

End of Project Report

Inter-Country Cost Comparisons in Beef

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Summary

- Beef accounts for about one-third of gross agricultural output (excluding the value of direct payments) and approximately 90 percent of the beef produced is exported. Over 90 percent or 135,000 of Irish farmers have a beef enterprise. Apart from its value to the National economy, the export competitiveness of Irish beef production has become an increasingly important issue since CAP reform in 1992 and the subsequent WTO agreement.
- For cattle farmers, CAP reform has resulted in a change in the revenue mix of beef prices and direct payments. Cost structures have also changed for the feed resources of concentrates and forage. These CAP policy adjustments are likely to have a differential impact on inter-country competitiveness because the methods of beef production vary greatly between countries within the EU.
- **The purpose of this study was to:**
 - establish the competitiveness of the Irish beef production systems post the 1992 CAP reform
 - quantify how Irish beef production costs, and cost components, compare with those for the other EU countries
 - determine the strengths and weaknesses of the Irish production systems.
- When the technical performance of the national cattle herds across the EU are compared, the results show that Ireland has: one of the highest average carcass weights and largest volume of beef output per cow in the herd and the lowest dependency on cull cows for beef supply.

Ireland outperforms the UK and France for most technical performance parameters. Both these countries operate beef production systems that are the most comparable with Ireland.

- Despite the constraints on calf supply arising from the introduction of milk quotas, technical performance for beef in Ireland in the subsequent decade compare favourably with trends in other EU countries. The main conclusion from the comparison of the national cattle herds in the EU was that the poor profitability of cattle production in Ireland is not primarily due to poor technical performance as has often been alleged.
- When the ability of individual EU countries to “draw-down” the various MacSharry direct payments (DPs) were compared using a range of measurements, the Irish performance was very good. The results show that irrespective of the method of measurement used, Ireland has a greater ability than other EU countries to “draw-down” the DPs. This reflects the extensive nature of cattle production in Ireland and the good balance achieved between the beef production systems used and the structure of the DP mechanisms, especially for extensification.
- An analysis of the prices of calves provided clear evidence that part of the value of the DPs was being “bid into” male calf prices. The results show that as DPs were being phased-in, the price of male Friesian calves in Ireland increased relative to those for other EU countries. The greatest increase in the price differential between Irish calves and non-Irish calves was in relation to calf prices in the Netherlands and for calves which are mainly used for veal production and hence do not collect DPs.

- For the Irish beef farmer, this capitalisation of the DPs into the price of calves is good for the calf and young animal producer but it becomes an added cost for farmers involved in cattle fattening and finishing. It was estimated that the value of the capitalisation into the price of male calves was in the region of £40 to £50 per animal.
- A major part of the project was to compare the economics of beef production in Ireland with suckler beef in France and Germany. The emphasis was on a comparison of both feed cost and margins over feed costs for representative production systems in the selected countries.
- The inter-country comparisons were made in Irish punts for 1995 for feed costs, beef prices and the value of the direct payments (DPs) using appropriate green and market rates of exchange for 1995. The year 1995 was chosen as it was considered the most “normal” year in the 1990’s, represented the end of the phased implementation of the 1992 CAP reform and it was the last year before the EU beef market was severely disrupted due to BSE. Sensitivity analysis was used to establish how the margins over feed costs would be affected by changes in the values of the various economic and technical components of the systems and by EU policy adjustments.
- The investigation found that the German results are generally quite poor, with the exception of weanling production. The major weakness is at the fattening stage, which returns negative market-based margins over feed cost. This is especially true for steers but these are a relatively small segment of cattle fattening in Germany.

- France is the most competitive per hectare for the complete calf to beef system. This is a product of a relatively poor performance in weanling production due to high feed costs, and a very good performance in the male fattening stage. The strong performance at the fattening stage was due mainly to the combination of intensive production and high beef prices resulting in a high market-based margin per hectare despite rather high feed costs.
 - In contrast, when performance is measured on the basis of kilos of beef produced, France obtains a lower margin over feed cost and a higher proportion of this is derived from the market. This arises because the higher prices obtained for beef in France are not sufficient to fully offset the combination of higher feed costs and the lower capacity of the intensive fattening stage to secure revenue from direct payments. The introduction of the higher premium for bulls, after 1996, partly offset these findings.
 - The French system, with its higher reliance on the market based margin, is likely to be more responsive to the consumer's requirements for beef. But the margin available to the producer, especially at the fattening stage, with its high turn-over of animals and kilos of beef is very vulnerable to changes in the prices of both weanlings and beef. But, as demonstrated above, the introduction of sizable animal based DPs causes much of the value of these payments to be capitalised into young animal prices and thereby alters the traditional relationship between the cost of weanlings and the price of beef.
 - Sensitivity analysis showed that unless there is a further divergence in beef prices as between EU countries, French competitiveness is
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particularly vulnerable to a reduction in beef prices. This arises because their production systems rely on a combination of high output and high beef prices to offset relatively high feed-cost.

