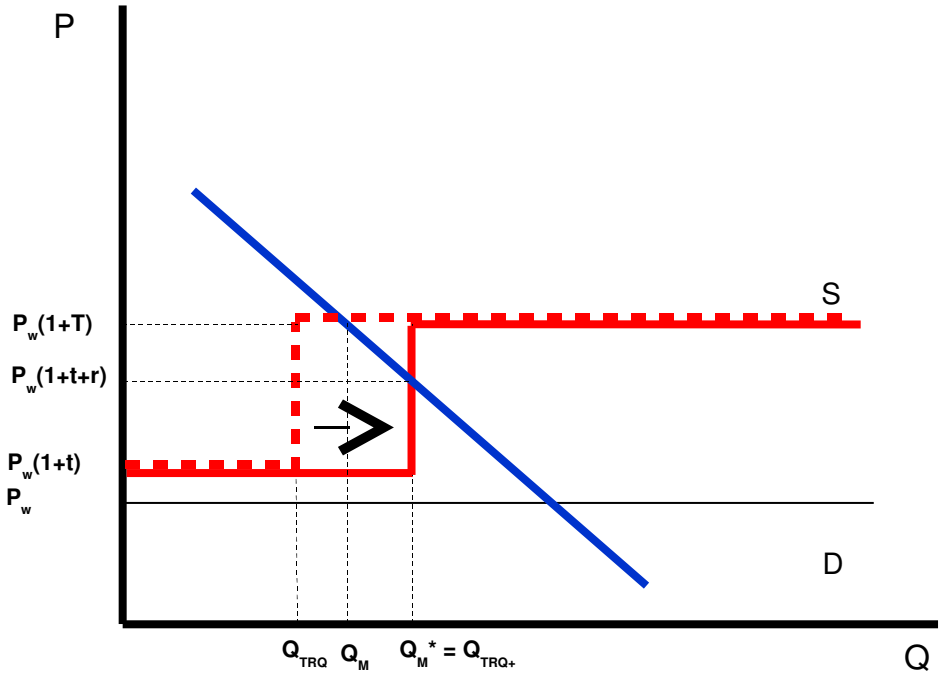
Case I: Imports less than or equal to expanded TRQ

In this case, illustrated in Figure 2-2, an increase in the TRQ from Q_{TRQ} to Q_{TRQ+} changes the import supply curve. The supply curve following a TRQ expansion is represented by the solid line and the pre TRQ expansion supply curve by the dotted 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 2-2: TRQ Expansion Case I: Imports less than or equal to expanded TRQ

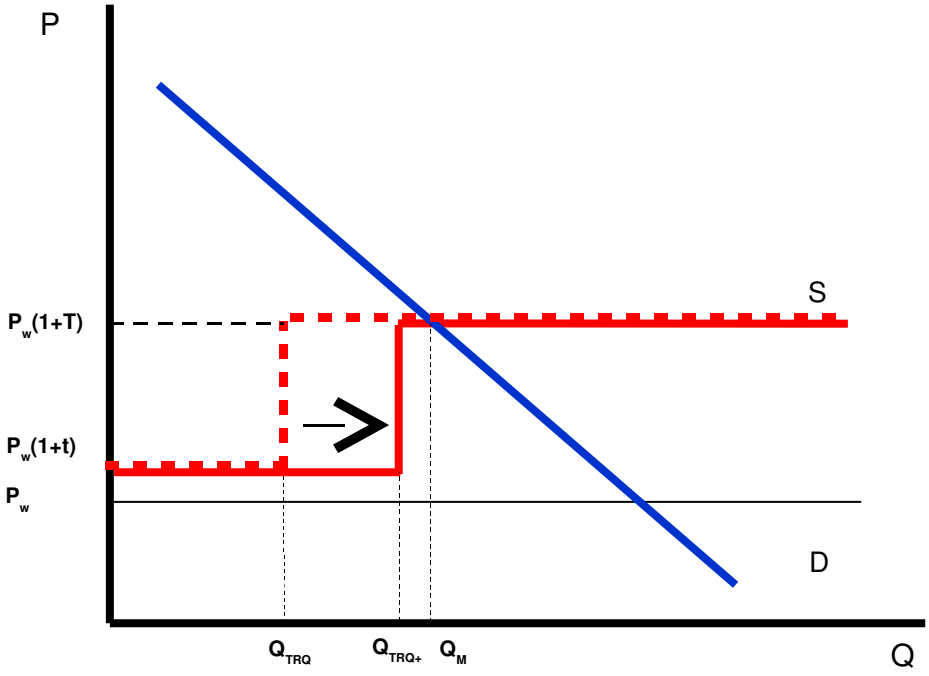


Case II - Imports exceed the Expanded TRQ volume

In the second case, illustrated in Figure 2-3, we examine the impact of exactly the same increase in TRQ, but here the volume of the ex-ante imports at the over-quota tariff rate price is in excess of the increased TRQ.

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. In Case II Q_M is significantly greater than the initial TRQ, Q_{TRQ}. With the expansion of the TRQ 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 $P_W(1+T)$.

