End of Project Report

The impact of feed resource costs on the relative competitiveness of beef with other meats

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Table of contents

Summary

The principal components of the 1992 reform of the CAP, which were phased-in over the three years 1993/94, 1994/95 and 1995/96, were:

- A reduction in the institutional support prices (30% for cereals and 15% for beef and veal)
- More effective management of grain supply, mainly through a new set-aside arrangement for arable land
- The introduction of direct payments to cereal and beef farmers to offset the negative impact of price reductions on farm incomes from these enterprises.

These reforms represented a major turning point in fundamental structure of EU agricultural policy. This, at the time of implementation, created much uncertainty at both institutional and farm level in relation to future feed resource costs, cattle and beef prices and related market outlooks. However, as this report shows, the reality for Irish cattle farmers was rather different. As a result much of the research effort during the lifespan of the project was diverted to explaining the causes of the unforeseen outcomes together with the implications of policy decisions and related market developments.

An unexpected sharp rundown of cereal and beef intervention stocks in the mid 1990's combined with poorer than average cereal harvests resulted in a sharp recovery in producer prices. This unforeseen sharp increase in cereal prices led to consequential increases in concentrate feed prices and reversed the anticipated feed cost advantage for whitemeat producers compared to extensive beef farmers. As a result of the recovery of producer prices, both cereal and cattle farmers enjoyed a "windfall gain" by receiving the full value of the direct payments from CAP reform but without the expected consequential reduction in cattle prices or feed costs. This gain was particularly noticeable in Ireland where the fluctuations in cattle prices are normally greatly amplified in response to changes in intervention stocks.

Furthermore, the expected impacts of many aspects of the reform of the CAP in Ireland became convoluted by the pronounced turbulence in the currency markets in the 1990's. In the highly regulated EU agricultural markets of this period, the currency adjustments themselves were also controlled through a rather complex and evolving agri-monetary system. This in turn had multifaceted direct and indirect impacts on the value in National currencies of direct payments, farm product prices, input costs, input mix, export competitiveness and trade flows.

For most of this period the Irish pound (IR£) was devaluing and once green rate changes were implemented they resulted in an increase in support prices and upward movement in the market prices for CAP products, thus mitigating many of the anticipated impacts of the reform of the CAP. The scale of impact of these agri-monetary induced changes by themselves in Ireland was such that before CAP reform was fully implemented in 1996:

- almost half the anticipated reduction in the support prices in IR£ for beef and cereals were negated, and
- the value of the direct payments in IR£ had increased by over 13 percent.

In contrast, the prices of non-CAP products (non CAP feeds - such as cereal substitutes, and soyabean meal -, fertilisers, agrichemicals and machinery) were determined after an appropriate time lag by actual, not green, exchange rates. Consequently, the extent and the phasing of these price adjustments could be very different from those for CAP products. In summary, the cost of the cereal component of animal feeds was largely driven by the green currency system while the non-cereal component of concentrate feeds and indeed forage costs were responding to actual exchange rates.

As a consequence, white-meat producers had to endure higher than originally anticipated prices for their cereal-based animal feeds whereas cattle farmers could largely avoid using cereals by incorporating a larger component of lower cost (non green currency based) cereal substitutes or even forages into their production mix. This resulted in differential impacts on the relative competitiveness of whitemeat and beef, thereby negating many of the expected negative implications of the CAP reform. It was only with the advent of the EMU and the single currency, the euro, that devaluations and revaluations ceased and the, by then greatly modified, agri-monetary system was confined to currencies that remained outside the EMU.

In 1996, as a consequence of the Bovine Spongiform Encephalopathy (BSE) crisis in the UK, the Community market for beef and veal became seriously destabilised and renationalised. This accentuated the market imbalance within the EU as there was an immediate and sharp decline in EU beef consumption and cattle prices. The market prices for Irish cattle rapidly descended below the by then much weakened trigger mechanism for support measures. Over 300,000 tonnes were bought into intervention stores, a further 12,000 were placed in private storage. More alarmingly, for countries like Ireland with a very high export dependency, there was no obvious outlet within the foreseeable future for the rapidly accumulating EU stocks in storage which could increase to over a million tonnes.

In an effort to restore markets and consumer confidence in beef, a programme was introduced in the UK to remove from the food chain the meat from cull cows and other bovines over 30 months old and premiums were awarded for the destruction of about 200,000 young male dairy bred calves. Also, some income support for farmers was provided by advancing the pay-out of premiums for suckler cows and male animals.

Post BSE, cattle farmers were facing very low market prices while simultaneously encountering animal feed cost increases of the order of 10%, the latter due mainly to rapidly rising world cereal prices. However, the high feed prices were also seriously adding to the costs for pig and poultry farmers and to some extent reducing the competitive price pressure on beef from the whitemeats. Nevertheless, countries like Ireland with a very high export dependency, were encountering a re-nationalised EU beef market and a major anxiety in relation to future prospects producer prices and farm incomes.

For the EU, there was the consequential imperative to swiftly readjust, rebalance and denationalise the beef market. The scale and urgency of the problem in Ireland provided

an enormous challenge for Irish policy makers as over 90% of Irish farms have a cattle enterprise and exports account for 90% of indigenous beef production. The real dilemma was how to devise a market price support system whereby the price of beef could be low enough to compete in consumer markets with other meats and yet high enough to provide cattle farmers with a satisfactory income.

Mainly in response to the BSE crisis, further reform of the CAP was outlined in the Agenda 2000 proposals published in 1997 and 1998. These proposals retained the earlier format which involved a further lowering of product price supports for cereals and beef and an increase in the DPs to protect farm incomes. However, the focus of many of the stated objectives of the Agenda 2000 proposals had shifted towards the possibility of incorporating Public Good type issues into production systems.