- In comparison with France, the margins in Ireland with the combination of low feed costs and beef prices and a greater reliance on direct payments are less vulnerable to declining beef prices. Germany, despite low feed costs, suffers from low intensity of output, rather poor beef prices and relatively low uptake of direct payments.
- The study also found that the maize silage subsidy is particularly important in the fattening stage of the French system. It was estimated that for the complete calf to beef system, the value of the maize silage subsidy is equivalent to a 10 percent reduction in feed costs or a 20 percent increase in the value of all direct payments or a 5 percent increase in beef prices. It is therefore a major element in the economics of French beef production, especially at the fattening stage.
- The results showed that the introduction of the special bull premium in 1997 increased, by approximately 2 percent, the margins on suckler systems that produced bulls and thereby improved somewhat the relative performance of German and French bull systems.
- In the period between the 1996 and the 2000 BSE crises, Irish beef prices have declined more severely than EU beef prices in general. This had the effect of reducing Irish beef margins and of causing a deterioration in the relative Irish competitive position as outlined in this report. If Irish prices recovered relative to other EU countries, as they did

in the first half of 2001, the relative margins as depicted in the study are still reasonably accurate.

- The findings of this study have shown that as the EU progressively shifts to a combination of lower beef prices and higher direct payments, Ireland's competitive position is likely to improve. The main threat to this is further divergence between Irish and EU beef prices.
- The combination of these results and the earlier research relating to Ireland's ability to draw down direct payments demonstrate Ireland's strong competitive position both in the short and longer-term as a producer of beef. The comparative Irish performance is least good in the specialised male fattening stage and this is especially so when data from the intensive French, maize silage system are included in the comparison.
- The French fattening system with its high turn-over of animals and kilos of beef is very vulnerable to changes in the price of both weanlings and beef. Under Agenda 2000, the price of beef is likely to decline but weanling prices could remain strong since part of the increased value of the direct payments will become capitalised into their prices. The competitiveness of Irish beef could therefore improve unless there is further divergence between Irish and EU beef prices.

1. Introduction

The export competitiveness of Irish beef production has become an increasingly important issue since CAP reform in 1992 and the subsequent WTO agreement.

The reform of the CAP in 1992 reduced the intervention price for beef and introduced a series of direct payments (DPs) to support the incomes of cattle farmers. A similar system was introduced to support the incomes of arable farmers and this had the effect of reducing the price of cereals with a consequent effect on the cost of concentrate feed for livestock producers.

These policy adjustments were phased in over three years and while there had as yet been little change in cattle prices by 1995, farmers were increasingly experiencing change in the revenue mix due to the increasing importance of DPs. There were also changes in the relativities between the prices of inputs such as concentrates, silage and grazed grass. These changes in revenue mix and cost structures were considered to be large enough to precipitate significant changes in the optimum systems of beef production.

Since the methods of beef production vary greatly between countries within the EU, the CAP policy adjustments were likely to have a differential impact on inter-country competitiveness. Furthermore, a study of inter-country competitiveness post CAP reform was a logical extension of the earlier work on how CAP reform affected the economics of beef production systems in Ireland (see report by Dunne *et al* on Project No. 4017).

Factors affecting inter-country competitiveness are of particular importance for cattle production in Ireland since 90 percent of production must be exported to a wide range of markets both within the EU and into third countries.

The Purpose of this Study was to:

- establish the competitiveness of the Irish beef production systems post CAP reform
- quantify how Irish beef production costs and cost components compare with those for the other EU countries
- determine the strengths and weaknesses of the Irish production systems.

Various aspects of this study have already been reported in public presentations, research papers and a post-graduate thesis (see Appendix 1). The most detailed accounts of the methodology used and the results obtained are available in a thesis by Murphy (1999) and an economic research report by Murphy *et al* (2000).

2. Approach and Methods

Within the EU, beef production methods vary greatly between individual member states. Information and reports on the inter-country competitiveness of beef are rather sparse probably reflecting the complexity of this type of study.

