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ECONOMIC EFFECTS OF LIBERALISATION OF THE BEEF MARKET ON THE IRELAND AND EU

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The EU has a political hot potato on its hands with CAP and in this essay Derek Mernagh examines what is at "steak" should the EU liberalise the market for beef. He takes the bull firmly by the horns from the outset with an analysis of current EU policies, which he finds to be not only inefficient, but also ineffective. Having applied an econometric model to both the Irish and EU cases, he surmises that the effect of liberalisation will turn the EU from a net-exporter to a net-importer and that the Irish economy, as the state that most successfully milks the EU cash cow, will bear the brunt of any welfare losses. Here's the beef:

Introduction

The aim of this paper is to estimate the price, quantity and welfare effects of moving to free trade in the beef market for the EU and Ireland. Beef/veal is the second largest production sector in the EU, making up 10% of EU agriculture[1]. Policymakers must decide whether the benefits of free trade outweigh the negative effects before agreeing its implementation. It is therefore necessary to measure the impact on producers, consumers and governments to ascertain an overall societal welfare effect. This will determine the eventual suitability, or not, of the proposal. A market simulation model is used in this analysis to determine the welfare effects for both the EU and Ireland.

The results for the EU will be representative of the 15 member states. There are, however, divergences within these states, with each country being either a net exporter or net importer making up a marginal self-sufficiency of just over 102% for the EU as a whole[2]. Ireland is a net exporter of beef, exporting almost 94% of its production[3]. Hence it can be expected that the effects of liberalisation will differ for

[1] http://europa.eu.int
[2] http://europa.eu.int
[3] http://www.cso.ie.

Ireland, each individual state and the EU as a whole. These discrepancies will be illustrated later.

The present regime for beef in the EU

The support for beef from the EU comes in four main ways: support prices through intervention buying, export subsidies, tariff and tariff rate quotas on imports and direct premium payments.[4] The intervention price paid to farmers is set by the Council of Ministers. It is paid when market prices fall below a certain pre-determined level. At this point the EU will buy excess beef, pay an intervention price for it and then the produce is put into storage. Intervention stocks have grown in recent years due to the BSE crisis in the mid- to late-nineties.

- Export subsidies are paid to beef farmers who export their produce outside the EU to make their exports more competitive, as internal prices are higher than world prices. For example, Ireland exports to Russia at a price lower than the Irish price. The EU will pay the Irish farmer based on the quantity exported, and based on a money limit. Therefore the Irish farmer will receive the lower market price from Russia and a refund from the EU based on the difference between the price received and the internal price.
- The EU also applies tariffs so that imports of beef cannot be sold in the EU below the desired internal market price.
- And finally, EU beef premiums make an important contribution to the income of farmers. Under this programme the farmer receives payment for each cow after 10 and 22 months[5]. These direct payment measures are aimed at extensification of livestock production, whereby producers must observe maximum stocking rates (livestock units per hectare) to qualify for payments[6]. These payments along with the export subsidies are paid out of the CAP budget, FEOGA. As Ireland is a member of the EU these rules and regulations apply.

Assumptions

Initially it was necessary to make the following assumptions in relation to the data required. These were the following:

[4] University of Manitoba, 2002
[5] R and H Hall Technical Bulletin 1998
[6] University of Manitoba, 2002

- **Changes in EU policy have no effect on the world price:** This simplifies the calculations, as it would be difficult to determine what effect this move would have on the world price. One would expect a price increase but for the purposes of this model we assume no change. This assumption is known as the small country assumption.
- **Only policy in the beef market is being changed:** Reforms to the CAP usually apply to an array of agricultural commodities. Liberalisation of the support structure for other commodities would make it difficult to quantify the effect on the beef market as both consumers and producers may switch respectively to the consumption and production of other commodities. Also beef and dairy production are linked so changes in milk policy will significantly impact on the beef market. There will be a certain level of substitution anyway, once the beef trade is liberalised; Supply will decrease as some beef farmers leave the market. However we are not concerned with any substitution from other production sectors in this case as it would be too complex to quantify in this model. Therefore we assume policy change only occurs in the beef market.
- **No compensation is paid to producers:** In general the farm lobby is quite strong and it would be highly unlikely that farmers would not be compensated. The implications of this would be a gain in the producer surplus but a corresponding decrease in government revenue, these would in effect cancel each other out. Therefore it should not distort the analysis but the welfare effects may be overstated as a result.
- **The marketing margin is assumed to be 100%:** This assumption recognises the inevitable difference in the price that the producer receives for his output, and the price consumers pay in the market. The difference is due to the costs incurred in the move from producer to retailer. These might be transport costs, refrigeration costs etc.

