COMPETITIVENESS OF MILK PRODUCTION IN IRELAND

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Abstract

This paper seeks to examine the competitiveness of milk production at farm level in Northern and Southern Ireland where different dairying regimes have existed in relation to milk quota policy. Competitiveness is a comparative concept and thus the profitability of dairy farms has been compared with the average wage rate in the country. Full economic costs of milk production in Ireland have also been examined. Data from dairy farms is collected in two separate on-line benchmarking databases in Ireland – e-profit monitor in the Republic of Ireland and Dairy Benchmarking in Northern Ireland. Results from these systems have been compared to those from other countries through European Dairy Farmers (EDF) (the authors represent their countries on the EDF Scientists Team for Research and Analysis). E-profit monitor includes approximately 8% of the dairy cows in Southern Ireland while the equivalent figure for Dairy Benchmarking in Northern Ireland is 10%. Results have shown that Irish cash costs per litre of milk (both North and South) are competitive in Europe. If imputed charges for owned land, capital and family labour are applied, the competitive advantage of Irish milk production is less pronounced.

Keywords: milk production, competitiveness

Introduction

The term "competitiveness" refers to characteristics that permit a business to compete effectively with other businesses due to lower costs or higher profits. Dairying as a business must be profitable for the individual farmer if milk production at national level is to be competitive in the world market against other countries. Competitiveness of milk production at farm level is dictated by a plethora of variables but central and key to the success of an individual business is the calculation of margin per litre of milk produced (regardless of the measure of margin used) times the total number of litres produced by that business.

In Ireland, as in all other milk producing regions of the EU, dairy farmer numbers are falling with milk produced per farm increasing. A typical rate of decline in dairy farm numbers is around 4 – 5%. In Northern Ireland, dairy producer numbers have halved since milk quotas were introduced while total cow numbers have remained fairly constant. Milk yield per cow has increased by approximately 2,000 litres per cow meaning that total farm production has increased by a factor of 2.89 since quotas were introduced. The most progressive farms in the region have doubled their total milk output in 10 years.

Figure 1: Milk production in Northern Ireland since the introduction of milk quotas

