Long-term Projections for the Beef and Sheep Sectors Under Alternative Policy Scenarios

Author: Kevin Hanrahan[1]

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[1] Rural Economy Research Centre, Teagasc, Ballsbridge, Dublin.

Summary

This study examines the effect of changes in agricultural policy and other important economic factors on the outlook for beef and sheep production in Ireland in future years. The analysis is conducted at an aggregate commodity level for the two sectors. Companion reports provide similar detail on other agriculture sectors (including dairy, pig and cereals) and for related farm level work, see Donnellan (2002), McQuinn and Behan (2002), and Behan and McQuinn (2002). The analysis summarised here took place in 2001 and 2002.

Objectives

The objective of the research reported here was the development and use of econometric models of the beef and sheep sectors, in conjunction with other related commodity models, to produce ten-year projections for the beef and sheep sectors under different policy scenarios.

The scenarios analysed related to the second BSE crisis, the reduction and the elimination of export refunds under the auspices of a new WTO agreement, and changes in the regulations relating to the payment of extensification direct payments under the Beef Common Market Organisation (CMO).

Methodology

A series of interlinked economic models capable of projecting key price and output variables were built for the main Irish agricultural commodities, including the beef and sheep sectors, and these in turn were linked with models for the EU and the World. It was thus possible to estimate the implications for the Irish beef and sheep sectors of supply, demand and policy changes at a world and EU level.

Key Findings

In this report results are presented for the Analyses conducted and published in April of 2001 and April of 2002.

2001 Baseline and Scenario Analysis:

Under the Baseline the value of output from the beef sector is projected to decline by 16 percent between 2000 and 2010. Increase in direct payment receipts over this payment largely offset the projected decline in the value of output so that total sector revenue declines by 1 percent in nominal terms between 2000 and 2010.

The value of output in the sheep sector, under the Baseline, is projected to decline by 15 percent between 2000 and 2010. Direct payments are projected to also decline (due to the reduction in the ewe flock) by 7% in value. Overall sector revenue is projected to decline by 12 percent between 2000 and 2010.

In order to understand the range of possible outcomes from the second BSE crisis that began in late 2000 a *pessimistic* BSE scenario was analysed incorporating twice the drop in consumption assumed under the Baseline. This resulted in cattle prices at 8 per cent below their baseline 2010 level. It was also assumed that all animals were slaughtered at less than 30 months of age, this led to a reduction in carcass weight. Together with the price drop projected under the scenario, this left the market value of the sector down 17 per cent on the baseline level.

In February 2000 the European Commission (EC) produced a proposal aimed at reforming the beef sector that became known as the "Seven-Point Plan". A scenario involving the proposals made in this plan, were analysed and projected to result in a drop in EU beef output and an increase in cattle prices relative to the Baseline. However, the drop in volume is greater than the price increase resulting in the value of the sector in 2010 being down 5 per cent on the baseline.

The beginning of the Doha WTO round negotiations motivated an analysis of the impact on agriculture of possible trade negotiations outcomes. Two scenarios were analysed. Under the first scenario export refunds reductions analogous to those implemented under the Uruguay Round Agreement on Agriculture (URAA) were analysed. Under the second scenario all export refunds used by the EU in selling EU agricultural products on world markets were eliminated.

The impact of both the export refund reduction and elimination scenarios on the Irish sheep sectors are very limited due to the fact that the EU is a net importer of sheep meat. The impact of the scenarios on the beef sector are much more significant.

Under the export refund reduction scenario the value of beef output declines only marginally. This outcome is largely a result of the Baseline under which EU exports of beef to World markets are projected to decline. Lower volumes of EU beef exports under the baseline mean that any reductions in the WTO maximum are projected to have only minor affects on the Irish and EU beef sectors.

On the other hand, Export Refund Elimination was projected to have serious consequences for the future of all sectors of Irish agriculture. The beef as one of the largest beneficiaries of the export refund regime bears the brunt of the removal of these supports. Ireland's greater reliance on export refunds translates to steeper price declines for Irish output relative to the output of other EU member states. The value of output from the beef sector in Ireland is projected to decline by 22 percent relative to the 2010 baseline level.

2002 Baseline and Scenario Analysis

Under the Baseline the value of output from the beef sector is projected 2010 to have decreased by 10 percent relative to its level in 2000. The value of output from the sheep sector is projected by 2010 to have decreased under the Baseline by 1 percent relative to its 2000 level.

The Scenario examined in 2002 focused on the impact of what was then (April 2002) considered a possible Medium Term Review (MTR) outcome for the beef CMO. This scenario involved a change in the extensification limits that were agreed under the Agenda 2000 agreement. The scenario analysed was one in which both the limits were lowered by 0.2 livestock units (LU) per hectare with "income neutral" compensation for foregone direct payment receipts paid via increased extensification payments.

The key results of the MTR scenario are that are that by 2010 relative to the Baseline

- EU beef production declines by 1.2%, EU beef consumption declines by 0.9%, and the EU reference cattle price increases by 3.9%
- EU lamb production declines by 0.6%, EU lamb consumption by 0.5% and EU lamb prices increases 1.5%
- The Irish suckler cow herd declines by 3%, the volume of beef output declines by 1.5%, and the Irish cattle reference price increases by 5%
- The Irish ewe flock declines by 4%, the volume of output from the sheep sector declines by 4 per cent, while the Irish sheep reference price increase by 2%.

Introduction

This report covers beef and sheep sector analysis conducted by the FAPRI-Ireland Partnership, a research consortium based in the Rural Economy Research Centre, Teagasc. Set up in 1997, the purpose of the Partnership is to conduct analysis of the implications of policy changes for Irish agriculture over a ten-year time horizon. There are companion reports that cover the other main commodities, agricultural inputs and agricultural income.[2]

The report contains the results of the baseline or no policy change outlooks for the beef and sheep sectors that were conducted in April of 2001 and 2002. The report also examines the potential implications for the Irish beef and sheep sector of the following scenarios:

- The second BSE crisis which affected continental EU consumption of beef in late 2000 and early
  2001 prompted analysis of two "BSE" scenarios

  - A pessimistic BSE scenario where per capita consumption remained depressed
  - A scenario based on a Baseline recovery of per capita demand and the supply controlling
    measures proposed under the European Commission's Seven Point Plan of February 2001

- Possible international trade reform to the export subsidy regime including

  - a reduction in export subsidies
    the complete elimination of export subsidies

In early 2002 the impending Medium Term Review proposals led to the analysis of what was considered a possible Medium Term Review (MTR) outcome for the beef CMO.

[2] See the companion reports on RMIS projects No. 4819, No. 4821, No. 4822 and No. 4823.

- the scenario analysed examined the impact of the lowering (by 0.2 livestock units per hectare) the stocking density limits under which beef farmers are entitled to extensification payments.

In this project, annual policy analysis is conducted by producing a baseline - essentially a projection of the future based on policies currently in existence or agreed to come into existence. This baseline outcome is then contrasted with the projected outcome of a change in policy. In this way, it is possible to gauge the potential effect of the change in policy.

Over the last 15 years, colleagues at FAPRI (Food and Agriculture Policy Research Institute) in the US have developed an extensive set of models for specific agricultural commodity markets. As part of its Annual Outlook on World Agriculture, FAPRI uses these models to provide projections for the Baseline scenario at a global level and for component regions, including the EU, for each year over the next decade. The results for Ireland obtained in this project were produced incorporating results from FAPRI's world models.

Given that approximately 90 per cent of beef output and over 70 percent of sheep meat output is exported from Ireland, conditions in EU and world markets exert a considerable influence on the outlook for Irish beef and sheep meat products. In turn at the EU level, the status of the beef and sheep sector's markets is conditioned by developments in the Common Agricultural Policy (CAP) and other events at a world level. The European and world dimensions provided by the link between the work undertaken as part of this project and that undertaken by colleagues at FAPRI-Missouri is therefore imperative.

A Note on Interpretation

Forecasting and policy analysis for commodity markets is like taking aim at a moving target. The environment in which this analysis is conducted is constantly evolving.

Changing macroeconomic and market supply and demand conditions can influence the effect of policy and the results of the analysis. Over time, the outlook for a commodity may change as new information is incorporated into the analysis. Projections for the outcome in future years may therefore differ in successive analyses. Accordingly, the interested reader should aim to familiarise him or herself with the most recent projections available from the Partnership.

See our website at http://www.tnet.teagasc.ie/fapri

What do we mean when we talk about a 'Baseline'

The evaluation of the effect of a change in policy or other critical factors is made, by comparing the future outlook for the Irish agriculture under the 'Baseline Scenario' with the outlook under the alternative scenario. The Baseline Scenario is a projection of the future status of the sector under the assumption that there is no change in known current policy. In other words, it includes agreed, impending, changes to existing policy. The Scenario projection, by contrast, is a projection where the changes to the Baseline policies are incorporated. The difference in the projections under the Baseline and the Scenario policy sets is interpreted as the impact of the policy changes defined in the scenario on agricultural commodity markets and the agricultural economy.

1 The 2001 Beef and Sheep Sector Baseline

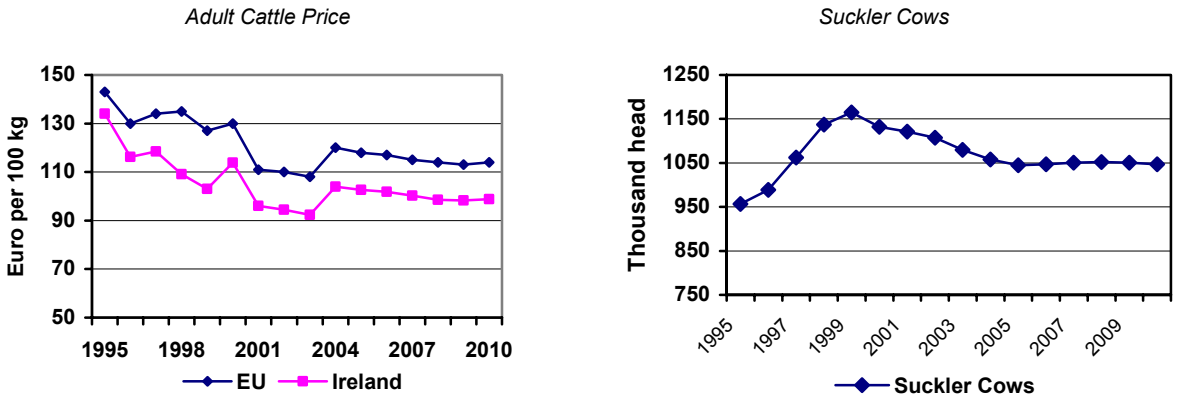
The first part of this report focuses on the analysis published in April 2001 (Binfield et al., 2001a, 2001b, 2001c).

1.1 The Irish Beef Sector 2001 Baseline Outlook

The year 2000 saw improved market conditions for cattle farmers, with the gap between Irish beef prices and those in the EU closing to levels that were similar to those that pertained prior to the BSE crisis of 1996. In mid-2000 the outlook for the beef sector was a good one, with intervention stocks largely eliminated, and buoyant markets for Irish weanlings in continental Europe. The collapse in consumer confidence in beef that occurred in continental EU markets in late 2000 and early 2001 has affected the Irish beef sector. Ireland is particularly vulnerable to the impact of the BSE crisis, as the post-1996 experience has shown. This vulnerability is due to the high reliance of the sector on export markets as an outlet for product. In the past food safety fears have led to the renationalisation of markets. Ireland is also relatively dependant on third country markets, and some of these have stopped taking beef from some or all EU countries.

The path that Irish and EU cattle prices are projected to take are shown Figure 1-1. Cattle prices have fallen since the mid-1990s, and the recovery in 2000 was projected to be eliminated by the impact of the then ongoing BSE crisis. The Baseline outlook for the recovery of EU per capita consumption of beef following the BSE crisis of 2000/2001 was based on the experience of the UK in 1996 where a sharp decline was followed with a lag of 2 years by a recovery in per capita consumption to levels observed prior to the crisis.

Figure 1-1: EU and Irish Adult Cattle Prices and Irish Suckler Cow Projections to 2010.



Source: FAPRI-Ireland Partnership Model (2001)

The high level of sales into intervention and the SPS scheme, along with the drop in prices in the EU, depress Irish cattle prices over the next three years. The recovery in the market situation in 2004 allows prices to rise, but it has been assumed that the Commission keeps prices, at an EU level, low in the subsequent years by running subsidised exports below their URA maximum level. Prices in the sector are as a consequence 13 per cent below the 2000 level in 2010. Store cattle prices, however, do not show the same reduction as a result of the increase in payments, with prices for male weanlings for example remaining relatively unchanged.

The size of the national herd is largely determined by factors other than price. The continuation of quotas on milk, and the projected increase in milk yields means that the number of dairy cows in Ireland is projected to fall by 160,000. Suckler cow numbers are also projected to fall over the projection period, as shown in Figure 1-1. The changes made under Agenda 2000 are the main driver of this fall in cow numbers, with the new extensification payment system, coupled with the facility to claim suckler cow premia on heifers driving numbers down. Suckler cow numbers in 2010 are about 80,000 head down on 2000, and over 120,000 below their peak in 1998.

1.1.1 Beef Sector Baseline 2001 Conclusions

In Ireland, the adult cattle reference price is projected to decline by 15 euro per 100 Kg over the ten-year period 2000-2010. Declines in the suckler cow herd and an associated contraction in the volume of beef output leave the value of beef sector output down by over 16 percent in 2010 relative to the level in 2000. Increases in the value of subsidies received by the sector (which increase by 29 percent) due to changes agreed as part of the Agenda 2000 agreement mean that total sector revenue of the sector declines by 1 percent.

1.2 The Irish Sheep Sector Baseline 2001 Outlook

The 2001 outlook for the sheep sector will be heavily dependent on FMD and BSE developments. It has been assumed that there are no further cases of FMD in Ireland. This is effectively a “best case” scenario for the State, with the sector benefiting from the widespread slaughter of animals in the UK, and a boost in consumption as people switch from beef. It is difficult to assess what impact, if any,

FMD will have on consumption habits. There is anecdotal evidence of some consumers reducing their demand for meat, but the longer-term impacts are impossible to assess at present.

One impact that FMD has had on the sector comes from a postponement of the reform of the sheep meat regime. It is likely that once the FMD situation has been resolved, the much criticised system will be changed. In the Baseline projections, however, the sheep meat CMO is maintained in its current form.