Figure 2-3: TRQ Expansion Case II: Imports exceed the Expanded TRQ volume



Case I and Case 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, due to the TRQ expansion, 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 $P_W(r)*(Q_{TRQ+} - Q_{TRQ})$.

2.1 *Sensitive Product Status – Differential impact of TRQ expansion*

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 current EU TRQ for many agricultural commodities are a mix of what Abbott (2002) terms "current access" and "minimum access" TRQ. The former tend to be preferential import quotas, while the latter are non-preferential TRQ created during the URAA to try to ensure that the URAA minimum access provisions would be met. The beef TRQ of the EU are a mix of these two types of TRQ and are also differentiated by form of beef (fresh and chilled versus frozen) and by end use designation (manufacturing and other). Thus, strictly speaking there is no single beef TRQ, rather there are a series of TRQ. Thus, the supply and demand representation of a TRQ regime in Figures 2-1, 2-3 and 2-3 does not exactly represent the reality of the EU beef TRQ but illustrates some of the important issues that arise when TRQ are expanded.

The impact of TRQ expansion in the previous section has not considered the impact of changes to in-quota and over-quota tariff rates. In particular, 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.

Case I, where the volume of the good imported was close to the existing TRQ, illustrates the potential downside of sensitive product designation. For a number of dairy commodities and perhaps lamb, Case I provides insights into why the designation of a product as sensitive by the EU may not afford it the import protection that the reduced over-quota tariff cut in isolation might still deliver.

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.

In the early stages of the Doha Development Round negotiations sensitive product status was considered by the EU and other WTO members as a potentially important tool in preventing an increase in imports of specific products. However, the increased TRQ based market access for sensitive products means that the effectiveness of sensitive product status as a trade barrier may be weakened.

Where Case I is representative of a particular product market and the EU does not declare the product as sensitive, then the full EU over-quota tariff reduction may create opportunities to export to the EU. The extent of this export opportunity is uncertain, since the degree to which the reduced tariff is ineffective in preventing trade depends on the level of future world and EU prices. In certain cases, even with a 70 percent tariff cut, the remaining tariff protection

may be sufficient, at given levels of world and EU prices, in preventing significant additional full tariff paid imports of some agricultural commodities.

There are, however, EU agricultural product markets where Case II is relevant. For such products, the EU is already importing volumes significantly in excess of the URAA TRQ. The case of beef is an obvious example. EU beef imports in recent years have exceeded 500 thousand tonnes and are significantly above the existing TRQ of 200 thousand tonnes and in 2007 exceeded the likely magnitude of any expanded TRQ of circa 500 thousand tonnes. 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. This generates lower tariff revenue and expanded quota rents, rather than any expansion in actual import volumes and associated negative impacts on domestic prices.

3 WTO Trade Reform Scenario Results

The impact on the EU of the WTO scenarios already outlined is detailed below. While the AMS limit of the EU is reduced, the use of such amber box measures by the EU has declined considerably due to the introduction of decoupling in the CAP reforms of 2003 and, as a consequence, this aspect of the possible WTO reform considered in this report has no bearing on the EU. The impact on trade and world prices of the implementation of the WTO reform in regions other than the EU is not considered in this analysis. The results of the two scenarios for the beef and dairy sector by 2017 are summarised in Table 3-1.

Table 3-1: EU Price Impacts under WTO I and WTO II scenarios by 2017

	Base	WTOI	WTOII	Base v WTOI	Base v WTOII
	Euro/100kg			% change	
Beef	335.1	276.8	263	-17.4	-21.5
Milk	28.8	28.3	27.7	-1.7	-3.8

Source: Authors' Model

WTO I Scenario Results

The main feature of the WTO I Scenario is that beef alone is designated as a sensitive product and is subject to the two thirds deviation from the required tariff reduction for non sensitive products.

Dairy: No dairy products are designated as sensitive by the EU in the analyses reported in this paper. Hence there are no expansions of dairy product TRQ. The level of protection afforded by the existing tariffs is quite high, so a tariff reduction of the order of 70 percent leaves a modest level of protection for the EU. Additionally, existing EU dairy TRQ limits are relatively small and are binding, so a TRQ expansion would have led to an increase in imports. Given these circumstances, the EU dairy market would appear to fit the Case I typology detailed earlier (see Binfield *et al*., 2009).

Based on the projected world price levels used in this analysis, the 70 percent reduction in the over-quota MFN dairy commodity tariffs in the WTO I Scenario leaves the EU market with sufficient tariff protection to limit any increase in imports of dairy products into the EU. Thus the price reductions that occur are due to the removal of export subsidies in 2013.

Beef: At an EU level the impact of the increased market access provisions of the WTO I Scenario flow from the increased volume of imports into the EU that arise due to the lowering of the over-quota tariff barrier to beef imports. The reduction in the tariff on beef imports of

23.3 percent, results, by 2017, in EU imports of beef that are approximately 230 thousand tonnes (29 percent) higher than under the Baseline level in 2017. This means that the level of EU beef imports under the WTO I Scenario in 2017 is projected to be almost 1 million tonnes. By 2017 these imports lead to a decline in internal EU cattle prices of almost 7 percent when compared with the Baseline.