This investigation was divided into two major components. These were:

- the various EU countries were compared in terms of:
 - the relative performance of the national cattle herds
 - the reliance on direct payments
 - the relationship between direct payments and calf prices
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- a comparison of inter-country competitiveness of beef production methods in selected countries and how these may be differentially affected by the EU policy shift to increasing the value of direct payments while reducing prices for beef and cereals.

National Herd Comparisons:

The relative performance of the national cattle herds in the various EU countries were compared in terms of technical outputs: average carcass weights, contribution of cow- beef to total beef supply, the volume of gross indigenous production and adult male beef slaughtered per cow in the national herd.

Most of the beef produced in the EU is derived from dairy cows and the number of dairy cows was constrained by the introduction of milk quotas in the 1980's. To allow for this constraint, trends in cow numbers and beef output per cow was also examined.

Reliance on the Direct Payments:

The reform of the EU beef regime in 1992, increased both the range and values of the Direct Payments (DPs) for beef to compensate cattle producers for the reduction in the market support prices and an expected decline in market prices. The farmer's revenue from DPs is conditional on the availability of eligible animals (suckler cows and male beef animals) and the stocking densities used to avail of the extensification premium. A comparison was undertaken of the ability of individual EU countries to "draw-down" the various DPs compared to the situation for Ireland. This ability was also expressed relative to cow numbers and the volume of the various categories of beef produced.

Direct Payments and Calf Prices:

Over a full beef production cycle, some production systems such as veal are not eligible to collect any DPs, others like bull beef are only eligible to collect one special beef premium, whereas steer beef systems could collect two special beef premiums. This greater propensity of the beef production methods in some countries to "draw down" the EU direct payments would be expected to be reflected in the evolution of prices for male calves. Price trends for male calves in a number of EU countries were evaluated over the period 1991 to 1997 to determine if the propensity of beef production systems to collect DPs was indeed being capitalised into calf prices. Since over 60% of the calves that are derived from the Irish dairy herd are born in

the period of February to April the investigation was confined to these months.

Inter-Country Competitiveness:

The major component of this project was a comparison of inter-country competitiveness of beef production methods in selected EU countries. Total cost is the ideal method of determining cost competitiveness, but other studies have shown it is generally necessary to resort to alternative measures for inter-country comparisons (see Murphy 1999), focusing particularly on feed costs.

Fixed Costs:

The determination of the correct value of fixed costs such as housing and family labour across countries and the establishment of the short or long-term rate, if any, at which they should be charged to general economic activity on the farm are extremely imprecise exercises. Allocating fixed costs to a specific economic activity or enterprise is even more difficult, especially for drystock farming which for many farmers is a residual enterprise with a low opportunity cost of labour and land.

The amount of paid labour on drystock farms is very small. The labour involved in the beef enterprise is mainly surplus family labour, often of older family members with a limited range of alternative skills. Therefore, the labour and skills used in beef production have probably a low employability in the off-farm employment market. A somewhat similar situation arises with land because, *inter alia*, EU quotas restrict expansion into other agricultural enterprises.

Taxation procedures, allowances and depreciation rules differ between countries. These can have a significant influence on establishing the optimum mix of labour, machinery and hired services and therefore on the apparent cost of beef production in different countries and especially its apparent breakdown as between fixed and variable costs at a point in time. For example, taxation allowances may dictate that hired machinery services, classified as a variable cost, are used in preference to owning the machine, which would be dealt with as a fixed cost.

Feed Costs:

Feed is the main variable cost in beef production. It can account for over 80% of the variable costs and must therefore be a major indicator of cost competitiveness. Also, the relativities of the prices of different feeds which may be used in beef production have been altered by CAP reform thus strengthening the case for focusing on feed cost.

Two aspects of the reform of the CAP in 1992 affect the optimum mix of feed resources. Firstly, the reduction in the price support level for cereals would be expected to reduce the price of cereals and concentrates relative to the cost of conserved fodder and grazed grass. Secondly, significant animal based direct payments (DPs) and extensification premiums were introduced but access to both of these was made conditional on stocking density criteria. The marginal value of the extra hectare in providing access to DPs and especially extensification payments can be exceedingly high. This is so because eligibility for extensification payments relates to the total herd and not to individual animals. Therefore, the "opportunity value" of the extra land in providing access to direct payments must be offset against any land charges attributed to cost of conserved fodder. For the individual farmer and

the country this seriously complicates the feed cost equation in relation to the optimum mix of purchased concentrates and conserved fodder.