Table 1-1: Main Sheep Variables 2000 with Baseline Projections for 2010

	2000	2010	Change 2000 - 2010	% Change 2000 - 2010
Sheep Price, 40-49kg	53	49	-4	-8%
Ewes	4,182	3,505	-677	-16%
Volume of Output	3,632	3,346	-286	-8%
Value of Output (1)	178	152	-26	-15%
Direct Payments (2)	92	86	-6	-7%
Sector Revenue (1)+(2)	270	238	-32	-12%

Source: FAPRI-Ireland Partnership Model (2001)

The impact of Agenda 2000 on the Irish sheep price is projected to be greater than that for the EU as a whole, as a result of relatively high level of mixed farming systems, and reliance on direct payments. Lower stocking density restrictions result in pressure on farmers to reduce their number of livestock on the land. Also, the higher payments available will encourage more producers into systems where extensification can be claimed.

As well as previous policy changes in Agenda 2000, developments in the Irish economy as a whole are likely to play a crucial role in shaping the future of the sheep sector. Sheep systems are, on the whole, relatively labour intensive. The strong projected growth in incomes outside the farming sector increases the opportunity cost of farmer's time, as well as the cost of hired labour. This is likely to mean that sheep systems will increasingly be unattractive, as the number of part time farmers rises. The sector could also be threatened by alternative enterprises with a lower labour requirement, in particular from forestry.

The combined impact of these changes is a long-term downward trend in sheep numbers over the projection period. The numbers of ewes stabilises as a result of

the current improvement in market conditions, before falling and ending the period down 16 per cent on 2000 levels. Sheep prices fall a little further in Ireland than in the EU as a whole, and end the period down 8 per cent. The fall in ewe numbers and the price fall results in the value of output down 15 per cent on 2000. The fall in ewe numbers offsets the slight increase in the ewe premia to leave sector revenue down 12 per cent.

As with the beef sector it should be stressed that the Baseline figures are produced under the assumption that there are no further cases on FMD reported in Ireland, and that the sheep meat regime is likely to stay in place in its current form. It is unlikely that the latter will be the case. If there were to be a significant FMD outbreak in Ireland, then the effects on the sector would be great, given the high importance of exports to the sector. The main variables for the sector are outlined in Table 1-1.

1.2.1 Sheep Sector Baseline 2001 Conclusions

In Ireland, the sheep prices are projected to decline by 8 percent over the period 2000-2010, when combined with the projected contraction in the Irish ewe flock means that the value of output from the sheep sector is projected to decline by 15 percent. The decline in the sheep flock leads to a decline in the value of ewe premium receipts, total sheep sector revenue declines by 12 percent.

2 Scenario Analysis in 2001: BSE & WTO

The Scenario analysis undertaken in 2001 focused on (a) the implications of the collapse in EU per capita consumption of beef that followed what has become known as the second BSE crisis (Binfield et al., 2001c), and (b) the implications of trade liberalising outcomes arising from the Doha Development Round of WTO negotiations (Binfield et al., 2001b).

2.1 BSE Scenario Analysis

At the beginning of the year 2000 the fortunes of cattle farmers appeared to be improving after a series of market disturbances and policy changes. However, the onset of the BSE crisis in continental Europe caused prices to fall in the Irish beef sector. At the time of the crisis it very difficult to forecast just how the second BSE crisis would unfold, due to great uncertainty as to when and by how much prices

would recover, or how the SPS scheme would be implemented by the different EU member states. In the light of this, therefore, it was decided that the FAPRI-Ireland team would simulate the FAPRI-Ireland Partnership models under two different sets of assumptions regarding the consequences of the second (continental) BSE crisis. This amounted to two scenario analyses that were titled the *Pessimistic* and *Seven-Point Plan* scenarios

The *Pessimistic* scenario incorporates a more pessimistic outlook for the beef sector than was portrayed in the baseline, both in terms of incorporating a larger and more sustained drop in the demand for beef, and an assumption that beef from over thirty month cattle that are not cows is not marketable, and Ireland therefore has to shift to an under thirty month system of production. In the second scenario (*the Seven-Point Plan*) some of the elements of the Seven-Point Plan proposed by the Commission were examined, to provide an indication of the type of issues that were thought to be likely to arise in the medium term review of the sector.

2.1.1 Pessimistic Scenario

The results of the scenarios for key variables in the Irish cattle sector are presented in Table 2.1. The decline in the beef price in Ireland is greater than that projected for the EU as a whole. In Ireland as in the EU, the supply response of the sector is negligible in terms of the size of the suckler cow herd but there is a significant drop in the average carcass weight of the animals slaughtered. The drop in slaughter weights, coupled with the price fall results in a large fall in the value of the output of the sector of over £150 million. Direct payments are more or less constant and so this is translated into a drop in the revenue of the sector as a whole of 9 per cent.

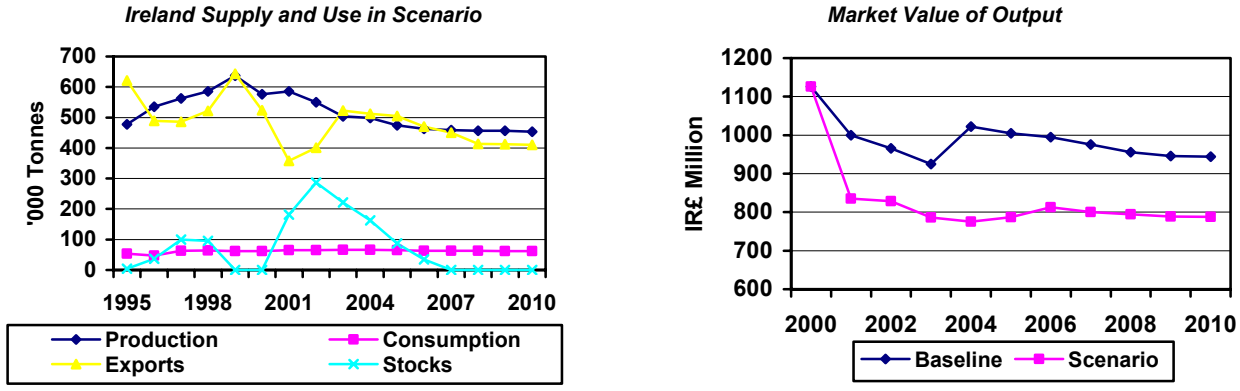
Table 2.1: Irish Main Beef Variables Baseline and Pessimistic BSE Scenario Projections for 2010.

	Baseline 2010	Scenario 2010	Change	% Change
		€ /100kg		
Adult Cattle Price	197	180	-17	-9%
		'000 Head		
Beef Cows[a]	1,047	1,028	-19	-2%
Total Cows[a]	2,171	2,137	-34	-2%
		Tonnes/Head		
Average Carcass Weight	0.303	0.274	-0.029	-10%
		'000 Head		
Slaughterings	1,645	1,655	10	1%
Volume of Output	1,971	1,960	-11	-1%
		IR£ Million		
Value of Output (1)	1199	1001	-198	-17%
Direct Payments[b] (2)	926	941	15	2%
Sector Revenue (1)+(2)	2125	1942	-183	-9%

Source: FAPRI-Ireland Partnership Model (2001).
[a]Beginning year inventories, i.e. previous year's December figure
[b]Does not include REPS payments.

The comparison between baseline and scenario for 2010 provides an incomplete picture of the situation. The real impact of the scenario is felt in the medium term, and the dynamic story is presented in Figure 2-1. The drop in consumption in the EU, and the reduction in third country demand prompts a large build up of stocks in Ireland, similar to the extent that intervention stocks rose to in the early 1990s. The build up of stocks is "front loaded" to the extent that slaughterings are brought forward in 2001 as we are assuming that no animals are taken into their third year. Stocks are gradually disposed of over the period to 2007. The drop in prices and carcass weights leaves the market value of the sector well below its baseline level for the duration of the projection period.

Figure 2-1: The Impact of the Pessimistic Scenario on the Irish Beef Sector



Source: FAPRI-Ireland Partnership Model (2001)

Other sectors were not projected to be affected to a large extent under the pessimistic BSE scenario. The value of output from the sheep sector expands relative to the baseline to utilise the extra land. As a result of the Pessimistic scenario, however, the income of the agricultural sector ends the period 5 per cent below the baseline. See Appendix A1 and A2 at the end of this report for further details.

2.1.2 Seven Point Plan Scenario

The main impact at an EU beef sector level from the Seven-Point Plan scenario comes from the imposition of a requirement to claim at least 20 per cent of producer's suckler cow premia on heifers. The assumed reductions in EU demand for beef under this scenario are the same as those in the baseline. The build up in intervention stocks therefore mirrors that of the 2001 Baseline. Thereafter the reductions in the number of breeding herd animals (suckler cows are 1.4 million head below the baseline in 2010) reduce production by 4 per cent relative to the level under the 2001 Baseline. This drop in production occurs after demand is assumed to recover, and so despite a fall in export levels prices are projected to end the period up 5 per cent on the baseline.

A summary of the results of the *Seven-Point Plan* scenario for some of the key variables in the Irish cattle sector is presented in Table 2-2. The cattle price in Ireland was projected to increase by seven per cent on the baseline as a result of this scenario due to the reduction in the production of beef. In Ireland the reduction of suckler cow numbers is projected to be 17 per cent relative to the 2001 Baseline. There is a small fall in carcass weight as a result in the increase in the proportion of dairy animals in the national herd. The drop in the number of animals results in the market value of the output of the sector falling. Direct payments fall as a result of the lower number of animals, and the re-imposition of the 90 head limit (this is despite the fact that extensification payments have been assumed to increase by £5 million).

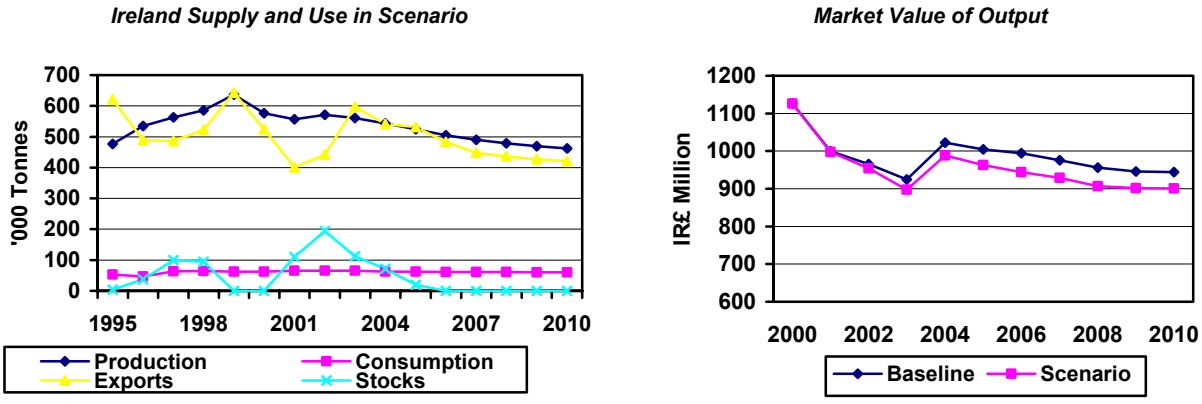
Table 2-2: Irish Main Beef Variables Baseline and "7-Point Plan" Scenario Projections to 2010.

	Baseline 2010	Scenario 2010	Change	% Change
		IR£/100kg		
Adult Cattle Price	197	211	14	7%
		'000 Head		
Beef Cows[a]	1,047	866	-181	-17%
Total Cows[a]	2,171	1,990	-181	-8%
		Tonnes/Head		
Average Carcass Weight	0.303	0.293	-0.01	-3%
		'000 Head		
Slaughterings	1,645	1,573	-72	-4%
Volume of Output	1,971	1,807	-164	-8%
		IR£ Million		
Value of Output (1)	1199	1144	-55	-5%
Direct Payments[b] (2)	926	918	-8	-1%
Sector Revenue (1)+(2)	2125	2062	-63	-3%

Source: FAPRI-Ireland Partnership Model (2001).
[a]Beginning year inventories, i.e. previous year's December figure
[b]Does not include REPS payments.

The evolution of the sector over the next ten years is shown in Figure 2-2. The path of intervention stocks is closer to that in the baseline projections. Production tracks the reduction in animal inventories. The market revenue of the sector is very similar to that in the baseline, as the reduction in cattle numbers is offset by the increase in the price under this scenario.

Figure 2-2: The Impact of the Seven-Point Plan Scenario on Ireland



Source: FAPRI-Ireland Partnership Model (2001)

2.2 WTO Scenario Analysis

The Baseline specifically includes all known current policies including Agenda 2000, and excludes policy changes that were not agreed at the time the analysis was conducted. An area of policy negotiation that commenced in 2001 related to the

Doha Development Round of the WTO. Agricultural trade reform that was addressed for the first time in the previous round of multilateral trade negotiations (the Uruguay Round) was again high on the WTO negotiations agenda.

Box 2-1: Export Subsidy Scenarios:

- ***Reduction of Export Subsidisation at the same rate as under the URAA.***

  Beginning in 2004, a six-year commitment to progressively reduce the volume of subsidised exports by the same amount as under the URAA, using the same 1986-1990 base period chosen for the URAA.

  By the end of the Millennium Round agreement's implementation period this would amount to a 42 percent reduction in the quantity restrictions relative to the URAA base period. It is this volume reduction, rather than the reduction in value of export subsidies, which is likely to have most effect on export markets

- ***Export Subsidy Elimination.***

  The total abolition of export subsidies phased in over a six-year period, starting in 2004.

Note:

In the analysis, these reforms are implemented across the various commodities. In both scenarios, no compensation is assumed for the farm level price reductions that might arise.

The key assumptions used in analysing the possible export subsidy reform are outlined in detail in Box 2-1. They are based on assumed changes in policy that the FAPRI-Ireland Steering group asked to be evaluated.

In addition to the specific assumptions relating to export subsidies it in necessary to make some related assumptions for other policies if such a reform was to look credible.

An elimination of export subsidies under current policy, would probably lead to an intervention stock build up in some sectors. To prevent this outcome, it is assumed that intervention prices are reduced in each of the scenarios.

Related assumption for Beef:

For the beef sector, this analysis assumes that intervention prices are set at a level to ensure that it does not operate.