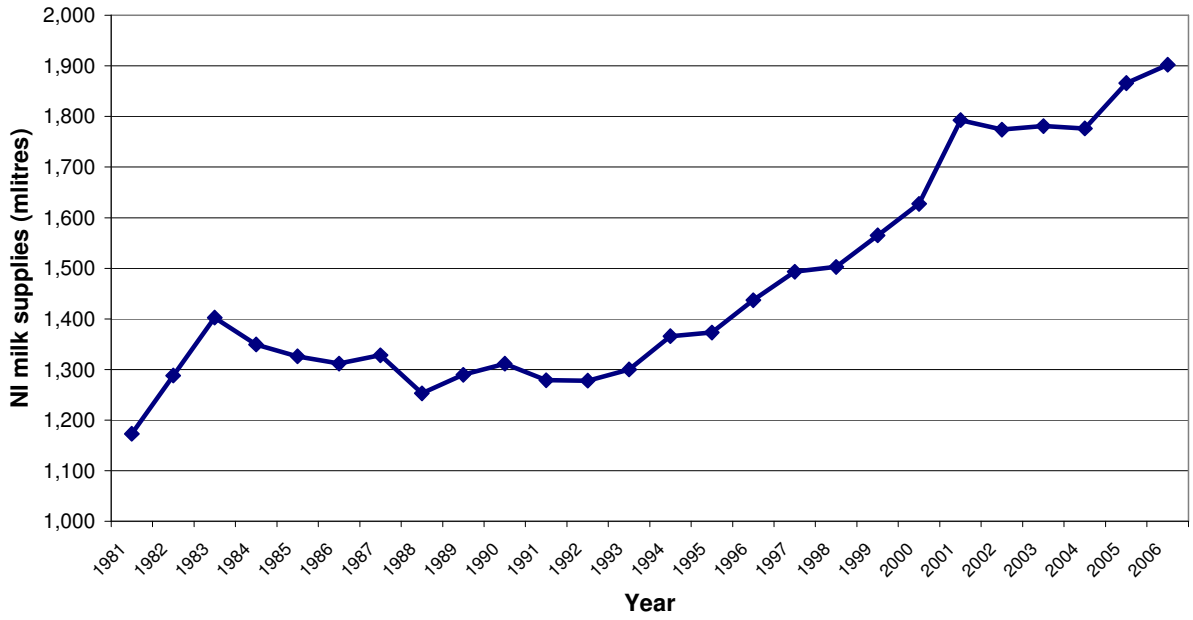


Figure 1 shows that milk production in Northern Ireland has increased markedly in recent years. Up until 1st January 1994, milk quota in the UK could not transfer between the GB mainland and Northern Ireland. From that date, inter-regional transfer became possible and since then milk quota has migrated – predominantly to the better grass growing regions in the UK – of which Northern Ireland is one. The permanent Northern Ireland milk quota held by farmers is up 540 million litres since 1994.This is equivalent to 3.9% of total UK milk quota.
In the Republic of Ireland, the total milk quota is 5,085 million litres. Due to external and internal pressures on dairy farmers, the numbers involved in the sector have and will continue to decrease as Table 1 highlights.

Table 1: Number of Milk Producers and Quota Size by Year in the Republic of Ireland

	2000	**2002**	**2004**	**2005**	**2015***
No. Producers	29,071	26,635	23,767	22,300	15,000
Ave Quota Size	170,720	188,506	213,955	227,000	

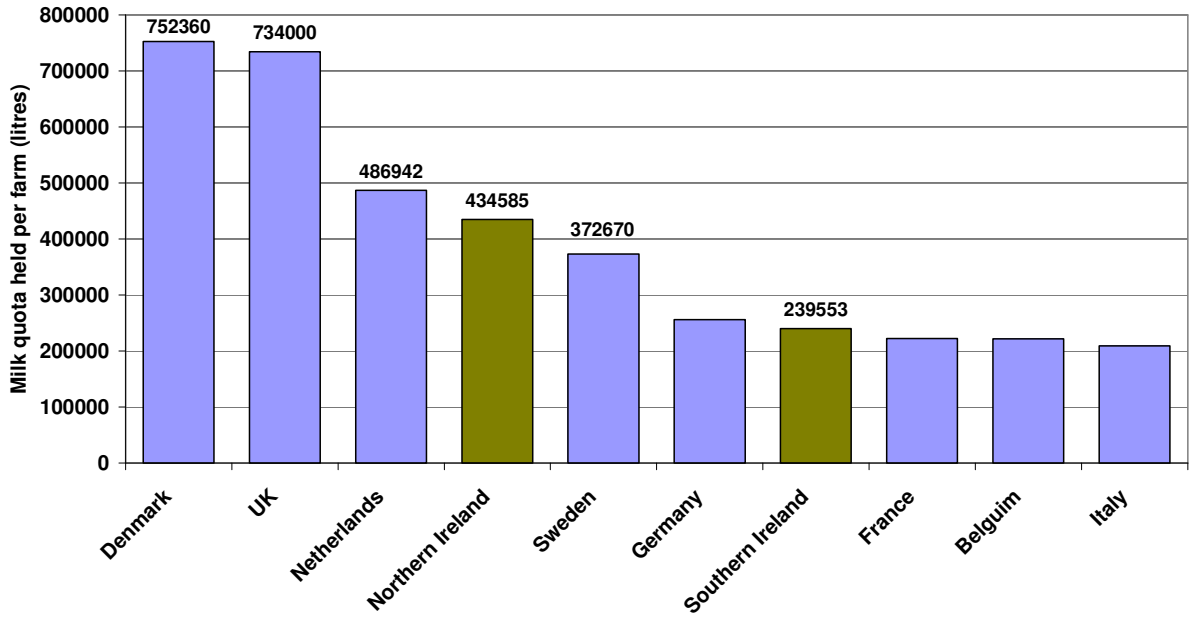
* Projected by Agri-Vision 2015 Committee

Source: Dept of Agriculture

Since 2000 the numbers exiting dairying per year has been 4.5%. This has resulted in quota size per producer increasing to almost 240,000 litres in 2006/07 (see figure 2), an increase of around 40%.