Procedure and Methodology

The procedure for finding data for the two countries was much the same, using various Irish, EU and World data from a selection of Internet sources and relevant national and international publications. These are shown in the following:

Table 1: Beef Market Data for 1999

Data	Source
EU Price	Agriculture in the European Union-Statistical and Economic Information 2001, Table 4.15.5.1
Irish Price	Same source as above, Table 4.15.5.1. Also www.cso.ie/publications/agriculture/oiifin/pdf.
EU Demand	Agricultural Situation in the EU 2000, p. T/299
EU Supply	Agricultural Situation in the EU 2000, p. T/299. IMF also provides a figure for the EU supply.
Irish Demand	www.cso.ie/publications/meatsup.pdf, Table 1
Irish Supply	www.cso.ie/publications/meatsup.pdf, Table 1
Demand Elasticity	"Disarray in world food markets" (1992),Tyers and Anderson p. 363
Supply Elasticity	"Disarray in world food markets" (1992), Tyers and Anderson p. 363
World Price	International Financial Statistics (2002), IMF, p. 72

It should be noted here that different sources provided varying information. The most up to date and relevant information was taken but some of the other sources will be used in the sensitivity analysis to test the results. This data was the basis for the model that was set up in Excel. Some of the data that was found had to be converted to euro[7] and euro per tonne[8].

Summary of results for the EU

The following table is a summary of the changes in the market for beef in the EU once liberalisation has taken place.

Table 2.

Change in Producer Price	-35.13
Change in Consumer Price	-35.13
Change in Quantity Supplied	-35.84
Change in Quantity Demanded	21.08

[7] using http://www.convert-me.com/en/convert/weight
[8] using http://www.econfinance.com/converters_currency.htm.

Prices in the market have decreased by over 35%. Customers are not very sensitive to price changes for beef as demand is inelastic at -0.60 (Tyers and Anderson). In general beef is slightly more elastic than other agricultural commodities, particularly some staple produce and also because of BSE scares and other health scares. However consumers only have to pay two thirds of what they used to pay so quantity demanded increases by 21%.

Producers who are used to having their produce supported at an EU level have to adapt to a situation where they are receiving just under two thirds of what they are used to. Supply elasticity is almost unit elastic, which means that supply will respond by proportionately the same as the change in price, which is evident from the above table where the reduction in quantity supplied is almost identical to the price decrease. It may be very difficult for many farmers to deal with this huge drop in revenue, so supply at an EU level drops by over one third as it has become less profitable to produce beef and the more inefficient farmers are forced to leave the market. The world price offered is much lower which reflects that the international market for beef is much more competitive with other countries maintaining a competitive advantage in its production in liberalised markets. The major producers of beef in the world are Australia/New Zealand, the USA, and Argentina. These countries may have the advantage of having adapted already to some form of free trade for example New Zealand whose subsidies in 1984 were slashed from 30% of farm income to 2%[9]. This radical move has helped encourage other types of farming as a substitute to beef. This may not be the desired policy of the EU though. At the new equilibrium level the EU becomes a huge net importer from being a net exporter pre liberalisation.

The following table illustrates the welfare effects for the EU after moving to free trade.

Table 3.

	€
Change in Consumer Surplus	13,507,856,682
Change in Producer Surplus	(6,223,665,889)
Change in Govt. Revenue	32,571,330
Overall Welfare Effect	7,316,762,123
Transfer Efficiency	46%

The change in consumer surplus is positive, to the tune of over €13 billion. This is the gain accruing to consumers resulting from the lower prices being charged