Margin Over Feed Cost:

The margin over feed cost is often used as an indicator of profitability. CAP reform impacted on this margin by reducing beef prices, changing feed costs and influencing access to direct payments which, in turn, is linked to animal stocking densities and related forage supplies. The overall impact of these changes could be significantly different in individual countries or regions where suckler beef production methods vary and the capacity to adjust to changes also differs. For inter-country comparisons, a reasonable extension of the margin over feed cost measure is to use it as a proxy indicator for relative profitability and competitiveness. Competitiveness in this sense relates to the ability to continue beef production in the future which is determined, at least in part, by current profitability.

Market Based Margins:

Since DPs can be a large component of the margin in cattle production, it is desirable to distinguish between the total margin, which includes the value of the DPs and the market based margin. The market based margin which is exclusive of the value of the DPs, is calculated as the revenue obtained from the ex-farm sale of the animal less the cost of production. The balance of origin of the margin, i.e. whether mainly market-based or mainly premium-based, is relevant to the operation of production systems and to how they change in response to CAP changes.

Geographic Scope:

The range of countries that could be considered had to be curtailed due to both the paucity of data and reports, and the limited relevance of the

historical information on costs and margins. Countries were selected on the basis of their contribution to EU beef supplies and the share of beef and veal in the final agricultural production of the individual country.

The original plan for this part of the project was to compare the economics of cattle production in Ireland, UK, France and Germany. France and Germany, at 26.8% and 16% respectively, are the largest producers of beef and veal in the EU15. Production practices in the UK are more comparable with those in Ireland. But, trade restrictions and the culling programme imposed after the BSE crisis in 1996 severely distorted the UK market, production systems and data. Due to these factors the UK was eventually excluded from the study.

Production Systems:

The early part of the investigation quantified the diversity of production methods and this was then used to further restrict the scope of the research. In France, almost half the calf supply is derived from suckler herds. Veal production is also important in France but the calves involved are mainly dairy type calves. Therefore, beef from suckler herds is fairly representative of French production systems. Suckler systems are not the most important source of beef in Germany, but they are of increasing importance especially in the former Eastern States. The main focus of the analysis was confined to a comparison of suckler beef production in Ireland, France and Germany.

The economics of beef production from dairy herds in Ireland was also included in the study. This comparison was undertaken because of the importance of dairy type beef in Ireland, and since the relevant technical-economic performance data for a variety of Irish dairy-based beef production

systems was already available, (see report by Dunne *et al* on Project No. 4017).

Therefore, the detailed study was confined to a comparison of Irish dairy calf to beef and suckler systems with suckler systems in France and Germany. Like the earlier Irish study, the primary emphasis was to compare feed costs and margins over feed cost for representative systems in the different countries.

Expression of Results:

The study was confined to estimating feed costs and margins over feed costs. These were compared on a per animal basis, per suckling unit* basis, per hectare and per kilo of beef produced. Such inter-country comparisons exclude information on other variable non-feed costs and overheads that could affect competitiveness. To the extent that other costs, particularly fixed costs, are higher in France and Germany than in Ireland the results obtained here will cast France and Germany in a more favourable light than the true situation.

The results are presented in different ways because different operators in the beef industry have different points of view. For processors and others involved in marketing Irish beef, the feed cost/kg of beef produced will be of immediate interest, because, it is a major component of current marketing competitiveness and an indicator of likely future supply.

For farmers, while feed cost/kg is also of interest and relevance, perhaps of even more immediate relevance is the measure of margin over feed since

* For a description of a suckler unit (excluding mortality) see Figure 1.1

this is an indicator of current producer economic welfare. It also determines to some degree whether the farmer is likely to remain in beef production in the future. This is also a relevant concept for processors from the point of view of the security of future beef supplies. It is therefore, at least to some extent, an indicator of future sustainability of the Irish beef industry.

Margin measures are presented on a *per* suckling unit and on a per hectare basis. Depending on their individual circumstances, producers may find one measure more relevant than the other.

Choice of Year:

comparable data were obtained for 1995 for feed costs, beef prices and the value of the direct payments (DPs). The inter-country comparisons were made in Irish punts after using appropriate green and market rates of exchange for 1995. The year 1995 was chosen as it:

- was considered the most “normal” year in the 1990’s
- represented the end of the phased implementation of the 1992 CAP reform
- was the last year before the EU beef market was severely disrupted due to BSE.