Overall, there will be fewer specialised dairy farmers who will have larger herds. They will need to be strong financial managers, technically well informed, while operating a system of farming that minimises labour requirements.

Figure 2: Dairy farm scale in Northern Ireland and Southern Ireland compared (2006/07) to other EU countries.

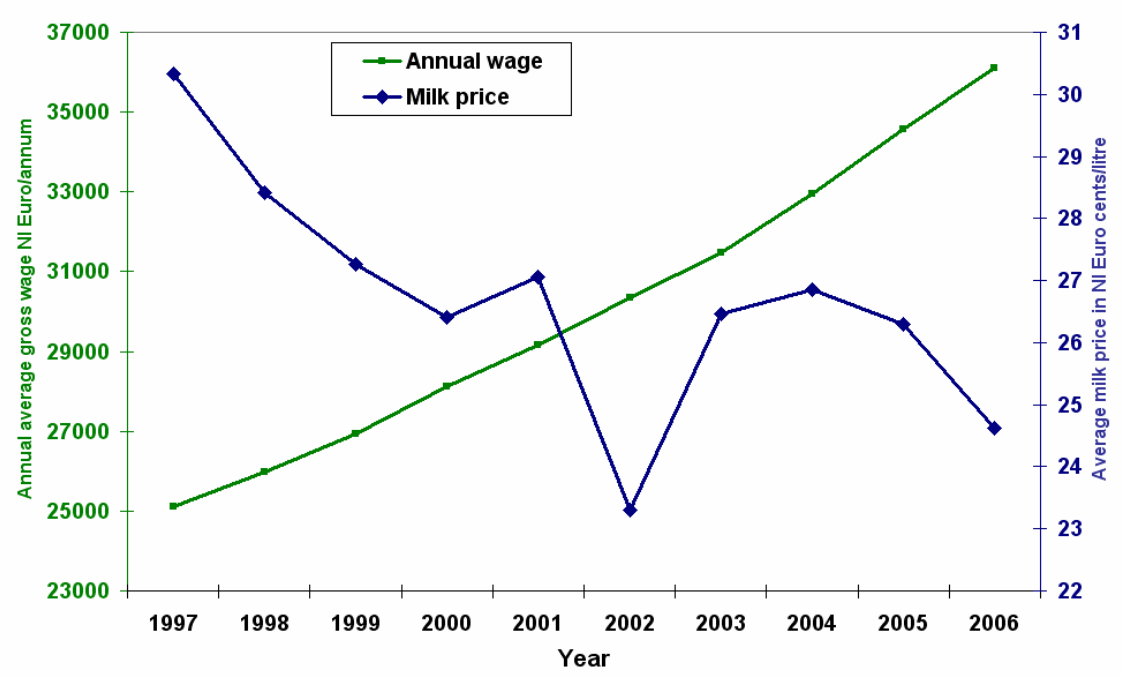


The total number of litres produced by a dairy farm is one very rudimentary measure of competitiveness. Figure 2 shows that while Northern Ireland is a long way behind the UK in terms of quota held per dairy farm, it is ahead of the average in many other countries. This is positive for dairying in this EU region however it is by no means a guarantee of success for individual farmers.