It was becoming increasingly obvious, to some analysts at least, that a more radical approach to beef policy and prices was required because the margin which Irish cattle farmers could in the future derive from the market would be variable and continue to shrink. Furthermore, as cattle farmers' incomes were becoming increasingly dependent on DPs, the main focus of their production systems would inevitably be on the compliance criteria for these DPs. Consequently, the DP system would have a very strong influence on future production systems, feed costs and especially silage costs.

Subsequent research clearly demonstrated that under Agenda 2000 the incentive for Irish cattle farmers to extensify production systems was very high. Also, the extra land required per animal to provide additional access to the extensification payments was acquiring a positive rental value which in-turn would reduce the economic cost of forage, especially internally produced silage. Furthermore, in most cattle production systems, managing surplus grass would be problematic and this would have to be removed irrespective of cost, most likely in the form of silage, for grassland management reasons. In such situations, there would be very limited technical or economic incentives for using externally purchased feeds in the form of concentrates almost irrespective of price.

These findings reinforced the conclusion that the ever mounting institutional complexities of the animal-based DP systems was seriously distorting the economics of cattle farming and that this income support system was unsustainable. Essentially, cattle farmers and farming in Ireland were being increasingly enveloped in an administrative straightjacket. The original CAP reform objectives of improving the competitiveness of cattle farming and beef by reducing feed resource costs and beef prices respectively were becoming marginalised. It was increasingly evident that any future prospects for improved competitiveness of beef could only arise if there was a radical overhaul of the entire EU income support system. To resolve this predicament, the future research effort was diverted to developing an alternative EU income support system based on decoupled payments.

1. Introduction

In the EU in the early 1990's serious difficulties were affecting many areas of economic activity and a recession was widespread. EU agriculture had for many years experienced both internal market difficulties and external trade tensions.

Internally there were serious budgetary problems and almost all agricultural markets were in structural surplus. For example, grain stocks in 1992 exceeded 30 million tonnes and intervention stocks of beef were 1.1 million tonnes. With the exception of dairying, farm prices and incomes were seriously depressed and the outlook was bleak.

This was the context that led to the first major reform of the CAP in 1992. The main objectives of which were to:

- Achieve a better balance in agricultural markets through a combination of controlling production and stimulating demand
- Improve the competitiveness of EU agriculture both internally and in international markets, mainly through price reductions
- Encourage more extensive production methods
- Redistribute income support towards more vulnerable enterprises such as cattle farming.

The principal components of the reform measures, which were phased-in over the three years 1993/94, 1994/95 and 1995/96, were:

- A reduction in the institutional support prices (30% for cereals and 15% for beef and veal)
- More effective management of grain supply, mainly through a new set-aside arrangement for arable land
- The introduction of direct payments for cereal and beef farmers to offset the negative impact of price reductions on farm incomes from these enterprises.

Since this was a major turning point in EU agricultural policy it created much uncertainty at both institutional and farm level in relation to future feed resource costs and beef prices and markets. Such was the background context in which this project was initiated.

2. Aims of the study

The perception when the reforms were agreed was that the EU market imbalance and oversupply for beef and cereals would continue into the foreseeable future and by implication cattle and cereal prices would decline in proportion to the reduction in support prices. A substantial reduction in the price of cereals would translate into significant reductions in concentrate feed costs and therefore differentially favour animal production systems based on concentrate feeds. This would favour pigs and poultry (whitemeat) production and to a lesser extent intensive beef farming. Since the feed cost reduction for whitemeats would greatly exceed that for extensive cattle production, their producer price could decline faster than those for cattle. In such a scenario, the relative competitiveness of beef in consumer markets for meat would decline further.

The original purpose of this project was to identify how the phased implementation of the 1992 CAP reform would impact on:

- Cattle prices and the relative competitiveness of Irish beef with white meats
- Cereal prices and concentrate feed costs
- The relative cost of concentrates and roughages (mainly silage), and
- The future feed mix of concentrates and roughages in Irish cattle production.

As events unfolded, the estimation of both cattle prices and feed costs became highly problematic due to unexpected developments in:

- The world commodity markets for cereals and beef
- Currency exchange rates
- The EU agri-monetary mechanism
- Markets arising from unforeseen consequences of the economic and political transformation of the economies of Central and Eastern Europe
- The BSE crisis in 1996 which led to additional CAP changes which further compounded the already complex EU institutional intrusion into the markets for beef and for feed resources.

The uncertainties arising from these events, generated an unprecedented demand for analysis and market information both within Teagasc and in the wider farming and agri-business community. In response, most of the research effort during the lifespan of the project was diverted towards:

- Elucidating how the phased implementation of the 1992 CAP reform in Ireland and the later BSE crisis appeared to be yielding unexpected outcomes for:
    - cattle prices and the relative competitiveness of beef in meat markets, and
    - changes in the feed input mix of concentrates and forages
- Identifying EU policy alternatives which could reduce level of administrative intrusion in production systems and better facilitate the function and rebalance of product markets within the Community.

To achieve these revised aims of clarifying the evolving market and policy developments and facilitating public discussion on the future direction of EU policy and farm income support systems, a number of conference papers and non-peer review articles were prepared and published during the project.

3. Approach and Methods

The original plan was to develop this project in parallel with two other Teagasc projects. These were:

- The economics of cattle production systems in Ireland post CAP reform, (see End of Project report by Dunne *et al*, project No. 4017)
- Inter-country cost comparisons in beef, (see End of Project report by Dunne *et al*, project No. 4314).

The expectation was that these three studies combined would identify and quantify the optimum cattle production systems in Ireland, export competitiveness of Irish beef, and the strengths and weakness of Irish cattle sector. The information would then be used to develop and evaluate alternative EU policies that would be more suitable for Irish cattle farmers and beef exports (project no 4313)

The initial work on this project was aimed at identifying and quantifying how the phased implementation of the 1992 CAP reform for beef and cereals would impact on Irish cattle and feed prices respectively. This information was planned as an input into the other two projects: the economics of cattle production (project No. 4017) and the inter-country comparisons (project No. 4314).