To achieve this outcome, intervention prices are set at 10 percent below the baseline level in the reduction scenario and 20 percent below the baseline level in the elimination scenario. See Appendix A3 and A4 at the end of this report for further details.

For details on assumptions relevant to other commodities see Donnellan (2002) and McQuinn and Behan (2002).

2.2.1 Export Subsidy Reduction Scenario Results

Reduction of Export Refunds: Impact on EU Beef Sector

The export subsidy reduction scenario involves a drop in the volume of export subsidies similar to that implemented under the URAA. This means that the current limit of 822,000 tonnes is reduced over a five-year period to 603,000 tonnes, a reduction of 27 per cent. In 2010, therefore, the volume limit on subsidised exports of beef is 58 per cent of the URAA base period. The impact of this on the beef sector in relation to the Baseline is minimal, with a very small drop in prices. The price drop is small because in the Baseline, exports are projected to run at approximately the reduction scenario limits (in the year 2000, for example, subsidised exports were run well below their maximum allowable limit under the URAA). If in the Baseline the assumption was made that the Commission chose to run exports from the EU at their maximum limit, then the price in the Baseline would be significantly higher, and the reduction scenario would have had a significant impact on the sector.

The Baseline also assumes that the consumption of beef recovers to approach the level it would have been in 2004 in the absence of the current BSE crisis. The intervention stocks that are built up over that period are disposed of before the full reduction is implemented. It is very easy to tell a different story (such as in the more pessimistic scenario outlined in Binfield et al., 2001c) where the BSE crisis leads to a larger drop in demand for beef in the EU in the next few years, or there is a permanent negative shift in beef consumption, or there is a closure of some third country markets for beef. Under these circumstances any build up in the surplus of beef could mean that the Commission does not have the option of reducing third country exports as we have assumed in the Baseline. Indeed, under the more pessimistic scenario regarding the BSE crisis, the current maximum limit becomes binding.

Reduction of Export Refunds: Impact on EU and Irish Sheep Sector

The impact of the reduction scenario on the EU and Irish sheep sector is projected to be minimal. The EU is a net importer of sheep meat and exports of beef from the EU are negligible and thus reductions if export subsidies do not affect the sheep sector greatly.

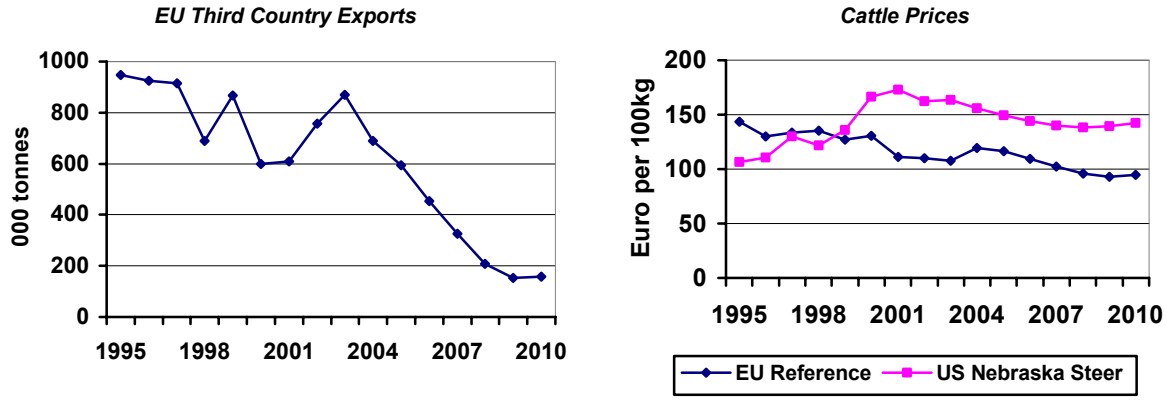
2.2.2 Policy Scenarios 2001: Export Subsidy Elimination Scenario Results

In the export subsidy elimination scenario, the export subsidy limit is reduced over five years so that from 2008 export subsidies are no longer allowed. The impact of the elimination of export subsidies depends critically on the path of world prices and exchange rates over the period. In Figure 2- the path of prices is shown (note that these prices are not strictly comparable). The results of the simulation of the FAPRI global models are that growth in incomes and population lead to increasing per capita incomes and demand for meat. This leads to a growth in world prices. However, a combination of growth in supply, and the strengthening of the euro, mean that in the Baseline the US Nebraska steer price is 18 per cent below its 2000 level in 2010. In the FAPRI model, other world prices track the US Nebraska price. This means that despite the drop in the beef prices projected, there is little scope for unsubsidised exports in the Baseline.

By contrast with the export subsidy reduction scenario, in the elimination scenario, third country exports of beef drop dramatically. Exports are projected to grow initially as some of the surplus that accrues as a result of the BSE crisis is exported. Thereafter exports of beef fall steadily to just over 150,000 tonnes. The ending of subsidised exports has a positive impact on world prices of just above 3 per cent. EU prices, however, fall by 17 per cent relative to the Baseline in 2010. This change in relative prices is not sufficient to stimulate large volumes of exports.

It is important at this stage to remember the assumptions that have been made regarding the elimination scenario. Recall that intervention is not operated, and that the rest of the CMO for beef is retained in its current form. This prevents a significant supply response in the EU to the fall in prices. Some of the key variables of the sector are presented in Table 2-3. Therefore, the very large drop in price only results in a drop in suckler cow numbers in the EU of 5 per cent in relation to the Baseline in 2010. It is this lack of supply response that will play an important role in the evolution of policy in the sector.

Figure 2-3: EU Third Country Exports, and EU and US Cattle Prices Under Elimination Scenario



Source: FAPRI-Ireland Partnership Model (2001)

The key issue in determining where the market will settle is the ability of the EU to export beef without subsidy. Export refunds have typically accounted for a large part of the value of beef that is sold onto world markets, sometimes up to 50 per cent of that value. The quality of the beef concerned has been relatively poor as a large proportion has been stored and frozen. It has effectively been dumped on the world market. It is likely to be the case that if EU prices were to move towards world prices it might start competing in markets other than the "traditional" destination markets for EU third country exports. As an example, Figure 2-3 shows how the EU prices are projected to be below those of the US.

Table 2-3: EU-15 Main Beef Variables for 2010, Baseline and Elimination Scenario

	Baseline	Elimination	Change	% Change
		Euro/100kg		
Reference Price	114.0	94.6	-19.4	-17%
		'000 Head		
Beef Cows	11,611	10,981	-629.7	-5%
		'000 Tonnes		
Production	7,095	7,009	-86.8	-1%
Imports	351	346	-5.6	-2%
Domestic Use	6,928	7,197	268.8	4%
Exports	519	157	-361.8	-70%

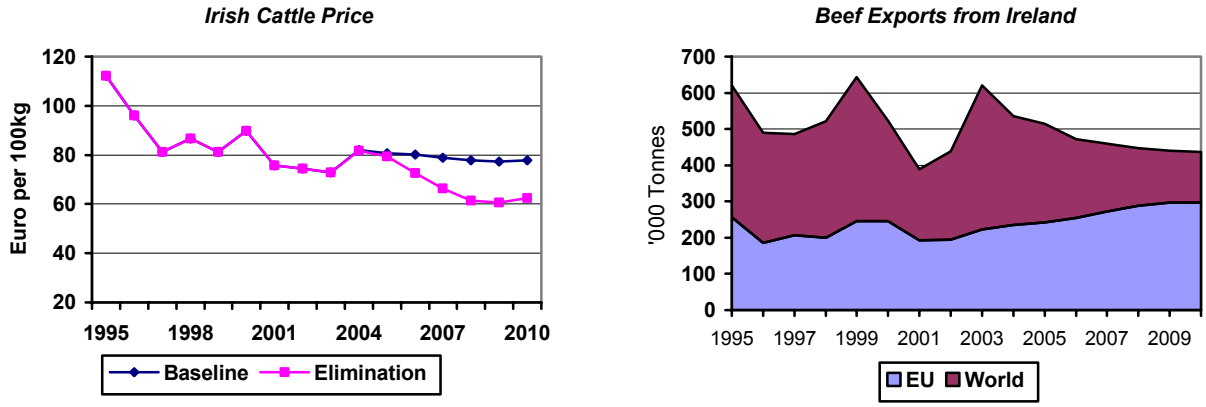
Source: FAPRI-Ireland Partnership Model (2001)

The impact on Ireland of a reduction of the export subsidy limit will be greater than for the EU as a whole. Whilst for the EU, the price of beef is 17 per cent below the Baseline in 2010, the Irish price is down 20 per cent, as shown in Figure 2-4. Also shown is the change in the level and composition of exports. The BSE crisis results in a larger reduction in the volume of beef exported from Ireland in the short run,

which is stored and then exported between 2003 and 2005, mostly to third country markets which are assumed to have re-opened.

The reason that the price in Ireland falls further than that for the EU as a whole is the relatively high reliance on third country markets as a destination for exports. Without subsidies, these have to be exported at the world price, which is below the EU price. Note that the model is projecting a healthy increase in exports to the EU as a result in the fall in surplus due to the fall in supply and increase in consumption as a result of the lower prices. This assumes that there is no further significant re-nationalisation of consumption because of consumer concerns about "food safety".

Figure 2-4: Irish Cattle Price and Exports Under the Export Subsidy Elimination Scenario



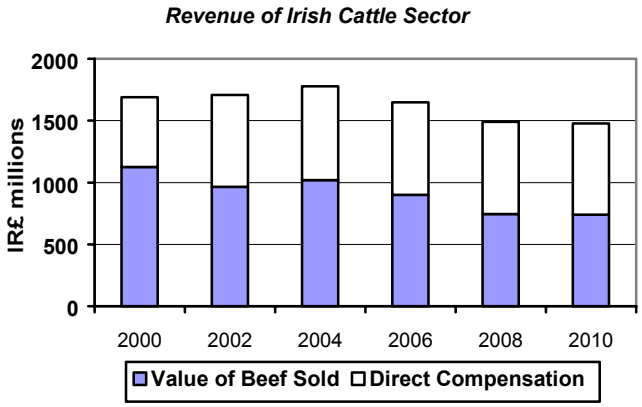
Source: FAPRI-Ireland Partnership Model (2001)

As in the rest of the EU, the maintenance of the beef sector CMO in its current form means that the supply response is limited. Suckler cow numbers are projected to fall just 2.5 per cent more under the elimination scenario than in the Baseline. The model projects a smaller response than in the EU as a whole due to the fact that Ireland derives a greater proportion of its revenue from payments than the rest of the EU generally, and is therefore less responsive to changes in market revenue. There is projected to be an additional fall in carcass weights of 3 per cent with the net impact on beef production amounting to a drop of 5 per cent on 2010 levels.

The effect on the revenue of the sector is shown in Figure 2-5. The drop in production, coupled with the drop in prices leaves market revenue down 34 per cent in 2010 in relation to 2000. Payments remain virtually the same, as we are assuming that there is no additional compensation for these price falls. Overall sector revenue therefore falls by IR£ 211 million, or 13 percent over the period 2000 to 2010. To

compensate for this drop, direct payments would have to be increased by nearly 30 per cent.

Figure 2-5: Cattle Sector Revenue under Export Subsidy Elimination Scenario



Source: FAPRI-Ireland Partnership Model (2001)

2.3 Scenario Analysis in 2001: Conclusions

The scenarios analysed in 2001 related to concerns about the consequences of a unforeseen shock to the agricultural economy (the second BSE scare) and the implications of a possible future policy change, i.e. further trade liberalisation under the aegis of the WTO Doha round.

Looking at the overall impact of the two WTO scenarios at an EU level illustrates the exposure of the Irish beef industry to world market developments and changes in EU export subsidy policies. The analysis examined only the impact of changing export subsidies and did not examine the consequences of lowering or eliminating the tariffs on imports of agricultural produce into the EU. The net importer of sheep meat status of the EU ensures that the effects of the scenario analysed are limited. Wider trade liberalisation that incorporated both reduction, and, elimination of export subsidies with the reduction in tariff rates on agricultural product imports into the EU could be expected to have greater impacts on both the beef and sheep sector.

Details of the impact of the Pessimistic BSE scenario, the Seven-Point-Plan scenario and the WTO subsidy elimination scenario on Agricultural Output, Inputs and Income are provided in Appendices A1 through A6 of this report and in Binfield et al. (2001a, 2001b, 2001c).

3 The 2002 Beef and Sheep Sector Baseline

The first part of this report focuses on the analysis published in April 2002 (Binfield et al., 2002a, 2001b).

3.1 The Beef Sector 2002 Baseline Outlook

The Baseline that is presented in this section of the paper maintains policy in its current form and assumes that EU beef consumption continues to recover so that by 2004 it is only marginally below the levels of per capita consumption observed prior to the 2000/2001 crisis. Agenda 2000 policy changes, specifically the drop in support prices, ensure that price levels over the projection period do not recover to the levels observed in 2000. But the increases in the per animal value of direct payments agreed under Agenda 2000 ensure that direct payment receipts increase significantly.

3.1.1 The Outlook for the EU

Despite the FMD crisis in 2001, the BSE crisis and the EU policy response to it are the key events that condition the Baseline projections for the EU beef sector. The EU policy response to the BSE crisis in 2001 involved the purchase for destruction (PFD) scheme, the subsequent Special Purchase Scheme (SPS) and a requirement that a minimum of 15 per cent of claims for suckler cow premiums be made on dry heifers (with a maximum allowable rate of 40 per cent dry heifer claims). These policies were introduced to reassure EU consumers about the safety of EU beef and to provide support to the market by removing large volumes of beef from the supply chain. Despite the success of these measures in terms of supporting market prices and fostering a recovery in EU beef consumption, a great deal of uncertainty remains concerning the future of EU consumption and exports of beef. It is necessary to make a series of assumptions. The assumptions relating to EU beef consumption are shown Table 3-1. The greatest drops in demand are projected for Germany, Italy, “other EU” (which includes Spain), and France. There is projected to be a recovery in demand in 2002 and 2003, but in the longer run consumption is projected to return to its long run downward trend.

Table 3-1: Beef consumption per capita change relative to 1999 (per cent)

	2001	2002	2003
	Percentage change		
France	-8	-5	-4
Germany	-21	-12	-8
Ireland	-2	-4	-6
Italy	-11	-7	-5
UK	-7	-5	-5
Other EU	-19	-6	-3
EU-15	-14	-7	-5

Source: FAPRI-Ireland Partnership Model (2002).