The Influence of The Wider Economic Environment

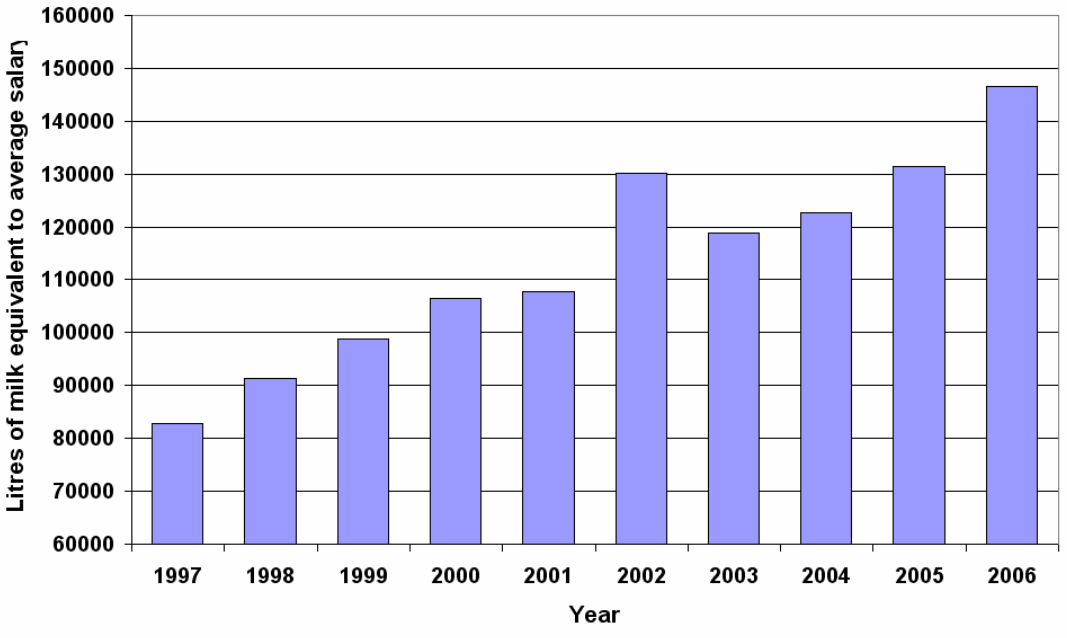
Dairy farming is a relatively labour intensive industry. The Irish dairy farming industry is characterised by predominantly family owned and operated units. This does not, however, mean that they are immune from the influence of economic prosperity outside of agriculture. The "pull factor" of improved working conditions and higher wage rates outside of agriculture has meant that succession on family farms has become more difficult with good employment prospects for young people seeking employment off-farm. The unemployment rate in Northern Ireland, for example, has consistently remained at between 4 and 5% for the last five years. Since milk quotas were introduced, the number of people employed by the private sector has increased by 70%. Figures 3 and 4 probably are the most striking illustration of the comparison of dairying with other industries in more recent years.

Figure 3. Comparison of the farmgate milk price in Euro cents per litre (right hand scale) with the average gross annual wage in Northern Ireland per annum for all workers in Euros (left hand scale)



All costs in GB pounds sterling converted to Euro at 0.68 Euro per GBP.

Figure 4. The number of litres of milk (at farmgate price) required to pay an equivalent average wage in Northern Ireland



It can be seen from figures 3 and 4 that to maintain a standard of living equivalent to that of their counterparts, dairy farmers have to expand (more easily possible in Northern Ireland due to the migration of milk quota from England) or become much more efficient as in the Republic of Ireland (assuming that milk price remains static).

Data for Costs of Milk Production In Ireland

Data from dairy farms is collected in two separate on-line benchmarking databases in Ireland – e-profit monitor in the Republic of Ireland and Dairy Benchmarking in Northern Ireland. E-profit monitor includes approximately 8% of the dairy cows in Southern Ireland while the equivalent figure for Dairy Benchmarking in Northern Ireland is 10%. Farmers are not randomly selected for either system and thus they cannot be considered to yield average results for either country. It is the larger and more progressive farmers that use the costing programs on line and thus results could be considered above average.

The following paragraphs give some of the highlights of the results from both systems for the 2005/06 milk quota year (April to March).