As events unfolded, the estimation of both cattle prices and feed costs became severely complicated by developments in: world commodity markets, currency exchange rates and within the EU the related agri-monetary mechanism, and the economic and political transformation of the economies of Central and Eastern Europe. Following the BSE crisis in 1996, the demand for beef collapsed and markets in member states became renationalised plus a serious overall market imbalance developed within the EU. This precipitated the publication of further CAP reform proposals for both cereals and beef. These further compounded an already complex institutional intrusion into the markets for beef and for feed resources.

Consequently, most of the research effort throughout the project lifespan was diverted towards explaining how the phased implementation of the 1992 CAP reform in Ireland and the later BSE crisis appeared to be yielding unexpected outcomes on cattle prices and feed costs and the value of direct payments.

The uncertainties in relation to impacts of the exceptional and fundamental nature of the agricultural policy changes generated an unprecedented demand for analysis and information both within Teagasc and in the wider farming and agri-business community. In response, a number of conference papers and non-peer review articles were prepared and published to service the requirements of both Teagasc staff and the wider needs of farming and agribusiness. Furthermore, the findings of this research provided a valuable and timely professional input by the project leader into:

- The report of the Committee on the reduction of costs in the pig feed sector, published by Department of Agriculture and Food, 1995
- The report of the poultry industry forum, published by Department of Agriculture and Food, March 1996, and

- The Department of Agriculture working group on the BSE crisis and related supply control policy options.

4. Results

The most significant results of this research are summarised under four key headings as follows:

1. CAP reform: anticipated implications
2. Reform implementation
3. Feed resource costs
4. Other key drivers.

4.1 CAP reform: anticipated implications

The cereal price reduction was expected to result in a substantial fall in the production costs (feed) for pig and poultry farmers (white meat producers) and to a lesser extent feed costs for beef producers. This should further increase the price competitiveness of white meat relative to beef.

For environmental protection reasons, and to further compensate extensive grassland farmers who would not benefit from the reduction in feed costs arising as a consequence of the cereal price reductions, the direct payments for cattle farmers were conditional on maximum stocking density limits. The expectation was that the latter would encourage cattle farmers to use more extensive production methods.

Altogether, there were four premium schemes for cattle farmers:

- Premiums for male animals, paid twice in their life if they were farmed as steers, plus de-seasonalisation premium which was an add-on payment depending on the time of slaughter and extent of the seasonality of slaughterings in previous years
- Suckler cow premiums payable annually on suckler cows within an acquired quota entitlement
- Calf conversion (slaughter) premium
- Extensification premium, paid as a top-up on both male bovine animals and suckler cows if the entire farm operated was below a specified stocking density.

In the early years of CAP reform these stocking density restrictions were relatively benign and operationally simple. But as the years progressed and beef supply control became the imperative, the operational rules for stocking density became paramount for access to the payments and were operationally very complex, (see sections 4.4.5 and 4.4.6 below). Yet, notwithstanding these complexities, the farmers needed to obtain access to the payments which by then had also become the entire income for many cattle farms.

4.2 Reform implementation

The MacSharry reforms represented a fundamental change since it marked a decisive shift away from supporting farmers through guaranteed prices towards supporting their incomes by direct payments which were accompanied by measures designed to influence their production methods. For example, cereal farmers beyond a certain area threshold were required to participate in a land set-side program before they were eligible for direct payments while cattle farmers had to comply with maximum stocking densities limits and

have lower than a specified milk production threshold to participate in the suckler cow direct payment scheme.

The implementation of these landmark reforms, which began in 1993, gave rise to much uncertainty in relation to their direct and indirect impacts on feed costs and beef prices and consequently on the margins in cattle farming. There was much uncertainty as to how farmers would adjust to the new mix of lower product prices and commodity based direct payments with their related compliance criteria. For cattle farmers this uncertainty related both to future production systems, input prices and purchases, production volumes, types and prices.

4.3 Feed resource costs

It was expected that the internal EU supply of cereals would be reduced as a consequence of limits on eligible land available, the increased use of the set-aside programme to withdraw land from cereal production and the output price effect of the substantial reduction in support prices would reduce or possibly reverse the incentive to intensify. The latter price reduction was also aimed at making indigenous EU grain more competitive with imported cereal substitutes and an increase their uptake in animal feeds.

For extensive cattle farming, it also raised the future prospect of increased concentrate feeding as an economic alternative to grass silage for winter feed. Furthermore, there was the possibility of the resulting reduction in winter feed cost being sufficient to eliminate the seasonality of cattle production in Ireland which was traditionally seen as a major impediment to all year access to quality beef markets. This prospect appeared particularly promising especially if it could be combined with the financial incentive provided by the de-seasonalisation premium for male animals slaughtered in the spring.

4.4 Other key drivers

Alas, however, apart from the 1992 CAP reforms there were a number of other institutional factors that were key driving forces in relation to feed resource costs and beef prices during this period. The main ones were:

1. Uruguay Round multilateral trade negotiations (GATT)
2. World market developments
3. Currency exchange rates including internal EU exchange rates and the resultant periodic readjustment of the agri-monetary system
4. Developments in the economies in Central and Eastern Europe during the transition from the planned economies to emerging democracies and markets
5. The BSE crisis
6. Further reform of the CAP: Agenda 2000 proposals in 1997 and 1998.

4.4.1 GATT

The negotiations for Uruguay Round multilateral trade negotiations (GATT) began in 1986 but they were only successfully concluded in December 1993 with implementation commencing in 1994. Even then it was still very unclear as to:

- The compatibility between GATT agreement itself and the earlier (1992) reform of the CAP which was being implemented in parallel with the GATT changes, and
- The precise effects of the agreement on the future market balances and the disposal options for the large surpluses of cereal and beef stocks in the EU, (see Dunne, Fingleton and Heavy 1994).

For cereals, the EU Commission were optimistic about a satisfactory balance emerging between production plus import commitments and internal consumption plus exports. However, there was a much wider consensus that further supply reductions were necessary and that this would be sought through greater use of supply control instruments such as compulsory set-aside.