Finally, sensitivity analysis was used to establish how the margins over feed costs would be affected by changes in the values of the various economic and technical components of the systems.

3. Results

The following is a summary of the main findings and their implications. More comprehensive results and related details have already been published in research papers and reports, a post-graduate thesis and in a number of public presentations (see Appendix 1).

Technical Performance of the National Cattle Herds:

When the technical performance of the national cattle herds in the EU are compared, Ireland outperforms the UK and France for most parameters. Both of these countries operate the most comparable beef production systems to Ireland.

The results show that Ireland has:

- the highest average carcass weights in the EU, except for Belgium. The average for Ireland is 316 kilos compared with 296 in the UK and Germany and 280 in France. The latter is substantially reduced due to the high content of veal which has low carcass weights
- one of the highest volumes of beef output per cow in the herd at 251 kilos compared to 214, 215, 265 and 304 respectively in France, UK, Germany and Belgium
- the lowest dependency on cull cows for beef supply at 19 % compared to 22% and 31% respectively in the UK and Germany and in excess of 36% for Belgium, France , Netherlands and Denmark..

The supply of calves for beef production is dependent on cow numbers and this supply was severely constrained by the introduction of milk quotas in 1984. In the decade following the introduction of milk quotas, Ireland had the lowest reduction in dairy cow numbers. In contrast with most other EU countries, Ireland increased the total cow herd by 19% and the volume of beef produced by 8%. This increase in beef production compares with reductions of 15, 14 and 6% respectively in the UK, France and Germany.

In this period, the change in productivity per cow was better in Ireland than in the UK and Germany despite a greater retention of heifers for breeding and the rapid expansion in suckler cow numbers. The main conclusion was that the poor profitability of cattle production in Ireland is not primarily due to poor technical performance as has often been alleged. More detailed results from this part of the study were presented at the Agricultural Research Forum in 1997.

Reliance on the Direct Payments:

When the ability of individual EU countries to “draw-down” the various MacSharry DPs were compared, the Irish performance was very good. The results show that because of the structure of the payment system and the extensive nature of the beef production systems used, Ireland has a greater ability than other individual EU countries to “draw-down” DPs.

For convenience, the results are expressed as a percentage of the comparable Irish figure (Ireland = 100). The main differences are that:

- for the second special beef premium (SBP at 22 months), the UK producers collect 76% but producers in most EU countries secure less than half

- for extensification (EP) on suckler cows, the UK and France collect over 90%, Portugal over 80% and Germany less than 70%
- for extensification on SBP animals, the UK and France collect about 90% but Germany, Portugal and Italy secure less than 30%.

Similar results emerge when the values of the DPs were compared with the volume of the various categories of beef produced. When the combined values for the SBPs+SCPs+EPs claimed were computed on a per cow in the National herd basis, the relative percentages (Ireland = 100) vary from:

- almost 70% for the UK and Greece
- over 50% for France, Portugal, and Belgium
- over 40% for Spain and Denmark
- less than 40% for Italy, Germany and the Netherlands.

A similar diversity of percentages was obtained when specific DPs, such as the SBP, were compared with the volume of beef produced from the appropriate category of animal. More detailed results for this part of the study can be obtained in the paper presented at Agricultural Research Forum in 1997.

Direct Payments and Calf Prices:

The analysis of the prices of calves provided clear evidence that part of the value of the DPs were being “bid into male calf prices”. The inter-country comparisons show that as the DPs were being phased-in, the price of male Friesian calves in Ireland increased relative to those in other EU countries. As anticipated, the greatest increase in the price differential was relative to calf prices in the Netherlands and for calves which are mainly used for veal

production and hence do not collect DPs. For the Irish beef farmer, this capitalisation of the DPs into the price of calves is good for the calf and young animal producer but it becomes an added cost for farmers involved in cattle fattening and finishing. It was estimated that the value of the capitalisation into the price of male calves was in the region of £40 to £50 per animal. More detailed results and the implications can be obtained in the paper presented at the Agricultural Research Forum in 1998 and other publications listed in appendix 1.

Inter-country competitiveness

A comparison of the cattle herds in Ireland, Germany and France in 1996 shows that:

- In Ireland there were over 6.6 million cattle, of which over 1.2 million were dairy cows and another million were suckler cows
- In Germany the total cattle population was 15.6 million, of which 5.2 million were dairy cows and over half a million were suckler cows
- In France the national cattle herd was approximately 20 million, of which 4.4 million were dairy cows about 4.2 million were suckler cows. France has the largest national suckler cow herd and accounts for 38% of all suckler cows in the EU.