Overhead Costs on Benchmarked Farms (Northern Ireland)

As a dairy farms expands, it is generally assumed that many categories of overhead costs will not increase in proportion with the increase in herd size. When looking at overheads costs per litre, figures can be mis-leading as only a proportion of overheads are allocated to the dairy herd and production per hectare can dilute the total figure. In order to examine overhead costs in more detail, total overheads in various categories have been extracted from benchmarking results. Four different herd size bands were selected with herds +/- 10 cows around 50, 100, 150 and 200 being investigated. It would automatically be assumed that the overhead costs for a 200 cow herd should be less than 4 times that of a 50 cow herd. In Table 2, it can be seen that overhead costs on the 200 cow farms are actually 4.8 times those on the 50 cow farms. While cost centres like utility costs are 3 times larger, cost centres like paid labour, interest, conacre and contractor all show increases well in excess of 4 times. It should be noted, as stated previously, that the larger herds have higher stocking rates. This is again apparent with the area farmed on the 200 cow farms just over 3 times that on the 50 cow farms. If the family labour charge is considered in addition to total overhead costs, the 200 cow farms have a total just over 3 times that of the 50 cow farms. Overhead costs are often referred to as "fixed costs". Table 2 emphasises that they should be referred to overhead rather than fixed costs. In fact, many vary almost proportionately with cow numbers. Dairy farmers should continually examine all areas of overhead costs to ensure they remain controlled. If expansion of a dairy herd is planned, overhead costs should not be underestimated

Table 2: Total overhead costs for farms with 50, 100, 150 and 200 cow herds – financial figures given in Euro

	50 cows	**100 cows**	**150 cows**	**200 cows**
Machinery running costs	6,669	12,468	21,119	24,265
Contractor costs	3,453	9,244	17,066	18,766
All depreciation	9,788	21,379	31,553	31,472
Electric, phone, water, rates	3,950	6,891	11,582	12,156
Paid labour & NIC	984	3,859	10,137	16,965
Property repairs	2,379	5,296	9,901	11,206
Miscellaneous	3,835	5,900	10,444	13,037
Conacre	2,654	7,971	12,776	17,434
Interest only	2,046	7,671	11,187	27,813
TOTAL overheads	35,760	80,678	135,768	173,115
Land farmed	43	70.8	102	138.9
Family labour units	1.22	1.57	1.79	1.91
Family labour charge	42,781	55,054	62,769	66,976
Milk yield X stocking rate	12,292	15,346	18,250	15,533

Costs of milk production

The cost of milk production can be calculated in a number of different ways. Figure 5 has been calculated on the following basis:-

Variable costs for the dairy herd + overhead costs allocated to the dairy herd (based on land area used by the dairy cows) + adjustment for calf output and replacement costs + imputed charge for family labour

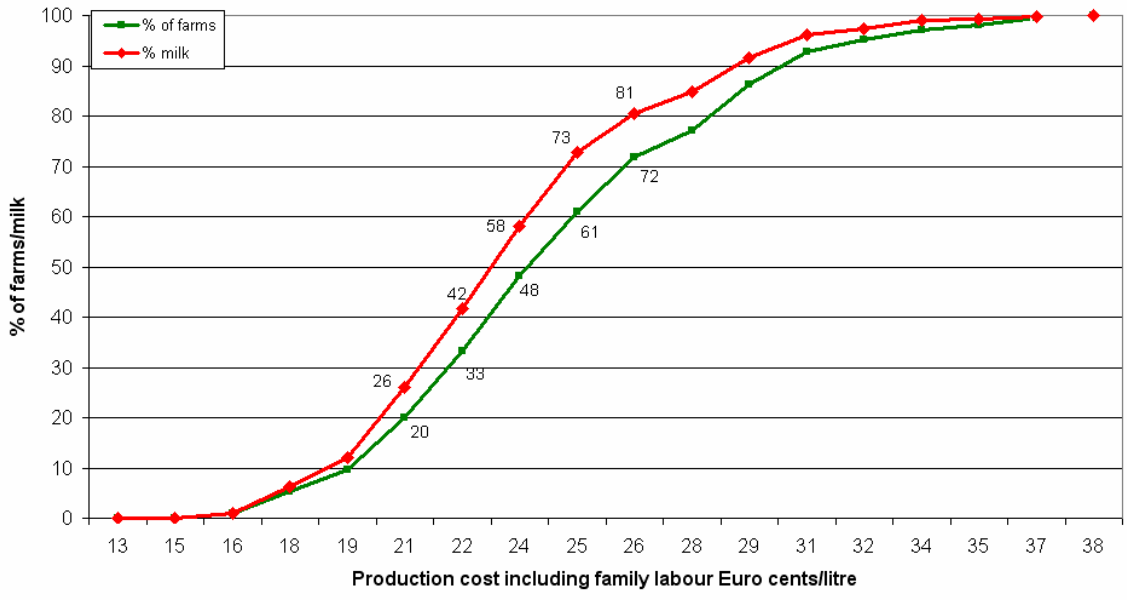
A few important notes on this calculation:-