A similar situation existed for beef, but unlike cereals it was almost impossible to predict what supply control measures the Commission could realistically adopt. The conundrum for beef was, at that time, no policy instruments existed which would place a precise limit on national or individual farm production for beef. Existing national (or individual farm) quotas for suckler cow and male cattle premiums could be used to constrain supply expansion, but implementing any "claw back" of premium rights would be problematic.

Supply could also be reduced by lowering cattle prices with the consequential predicament of a reduction in the already low incomes of cattle farmers. Cattle prices could be reduced through either a direct reduction of the intervention price or indirectly by changing the criteria to access intervention. The latter could be achieved by implementing further technical requirements, similar to carcass limit of 340 Kilo (see Keane and Dunne 1993) and/or through the use of "administrative wedges" such as payment delays etc. Even if such instruments were developed, the immediacy of their impact on supply and prices was very difficult to predict and quantify as the farm level response would be complex and the time lag would be substantial due to the length of the beef production cycle, especially in Ireland.

In essence, cattle prices would have to decline to dissipate the beef surplus but the consequence would be a substantial reduction in farmer's incomes unless the financial values of the existing individual direct payments were increased through further CAP reform.

4.4.2 World market developments

Within the EU, high cereal stocks depressed producer prices which initially followed the planned phased reduction in support (intervention) prices. Also, a higher than expected uptake of set-aside and unfavourable weather all combined to reduce internal supply. In addition, cereals were becoming price competitive in the EU animal feeds market.

Unfavourable weather in the US led to greatly reduced international supplies of grain and soya, resulting in much strengthened world prices. As a consequence, the EU could then export some cereals without subsidies and such exports were not constrained by GATT volume limits.

The combination of declining EU grain production and the increased consumption and exports led to a substantial reduction in intervention stocks, from about 30 to just over 11 million tonnes, in approximately two years. The scale of this change and the related EU budget implications can be observed in Table 1, appendix 1.

The unexpectedly sharp rundown of intervention stocks was further augmented by a poorer than average harvest in 1995/96, and producer prices recovered to well in excess of intervention levels. As a consequence, the producer set-aside requirement was relaxed and export refunds were even temporarily suspended to prevent internal prices becoming too high and thereby endangering the recovery of internal use of cereals in animal feeds.

This unforeseen sharp increase in cereal prices led to consequential increases in concentrate feed prices and reversed the anticipated feed cost advantage for whitemeat producers compared to extensive beef farmers. From a project perspective, the market upheaval gave rise to much uncertainty and requests for information and clarification of developments and their likely future market impacts (see publication list on feed resources, white meats, and beef).

By the mid 1990's, the beef market also benefited from the reduced competition from the whitemeat sector, with the result that beef intervention stocks were quickly dissipated. The scale of this change and the related EU budget expenditure implications can be observed in Table 2 and 3, appendix 1.

As a result, producer prices recovered unexpectedly in 2005. Consequently, cattle farmers enjoyed a "windfall gain" by receiving the full value of the direct payments arising from CAP reform but without the expected consequential reduction in cattle prices. This gain was particularly noticeable in Ireland where the fluctuations in cattle prices are normally greatly amplified in response to changes in intervention stocks (see O'Connell *et al* working paper No 1, on cattle and beef prices in the EU).

Given the historic weakness of the Irish cattle price performance, the timing of the price increase was also significant because by then the cattle-based DPs of the 1992 reform were already fully phased-in. Therefore, farmers enjoyed both the full benefit of the DPs plus an added boost from the amplified price increase.

As subsequent investigation showed, the Irish cattle sector in general benefited from CAP reform which involved reduced beef support prices with compensation in the form of DPs (see O'Connell *et al* working paper No 4, inter-country comparisons of direct payments and total revenue for beef). This study demonstrated that on a combined price and DP basis Irish beef performs well relative to other countries in the EU and compared to the EU average. This outcome is made up of a relatively poor price performance and a comparatively good DP performance.

4.4.3 Currency exchange rates

Within the EU, the implementation of many aspects of the reform of the CAP was complicated by pronounced turbulence in the currency markets. Also, the developments

in the currency markets seriously tested the realisation of the Single EU market at an early stage. This caused much uncertainty in relation to both the adequacy of the EU farm budget and for farm input costs and product prices in individual member states.

Currency exchange rate adjustments in the form of devaluations and revaluations are the normal mechanism used to restore the loss of competitiveness arising from past and anticipated inflation. For industrial goods these adjustments occur almost routinely and, after an appropriate time lag, affect product prices and input costs. In the highly regulated EU agriculture sector, with common support prices and direct payments etc, the currency adjustments themselves were highly regulated and much more transparent.

There was considerable turbulence in international currency exchange rates in the 1990's and this severely impacted on EU external trade and that between member states within the EU. Changes in the exchange rate with the US dollar were key factors in determining the ability to export CAP products (cereals and beef) with or without subsidies, i.e. the disposal of surpluses. This had major implications for the CAP budget and, probably more important in this period, increased the compatibility of the GATT agreement with CAP reform and the internal farm price impact of the GATT export restrictions on the export of CAP products (see section 4.4.1 above).

Within the EU in the pre euro (€) era, each member state had its own currency. Some exchange rates were fixed or relatively stable within the European Monetary System (EMS) while others, like sterling, often fluctuated freely. Also, trade in (CAP) farm products within the Community was governed by an agri-monetary system which was created almost three decades earlier, but which passed through various moults during the 1990's before finally being phased-out in preparation for the launch of the euro (€).

The agri-monetary system was essentially an administrative buffer exchange rate mechanism to delay and/or mitigate the immediate impact of short-term fluctuations in the "green" exchange rates for CAP product support prices (mainly intervention) and internal trade, and by implication affected the farm level prices for such products in individual member countries. The trading rules were rather complex for both the timing and extent of the trigger mechanisms for changes in green (agri-monetary) exchange rates and related Monetary Compensatory Amounts (MCA's). The latter were either subsidies or taxes on inter-country trade in CAP products depending on the relative strengths of their currencies and the direction of the trade.