The ending of the PFD scheme, its replacement with the SPS and the operation of intervention has resulted in a significant build up of stocks. EU beef stocks that rose to 305,000 tonnes in 2001 are projected to decline to 222,000 tonnes in 2002, and to 32,000 tonnes by 2003. In the remainder of the projection period no intervention purchases are projected as consumption in the EU recovers and exports to third countries resume. The significant drop in the intervention price means that purchases into intervention do not occur in the years after 2003. Market conditions could easily be much worse, if EU consumption were not to rise, or if BSE and FMD concerns kept third country markets closed.

Table 3-2 shows projections for the main variables in the beef sector for 2010. EU beef prices are projected to recover somewhat over the period 2003 to 2005 as demand for beef in the EU recovers. The initially high level of stocks, and the falling support price mean that the EU price does not recover to the level observed prior to the BSE crisis. From 2004 onwards EU beef consumption is projected to resume its downward trend. In addition the assumption that the EU runs subsidised exports at below the GATT agreed maximum level means that by the end of the period the EU price is projected to be 15 per cent below the 2000 level.

Of course the Commission could choose to run subsidised exports at a higher level than that assumed in this analysis, with the result that the market price drop would not be as pronounced. On the other hand, it may be more realistic to assume that export subsidies will be reduced as the Commission tries to reduce budgetary expenditure and avoid higher internal EU prices in the period immediately prior to EU enlargement.

Table 3-2: EU-15 Main Beef Variables 2000 and Baseline Projection for 2010.

	2000	2010	Change 2000-2010	% Change 2000-2010
		€uro/100kg		
Reference Price	130.8	111.50	-19.3	-15%
		'000 Head		
Beef Cows	12,053	12,542	489	+4%
Dairy Cows	20,631	18,525	-2,106	-10%
		'000 Tonnes		
Production	7,466	7,219	-247.0	-3%
Imports	448	425	-0.6	-5%
Domestic Use	7,316	7,040	-276.3	-4%
Exports	643	604	-38.8	-6%
Intervention	15	0	-15.0	-100%

Source: FAPRI-Ireland Partnership Model (2002).

Despite the changes made to beef policy under Agenda 2000 and those changes introduced in response to the BSE crisis in 2001, the EU beef sector remains largely unable to adjust on the supply side to demand shocks of this scale, and thereby internally restore market balance. This rigidity arises because with the milk quota in place, and the suckler cow and special beef premia schemes structured in the way that they are, EU beef supply is still largely unresponsive to market prices. EU suckler cow numbers are projected to rise marginally as prices recover, premia levels rise and the dairy cow herd declines due to improvements in yield. It should be noted that the projected increase in the EU suckler cow herd is small relative to the 29 per cent increase that occurred between 1990 and 2000. When combined with the decline in the EU dairy cow herd of 11 per cent and a consequent reduction in the supply of calves to EU beef producers, EU production is projected to decline by 3 per cent by 2010 relative to the level in 2000.

The Baseline projections made by the FAPRI-Ireland models are always subject to the proviso that they are made under a series of assumptions, which here include, *inter alia*, constant policy, normal weather, and in the beef sector, assumptions about the behaviour of the Commission.

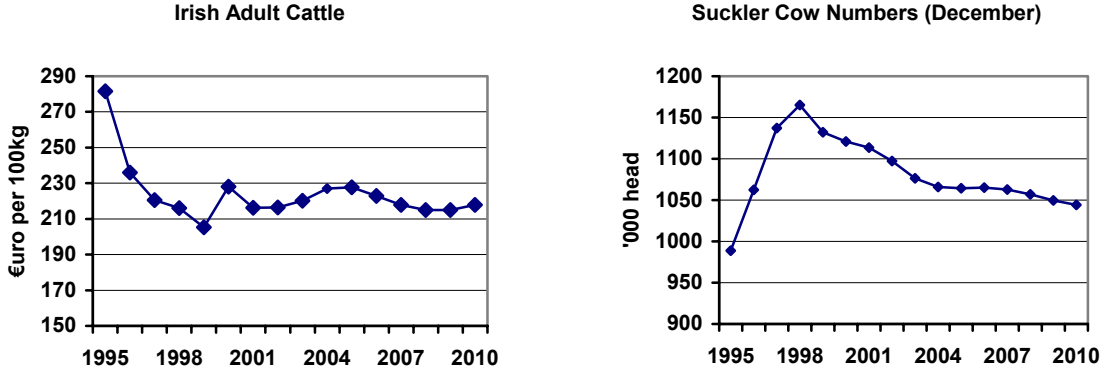
3.1.2 The Outlook for Ireland

In 2001 the Irish beef sector was undoubtedly affected by the uncertainty and market disruption that flowed from the FMD crisis in the UK. More important influences in the

sector were the latest BSE crisis in the European Union and the continuing closure of important third country export markets.

EU and national policy responses to the BSE crisis, principally the PFD and SPS schemes helped to maintain Irish cattle prices in the face of dramatically reduced demand. In the first 6 months of 2001 the operation of the PFD scheme successfully underpinned cattle prices, while in the second half of the year the special purchase scheme supported cow prices. Despite the operation of these two schemes the Irish reference price for cattle was 5.5 per cent lower than the level in 2000. The path that Irish cattle prices are projected to take is shown in Figure 3-1. Irish cattle prices are projected to recover in the first half of the projection period as EU beef consumption recovers from the BSE crisis and third country exports markets that were closed to exports of EU and Irish beef reopen and Irish exports of beef resume.

Figure 3-1: Baseline Irish Cattle Price and Suckler Cow Numbers



Source: FAPRI-Ireland Partnership Model (2002).

The recovery in the Irish cattle price is projected to peak in 2005, the subsequent decline in the projected price occurs due to the lowered level of support prices agreed under Agenda 2000 and the resumed reduction in EU beef consumption. It has been assumed that the EU Commission runs subsidised exports below their Uruguay Round Agreement on Agriculture (URAA) maximum level. As a consequence of this prices in the sector are 15 per cent below the 2000 level in 2010. Store cattle prices, however, do not show the same reduction. The increase in the value of the special beef premium agreed as part of Agenda 2000 are partly bid into the prices of male calves, and this results in projected 2010 prices for male weanlings, for example, increasing slightly on the level observed in 2000.

The size of the national herd is largely determined by factors other than price. The continuation of quotas on milk, and the projected increase in milk yields means that the number of dairy cows in Ireland is projected to fall by 134,900. Suckler cow numbers are also projected to fall over the projection period, as shown in Table 200000. The changes made under Agenda 2000 are the main driver of this fall in cow numbers. The new extensification payment system, coupled with the facility to claim suckler cow premia on heifers also drives numbers down. The introduction of a mandatory minimum suckler cow premium claim of 15 per cent on dry heifers (up to a maximum of 40 per cent) for the years 2002 and 2003 re-enforces the policy pressures that flow from the Agenda 2000 reforms. Suckler cow numbers in 2010 are about 82,500 head down on 2000.

Projections of the key variables are contained in Table 3-4. The initial recovery in the projected Irish cattle price results in increases in the value of the marketed output of the Irish beef sector that by 2004 are projected to be almost equal to the value of the sector's output prior to the BSE crisis.

Table 3-3: Irish Main Beef Variables in 2000 With Baseline Projections to 2010.

	2000	2010	Change 2000 – 2010	% Change 2000 – 2010
		€uro/100kg		
Adult Cattle Price	228	218	-10	-4.5%
		'000 Head		
Beef Cows[a]	1,132	1,050	-82	-7%
Total Cows[a]	2,393	2,176	-217	-9%
		Tonnes/Head		
Average Carcass Weight	0.306	0.306	-0.006	-0.2%
		'000 Head		
Live Exports	405	260	-145	-36%
Slaughterings	1,887	1,762	-119	-6%
Volume of Output (incl. Stock changes)	2,038	1,973	-65	-3%
		€uro million		
Value of Output[b] (1)	1372	1234	-138	-10%
Direct Payments[c] (2)	794	976	182	23%
Sector Revenue (1)+(2)	2166	2210	44	2%

Source: FAPRI-Ireland Partnership Model (2002).
[a]Beginning year inventories, i.e. previous year's December figure
[b] Includes changes in stocks on farms
[c]Does not include REPS payments.

The subsequent decline in cattle prices that occurs in the second half of the projection period, in combination with the projected decline in cow numbers and a small decline in the slaughter weight of beef animals, results in the market value of

output from the beef sector in 2010 being 10 per cent lower than that observed in 2000.

The decline in the value of output from the sector that flows largely from the drop in cow numbers (and the associated decline in the numbers of animals slaughtered and volume of output) is offset by an increase in the value of direct payments. Despite the decline in suckler cows and steers claiming direct payments, the increased value of the payments introduced in the Agenda 2000 reforms of the CAP result in increased overall direct payment receipts. These increased receipts more than offset the decline in the value of sector output so that the overall revenue of the Irish beef sector increases by two per cent in 2010 on its 2000 value.

3.2 The Sheep Sector 2002 Baseline Outlook

For the Irish sheep sector, the year 2001 was a most unusual year. The BSE crisis effects on consumption of lamb and Irish lamb prices were completely overshadowed by the impact of the UK FMD crisis. The FMD crisis of 2001 led to the exclusion of UK lamb from other EU markets, most importantly the French market. This development and the success of Irish policy in restricting the incidence of FMD to one reported case resulted in a very large increase in Irish lamb prices, which in 2001 were over 40 per cent higher than in 2000.

Under the baseline no further FMD outbreaks are assumed to occur and UK supplies return to the French and other continental EU lamb markets. The large reduction in the UK sheep flock that occurred in response to the FMD crisis in the UK is reversed over the projection period but results in a tighter EU lamb supply and demand balance over the projection period.

The Baseline incorporates the reform of the EU sheep regime that was agreed in December 2001. The agreed reform substituted a fixed ewe premium for the deficiency based ewe premium that had operated previously.

3.2.1 The Outlook for the EU

The BSE crisis, the destruction of animals in the UK and the exclusion of UK lamb exports from other EU markets because of the FMD crisis, resulted in a large rise in sheep meat prices in the EU In 2001. It is projected that the positive impact of FMD on prices in 2001 will be reduced over the period 2002 to 2006 as the UK re-enters the EU lamb market. The FMD outbreak led to a dramatic reduction in the size of the UK flock in 2001. There is projected to be some recovery in the size of the flock, although it should be remembered that the flock in the UK was shrinking, even before the FMD outbreak.

The high price of lamb and some shift away from lamb contributed to a large drop in EU consumption of the meat in 2001. In 2002 some recovery in consumption and the fact that supplies will remain tight results in the price of lamb remaining high, albeit below 2001 levels. In the longer term prices stabilize at close to their 2000 levels. An increase in imports is projected as a result of increased take up of existing market access agreements.

Table 3-4: EU-15 Main Sheep Variables 2000 With Baseline Projections for 2010.

	2000	2010	Change 2000 – 2010	% Change 2000 – 2010
		€uro /100kg		
Reference Price	358	351	-7	-2%
		'000 Head		
Ewes	68,394	65,406	-2,988	-4%
		'000 Tonnes		
Production	1,118	1,054	-64	-6%
Imports	230	265	35	15%
Domestic Use	1,345	1,317	-28	-2%
Exports	2	2	0	0%

Source: FAPRI-Ireland Partnership Model (2002).

3.2.2 The Outlook for Ireland

The high Irish lamb prices that occurred in 2001 as a result of the exclusion of UK exports of lamb from continental markets would, other things being equal, have been expected to lead to increased ewe numbers and sheep meat production. Contrary to

such expectations ewe numbers in Ireland have continued to decline, with beginning ewe numbers for 2002 down 124,000 head on the level observed in 2001.

Developments in the Irish economy as a whole play a crucial role in shaping the future of the sheep sector. Sheep systems are, on the whole, relatively labour intensive. The strong projected growth in incomes outside the farming sector increases the opportunity cost of farmer's time, as well as the cost of hired labour. This is likely to mean that sheep systems will increasingly be unattractive, as the number of part time farmers rises. The sector could also be threatened by alternative enterprises with a lower labour requirement particularly forestry.

The path of sheep prices in Ireland largely reflects the projected path of EU prices in that high price levels observed in 2001 prices decline over the remainder of the projection period. The percentage price change (2010 on 2000) that are reported in Table 3-5 may appear to imply a divergent path of prices in Irish and EU markets. This impression is a function of the unusually low Irish prices in 2000 and the greater increase that occurred in Irish markets in 2001. The high Irish prices observed in 2001 are, however, only partly eroded, as the UK sector does not fully recover from the FMD crisis of 2001.

By the end of the period Irish sheep prices are projected to be over 12 per cent higher than their level in 2000. This positive price projection, and the advent of a fixed ewe premium following the reforms of the EU sheep sector, are not sufficient to offset the forces that, under the Baseline, are projected to lead to a continuing decline in the ewe flock. The high prices, and fixed ewe premium, moderate the rate of decline for that observed in recent years. By 2010 ewe numbers in Ireland are projected to be almost 11 per cent lower than their level in 2000.

The overall value of market output from the sector declines by approximately 1 per cent relative to the level observed in 2000. Declining ewe numbers, and the associated decline in the volume of Irish lamb production are largely offset by the higher price level projected.

The reform of the sheep regime that involved a shift from a deficiency based ewe premium to one based on a fixed amount resulted in a ewe premium that

is projected to be over 18 per cent higher in 2010 than in 2000. This increase in the value of the premium when combined with the lower ewe numbers results in a decline in total sector direct payment receipts. Overall by 2010, sheep sector revenue declines by 4 per cent relative to the year 2000. The main variables for the sector are outlined in Table 3-5.

Table 3-5: Irish Main Sheep Variables 2000 With Baseline Projections for 2010.

	2000	2010	Change 2000 - 2010	% Change 2000 - 2010
		€uro/100kg		
Sheep Price, 40-49kg	60	67	7	12%
		'000 Head		
Ewes [a]	4,182	3,725	-457	-11%
Volume of Output [b]	3,614	3,552	-62	-2%
		€uro Million		
Value of Output (1)	205	203	-2	-1%
Direct Payments[c] (2)	130	117	-13	-10%
Sector Revenue (1)+(2)	335	320	-15	-4%

Source: FAPRI-Ireland Partnership Model (2002).
[a]Beginning year inventories, i.e. previous year's December figure.
[b] Includes changes in stocks on farms.
[c]Does not include REPS payments.