- An imputed charge for owned land has not been included.
- Labour has been allocated to the dairy herd on the same basis as overhead costs.
- The charge imputed to one family labour unit has been taken as the average wage in Northern Ireland from the Department of Enterprise, Trade and Investment Northern Ireland Annual Survey of Hours and Earnings (ASHE). This figure in the 2006 survey was an annual wage of 35,066 euros.
- The Single Farm Payment is not included in the calculation of production costs.

Figure 5 shows the percentage of farms or milk that can be produced at a given milk price based on the above calculation. It is best understood by considering either end of the graph. At a milk price of 16.2 euro cents per litre, no milk can be produced for a cost of production below this. At 38.2 euro cents per litre, all milk is produced at a cost less than this. The "steep" area of the graph occurs between a milk price of 22 cents and 26.5 cents. At a milk price of 26.5p, 72% of farms could produce milk at a cost below this. However, at 22 cents only 33% of farms can produce milk at this cost. Thus, even relatively small falls in milk price below 26.5ppl puts economic pressure on a relatively large number of farms. Dairy farms would critically assess whether they should remain in production at these price levels and milk supply could be reduced in the longer term if prices in the region of 23.5 – 25 cents per litre were maintained. Remember also that benchmarked farms are generally better than Northern Ireland average.

The main feature of the farms producing milk at the lowest costs seems to be a low labour charge per litre. This results from efficient use of labour and, in some cases, family members working much longer hours than has been costed in this exercise.

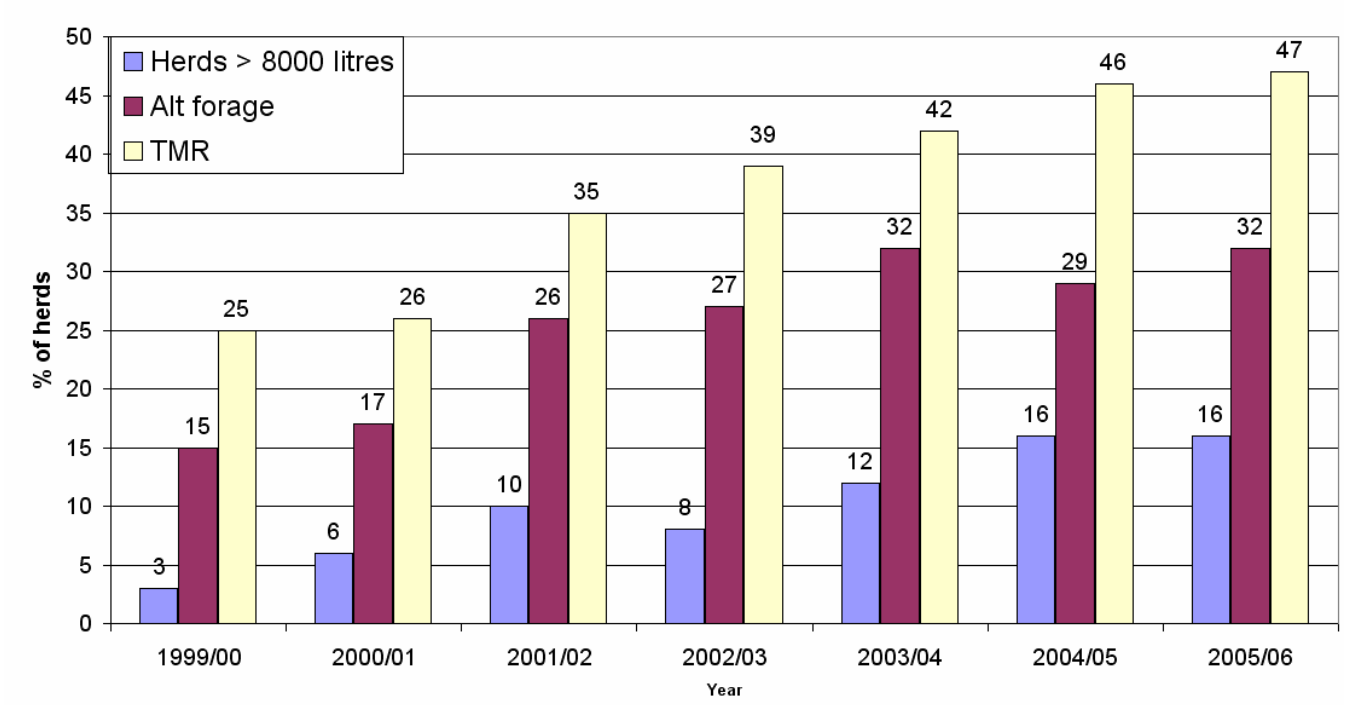
Figure 5. Cumulative % of milk produced at various production costs