Since a large portion of Irish agricultural exports were to the UK, and sterling was a rather volatile currency with a floating exchange rate, the agri-monetary system and related MCA's continued to have both ongoing and significant direct and indirect impacts on farm input and output prices in Ireland.

The agri-monetary mechanism itself was frequently adjusted in response to evolving currency issues and related political developments. Therefore, in the volatile currency markets of the 1990's there was much uncertainty in product markets especially for countries heavily dependent on trade in CAP products, like Ireland. Changes to the agri-

monetary system itself also added to this uncertainty and as a consequence there were ongoing requests for information about the system and the trading implications from both within Teagasc and from agri-business in Ireland, (see various publications listed under currency issues)

The operation of the agri-monetary system had complex impacts on the value in National currencies of direct payments, farm product prices, input costs, input mix, export competitiveness and trade flows, (see listed publications on currency issues). For example, the farm prices for CAP products, like cereals and beef, were largely determined by the green exchange rates. Expressed in national currencies, the support prices of these moved upwards and downwards almost immediately in response to respective green rate devaluations and revaluations. But for some countries there was often a deliberate lag in implementing green rate changes, for example they were implemented almost immediately in Ireland whereas in the UK they were rather tardy. Consequently, there were differential movements in support prices in both countries even when the respective actual currencies were depreciating at the same rate. For most of the relevant time period of this study, the Irish pound (IR£) was devaluing and as a consequence the green rate changes once implemented resulted in an increase in support prices and upward movement in the market prices for CAP products within the country. However, contrary to the tradition, green IR£ revaluations occurred in late 1996 and early 1997 resulting in a reduction in CAP support prices (for further details, see article by Dunne in the Tillage Farmer April 1997).

The scale of impact of these agri-monetary induced changes in Ireland by themselves was such that before CAP reform was fully implemented in 1996:

- Almost half the anticipated reduction in the support prices in IR£ for beef and cereals were negated, and
- The value of the direct payments in IR£ had increased by over 13 percent.

In contrast, the prices of non-CAP products (non CAP feeds - such as cereal substitutes, and soyabean meal -, fertilisers, agrichemicals and machinery) were determined after an appropriate time lag by actual, not green, exchange rates. Consequently, the extent and the phasing of these price adjustments could be very different from those for CAP products. In summary, the cost cereal component of animal feeds was largely driven by the green currency system while the non-cereal component of concentrate feeds and indeed forage costs were responding to actual exchange rates.

Since the technical constraints on flexibility in the feed input mix for beef and white-meat production varies substantially, the operation of the green currency system had a differential impact on relative production costs for the different meat sectors. For example, in countries with a devaluing currency (Ireland) white-meat producers had to endure higher prices for their cereal-based animal feeds whereas cattle farmers could largely avoid using cereals by incorporating a larger component of lower cost cereal substitutes or even forages into their production mix. This resulted in differential impacts on the relative competitiveness of whitemeat and beef.

With the advent of the EMU and the single currency, the euro, devaluations and revaluations ceased to exist and the agri-monetary system was no longer required except for currencies that remained outside the EMU. The countries that joined the EMU had to maintain good economic discipline and low inflation. Consequently, the need for currency adjustments to maintain or restore competitiveness should not arise.

4.4.4 Central and Eastern Europe in transition

With the ratification of the Maastricht Treaty, the transition to the single EU market came into operation in January 1993. However, as demonstrated above, for the beef producers in Ireland this transition was heavily influenced by developments in international exchange rates and EU policy in relation to income support and export trading conditions.

The economic difficulties caused by the transition from the planned to a market economy in Central and Eastern Countries (CEC's) added a further unexpected market volatility dimension. The market transition in the CEC's led to a reduction in domestic consumption of beef and other meats, a prolonged and severe liquidation of livestock numbers especially for cattle resulting in a short to medium term increase in beef supplies and with relatively porous borders a general disruption of normal trade with the EU. But, after some initial hesitance and uncertainty, import tariff quota arrangements and individual country association agreements were developed and implemented. In general, access to the Community market was becoming more open because of an increase in some quotas and a reduction in duties. Nevertheless, the transition caused considerable disruption of trade flows and uncertainty in a very unpredictable EU beef market for a number of years.

4.4.5 BSE crisis

The Community market for beef and veal became seriously destabilised and renationalised in 1996 as a consequence of the Bovine Spongiform Encephalopathy (BSE) crisis in the UK. This further accentuated the market imbalance within the EU as there was an immediate and sharp decline in EU beef consumption and cattle prices. The market prices for the cattle grades eligible for intervention rapidly descended below the by then much weakened trigger mechanism for support measures and for other grades the price decline was even greater. Over 300,000 tonnes were bought into intervention stores, a further 12,000 were placed in private storage. More alarmingly, there was no obvious outlet within the foreseeable future for the rapidly accumulating stocks in storage which could increase to over 1 million tonnes. The scale of this unfolding dilemma and the related EU budget expenditure implications can be observed in Table 2 and Table 3 in appendix 1.

In an effort to restore markets and consumer confidence in beef, a programme was introduced in the UK to remove from the food chain the meat from cull cows and other bovines over 30 months old. In addition, premiums were also awarded for the destruction of about 200,000 young male dairy bred calves in the UK and Portugal to curtail future supply. Also, some income support for farmers was provided by advancing the pay-out of premiums for suckler cows and male animals. An indication of the scale of these

individual measures and related direct costs can be observed from trends in EU budget expenditure in this period, shown in Table 3, appendix 1.

Cattle farmers were facing very low market prices while simultaneously encountering concentrate cost increases of the order of 10% due mainly to rapidly rising world cereal prices. However, the high feed prices were seriously adding to the costs for pig and poultry farmers and to some extent reducing the competitive price pressure of beef from the whitemeats for the immediate future, (see Dunne, Irish Farmers' Journal October 5th, 1996).