4 Scenario Analysis in 2002: Medium Term Review

The scenario examined is one in which the policy change is designed to reduce numbers of beef animals (and as a consequence beef supply), while not adversely affecting income from beef farming. In the scenario the extensification limits agreed as part of the Agenda 2000 CAP reform are lowered, while farmers are compensated for this reduction on the basis of the loss of receipts from direct payments that were granted as "compensation" for previous CAP price reductions.

In Ireland the two extensification limits, the so-called "high" and "low rates", are both lowered by 0.2 L.U. Thus, under the scenario the new limits for receipt of extensification payments are a stocking density between 1.2 and 1.6 L.U. per hectare, and a stocking density of less than 1.2 L.U. per hectare.

Modelling of the changed extensification regime at the aggregate (country) level poses several challenges. The complexity of the operation of the extensification regime could never be captured in aggregate level time series models. This is part of the reason why within the FAPRI-Ireland Partnership resources have been devoted to farm level analysis. Changes in the extensification regime will impact differently on

different farms, dependent on their particular conditions with regard to intensity of production, mix of different animals, and so on. The results of the farm level scenario to a large extent, therefore, determine the adjustments that are made at the aggregate level.

As a result of the Agenda 2000 reforms of the CAP, producers receiving special and/or suckler cow premiums may qualify for an additional payment, the "extensification premium" provided that during the calendar year the stocking density on their holding is below a certain limit. Stocking density is defined on the basis of temporary and permanent pasture and all other forage areas other than arable crops area. The animals on which the stocking density calculation is based are all adult animals receiving direct payments (suckler cattle, adult male cattle, and ewes) as well as dairy cows producing quota milk.[3] In Ireland extensification payments are granted at the rates shown in Table 4.1.

Table 4.1: Extensification payments Under Agenda 2000.

Stocking Density (S.D.)	2002 Rate per Animal
1.4 L.U. < S.D. < 1.8 L.U.	€ 40
S.D. < 1.4 LU	€ 80

The scenario examined is one in which the policy change is designed to reduce numbers of beef animals (and as a consequence beef supply), while not adversely affecting income from beef farming. In the scenario the extensification limits agreed as part of the Agenda 2000 CAP reform are lowered, while farmers are compensated for this reduction on the basis of the loss of receipts from direct payments that were granted as "compensation" for previous CAP price reductions. In Ireland the two extensification limits detailed in Table 4.1, the so-called "high" and "low rates", are both lowered by 0.2 L.U. Thus, under the scenario the new limits for receipt of extensification payments are a stocking density between 1.2 and 1.6 L.U. per hectare, and a stocking density of less than 1.2 L.U. per hectare.

The increase in the level of the extensification payments per animal received under the scenario were to be such that the change would be "neutral" in terms of

[3] Suckler cows are equivalent to 1 livestock unit (L.U.), steers less 2 years old are equivalent to 0.6 L.U., dry heifers less than 2 years claiming suckler cow payments are equivalent to 0.6 L.U., while ewes on which ewe premiums are claimed are equivalent to 0.15 L.U. The stocking density of dairy cows is calculated from total quota divided by a reference yield or from a farm's milk records if held.

compensatory payments foregone by a move to a lower stocking rate per hectare. The design of such compensatory payments presents a problem in that the level of compensation that would yield a direct payments receipts "neutral" outcome differs on the basis of the type of animals on which the extensification payments are based. Table 4.2 illustrates the difference in compensatory payments receipts when a hectare of land is stocked at the 1.8 and 1.4 L.U. per hectare with steers and when a hectare is stocked at 1.8 and 1.4 L.U. per hectare with suckler cows.

Table 4.2 illustrates that receipts of compensatory direct payments per hectare differ greatly and depend on the animals with which the hectare is stocked. A lowering of the extensification rate by 0.2 at both the high and low stocking density limits, with a direct payments neutral increase in the extensification payments per animal, would be impossible to generate given the different values of direct payments that would have to be sacrificed in a de-stocking that ensured compliance with a lower extensification rate per hectare.

Table 4.2: Calculation of Receipts per Hectare.

		Direct payment per animal*	Receipts per Ha
Suckler cows	1.4 L.U. = 1.40 Suckler cows	€ 200	€ 200*1.40 = € 280
Steers	1.4 L.U. = 2.33 Steers	€ 150	€ 150*2.33 = € 350
Suckler cows	1.8 L.U. = 1.80 Suckler cows	€ 200	€ 200*1.80 = € 360
Steers	1.8 L.U. = 3.00 Steers	€ 150	€ 150*3.00 = € 450

* Excludes extensification and slaughter premia, and national envelop top ups.

The question then is, what increase in extensification payments should be paid to "compensate" for the loss of direct payments that would result from a reduction of the extensification rates by 0.2 of a L.U.? In choosing what rates of compensation per animal should be made we make an extreme assumption that on a given hectare either only suckler cows or steers claim compensatory direct payments and that the animals are stocked at either exactly the 1.8 or 1.4 L.U. per hectare limits.

At a stocking density of 1.8 L.U. a hectare stocked with only steers draws down a total of € 450 in special beef premium payments (3 steers claiming € 150). Reducing the maximum stocking density to 1.6 L.U. per hectare requires that the number of steers per hectare must be reduced. As a consequence the special beef payments

received per hectare are reduced to € 400. The reduction in direct payment receipts that requires “compensation” is then € 50 spread over 1.6 L.U., or 2.66 steers. This is equivalent to an increase in the extensification payment of € 18.75 per animal.

One hectare stocked with only steers stocked at a density of 1.4 L.U. draws down a total of € 350 in special beef premium payments (2.33 steers claiming € 150). Reducing the stocking density to 1.2 L.U. per hectare requires that the number of steers per hectare must be reduced (to 2), and as a consequence, the special beef payments received per hectare are reduced to € 300. The reduction in direct payment receipts that requires “compensation” is then € 50 spread over 1.2 L.U., or 2 steers. This is equivalent to an increase in the extensification payment per animal of € 25.

The arithmetic involved in calculating the “compensatory” increase in extensification payments that arises when a hectare stocked with suckler cows at 1.8 is reduced to 1.6, and 1.4 to 1.2 is equivalent to that used above. One hectare with only suckler cows stocked at a rate of 1.8 L.U. per hectare draws down suckler cow payments of € 360. A reduction of the stocking density to 1.6 LU (equivalent to 1.6 cows) would result in a decline to € 320 in suckler cow premium receipts per hectare. The reduction in direct payment receipts of € 40 requires compensation over the remaining 1.6 cows; this is equivalent to an increase in extensification payments per animal of € 25.

At a stocking ratio of 1.4 L.U., a hectare with only suckler cows stocked draws down receipts of € 280 per hectare from suckler cow payments. A reduction of the stocking density to 1.2 LU would result in a decline in suckler cow premium receipts to € 240 per hectare. The reduction in direct payment receipts of € 40 requires compensation over the remaining 1.2 cows; this is equivalent to an increase in extensification payments per animal of € 33.33 per animal.

We have made an assumption that in political terms the higher rate of payment will be used to ensure that there are no “losers” on foot of the scenario’s changes, this means that the compensatory increase in the extensification payments granted is an increase of € 25 per animal on the current € 40 per animal paid on animals stocked

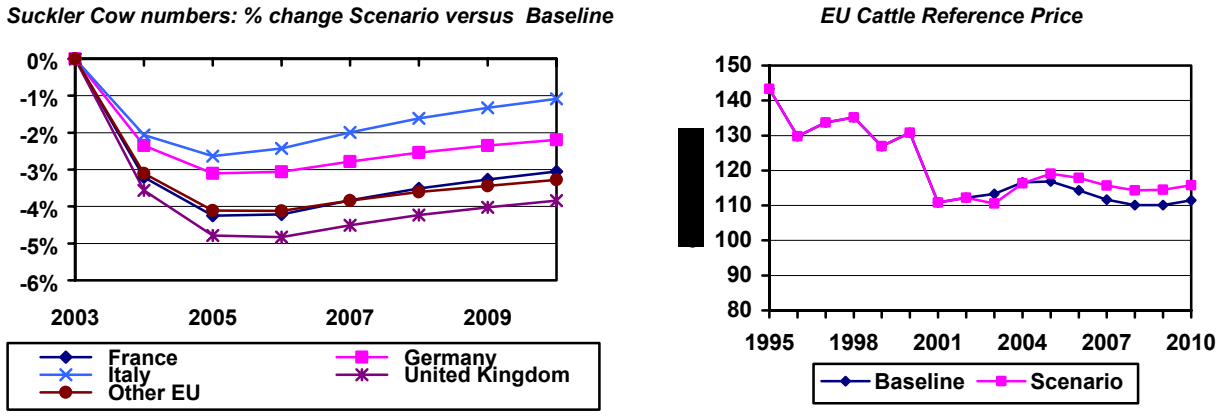
at a rate between 1.8 and 1.4 L.U. per hectare when these limits are reduced to a 1.6 to 1.2 L.U. per hectare rate. The compensatory increase in extensification payments at the lower stocking density of € 80 is assumed to equal € 33.33 per animal.

4.1 Policy Scenario 2002: Results

The results of the simulation on key variables are presented in Figure 4-1. In the short run, the decrease in the size of herd results in more beef production, and a slight decrease in price. In the longer run prices rise above their Baseline level. For the EU as a whole the percentage reduction in cattle numbers peaks at approximately 4.5 per cent in 2005. Thereafter the effect of the stricter stocking density requirements are mitigated somewhat by the general decline in livestock numbers that are already included as part of the baseline, mostly resulting from the drop in dairy cow numbers.

The impact of the scenario on key EU variables is shown in Table 4.3. The reduction in the number of suckler cows causes a significant reduction in the production of beef of 80,000 tonnes in 2010 relative to the baseline. The beef price increases to 116 euro/100kg in 2010, with the other meat prices also increasing marginally. Consumption in of beef in the EU is 70 g/head lower in 2005, and 270 g/head lower in 2010 relative to the baseline in those years.

Figure 4-1: The Impact of the Scenario on the EU



Source: FAPRI-Ireland Partnership Model (2002)

Some adjustments were also made to the sheep numbers in some of the countries as a result of the farm level analysis. These result in ewe numbers falling by 40,000

in 2010 relative to the baseline, mostly as a result of the reductions of ewe numbers in Ireland.

Table 4.3: EU Main Beef Variables Baseline and Scenario Projections for 2010.

	Baseline 2005	Scenario 2005	% Change	Baseline 2010	Scenario 2010	% Change
		€uro /100kg			€uro /100kg	
Cattle Ref. Price	116.9	119.1	1.9%	111.5	115.8	3.9%
Sheep Ref. Price	352.0	358.9	2.0%	352.2	357.6	1.5%
		Million Head			Million Head	
Beef Cows	12.56	12.04	-4.1%	12.54	12.16	-3.0%
Total Cows	32.26	31.74	-1.6%	31.28	30.90	-1.2%
Ewes	66.95	66.45	-0.7%	65.41	65.04	-0.6%
		000 Tonnes			000 Tonnes	
Beef Production	7337	7295	-0.6%	7219	7135	-1.2%
Lamb Production	1069	1062	-0.7%	1054	1048	-0.6%
Beef Consumption	7183	7155	-0.4%	7040	6977	-0.9%
Lamb Consumption	1321	1314	-0.5%	1317	1311	-0.5%

Source: FAPRI-Ireland Partnership Model

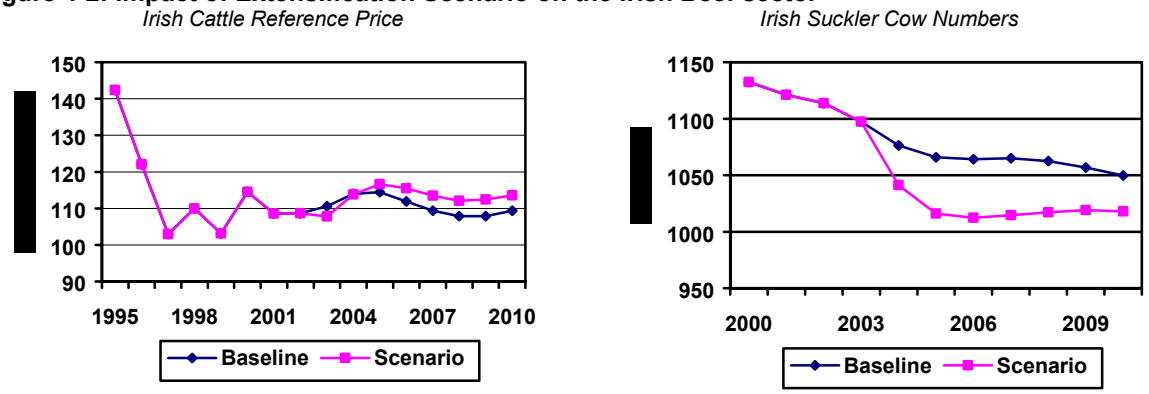
As with the baseline there are assumptions regarding the behaviour of the Commission that underlie these results. In particular, the Commission could decide to prevent the beef price in the EU from rising to this extent by reducing the level of subsidised exports, especially given that the Agenda 2000 reforms included direct payment compensation for a drop in the support price.

Compared to most other EU member states the extensification scenario has a larger and more wide ranging impact in Ireland. This difference arises due to the more extensive nature of Irish livestock production and the more mixed nature of Irish livestock production. Nevertheless, the impact in Ireland of the reduction of 0.2 L.U. per hectare to the two existing extensification limits is projected to be quite limited. Analysis of National Farm Survey data and farm level microeconomic analysis that is presented later in this paper indicates that the reduction in the suckler cow herd will be relatively limited.

Under the scenario the projected reduction in the Irish suckler cow herd, relative to the baseline level, will be approximately 50,000 head, see Figure 4-2. This projected reduction is based on analysis that indicates that most classes of beef producers would reduce numbers of ewes and steers so as to comply with the scenario's lower extensification limits, rather than reduce suckler cow numbers. Where farms adjust

to the lower extensification by shedding steers these animals are also likely to be redistributed to farms that are not claiming extensification and to farms that under the scenario are projected to exit the dairy industry and engage in store beef production.

Figure 4-2: Impact of Extensification Scenario on the Irish Beef sector



Source: FAPRI-Ireland Partnership Model (2002).