In the EU, beef cattle originate from both dairy and suckler cow herds. The supply of calves from suckler herds has been on the increase since the introduction of milk quotas in 1984. There were just over 12 million suckler cows in the EU in June 1998 and just over one third of these were in France. In contrast, Ireland and Germany accounted for just over 10% and 6 %, respectively. Apart from France, only the UK and Spain at 1.9 and 1.8 million respectively, have a larger suckler cow herd than Ireland.

A significant number of farmers are involved in suckler cow beef production in each of the three selected countries. In general, it is a small-scale enterprise with a high percentage of the farmers having less than 20 cows. This varies from 90% in Germany to 80% and 57%, respectively in Ireland and France. At the other end of the scale, the percentage of holders with more than 50 cows is less than 3% in Germany and Ireland, but France has over 13% in this category. Yet, these larger farms account for 12%, 33% and 41% of the suckler cows in Ireland, Germany and France, respectively. Over half the suckler cows in all three countries are to be found on farms with 20 or more cows, and this increases to 81% in France.

Suckler herds in Ireland are grass based and 70% are spring calving, i.e. February, March and April. The steers produced from the suckler system could be finished at two years at 700 kilograms liveweight but are generally kept for at least an additional six months on a lower growth regime and slaughtered at 720 kilograms liveweight. The most popular dairy beef system in Ireland involves the slaughter of steers at about 30 months or over 600 kilograms liveweight. Friesian heifers from dairy herds are generally kept as replacements, while beef heifers are generally slaughtered at 20 to 27 months.

Bulls account for the largest proportion of French beef production, namely 19% of all cattle slaughtered and 27% of the beef produced. Steer beef production is declining in popularity. Cull cows and heifers are very important sources of beef and are mainly consumed on the domestic market.

Beef production systems in the all-grassland French (central) regions are generally confined to weanling systems. The weanlings are normally sold on return from grazing in the autumn at about 280 kilograms liveweight. Many of

the weanlings and stores produced in France are exported to fattening lots in Italy and Spain.

Fattening systems in France are generally confined to lowland regions with better forage growing potential. High output is obtained from the semi-intensive finishing systems, with bulls being finished at 410-430 kilograms carcass weight, heifers at 350-370 kilograms carcass weight and partially finished store bulls, often exported, at 400-500 kilograms liveweight. Diets are mixed and consist of grass, grass-silage, maize-silage, feed grains and protein meals.

Prior to the introduction of milk quotas there was very little suckler beef production in Germany. Since then there has been a threefold increase in the suckler herd, although production is confined to mainly grassland regions. Suckler farming is regarded as being a complementary component to the many regional environmental programs in Germany.

Bull fattening is the dominant production system and accounts for 50% of the beef produced in Germany. This study examined the economics of bulls produced from suckler herds for slaughter at 18 months or 550 kilograms liveweight. Steer production also occurs to a limited extent. Steers have a longer production period than bulls and are slaughtered at about 22 months or at 480 kilograms liveweight. Heifers are slaughtered at a similar age to steers but at 450 kilograms liveweight. These systems were evaluated for two regions, Mecklenburg-Vorpommern (Meck.-Vorp.), located in former East Germany and accounting for about 25% of the suckler cows, and Schleswig-Holstein (Sch.-Hol.) located in the northern part of former West Germany and accounting for about 12% of the suckler cow herd.

The main results, presented in tabular form below, from this part of the project focus on the comparison of both feed cost and margins over feed costs for representative production systems in the different countries. These and more detailed results with supporting computations and information are to be found in the report by Murphy *et al* (2000) and in the thesis by Murphy (1999).

The summary results presented relate to feed cost per kg of beef output, margins over feed cost at producer level as well as market-based margins over feed cost.

Table 1 presents the summary results for feed costs per kg of beef produced as a measure pertaining to current market competitiveness of Irish beef.

In terms of feed cost per kg of beef output the Irish system of:

- weanling production is competitive with Germany and especially France
- male animal fattening is competitive with France but more expensive than Germany
- heifer fattening is very competitive with France but more expensive than Germany
- complete calf to beef systems is more expensive than France but considerably cheaper than the Schleswig-Holstein region of Germany.

Table 2 presents summary results for margin over feed cost per hectare as a measure pertaining to producer economic welfare and to sustainability of beef production in the future.