For countries like Ireland with a very high export dependency, the re-nationalisation of the EU beef market became a major anxiety in relation to producer prices and farm incomes. For the EU, there was a consequential imperative to swiftly readjust, rebalance and denationalise the beef market post BSE crisis. The scale and urgency of the problem also provided an enormous challenge for Irish policy makers as over 90% of Irish farms have a cattle enterprise and exports account for 90% of indigenous beef production.

For Ireland's premier agricultural enterprise, cattle farming, this posed a serious price support dilemma since beef was still losing competitiveness and market share but the value of the beef-based DPs to farmers were already approaching the equivalent of IR£1/kg (approx €1.3/kg) of beef produced, yet, margins were very low relative to other enterprises (see Dunne 1996). The real quandary for policy makers was how to devise market price support system whereby the price of beef could be low enough to compete in consumer markets with other meats and yet high enough to provide the beef producer with a satisfactory income.

Prior to the BSE crisis, the expansion of the animal-based DPs had partly reversed the relative decline in producers' margins but it was also becoming apparent that these "beef payments" needed to be better targeted to maintain or improve beef quality and relative producer margins (Dunne 1996). Nonetheless, Dunne writing in the Irish Farmers Monthly in July 1996, concluded that
"In the face of adversity, Irish beef production may be more resilient than in many other EU member states. This is as a consequence of its:

- *low capital investment requirements relative to competitors*
- *low direct cost of grass based extensive production systems used*
- *relatively low sensitivity of producer's margins to both calf costs and beef prices*
- *suitability as an enterprise for part-time farming*
- *production systems that are more compatible with the ever increasing consumer demand for systems that are animal welfare and environmentally friendly."*

The author also went on to suggest that the animal-based payments might best be decoupled in the future. A market oriented approach to decoupling was outlined in a paper at the annual Teagasc agri-food economics conference in December 1996 and in an article in To-days Farm early in 1997. A more detailed framework template for achieving full decoupling for all EU product-linked DPs, with provision for the phasing of decoupling for individual products, was outlined in a subsequent paper presented at the

56th EAAE seminar in Paris, (Dunne and O'Connell 1998). This framework template was almost identical to the decoupling mechanism eventually used by the EU almost seven years later in the switch to the Single Farm Payment (SFP) which was implemented in 2005.

4.4.6 Further Reform of the CAP

In response to the BSE crisis, further reform of the CAP was outlined in the Agenda 2000 proposals published in 1997 and 1998. Although it was becoming increasingly obvious that a more radical approach to beef policy and prices was required, these new proposals retained the earlier format which involved a further lowering of product price supports for cereals and beef and an increase in the DPs to protect farm incomes. Nonetheless, the focus of many of the stated objectives of the Agenda 2000 proposals had shifted towards incorporating issues like food safety, consumer concerns, resource conservation and long-term sustainability outlined earlier by Dunne in a paper at the Teagasc Agri-food Economic conference in 1996 and in a non-peer review article in 1997 and by Dunne and O'Connell at an international conference in 1998.

An economic appraisal of the July 1997 proposals was undertaken and the main findings were published in the proceedings of the Teagasc Agri-food Economic conference in December of that year, Dunne 1997. The main conclusions were that if the proposals were implemented in full, the EU would likely be able to export cereals and whitemeats without subsidies and thereby avoid the earlier GATT volume constraints. Unrestricted exports of pig and poultry meat could reduce the price pressure on beef within the EU, especially in periods of excess supply of whitemeats. Also, the lower support price for beef could facilitate the possible export of some beef cuts without subsidies. However, due to the added exposure to world markets, the prices for all commodities within the EU would become more volatile in the future.

In addition, under the Agenda 2000 proposals, the margin which Irish cattle farmers could derive from the market would be variable and continue to shrink. Furthermore, with the much increased dependency of cattle farmers' incomes on DPs, the main focus of their production systems would be on the compliance criteria for the DPs. Consequently, the DP system would have a very strong influence on future production systems, feed costs and especially silage costs.

Subsequent research clearly demonstrated that under Agenda 2000 the incentive for Irish cattle farmers to extensify production systems was very high (see feed resources costs, Dunne 2002 and 2005). And, of even greater interest, this incentive increased as the market-based margin (product sales value less direct costs) declined. This research showed that the extra land required per animal, to provide additional access to the extensification payments had a positive rental value and also added to the internal (forage) feed resources of the farm unit. The positive land rent for the additional area accordingly reduced the economic cost of forage, especially internally produced silage.

Furthermore, for cattle production systems on good quality land, managing surplus grass became problematic and this would have to be removed for grassland management

reasons irrespective of cost, and most likely in the form of baled silage. In such situations, there were very little technical or economic incentives for using externally purchased feeds in the form of concentrates almost irrespective of price.

In essence, cattle farming and farms with a significant cattle enterprise were inadvertently being subjected to administrative asphyxiation since they needed to gain access to the animal-based DPs for their income. But the extra land required per animal would produce surplus feed (forage) within the farm which had to be removed and either used internally on the farm or sold to other farmers as baled silage before they could even consider purchasing externally produced concentrate feed, almost irrespective of its cost (for further details on appropriate management strategies and related implications see summary abstract and related poster presentation by Dunne 2005, reproduced in appendix 2)

Such findings reinforced the earlier research, as outlined by Dunne in the conference paper in 1996, that the institutional complexities of the animal-based DP system were seriously distorting the economics of cattle farming and that this income support system was unsustainable. Also, the original CAP reform objectives of increasing the competitiveness of cattle farming and beef by reducing feed resource costs and beef prices respectively were increasingly being sidelined under the Agenda 2000 reforms. Consequently, subsequent research was refocused on developing alternative policy options (project no 4313) and the twin approaches used were:

- Preparing and publishing a series of working papers on the "development of a strategic approach for a single EU beef market" (see working paper series), while simultaneously
- Refining the methodology and related justification of the earlier proposal for phased decoupling of all of the product-based DPs, (see Dunne and O'Connell paper presented at the 56th EAAE seminar, Paris 1998).