[9] International issues in the beef industry

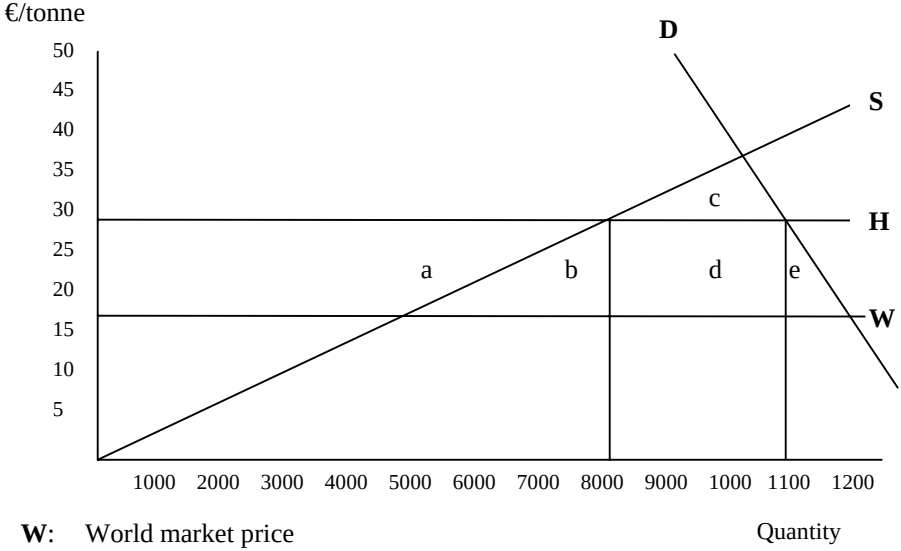
in the market. The producer surplus will obviously diminish as their price falls by over a third. There is an increase in government revenue, as European taxpayers do not have to support beef farmers anymore. The overall effect for society is a substantial increase in welfare of almost €7.3 billion. Transfer efficiency measures the income gain to beef farmers relative to consumer and taxpayer costs. So while the market was protected only 46% of the planned benefit was getting to farmers while the remaining 54% of the planned transfer is a deadweight loss. Therefore the protectionist policy of the EU was not benefiting those that it targeted successfully.

We can graphically display the welfare changes on the following graph. The change in consumer surplus is represented by the area underneath the demand curve between the two price ranges (area A+B+D+E on the diagram). The change in producer surplus is the area above the supply curve between the two price ranges (area A on the diagram) and the change in government revenue is the difference in demand and supply at the original price multiplied by the difference in the two prices (area C+D on the diagram). The overall welfare effect can be calculated as follows:

Table 4.

Δ*CS*	A+B+D+E
ΔPS	(A)
ΔGR	C+D
ΔW	B+C+2D+E

Fig. 1. European Beef Market



W: World market price
H: Domestic price
D: Demand curve
S: Supply curve

Summary of results for Ireland

Liberalisation had the following effects on Ireland:

Table 5.

Change in Producer Price	-19.22
Change in Consumer Price	-19.22
Change in Quantity Supplied	-19.6
Change in Quantity Demanded	11.5

Once again there is a price decrease but much smaller than that for the EU as the Irish price is closer to the world price. This may indicate that Irish producers are some of the more efficient in the EU and should be able to handle this move better than most. Indeed we see a much smaller reduction in the quantity supplied

than for the EU. As Irish consumers are used to paying lower prices than the EU the price reduction does not have as significant an impact on quantity demanded which increases by 12.5%. Ireland is a massive net exporter with supply far outstripping demand; so Irish producers are highly dependent on exports. Supply contracts by almost 20%, which may indicate that the less efficient have left the market leaving the efficient and more specialised farmers. The welfare effects for Ireland are as follows:

Table 6.

	€
Change in Consumer Surplus	59,020,657
Change in Producer Surplus	(250,698,955)
Change in Government Revenue	-
Overall Welfare Effect	(191,678,298)
Transfer Efficiency	425%

There is a small increase in the consumer surplus relative to the very large decrease in the producer surplus. Indeed a move to free trade would cost Irish beef farmers over €250 million. Ireland as a whole would loose over €190 million as there is no gain in government expenditure. The reason for this is the fact that each year EU members pay into the CAP fund. Ireland only makes a small contribution to this fund as it is a net exporter and it has a small proportionate population. Therefore Ireland is a net beneficiary of the CAP payments. So in the event of free trade the government will not have to pay into the fund, but as the payment is so small we do not recognise any gain in government revenue. Even if there were it would accrue to the EU anyway. The reason why Ireland would lose out is that we are a huge net exporter so our producers are used to being supported. As can be seen from the transfer efficiency, the intended benefit of this policy transfer is more than reaching Irish producers. There is a graph for the Irish model, which is in the spreadsheet sheet 3. The welfare effects are not shown graphically in this case but they are negative as can be seen from the table above.