The decline in suckler cow numbers that is projected under the scenario relative to the baseline means that under the scenario the reduction in beef production is also relatively modest. Some of the key results of the scenario at the aggregate level for both the beef and sheep sectors are given in

Table 4-5: Key Irish Beef Variables - Baseline and Scenario Projections for 2010

	Baseline 2005	Scenario 2005	Change %	Baseline 2010	Scenario 2010	Change %
		€uro /100kg			€uro /100kg	
Cattle Ref. Price	114	117	2%	109	114	5%
		'000 Head			'000 Head	
Beef Cows[a]	1,064	1,016	-5%	1,050	1,017	-3%
Total Cows[a]	2,265	2,215	-2%	2,176	2,143	-2%
		'000 head			'000 head	
Live exports	190	190	0%	189	189	0%
Slaughterings	1,837	1,816	-1%	1,763	1737	-1.5%
Volume of Output (incl. Stock changes)	2,053	2,007	-2%	1,973	1,943	-1.5%
		€uro m			€uro m	
Value of Output	1,352	1,337	-1%	1,234	1,265	3%
Direct Payments	820	818	-1%	813	843	4%
Sector Revenue	2,172	2,155	-1%	2,047	2,108	3%

Source: FAPRI-Ireland Partnership Model (2002).

Table 4-5. Irish beef production in 2010 is less that 1.5 per cent lower than under the baseline. The increase in the Irish beef price is largely determined by developments in Ireland's beef export markets. The projected change in the Irish cattle reference price relative to the baseline is an increase of 5 per cent. This increase in the cattle

price together with the modest decline in the volume of output results by 2010 in an increase in the value of output relative to the Baseline. The value of direct payments increases because of the “generous” nature of the assumed compensatory increase in extensification payments and the claiming of suckler cow payments on dry heifers. Overall direct payments receipts are projected to increase by approximately € 30m. Overall beef sector revenue increases by over 3%.

The reduction in the Irish ewe flock that is projected under the extensification scenario re-enforces the reduction that occurs under the Baseline. The Irish ewe flock is projected to be 4 per cent lower by 2010 relative to its level under the Baseline. This further reduction in the Irish ewe flock arises because while ewes are assessed in determining farm stocking densities they are not eligible for extensification payments in their own right. This means that relative to both steers and cows these animals are more likely to be lost as mixed farms adjust to the lower extensification limits.

Table 4-6: Main Irish Sheep Variables - Baseline and Scenario Projections for 2010

	Baseline 2005	Scenario 2005	Change %	Baseline 2010	Scenario 2010	Change %
	€uro /100kg			€uro /100kg		
Sheep Ref. Price	339	342	1%	338	344	2%
	'000 Head			'000 Head		
Ewes	3,816	3,704	-3%	3,725	3,570	-4%
	‘000 head			‘000 head		
Volume of Output	3,641	3,535	-3%	3,552	3,406	-4%
	€uro m			€uro m		
Value of Output	208	203	-2%	202	197	-2%
Direct Payments	120	115	-2%	117	112	-4%
Sector Revenue	359	351	-2%	319	309	-3%

Source: FAPRI-Ireland Partnership Model (2002).

The results of the scenario for the key results relating to the Irish sheep sector are given in Table 4-6. Overall the value of output under the scenario is 2% lower than under the baseline, when combined with a decline in overall sector ewe premium receipts, this means that sheep sector revenue is down by 3 per cent relative to the baseline.

4.2 Scenario analysis in 2002: Conclusions

In a general income context, total livestock output value increases under the extensification scenario. This is mainly due to projected increases in the value of the

beef sector. The decline in output volume caused by the reduction in livestock numbers is outweighed by the increase in EU and Irish beef prices due to the overall decline in supply. The sheep sector, on the other hand experiences a decline in the value of sector output of over two per cent relative to the baseline due to a projected four per cent decline in sheep numbers. Total livestock values are up by two per cent relative to the baseline in 2010.

Under the scenario, extensification payments are increased to ensure that the scenario is income "neutral" in terms of the compensatory payments foregone by a move to a lower stocking rate per hectare. Therefore aggregate subsidy levels are increased relative to baseline levels. In particular subsidies on production are up by over four per cent in 2010 on their levels under the baseline. With input expenditure declining by one per cent the net effect of the extensification changes is a three per cent increase in Irish agricultural incomes in 2010 relative to their baseline level.

Details of the impact of the MTR scenario on Agricultural Output, Inputs and Income are provided in Appendices A7 and A8 of this report and in Binfield et al. (2002a, 2002b).

Related Reading:

Behan, J. and K. McQuinn (2002). **Projections of Agricultural Land Use and the Consequent Environmental Implications.** End of Project Report (Project No. 4822). Teagasc, Dublin.

Binfield J., T. Donnellan and K. McQuinn (1999) **The Impact of the Berlin Agreement on Irish Agriculture.** Paper presented to Agricultural Economics Society of Ireland. Dublin. May 31.

Binfield J., T. Donnellan and K. McQuinn (2000). Agricultural Sector Outlook for Ireland. In proceedings *FAPRI-Ireland Outlook 2000: Medium Term Analysis for the Agri-Food Sector*. Teagasc, Dublin.

Binfield, J., K. Hanrahan, and M. Henchion (2001). **An Econometric Model of the Irish Beef Sector for Policy Analysis.** End of Project Report (Project No. 4432). Teagasc, Dublin.

Binfield, J., T. Donnellan, K. Hanrahan, K. McQuinn and P. Westhoff (2001a). The Baseline Outlook for Agricultural Sector in Ireland. In proceedings *FAPRI-Ireland Outlook 2001: Medium Term Analysis for the Agri-Food Sector*. Teagasc, Dublin.

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Binfield, J., T. Hennessy, A. Matthews, and P. Westhoff (2001c). The BSE Crisis and Agri-Food Sector. In proceedings *FAPRI-Ireland Outlook 2001: Medium Term Analysis for the Agri-Food Sector*. Teagasc, Dublin.

Binfield, J. T. Donnellan, K. Hanrahan, K. McQuinn and P. Westhoff (2002a) The Baseline Outlook for Agricultural Sector in the EU and Ireland. In proceedings

FAPRI-Ireland Outlook 2002: Medium Term Analysis for the Agri-Food Sector. Teagasc, Dublin.

Binfield, J. T. Donnellan, K. Hanrahan, K. McQuinn and P. Westhoff (2002b) The Mid-Term Review: An Analysis of Impact of Changes to Extensification Regime. In proceedings *FAPRI-Ireland Outlook 2002: Medium Term Analysis for the Agri-Food Sector*. Teagasc, Dublin.

Donnellan, T. (2002). **Economic Projections for the Dairy and Pig Sectors.** End of Project Report (Project No. 4819). Teagasc, Dublin.

Donnellan, T., W. Fingleton, M. Keane, P. Enright, and D. O'Connor (1998). **Dairy Sector Outlook for Ireland.** In proceedings Agri-Food Economics Conference 1998. Teagasc, Dublin.

McQuinn, K. and J. Behan (2002). **Policy changes in the Crops Sector and Projections for Incomes and Costs in Irish Agriculture.** End of Project Report (Project No. 4821/4823). Teagasc, Dublin.

Appendix A

Table A 1: Output Input and Income in Agriculture (Pessimistic BSE Scenario)

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2010 v 2000	
							£m						change	%
Livestock	**1,674**	**1,784**	**1,576**	**1,530**	**1,465**	**1,453**	**1,460**	**1,478**	**1,459**	**1,454**	**1,448**	**1,449**	-335	-18.8%
of which: cattle	1,087	1,126	835	829	786	775	787	813	800	795	789	788	-338	-30.0%
pigs	182	214	239	230	228	232	225	218	214	212	208	206	-8	-3.7%
sheep and lambs	172	178	220	198	179	171	168	165	161	160	159	160	-18	-10.1%
Livestock Products	**1,136**	**1,168**	**1,193**	**1,205**	**1,207**	**1,203**	**1,172**	**1,145**	**1,122**	**1,127**	**1,132**	**1,138**	-30	-2.6%
of which: milk	1,112	1,133	1,169	1,179	1,182	1,178	1,147	1,120	1,096	1,100	1,104	1,108	-25	-2.2%
Crops	**798**	**825**	**789**	**788**	**797**	**800**	**804**	**809**	**815**	**821**	**827**	**834**	9	1.1%
of which: cereals	146	163	136	133	138	136	134	135	135	136	137	138	-25	-15.3%
root crops	124	113	119	117	117	117	118	118	119	119	120	120	7	6.2%
forage plants	337	360	349	347	346	345	345	344	344	344	343	343	-17	-4.7%
Goods output at producer prices	**3,608**	**3,777**	**3,558**	**3,524**	**3,469**	**3,457**	**3,436**	**3,432**	**3,396**	**3,402**	**3,407**	**3,421**	-356	-9.4%
Agricultural services	215	209	206	205	199	197	195	195	193	193	192	193	-16	-7.7%
Subsidies less taxes on products	562	664	725	864	899	896	902	929	960	974	973	970	306	46.1%
Agricultural output at basic prices	**4,385**	**4,650**	**4,489**	**4,592**	**4,567**	**4,550**	**4,533**	**4,556**	**4,550**	**4,569**	**4,572**	**4,584**	-66	-1.4%
Intermediate consumption	**2,337**	**2,453**	**2,445**	**2,408**	**2,397**	**2,381**	**2,367**	**2,364**	**2,369**	**2,376**	**2,384**	**2,388**	-65	-2.6%
of which: feeding stuffs	677	661	685	679	687	676	659	646	637	631	627	622	-39	-5.9%
fertilizers	267	265	250	247	245	245	245	245	245	245	245	243	-22	-8.3%
energy	269	351	329	312	307	307	308	312	318	323	329	335	-16	-4.6%
forage plants	334	356	345	344	342	342	341	341	340	340	340	340	-16	-4.5%
agricultural services	215	209	206	205	199	197	195	195	193	193	192	193	-16	-7.7%
Gross value added at basic prices	**2,048**	**2,197**	**2,044**	**2,184**	**2,170**	**2,169**	**2,166**	**2,192**	**2,180**	**2,193**	**2,189**	**2,195**	-2	-0.1%
Fixed capital consumption	456	497	467	463	459	457	455	454	453	453	453	453	-44	-8.9%
Net value added at basic prices	**1,592**	**1,700**	**1,578**	**1,721**	**1,710**	**1,712**	**1,711**	**1,738**	**1,727**	**1,740**	**1,735**	**1,742**	42	2.5%
Subsidies less taxes on production	329	341	331	343	345	347	349	351	353	355	357	359	18	5.3%
Factor income	1,921	2,041	1,909	2,064	2,055	2,059	2,060	2,089	2,080	2,095	2,092	2,101	60	2.9%
Compensation of employees	200	198	215	219	223	226	231	237	246	257	267	275	77	38.9%
Operating surplus	**1,721**	**1,843**	**1,694**	**1,845**	**1,832**	**1,833**	**1,829**	**1,852**	**1,834**	**1,838**	**1,826**	**1,826**	-17	-0.9%

Source: *FAPRI-Ireland GOLD Model.*
Historical data, CSO.

Table A 2: Percentage Change from Baseline under Pessimistic BSE Scenario

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
	IR£ millions											
Livestock	**0.0%**	**0.0%**	**-7.9%**	**-7.3%**	**-8.4%**	**-15.0%**	**-12.9%**	**-10.6%**	**-10.6%**	**-9.7%**	**-9.4%**	**-9.4%**
of which: cattle	0.0%	0.0%	-16.5%	-14.2%	-15.0%	-24.2%	-21.6%	-18.2%	-18.0%	-16.8%	-16.6%	-16.5%
pigs	0.0%	0.0%	0.8%	0.0%	-0.4%	-2.5%	-0.9%	0.0%	-0.5%	-0.5%	-0.5%	-0.5%
sheep and lambs	0.0%	0.0%	11.1%	8.8%	3.5%	-1.2%	1.8%	3.8%	3.2%	3.9%	3.9%	5.3%
Livestock Products	**0.0%**	**0.0%**	**0.0%**	**0.1%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**-0.1%**	**-0.1%**	**0.0%**	**0.0%**
of which: milk	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	-0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
Crops	**0.0%**	**0.0%**	**0.1%**	**0.3%**	**0.4%**	**0.4%**	**0.6%**	**0.7%**	**0.9%**	**0.7%**	**0.7%**	**0.8%**
of which: cereals	0.0%	0.0%	0.0%	0.8%	0.7%	0.7%	0.0%	0.7%	0.7%	0.7%	0.7%	0.7%
root crops	0.0%	0.0%	0.8%	1.7%	2.6%	3.5%	4.4%	4.4%	5.3%	5.3%	6.2%	6.2%
forage plants	0.0%	0.0%	0.0%	0.0%	0.0%	-0.3%	0.0%	-0.3%	0.0%	0.0%	-0.3%	-0.3%
Goods output at producer prices	**0.0%**	**0.0%**	**-3.6%**	**-3.2%**	**-3.7%**	**-6.8%**	**-5.8%**	**-4.7%**	**-4.7%**	**-4.2%**	**-4.1%**	**-4.0%**
Agricultural services	0.0%	0.0%	-1.4%	-1.9%	-3.4%	-4.4%	-5.8%	-5.8%	-5.4%	-4.5%	-4.5%	-4.0%
Subsidies less taxes on products	0.0%	0.0%	-2.9%	-0.6%	0.7%	1.4%	0.8%	0.7%	0.6%	0.6%	0.7%	0.7%
Agricultural output at basic prices	**0.0%**	**0.0%**	**-3.4%**	**-2.7%**	**-2.8%**	**-5.2%**	**-4.5%**	**-3.7%**	**-3.6%**	**-3.3%**	**-3.1%**	**-3.1%**
Intermediate consumption	**0.0%**	**0.0%**	**0.0%**	**-1.8%**	**-2.5%**	**-2.9%**	**-3.0%**	**-2.9%**	**-2.6%**	**-2.4%**	**-2.1%**	**-2.1%**
of which: feeding stuffs	0.0%	0.0%	1.2%	-1.0%	-2.1%	-2.9%	-3.1%	-3.3%	-3.3%	-3.1%	-2.8%	-3.0%
fertilizers	0.0%	0.0%	-2.7%	-2.4%	-2.4%	-2.4%	-2.8%	-2.4%	-2.4%	-2.8%	-2.8%	-3.6%
energy	0.0%	0.0%	0.0%	-4.0%	-4.1%	-3.8%	-3.8%	-3.1%	-2.2%	-1.8%	-1.5%	-1.2%
forage plants	0.0%	0.0%	-0.3%	0.0%	-0.3%	0.0%	-0.3%	0.0%	-0.3%	-0.3%	-0.3%	0.0%
agricultural services	0.0%	0.0%	-1.4%	-1.9%	-3.4%	-4.4%	-5.8%	-5.8%	-5.4%	-4.5%	-4.5%	-4.0%
Gross value added at basic prices	**0.0%**	**0.0%**	**-7.2%**	**-3.7%**	**-3.2%**	**-7.6%**	**-6.1%**	**-4.7%**	**-4.7%**	**-4.2%**	**-4.1%**	**-4.1%**
Fixed capital consumption	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Net value added at basic prices	**0.0%**	**0.0%**	**-9.1%**	**-4.6%**	**-4.0%**	**-9.5%**	**-7.6%**	**-5.8%**	**-5.9%**	**-5.3%**	**-5.2%**	**-5.1%**
Subsidies less taxes on production	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Factor income	**0.0%**	**0.0%**	**-7.6%**	**-3.9%**	**-3.3%**	**-8.0%**	**-6.4%**	**-4.9%**	**-4.9%**	**-4.4%**	**-4.3%**	**-4.3%**
Compensation of employees	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Operating surplus	**0.0%**	**0.0%**	**-8.6%**	**-4.3%**	**-3.7%**	**-8.9%**	**-7.2%**	**-5.5%**	**-5.6%**	**-5.0%**	**-4.9%**	**-4.9%**

Source: FAPRI-Ireland GOLD Model.
Historical data, CSO.