5. Conclusions and implications

At the time of implementation, the 1992 reforms of the CAP represented a major turning point in fundamental structure and objectives of EU agricultural policy, especially for cereals and beef. This precipitated much uncertainty at both institutional and farm level in relation to future feed resource costs, cattle and beef prices and related product markets. The perception was that the EU market imbalance and the oversupply for beef and cereals would continue into the foreseeable future. By implication cattle and cereal prices would decline in proportion to the reduction in support prices. And the reduction in the price of cereals would translate into significant reductions in concentrate feed costs and therefore differentially favour animal production systems based on concentrate feeds. Since the feed cost reduction for whitemeats would greatly exceed that for extensive cattle production, their producer price could decline faster than those for cattle. In such a scenario, the relative competitiveness of beef in consumer markets for meat would decline further.

As events unfolded, the reality for Irish cattle farmers was, however, rather different. An unexpected sharp rundown of cereal and beef intervention stocks in the mid 1990's combined with poorer than average cereal harvests resulted in a sharp recovery in producer prices. Also, the consequential increases in concentrate feed prices reversed the anticipated feed cost advantage for whitemeat producers compared to extensive beef farmers. The overall result was a "windfall gain" for both cereal and cattle farmers as they enjoyed the full value of the direct payments without incurring the expected consequential reduction in cereal and cattle prices or feed costs. This gain was particularly noticeable in Ireland where the fluctuations in cattle prices are normally greatly amplified in response to changes in intervention stocks.

An added bonus for farmers in Ireland was that many of the expected impacts of the reform of the CAP were offset by substantial changes in currency exchange rates. In a CAP context, such currency shifts had multifaceted direct and indirect impacts on the value in National currencies of direct payments, farm product prices, input costs, input mix, export competitiveness and trade flows. In Ireland, before CAP reform was fully implemented in 1996, devaluations in the IR£ green pound had:

- Negated almost half the anticipated reduction in the support prices in IR£ for beef and cereals, and also
- Increased the value of the direct payments in IR£ by over 13 percent.

While the cost cereal component of animal feeds was largely driven by the green currency system, the non-cereal component of concentrate feeds and indeed forage costs were responding to actual exchange rates. As a consequence, white-meat producers had to endure higher than originally anticipated prices for their mainly cereal-based animal feeds whereas cattle farmers could largely avoid using cereals by incorporating a larger component of lower cost (non green currency based) cereal substitutes or even forages into their production mix. This had differential impacts on the relative competitiveness of whitemeat and beef which only disappeared with the advent of the EMU and the single currency, the euro (€).

The Community market for beef and veal became seriously destabilised and renationalised in 1996 as a consequence of the Bovine Spongiform Encephalopathy (BSE) crisis in the UK. There was an immediate and sharp decline in EU beef consumption and cattle prices. More alarmingly for a country with a high export dependency like Ireland, there was no obvious outlet within the foreseeable future for the rapidly accumulating EU stocks in storage. Irish cattle farmers were facing a renationalised EU market with a gross surplus of beef and very low market prices while simultaneously encountering animal feed cost increases of the order of 10%, the latter due mainly to rapidly rising world cereal prices. But, the high feed prices were also seriously adding to the costs for pig and poultry farmers and to some extent reducing the competitive price pressure of beef from the whitemeats.

For Irish farmers and policy marker there was major apprehension in relation to future producer prices and farm incomes. The real quandary was how to devise an EU market price support system whereby the price of beef could be low enough to compete in consumer markets with other meats and yet high enough to provide the beef producer with a satisfactory income.

After some initial delay, the EU response was a further reform of the CAP as outlined in the Agenda 2000 proposals published in 1997 and 1998. These proposals retained the earlier format which involved additional reductions in product price supports for cereals and beef and an increase in the DPs to protect farm incomes. Nevertheless, many of the stated objectives of the Agenda 2000 proposals had shifted towards incorporating Public Good type issues into production systems.

It was becoming increasingly obvious that a more radical approach to EU beef policy and prices was required because the margin which Irish cattle farmers could in the future derive from the market would be variable and continue to shrink. And, as cattle farmers' incomes become increasingly dependent on value of the DPs, the main focus of their production systems would inevitably move towards the compliance criteria for these DPs. Therefore, the DP system would have a very strong influence on future production systems, feed costs and especially silage costs.

Under Agenda 2000 the economic incentive for Irish cattle farmers to extensify production systems was very high and the extra land required per animal to provide additional access to the extensification payments had assumed a positive rental value. This would, in-turn, reduce the economic cost of forage, especially internally produced silage and in most cattle production systems managing surplus grass would be problematic. This surplus feed would have to be removed for grassland management reasons, most likely in the form of silage, and almost irrespective of cost. In such situations, there would be very limited technical or economic reasons for cattle farmers to "import" externally purchased feeds in the form of concentrates almost irrespective of price.

For Irish cattle farmers, the growing institutional complexities of the animal-based DP system was seriously distorting the inherent economics of cattle farming and that this

income support system was becoming unsustainable. The original CAP reform objectives, of improving the competitiveness of cattle farming and beef by reducing cereal prices plus related feed resource costs and beef prices respectively, were becoming marginalised. To resolve this dilemma an alternative EU income support system based on decoupled payments needed to be developed urgently.