Sensitivity analysis of the model

In order to assess the validity of this model we need to make adjustments to some of the variables by using some of the other sources available. Once the model

has been made then this is quite simple as it is just a matter of analysing the effects that different data has on welfare. These different data should have roughly equated to the same overall welfare effect if the model is accurate. The lower the variance of the results, then the more confident we can be that the assumptions we made are justifiable.

In the first test an alternative world price is used. It is the US price as opposed to the Australia/New Zealand price.

Table 7.

Welfare effects	**EU** **€**	**Ireland** **€**
Change in Consumer Surplus	8,657,489,443	6,687,481
Change in Producer Surplus	(4,137,233,531)	(32,696,037)
Change in Government Revenue	19,965,330.00	-
Overall Welfare Effect	4,540,221,242	(26,008,556)

The US price is closer to the EU and Irish price, so the expected result would be to have a smaller overall welfare increase for the EU and a reduced loss of welfare for Irish farmers as they would receive a higher price in this case.

Then the EU and Irish prices were changed. The EU intervention price which was used was higher than the original figure used increases the welfare effect. For Ireland the unit value approach is used as an alternative to the Irish price from the original market model.

Table 8.

Welfare effects	**EU** **€**	**Ireland** **€**
Change in Consumer Surplus	21,674,663,387	93,573,214
Change in Producer Surplus	(9,616,203,021)	(371,905,352)
Change in Government Revenue	54,536,130	-
Overall Welfare Effect	12,112,996,496	(278,332,138)

The higher the Irish price, the greater the loss to society so this expands the welfare loss. For the EU we see a high welfare gain as the reduction from the intervention price to the world level creates a massive consumer surplus.

The final test was to change the supply elasticity to the short run value found in Tyers and Anderson (1992).

Table 9.

Welfare effects	The EU €	Ireland €
Change in Consumer Surplus	13,507,856,682	59,020,657.09
Change in Producer Surplus	(7,422,382,005)	(274,738,709.41)
Change in Government Revenue	32,571,330	-
Overall Welfare Effect	6,118,046,008	(215,718,052.32)

This decreases the welfare gain as not as many producers leave the beef market as they are not as sensitive in the short run. Therefore there are more producers chasing a lower price so producer surplus increases.

The overall effect of the changes in the respective parameters is still positive for the EU and negative for Ireland but the magnitude of the gains and losses change. Therefore it is obvious that the result that we found with the original model is realistic and so the sensitivity analysis shows that we can be more confident that this will be the actual effect of trade liberalisation in theses markets.

Conclusion

The effects of liberalisation have been clearly outlined and some interesting results have been found. The EU benefits from free trade in this market as prices are reduced which benefits consumers, and government revenue has increased. Beef farmers are worse off but the lower price means that some will not survive and have to cease production. The ones who stay have to be more efficient if they are going to survive under competitive conditions. We recognise an overall positive welfare effect to society, the main cost of which is the reduction in EU supply. The EU becomes a net importer from being a net exporter. This scenario would mean that the EU would have to change their mission of support from “promoting the development of an efficient primary agricultural sector, while ensuring the retention as far as possible, of the highest number of farm households”.

If we shift the focus to individual member states focusing on Ireland we find a negative welfare effect. The Irish case is extraordinary however. Ireland is a huge net exporter, as domestic demand is very small in relation to supply. In fact Ireland is the largest exporter of beef in the EU in real terms, as domestic demand in other larger countries matches domestic supply a lot more closely. Irish beef producers would seek a slower move to liberalisation on the basis that the CAP still provides significant support to Irish farmers. Also as Ireland exports so much then they will seek to minimise restrictions on exports.

According to R and H Hall, Agricultural Ministers have decided to support the European model of Agriculture, based on the family farm, the multifunctional role of farmers in society, the rural economy and the environment. Therefore a move to liberalisation would require a gradual adjustment process. Also the vested interests of the beef lobby are influential. In theory there may be a case for free trade but in practice this may be very difficult to achieve.

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