Table A 3: Output Input and Income in Agriculture (Seven Point Plan BSE Scenario)

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2010 v 2000	
	IR£ millions												change	%
Livestock	**1,674**	**1,784**	**1,709**	**1,650**	**1,587**	**1,694**	**1,652**	**1,621**	**1,604**	**1,579**	**1,572**	**1,573**	-211	-11.8%
of which: cattle	1,087	1,126	997	955	898	988	963	944	929	907	902	901	-225	-20.0%
pigs	182	214	237	230	229	238	227	219	217	214	210	209	-5	-2.3%
sheep and lambs	172	178	198	194	187	190	181	176	173	170	168	166	-12	-6.7%
Livestock Products	**1,136**	**1,168**	**1,193**	**1,206**	**1,208**	**1,204**	**1,172**	**1,145**	**1,123**	**1,128**	**1,132**	**1,138**	-30	-2.6%
of which: milk	1,112	1,133	1,169	1,179	1,182	1,179	1,148	1,120	1,096	1,100	1,104	1,108	-25	-2.2%
Crops	**798**	**825**	**788**	**786**	**794**	**797**	**799**	**804**	**809**	**815**	**822**	**828**	3	0.4%
of which: cereals	146	163	136	133	137	135	134	134	134	135	136	137	-26	-16.0%
root crops	124	113	118	116	115	114	113	113	114	114	114	114	1	0.9%
forage plants	337	360	349	347	346	346	345	345	344	344	344	344	-16	-4.4%
Goods output at producer prices	**3,608**	**3,777**	**3,690**	**3,642**	**3,589**	**3,694**	**3,623**	**3,570**	**3,536**	**3,522**	**3,526**	**3,538**	-239	-6.3%
Agricultural services	215	209	209	209	206	206	206	205	202	200	200	200	-9	-4.3%
Subsidies less taxes on products	562	664	752	871	898	889	897	924	952	964	959	954	290	43.7%
Agricultural output at basic prices	**4,385**	**4,650**	**4,651**	**4,723**	**4,693**	**4,789**	**4,726**	**4,700**	**4,690**	**4,686**	**4,685**	**4,692**	42	0.9%
Intermediate consumption	**2,337**	**2,453**	**2,444**	**2,448**	**2,435**	**2,421**	**2,406**	**2,397**	**2,393**	**2,391**	**2,393**	**2,393**	-60	-2.4%
of which: feeding stuffs	677	661	676	684	692	686	669	654	644	635	629	623	-38	-5.7%
fertilizers	267	265	257	253	247	250	251	251	251	251	252	250	-15	-5.7%
energy	269	351	329	325	319	314	313	317	321	325	330	335	-16	-4.6%
forage plants	334	356	346	344	343	342	342	341	341	341	340	340	-16	-4.5%
agricultural services	215	209	209	209	206	206	206	205	202	200	200	200	-9	-4.3%
Gross value added at basic prices	**2,048**	**2,197**	**2,207**	**2,275**	**2,258**	**2,368**	**2,320**	**2,303**	**2,297**	**2,295**	**2,292**	**2,299**	102	4.6%
Fixed capital consumption	456	497	467	463	459	457	455	454	453	453	453	453	-44	-8.9%
Net value added basic prices	**1,592**	**1,700**	**1,741**	**1,812**	**1,799**	**1,912**	**1,865**	**1,849**	**1,844**	**1,842**	**1,839**	**1,846**	146	8.6%
Subsidies less taxes on production	329	341	331	343	345	347	349	351	353	355	357	359	18	5.3%
Factor income	1,921	2,041	2,072	2,155	2,144	2,259	2,214	2,200	2,197	2,197	2,196	2,205	164	8.0%
Compensation of employees	200	198	215	219	223	226	231	237	246	257	267	275	77	38.9%
Operating surplus	**1,721**	**1,843**	**1,857**	**1,936**	**1,920**	**2,033**	**1,983**	**1,963**	**1,951**	**1,940**	**1,930**	**1,930**	87	4.7%

Source: *FAPRI-Ireland GOLD Model.*
Historical data, CSO.

Table A 4: Percentage Change from Baseline under Seven Point Plan BSE Scenario

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
	IR£ millions											
Livestock	**0.0%**	**0.0%**	**-0.2%**	**0.0%**	**-0.8%**	**-0.9%**	**-1.4%**	**-2.0%**	**-1.7%**	**-2.0%**	**-1.7%**	**-1.6%**
of which: cattle	0.0%	0.0%	-0.3%	-1.1%	-2.9%	-3.3%	-4.1%	-5.0%	-4.8%	-5.1%	-4.7%	-4.6%
pigs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	0.9%	0.5%	0.5%	1.0%
sheep and lambs	0.0%	0.0%	0.0%	6.6%	8.1%	9.8%	9.7%	10.7%	10.9%	10.4%	9.8%	9.2%
Livestock Products	**0.0%**	**0.0%**	**0.0%**	**0.2%**	**0.1%**	**0.1%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**
of which: milk	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Crops	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.1%**	**0.1%**	**0.0%**	**0.1%**	**0.1%**
of which: cereals	0.0%	0.0%	0.0%	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
root crops	0.0%	0.0%	0.0%	0.9%	0.9%	0.9%	0.0%	0.0%	0.9%	0.9%	0.9%	0.9%
forage plants	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Goods output at producer prices	**0.0%**	**0.0%**	**-0.1%**	**0.1%**	**-0.3%**	**-0.4%**	**-0.7%**	**-0.9%**	**-0.8%**	**-0.9%**	**-0.7%**	**-0.7%**
Agricultural services	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.5%	-1.0%	-1.0%	-1.0%	-0.5%	-0.5%
Subsidies less taxes on products	0.0%	0.0%	0.7%	0.2%	0.6%	0.6%	0.2%	0.1%	-0.2%	-0.4%	-0.7%	-0.9%
Agricultural output at basic prices	**0.0%**	**0.0%**	**0.1%**	**0.1%**	**-0.1%**	**-0.2%**	**-0.5%**	**-0.7%**	**-0.7%**	**-0.8%**	**-0.7%**	**-0.8%**
Intermediate consumption	**0.0%**	**0.0%**	**-0.1%**	**-0.2%**	**-1.0%**	**-1.3%**	**-1.4%**	**-1.5%**	**-1.6%**	**-1.8%**	**-1.8%**	**-1.9%**
of which: feeding stuffs	0.0%	0.0%	-0.1%	-0.3%	-1.4%	-1.4%	-1.6%	-2.1%	-2.3%	-2.5%	-2.5%	-2.8%
fertilizers	0.0%	0.0%	0.0%	0.0%	-1.6%	-0.4%	-0.4%	0.0%	0.0%	-0.4%	0.0%	-0.8%
energy	0.0%	0.0%	0.0%	0.0%	-0.3%	-1.6%	-2.2%	-1.6%	-1.2%	-1.2%	-1.2%	-1.2%
forage plants	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.3%	0.0%
agricultural services	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.5%	-1.0%	-1.0%	-1.0%	-0.5%	-0.5%
Gross value added at basic prices	**0.0%**	**0.0%**	**0.2%**	**0.3%**	**0.8%**	**0.9%**	**0.6%**	**0.2%**	**0.4%**	**0.2%**	**0.4%**	**0.4%**
Fixed capital consumption	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Net value added at basic prices	**0.0%**	**0.0%**	**0.3%**	**0.4%**	**1.0%**	**1.1%**	**0.7%**	**0.2%**	**0.5%**	**0.3%**	**0.5%**	**0.5%**
Subsidies less taxes on production	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Factor income	**0.0%**	**0.0%**	**0.2%**	**0.4%**	**0.8%**	**0.9%**	**0.6%**	**0.2%**	**0.4%**	**0.2%**	**0.4%**	**0.5%**
Compensation of employees	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Operating surplus	**0.0%**	**0.0%**	**0.2%**	**0.4%**	**0.9%**	**1.0%**	**0.7%**	**0.2%**	**0.5%**	**0.3%**	**0.5%**	**0.5%**

Source: *FAPRI-Ireland GOLD Model.*
Historical data, CSO.

Table A 5:Output Input and Income in Agriculture (Export Refund Elimination Scenario)

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2010 v 2000	
	IR£ millions												change	%
Livestock	**1,674**	**1,784**	**1,712**	**1,650**	**1,600**	**1,705**	**1,649**	**1,541**	**1,449**	**1,373**	**1,349**	**1,365**	**-419**	**-23%**
of which: cattle	1,087	1,126	1,000	966	925	1,019	986	900	816	746	726	739	-387	-34%
pigs	182	214	237	230	229	237	222	207	202	197	192	191	-23	-11%
sheep and lambs	172	178	198	182	173	172	164	156	151	149	147	146	-32	-18%
Livestock Products	**1,136**	**1,168**	**1,193**	**1,204**	**1,207**	**1,175**	**1,089**	**1,020**	**964**	**931**	**920**	**922**	**-246**	**-21%**
of which: milk	1,112	1,133	1,169	1,179	1,182	1,150	1,065	995	938	904	891	892	-241	-21%
Crops	**798**	**825**	**788**	**786**	**794**	**796**	**797**	**800**	**805**	**811**	**819**	**828**	**3**	**0%**
of which: cereals	146	163	136	132	137	135	130	127	125	122	123	124	-39	-24%
root crops	124	113	118	115	114	114	114	115	118	121	124	127	14	12%
forage plants	337	360	349	347	346	346	345	344	344	343	343	342	-18	-5%
Goods output at producer prices	**3,608**	**3,777**	**3,692**	**3,640**	**3,601**	**3,676**	**3,535**	**3,361**	**3,218**	**3,115**	**3,088**	**3,115**	**-662**	**-18%**
Agricultural services	215	209	209	209	206	206	204	199	191	183	178	176	-33	-16%
Subsidies less taxes on products	562	664	747	869	893	885	896	927	960	977	976	972	308	46%
Agricultural output at basic prices	**4,385**	**4,650**	**4,648**	**4,719**	**4,700**	**4,767**	**4,635**	**4,487**	**4,368**	**4,275**	**4,242**	**4,263**	**-387**	**-8%**
Intermediate consumption	**2,337**	**2,453**	**2,446**	**2,452**	**2,459**	**2,449**	**2,424**	**2,397**	**2,371**	**2,346**	**2,334**	**2,329**	**-124**	**-5%**
of which: feeding stuffs	677	661	677	686	702	694	669	647	627	609	600	594	-67	-10%
fertilizers	267	265	257	253	251	251	250	247	244	242	241	240	-25	-9%
energy	269	351	329	325	320	319	320	321	322	324	327	330	-21	-6%
forage plants	334	356	346	344	343	342	342	341	340	340	339	339	-17	-5%
agricultural services	215	209	209	209	206	206	204	199	191	183	178	176	-33	-16%
Gross value added at basic prices	**2,048**	**2,197**	**2,203**	**2,268**	**2,241**	**2,317**	**2,211**	**2,091**	**1,997**	**1,929**	**1,908**	**1,934**	**-263**	**-12%**
Fixed capital consumption	456	497	467	463	459	457	455	454	453	453	453	453	-44	-9%
Net value added at basic prices	**1,592**	**1,700**	**1,736**	**1,804**	**1,781**	**1,861**	**1,756**	**1,637**	**1,544**	**1,476**	**1,455**	**1,480**	**-220**	**-13%**
Subsidies less taxes on production	329	341	331	343	345	347	349	351	353	355	357	359	18	5%
Factor income	**1,921**	**2,041**	**2,067**	**2,147**	**2,126**	**2,208**	**2,105**	**1,988**	**1,897**	**1,831**	**1,812**	**1,839**	**-202**	**-10%**
Compensation of employees	200	198	215	219	223	226	231	237	246	257	267	275	77	39%
Operating surplus	**1,721**	**1,843**	**1,853**	**1,928**	**1,903**	**1,982**	**1,874**	**1,751**	**1,651**	**1,574**	**1,546**	**1,564**	**-279**	**-15%**

Source: *FAPRI-Ireland GOLD Model.*
Historical data, CSO.