In terms of margin over feed cost per hectare the Irish systems of:

- weanling production compare very favourably with both Germany and France
- male animal fattening compare favourably with Germany but poorly with France
- heifer fattening compare very favourably with Germany and favourably with France
- complete calf to beef production compare very favourably with Germany but unfavourably with France.

The final set of summary results, presented in Table 3, is that for the market-based margin over feed cost.

In terms of market-based margin over feed cost per hectare Irish systems of:

- weanling production compare very favourably with both Germany and France
- male animal fattening compare very favourably with Germany, especially for steers, but poorly with France
- heifer fattening compare very favourably with Germany and favourably with France
- complete calf to beef production compare very favourably with Germany but poorly with France.

In summary, the German results are generally quite poor with the exception of weanling production. Their major weakness is in the fattening stage and especially for steer fattening which returns negative market-based margins over feed cost.

France is the most competitive per hectare for the complete calf to beef system. This is a product of:

- a relatively poor performance in weanling production due to high feed costs, and
- a very good performance in the male fattening stage, due mainly to the combination of intensive production and high beef prices being able to produce a high market-based margin per hectare despite rather high feed costs.

However, per kilo of beef produced, France obtains a lower margin over feed and a higher proportion of this is derived from the market. This arises because the higher prices obtained for beef in France are not sufficient to fully offset the combination of higher feed costs and the lower capacity of the intensive fattening stage to secure revenue from direct payments.

The French system, with its higher reliance on the market based margin, is likely to be more responsive to the consumer requirements for beef. But the margin available to the producer, especially at the fattening stage, with its high turn-over of animals and kilos of beef is very vulnerable to changes in the price of both weanlings and beef. When this is linked with the findings from the earlier study on the relationship between calf prices and direct payments the future economics of the French system are vulnerable. To recap, that study found that the introduction of sizeable animal based direct payments causes much of the value of these payments to be capitalised into young animal prices and thereby alter the traditional relationship between the cost of weanlings and the price of beef.

Table 1. Feed Cost Comparison

SYSTEM	EXPRESSION OF COST	COST
Weanling Production:		
Ireland	IR£/kg liveweight output	0.54
Germany Sch. – Hol.	“	0.61
Germany Meck.- Vorp.	“	0.46
France - All grass (mainly central France)	“	0.96
France - NW	“	0.79
	Ireland as % of average	80
Fattening Male Animals:		
Ireland - Steers	IR£/kg carcass weight output	0.60
Germany - Steers		
- Sch. Hol	“	0.42
- Meck. - Vorp.	“	0.31
Germany - Bulls		
- Sch. - Hol	“	0.70
- Meck. - Vorp.	“	0.56
France - NW - Bulls	“	0.64
	Ireland as % average steers	135
	Ireland as % average male animals	112
Heifer Fattening		
Ireland	IR£/kg carcass weight output	0.53
Germany Sch. - Hol.	“	0.41
Germany Meck.- Vorp.	“	0.31
France - NW	“	0.97
	Ireland as % average	0.95
Complete Calf to Beef		
Ireland - Steer		
- Suckler	IR£/kg carcass weight output	1.03
- Dairy	“	0.99
Germany - Bulls		
- Sch. - Hol	“	1.30
- Meck - Vorp	“	0.99
Germany - Steers		
- Sch. - Hol	“	1.23
- Meck. - Vorp.	“	0.92
France - NW - Bulls	“	0.92
	Irish average as % average steers	0.96
	Irish average as % of average male animals	0.95

Table 2. Margin Over Feed Cost

SYSTEM	IR£/HECTARE
Weanling Production:	
Ireland	639
Germany - Sch-Hol	462
- Meck-Vorp	485
France - All grass	231
- NW	496
Ireland as % average	138
Fattening Male Animals	
Ireland	573
Germany - Bull	
- Sch-Hol	447
- Meck-Vorp	485
Germany - Steer	
- Sch-Hol	482
- Meck-Vorp	513
France - NW - Bull (intensive operations)	3,204
Ireland as % average steer (excluding France)	110
Ireland as % male – excluding France	115
- including France	60
Heifer Fattening	
Ireland	287
Germany - Sch-Hol	171
- Meck-Vorp	190
France – NW	267
Ireland as % average	125
Complete Calf to Beef	
Ireland - Suckler	565
- Dairy	607
Germany - Bull	
- Sch-Hol	444
- Meck-Vorp	469
Germany - Steer	
- Sch-Hol	438
- Meck-Vorp	462
France - NW- Bull	660
Ireland average as % average steer	113
Ireland average as % male	113