Under the WTO I Scenario, by 2017, lower cattle prices lead to a 3 percent decline in the inventory of beef cows in the EU relative to the Baseline level in 2017. Stocks of dairy cows are projected to decline at the same rate as in the Baseline. Lower cow numbers under the WTO reform scenario lead to lower volumes of beef production in the EU, with the volume of beef produced in 2017 projected to be almost 100 thousand tonnes lower than under the Baseline.

With lower beef prices, domestic use of beef in the EU increases under the WTO I Scenario when compared with the Baseline. EU per capita consumption of beef is projected to be almost 130,000 tonnes higher than under the Baseline by 2017.

The designation of beef as a sensitive product partially insulates the EU beef sector from the potentially more negative impact of large beef tariffs reductions that would arise if beef was not declared sensitive under a WTO reform. The smaller reduction in tariffs for sensitive products still leaves EU beef markets with a significant amount of tariff protection. By the end of the projection period, because of this remaining tariff protection, EU cattle prices remain significantly higher than world price levels.

A consequence of beef being designated as a sensitive product is a significant TRQ expansion. Under the WTO I Scenario, the EU beef TRQ increases by 290 thousand tonnes to 490 thousand tonnes. Future imports of beef into the EU under both the Baseline and the WTO I Scenario are projected to be significantly in excess of the expanded TRQ, and hence

the impact of the TRQ expansion of 290 thousand tonnes on the internal EU market balance and on the prices of beef cuts and beef carcasses is largely already reflected in the Baseline projections. The increase in beef imports into the EU market projected in the sensitive beef scenario is driven by the 23.3 percent reduction in the over-quota tariff and not by the expansion of the EU beef TRQ.

WTO II Scenario Results

In essence the definition of the WTO II Scenario is exactly the same as WTO I Scenario, except that beef is not designated as sensitive. If beef were not designated as a sensitive product then the tariffs imposed on imports of beef into the EU would be cut by 70 percent rather than by 23.3 percent and the expansion in TRQ incorporated in the analysis of the WTO I Scenario would not occur. A cut in the over-quota tariff of 70 percent erodes much more of the tariff protection afforded to EU beef markets than the 23.3 percent tariff cut analysed in the WTO I Scenario. The 70 percent tariff cut is projected to lead to a much larger increase in EU beef imports than that projected under the WTO I Scenario, and as a consequence there is a much larger negative impact on internal EU cattle prices in the WTO II Scenario.

Under the WTO II Scenario, EU beef imports in 2017 are projected to be almost 117 percent higher than those projected under the Baseline. This very large increase in EU beef imports over the projection period means that by 2017, under the WTO II Scenario, the EU is projected to import almost 1.7 million tonnes of beef. By 2017 under the WTO II Scenario, imports of beef into the EU are projected to account for over 18 percent of EU beef consumption. Under the Baseline, EU beef imports are projected by 2017 to account for just over 9 percent of consumption. In 2007 EU beef imports accounted for approximately 7 percent of EU domestic use of beef.

In response to the large increase in beef imports, EU cattle prices, by 2017, are projected to decline by close to 21 percent relative to the Baseline. The bulk of the adjustment in EU beef production is projected to occur in suckler cow based beef production, with EU ending stocks of suckler cows in 2017 projected to be over 11 percent lower than under the Baseline. Total EU beef production is projected to be 4 percent lower in 2017 under the WTO II Scenario relative to the Baseline.

4 Conclusions

For some EU dairy products the EU/world price gap has reached the point where unsubsidised exports to third countries are possible. Import tariffs continue to remain important for the EU dairy sector, but the projected level of world dairy prices means that the protection afforded by these tariffs is in excess of what is required to limit the supply of dairy products on the EU dairy market. As a result the considerable cuts in dairy tariffs implemented in the WTO scenarios examined here, still leave the EU largely protected from third country dairy imports. Since the existing TRQ for dairy products are binding, any TRQ expansion will result in increased imports and thus sensitive product status is not an effective means of import protection.

By contrast in the beef sector, there has not been a strong upward movement in world prices and while import tariffs for high quality beef cuts are higher than tariffs for carcasses, they are not sufficient to prevent third country imports into the EU under existing trade policy arrangements. As these tariffs are reduced in the WTO I and WTO II scenarios, this facilitates further increases in imports of tariff paid third country beef into the EU, particularly in the case where the tariff is reduced by 70 percent.

When sensitive product status is afforded to EU beef, the tariff reduction is 23.3% and again the volume of third country EU beef imports into the EU increases and this leads to a fall in

EU beef prices. However, this analysis concludes that the expansion in TRQ afforded under sensitive product status does not, in of itself, promote greater imports of beef, since the expanded TRQ would be below the projected future import volumes under existing trade policy.

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