Table A 6: Percentage Change from Baseline under Export Refund Elimination Scenario

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
	IR£ millions											
Livestock	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**-0.3%**	**-1.6%**	**-6.8%**	**-11.2%**	**-14.8%**	**-15.6%**	**-14.6%**
of which: cattle	0.0%	0.0%	0.0%	0.0%	0.0%	-0.3%	-1.8%	-9.5%	-16.4%	-22.0%	-23.3%	-21.7%
pigs	0.0%	0.0%	0.0%	0.0%	0.0%	-0.4%	-2.2%	-5.0%	-6.0%	-7.5%	-8.1%	-7.7%
sheep and lambs	0.0%	0.0%	0.0%	0.0%	0.0%	-0.6%	-0.6%	-1.9%	-3.2%	-3.2%	-3.9%	-3.9%
Livestock Products	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**-2.3%**	**-7.1%**	**-10.9%**	**-14.2%**	**-17.5%**	**-18.7%**	**-19.0%**
of which: milk	0.0%	0.0%	0.0%	0.0%	0.0%	-2.5%	-7.2%	-11.2%	-14.4%	-17.8%	-19.3%	-19.5%
Crops	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**-0.1%**	**-0.3%**	**-0.4%**	**-0.4%**	**-0.5%**	**-0.2%**	**0.1%**
of which: cereals	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-3.0%	-5.2%	-6.7%	-9.6%	-9.6%	-9.5%
root crops	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	0.9%	1.8%	4.4%	7.1%	9.7%	12.4%
forage plants	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.3%	0.0%	-0.3%	-0.3%	-0.6%
Goods output at producer prices	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**-0.9%**	**-3.1%**	**-6.7%**	**-9.7%**	**-12.3%**	**-13.1%**	**-12.6%**
Agricultural services	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-1.4%	-3.9%	-6.4%	-9.4%	-11.4%	-12.4%
Subsidies less taxes on products	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.4%	0.6%	0.9%	1.0%	0.9%
Agricultural output at basic prices	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**-0.7%**	**-2.4%**	**-5.2%**	**-7.5%**	**-9.5%**	**-10.1%**	**-9.9%**
Intermediate consumption	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**-0.2%**	**-0.7%**	**-1.5%**	**-2.5%**	**-3.6%**	**-4.2%**	**-4.5%**
of which: feeding stuffs	0.0%	0.0%	0.0%	0.0%	0.0%	-0.3%	-1.6%	-3.1%	-4.9%	-6.5%	-7.0%	-7.3%
fertilizers	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.8%	-1.6%	-2.8%	-4.0%	-4.4%	-4.8%
energy	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.3%	-0.9%	-1.5%	-2.1%	-2.7%
forage plants	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.3%	-0.3%	-0.6%	-0.3%
agricultural services	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-1.4%	-3.9%	-6.4%	-9.4%	-11.4%	-12.4%
Gross value added at basic prices	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**-1.3%**	**-4.2%**	**-9.0%**	**-12.7%**	**-15.8%**	**-16.4%**	**-15.5%**
Fixed capital consumption	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Net value added at basic prices	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**-1.6%**	**-5.2%**	**-11.3%**	**-15.9%**	**-19.7%**	**-20.5%**	**-19.4%**
Subsidies less taxes on production	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Factor income	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**-1.4%**	**-4.4%**	**-9.5%**	**-13.3%**	**-16.5%**	**-17.1%**	**-16.2%**
Compensation of employees	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Operating surplus	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**-1.5%**	**-4.9%**	**-10.6%**	**-15.0%**	**-18.7%**	**-19.5%**	**-18.5%**

Source: *FAPRI-Ireland GOLD Model.*
Historical data, CSO.

Table A 7: Output Input and Income in Agriculture (MTR Extensification Scenario)

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2010 v 2000	
						€uro millions							change	%
Livestock	**2,075.7**	**2,153.2**	**2,169.8**	**2,187.6**	**2,137.9**	**2,160.6**	**2,171.1**	**2,145.3**	**2,113.8**	**2,099.7**	**2,101.4**	**2,114.0**	**-1.8%**	**2,075.7**
of which: cattle	1,340.0	1,372.1	1,252.9	1,328.9	1,301.6	1,323.3	1,337.8	1,318.3	1,290.5	1,268.2	1,261.0	1,264.6	**-7.8%**	1,340.0
pigs	231.3	271.9	324.7	314.1	297.0	302.5	301.8	296.7	291.3	293.3	295.4	298.5	**9. 8%**	231.3
sheep and lambs	200.2	205.2	283.7	227.8	219.7	211.4	203.3	197.6	194.6	195.5	196.9	197.1	**-4.0%**	200.2
Livestock Products	**1,438.8**	**1,481.9**	**1,594.7**	**1,443.6**	**1,451.2**	**1,435.2**	**1,404.2**	**1,378.4**	**1,360.4**	**1,372.2**	**1,376.4**	**1,380.9**	**-6.8%**	**1,438.8**
of which: milk	1,410.5	1,444.7	1,559.4	1,412.9	1,419.8	1,404.6	1,373.0	1,346.1	1,326.9	1,337.2	1,340.0	1,343.4	**-7.0%**	1,410.5
Crops	**1,024.9**	**1,057.6**	**1,111.4**	**1,036.8**	**1,042.1**	**1,043.6**	**1,046.5**	**1,052.1**	**1,059.3**	**1,067.0**	**1,074.0**	**1,081.0**	**2.2%**	**1,024.9**
of which: cereals	164.1	185.1	193.6	172.1	172.2	167.7	165.1	165.5	166.3	167.5	167.9	168.3	**-9.1%**	164.1
root crops	172.8	143.4	169.4	150.5	148.9	148.2	147.6	147.4	147.6	147.6	147.5	147.2	**2.7%**	172.8
forage plants	438.5	463.2	473.8	451.1	450.5	450.0	449.6	449.3	448.9	448.6	448.4	448.2	**-3.3%**	438.5
Goods output at producer prices	**4,539.4**	**4,692.8**	**4,875.9**	**4,667.9**	**4,631.2**	**4,639.4**	**4,621.9**	**4,575.7**	**4,533.4**	**4,538.8**	**4,551.8**	**4,576.0**	**-2.5%**	**4,539.4**
Agricultural services	272.9	275.2	291.4	281.0	279.8	275.1	274.2	273.1	271.0	269.4	268.9	269.8	**-2.0%**	272.9
Subsidies less taxes on products	715.1	843.6	697.5	858.6	881.9	876.7	891.8	929.1	967.5	986.2	984.3	982.2	**16.4%**	715.1
Agricultural output at basic prices	**5,527.4**	**5,811.6**	**5,864.8**	**5,807.5**	**5,792.9**	**5,791.2**	**5,787.9**	**5,777.9**	**5,772.0**	**5,794.4**	**5,805.0**	**5,827.9**	**0.3%**	**5,527.4**
Intermediate consumption	**2,980.7**	**3,109.4**	**3,235.5**	**3,130.2**	**3,148.2**	**3,122.3**	**3,116.6**	**3,121.7**	**3,138.4**	**3,152.8**	**3,168.0**	**3,184.2**	**2.4%**	**2,980.7**
of which: feeding stuffs	859.5	829.5	876.3	849.6	864.2	846.1	825.7	811.4	800.0	790.8	780.8	770.1	**-7.2%**	859.5
fertilizers	338.3	336.7	350.4	335.4	324.3	321.1	322.0	325.2	329.6	335.8	341.8	349.3	**3.7%**	338.3
energy	341.4	449.9	469.6	399.4	402.8	405.2	407.4	412.5	419.8	427.0	435.3	444.9	**-1.1%**	341.4
forage plants	434.3	458.9	469.6	446.6	446.0	445.5	445.1	444.8	444.5	444.2	443.9	443.7	**-3.3%**	434.3
agricultural services	272.9	275.2	291.4	281.0	279.8	275.1	274.2	273.1	271.0	269.4	268.9	269.8	**-2.0%**	272.9
Gross value added at basic prices	**2,546.7**	**2,702.2**	**2,629.3**	**2,677.4**	**2,644.6**	**2,668.9**	**2,671.3**	**2,656.2**	**2,633.6**	**2,641.5**	**2,637.0**	**2,643.6**	**-2.2%**	**2,546.7**
Fixed capital consumption	543.7	556.7	568.3	588.3	583.4	579.7	577.5	576.1	575.4	575.4	575.4	575.4	**3.4%**	543.7
Net value added basic prices	**2,003.0**	**2,145.5**	**2,061.0**	**2,089.0**	**2,061.3**	**2,089.2**	**2,093.8**	**2,080.2**	**2,058.2**	**2,066.1**	**2,061.6**	**2,068.2**	**-3.6%**	**2,003.0**
Subsidies less taxes on production	407.6	424.0	645.1	694.3	755.2	757.8	760.1	762.5	765.0	767.5	770.0	772.5	**82.2%**	407.6
Factor income	2,410.6	2,569.5	2,706.1	2,783.3	2,816.4	2,846.9	2,854.0	2,842.6	2,823.2	2,833.6	2,831.6	2,840.7	**10.6%**	2,410.6
Compensation of employees	256.3	253.9	255.1	274.3	258.2	257.6	276.8	288.9	307.1	326.6	342.6	355.4	**40.0%**	256.3
Operating surplus	**2,154.2**	**2,315.6**	**2,451.0**	**2,509.0**	**2,558.2**	**2,589.3**	**2,577.2**	**2,553.8**	**2,516.1**	**2,507.0**	**2,489.0**	**2,485.3**	**7.3%**	**2,154.2**

Source: *FAPRI-Ireland GOLD Model.*
Historical data, CSO.

Table A 8: Percentage Change from Baseline under MTR Extensification Scenario

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Livestock	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**-2.0%**	**-2.0%**	**-0.7%**	**0.1%**	**0.7%**	**1.1%**	**1.4%**	**1.3%**
of which: cattle	0.0%	0.0%	0.0%	0.0%	-2.8%	-2.7%	-1.0%	0.5%	1.5%	2.1%	2.6%	2.5%
pigs	0.0%	0.0%	0.0%	0.0%	-0.7%	0.2%	0.5%	0.5%	0.5%	0.5%	0.6%	0.5%
sheep and lambs	0.0%	0.0%	0.0%	0.0%	-1.6%	-3.5%	-2.1%	-2.8%	-3.1%	-2.9%	-2.6%	-2.5%
Livestock Products	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**-0.1%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**
of which: milk	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Crops	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.1%**	**0.1%**	**0.1%**	**0.1%**	**0.0%**	**0.0%**	**0.0%**
of which: cereals	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%
root crops	0.0%	0.0%	0.0%	0.0%	0.2%	0.4%	0.4%	0.4%	0.3%	0.2%	0.1%	-0.1%
forage plants	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Goods output at producer prices	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**-0.9%**	**-0.9%**	**-0.3%**	**0.1%**	**0.3%**	**0.5%**	**0.6%**	**0.6%**
Agricultural services	0.0%	0.0%	0.0%	0.0%	-0.3%	-0.6%	-0.7%	-0.4%	0.0%	0.3%	0.5%	0.6%
Subsidies less taxes on products	0.0%	0.0%	0.0%	0.0%	0.2%	-0.4%	-0.5%	-0.7%	-0.8%	-0.8%	-0.7%	-0.7%
Agricultural output at basic prices	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**-0.7%**	**-0.8%**	**-0.4%**	**-0.1%**	**0.1%**	**0.3%**	**0.4%**	**0.4%**
Intermediate consumption	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**-0.1%**	**-0.5%**	**-0.9%**	**-1.0%**	**-1.0%**	**-0.8%**	**-0.7%**	**-0.7%**
of which: feeding stuffs	0.0%	0.0%	0.0%	0.0%	-0.1%	-0.7%	-1.1%	-1.2%	-1.2%	-1.2%	-1.1%	-1.0%
fertilizers	0.0%	0.0%	0.0%	0.3%	-0.5%	-0.9%	-1.1%	-1.1%	-0.9%	-0.8%	-0.7%	-0.6%
Energy	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.9%	-1.2%	-1.2%	-1.1%	-0.9%	-0.8%
forage plants	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
agricultural services	0.0%	0.0%	0.0%	0.0%	-0.3%	-0.6%	-0.7%	-0.4%	0.0%	0.3%	0.5%	0.6%
Gross value added at basic prices	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**-1.5%**	**-1.2%**	**0.2%**	**1.0%**	**1.5%**	**1.6%**	**1.8%**	**1.7%**
Fixed capital consumption	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Net value added at basic prices	**0.0%**	**0.0%**	**0.0%**	**-0.1%**	**-1.9%**	**-1.5%**	**0.3%**	**1.3%**	**1.9%**	**2.1%**	**2.3%**	**2.2%**
Subsidies less taxes on production	0.0%	0.0%	0.0%	0.0%	7.4%	7.4%	7.4%	7.3%	7.3%	7.3%	7.2%	7.2%
Factor income	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.5%**	**0.7%**	**2.1%**	**2.9%**	**3.3%**	**3.5%**	**3.6%**	**3.5%**
Compensation of employees	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Operating surplus	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.5%**	**0.8%**	**2.3%**	**3.2%**	**3.7%**	**3.9%**	**4.1%**	**4.0%**

Source: *FAPRI-Ireland GOLD Model.*
Historical data, CSO.

Background notes to the Output, Input and Income Table

Introduction	The historical estimates and projections are based on a new methodology arising from the revision of the System of National Accounts in 1995.
National farm	The concept of the "National farm" has been dropped. With this change, certain transactions between farms and between different enterprises within the same farm are now valued as both output and intermediate consumption.
Basic prices	Output is now valued added at basic prices. The basic price corresponds to the producer (ex-farm) price plus any subsidies directly linked to a product minus any taxes on products. VAT is excluded. Subsidies and taxes linked to production are not included in output.
Forage plants	The production of forage plants is now valued as a part of output. Silage and hay are the main items in this category. These items are also treated as intermediate consumption with minor exceptions such as sales of straw to racing stables.
Agricultural services	Activities performed by agricultural contractors directly related to the production of agricultural products (e.g. harvesting) are an integral part of agriculture. The value of such work is included as output and also as intermediate consumption.
Fixed capital consumption	This relates to foreseeable wear and tear and obsolescence of fixed capital goods. It is calculatec on the basis of the probable economic life of the asset. It is not calculated for breeding livestock nor for non-produced assets such as land.
Compensation of employees	This includes remuneration in cash and in kind. It does not include the remuneration of work undertaken by the farmer or by non-salaried family farm members.
Operating surplus	This indicator is an approximation for the income indicator used under the old agricultural accounts methodology. It is calculated before deductions for interest payments on borrowed capital and before deductions for land annuities and for rent paid by farmers to landowners for the use of their land.
Land rental	This mainly corresponds to rents paid by farmers to the landowners. Land annuity payments as well as rentals for under and over one year are included.
Interest paid	This concerns interest payable on a capital loan granted to finance agricultural activity..
Entrepreneurial income	This is before payment by farmers of taxes on income.

Source: Adapted from the CSO Output, Input and Income In Agriculture Statistical Release