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The following list includes a number of publications arising from this and related research. For convenience the publications are categorised by the following topics:

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- Whitemeats
- Beef
- Currency issues
- Policy issues
- Working paper series

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Appendix 1

Table 1: Trend in EAGGF Guarantee expenditure on Arable crops (ECU/million)

Year	Arable crops Total	Storage and export refunds	Aid per hectare
1993	10,611	5,513	427
1994	12,652	1,700	10,553
1995	15,018	1,155	13,506
1996	16,372	266	13,536
1997	17,414	604	14,618

Source: Financial report EAGGF Guarantee section COM (1998) 552 final

Table 2: Trend in EAGGF Guarantee expenditure on Beef/veal (ECU/million)

Year	Total	Export refunds	Intervention
1993	3,986	1,711	2,275
1994	3,467	1,708	1,758
1995	4,021	1,761	2,260
1996	6,687	1,559	5,128
1997	6,580	1,499	5,082

Source: Financial report EAGGF Guarantee section COM (1998) 552 final

Table 3: Trend in type of intervention EAGGF Guarantee expenditure on Beef/veal (ECU/million)

Year	Public and private storage	Suckler cow premium	Special beef premium	BSE measures
1993	1,383	558	319	-
1994	-209	882	657	-
1995	-216	1,047		957
1996	621	1,513	1,407	1,022
1997	750	1,522	1,239	879

Source: Financial report EAGGF Guarantee section COM (1998) 552 final

Appendix 2

The impact of the EU direct payments on beef production systems and feed costs

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Grass and grass-silage are joint products from grassland and intermediate products within a livestock production system. They have a multiplicity of "value in use" conditions, and being non-tradable it is difficult to establish either their cost of production, price, or true market value. Land charges are involved both directly and indirectly in estimating the cost of all feed types and these are affected by the EU policy for both beef and cereals. The EU policy switch to the direct payments (DP) income support system, especially extensification, greatly changed the economic circumstances where silage is both produced and used. In cattle farming within the EU, land performs a dual function in that it supplies fodder and provides access to DPs via stocking density compliance criteria.

Computer programmes were developed to estimate the net cost of land for silage based on its estimated value for accessing DPs and its opportunity rental charge. This was applied to a cattle production system for a stocking rate range of 1.4 to 2.0 livestock units (LU) per ha. Stocking densities were adjusted by two methods: shedding animals and renting-in land at typical market rates. The aims were to identify the best gross margin for the cattle enterprise and estimate silage costs for the range of stocking densities, and for the different methods of manipulating stocking densities.

Source*: Book of Abstracts No. 11(2005) of the 56th annual meeting of the European Association of Animal Production (EAAP), Uppsala Sweden p 38*.

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Impact of the EU Direct Payments on Beef Production Systems and Feed Costs

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Problem

Under Agenda 2000, land used for forage produced internally on the farm has a net rental value of:

- a rental (opportunity) cost for renting-in or renting-out land to achieve a desired stocking density, plus
- a value due to its capacity for adjusting stocking density and provide access to extra animal-based Direct Payments (DPs)

Objective

The objectives of the study were to estimate:

- the net land rent (gross rent ± change/ha in farm gross margin) over a range of case studies, plus
- the resulting implications for:
  - silage costs
  - the break-even value for purchased rolled barley
  - changes in "Farm" feed resource balance (volume)

Methods and assumptions

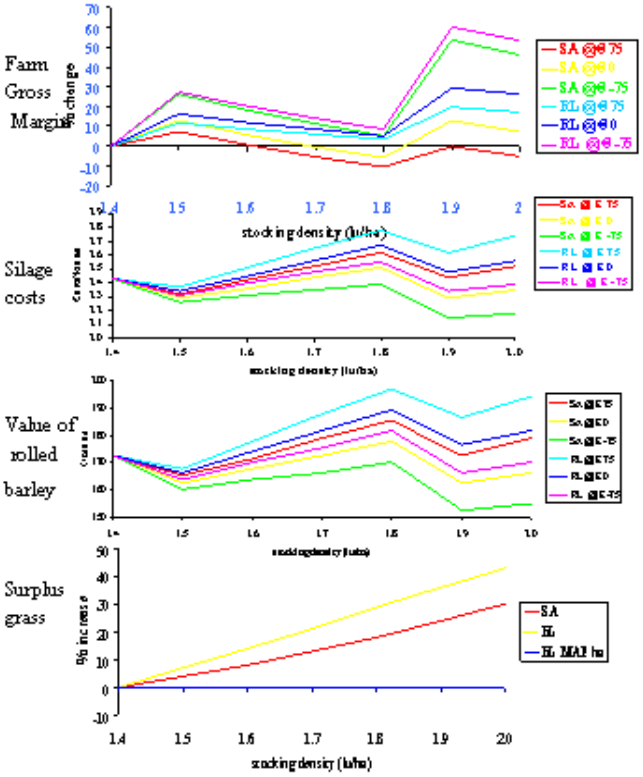
A series of Farm case studies were developed by:

- adjusting stocking densities by using two options::
  - Shedding animals (SA)
  - Renting-in land (LR)
- over a Farm stocking density range of 1.4 to 2.0 (Lu/ha)

Case study assumptions

- Animal types
  - Steers 6 to 24 months - (0.6 Lu)
  - SBP €150/steer @ <2.0 Lu/ha, plus
  - EPs: €80 @ < 1.4 Lu/ha *OR* €40 @ 1.4 to 1.8 Lu/ha
  - Market gross margin/steer (€) 75, 0, -75
- Silage system
  - yield - 25t/ha (20% dm)
  - waste - 20% (field to face)
  - direct cost - €340/ha (field to face)
  - GROSS Land rent-in charge - 45% of €320/ha = €143/ha
  - = silage cost including GROSS land rent €24.1/tonne

Results



Conclusions

- Extensification under Agenda 2000
  - Economic incentive to extensify is high
  - most situations benefit @ high extensification rate
  - the incentive to extensify increases as the market-based margin per animal declines
- Land has a **positive rent** for extensification
- NET cost of Land for grazing or silage is:
  - the normal lease-in charge, plus
  - rental value for access to DPs

Implications

- The cost of grass or grass-silage depends on:
  - grass and silage production system, plus
  - animal production system used
- managing surplus grass is problematic on good land farms which are "eligible" for EPs @ €40/animal
- value of purchased concentrates reflect:
  - forage costs, plus
  - economic options for forage use and management
- a single value techno-economic optimum remains "elusive" & "academic"