Table 3. Market-Based Margin Over Feed Cost

SYSTEM	IR£/HECTARE
Weanling Production:	
Ireland	407
Germany - Sch-Hol	298
- Meck-Vorp	321
France - All grass	99
- NW	271
Ireland as % average	146
Fattening Male Animals	
Ireland	328
Germany - Bull	
- Sch-Hol	152
- Meck-Vorp	190
Germany - Steer	
- Sch-Hol	-78
- Meck-Vorp	-47
France - NW - Bull (intensive operations)	2,684
Ireland as % average steer (excluding France)	482
Ireland as % male - excluding France	301
- including France	61
Heifer Fattening	
Ireland	287
Germany - Sch-Hol	171
- Meck-Vorp	190
France – NW	267
Ireland as % average	125
Complete Calf to Beef	
Ireland - Suckler	331
- Dairy	358
Germany - Bull	
- Sch-Hol	267
- Meck-Vorp	292
Germany - Steer	
- Sch-Hol	221
- Meck-Vorp	245
France - NW - Bull	453
Ireland average as % average steer	119
Ireland average as % male	111

The sensitivity analysis showed that unless there is a further divergence in beef prices as between EU countries, French competitiveness is particularly vulnerable to a reduction in beef prices. This arises because their production systems rely on a combination of high output and high beef prices to offset relatively high feed-costs.

The initial data used in estimating the feed costs in this study did not take account of the value of the maize silage subsidy which is particularly important in the fattening stage of the French system. It was estimated that for the complete calf to beef system, the value of the maize silage subsidy is equivalent to a 10 percent reduction in feed costs or a 20 percent increase in the value of all direct payments or a 5 percent increase in beef prices. It is therefore a major element in the economics of French beef production, especially at the fattening stage.

In comparison with France, the margins in Ireland due to low feed costs and beef prices and a greater reliance on direct payments are less vulnerable to declining beef prices. Germany, despite low feed costs, suffers from low intensity of output, rather poor beef prices and relatively low uptake of direct payments.

The data used in this analysis relate to 1995. Following the BSE crisis in 1996, a special bull premium was introduced in 1997. It was estimated that this increased margins on suckler systems that produced bulls by approximately 2 percent, thereby improving somewhat the relative performance of German and French bull systems compared with that shown.

Other studies by O'Connell *et al* (1999) have shown that Irish beef prices in the post BSE period have declined more severely than EU beef prices in

general. This had the effect of reducing Irish beef margins and of causing a deterioration in the relative Irish competitive position as presented in Tables 2 and 3. If however, Irish prices recover, the relative margins as depicted in these tables are still reasonably accurate.

The more recent Agenda 2000 agreement further reduced institutional beef prices and increased the value of direct payments including extensification. The findings of this study has shown that as the EU progressively shifts to a combination of lower beef prices and higher direct payments, Ireland's competitive position is likely to improve. The main threat to this is further divergence between Irish and EU beef prices.

The results presented in Tables 1 to 3 in conjunction with the research, reported earlier, relating to Ireland's ability to draw down direct payments demonstrate that Ireland is in a strong competitive position both in the short and longer-term as a producer of beef. The comparative Irish performance is least good in the specialised male fattening stage and this is especially so when data from the intensive French, maize silage system is included in the comparison.

The French fattening system with its high turn-over of animals and kilos of beef produced is very vulnerable to changes in the price of both weanlings and beef. Under Agenda 2000, the price of beef is likely to decline but weanling prices could remain strong since part of the increased value of the direct payments will become capitalised into their prices. The competitiveness of Irish beef could therefore improve unless there is further divergence between Irish and EU beef prices.

Appendix 1: **Publications arising from this and related research**

Dunne, W. (1994): Farm revenue mix: the impact of direct payments: pages 12 and 13, Teagasc, Today's Farm, November/December 1994.

O'Neill, R. and Dunne, W. (1995): Beef from the dairy herd with or without subsidies: pages 1 and 2, *In* summary of papers presented at Agricultural Research Forum held at the Faculty of Agriculture, University College Dublin, Belfield, Dublin 4, March 1995.

Dunne, W. and O'Neill, R. (1995): Valuing silage post CAP reform: pages 63 and 64, *In* summary of papers presented at Agricultural Research Forum held at the Faculty of Agriculture, University College Dublin, Belfield, Dublin 4, March 1995.

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degree of Master of Agricultural Science at University College Dublin, Department of Agribusiness and Rural Development, August 1996.

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