Trends on Benchmark Farms

Greenmount Benchmarking allows for the analysis of long-term trends on dairy farms due to the large database of information that has now been built up. Figure 6 shows some of the changes that have been happening on dairy farms. A move to Total Mixed Ration feeding of dairy cows has become apparent with almost half of the dairy herds using benchmarking now using TMR in their herds. This compares to one quarter of herds 6 years ago. This has not automatically generated greater efficiency or higher profits for those that have followed this route (Figure 2). Alternative forage (either whole crop or forage maize) substitutes for at least some grass silage on one third of dairy farms. The number growing these crops appears to have levelled off with decoupling of Arable Aid Premiums likely to be having an impact. Some dairy farms appear not to be growing enough alternative forage to gain a response from their herds. Alternative forages have more of an impact on herd performance if they can be fed at 30% to 50% of the dry matter of the forage diet during the whole winter period. The average dairy farmer growing alternative forage grows 9.4 hectares for 127 cows. This is likely to provide around 0.8 tonnes of dry matter per cow during the winter on average (out of 1.8 – 2.2 tonnes of forage dry matter intake per cow during the winter).

Figure 6: Long term trends on benchmark farms



Herds yielding over 8,000 litres per year have also increased. Six years ago, only 3% of herds had an annual milk production per cow per year of over 8,000 litres. Now, this has risen to 16%. This level of milk can be taken as a "watershed" mark in terms of herd management. Individual cow daily milk yields peaking in excess of 40 litres becomes common place and creates an increased nutritional challenge on the production system to ensure adequate dry matter intakes to maintain cow fertility and welfare. It should be remembered that this is not a milk recorded 305-day yield. The benchmark yield is derived from the total milk produced (sold and used on the farm) divided by the average number of cows. It gives a better measure of economic performance in the dairy herd. In many cases, 305-day yields are quoted much higher than benchmark yields. This is due mainly to extended calving intervals.

What Are The Top 25% Of Farmers Doing Differently?

In recent years, the limiting factors on a dairy farm in Northern Ireland have moved away from milk quota to land and labour and thus effectively cows. The advent of the Nitrates Action Plan will continue this transition, as stocking rate will be capped on dairy farms. The best farmers must thus be measured on profit per cow rather than on profit per litre. Table 6 shows the tremendous range in profitability per cow between herds on benchmarking. The top 25% would be better off in a herd of 100 cows by just over 61,764 euros per annum. The key differences between the top and bottom groups accounting for this difference are as follows:

- Milk yield per cow is higher by 820 litre per cow
- Meal feeding only slightly lower by 163 kilos per cow
- Variable costs per cow lower by 79 euros per cow.
- Overheads lower by 184 euros per cow
- Milk quality and replacement rate are similar between the 2 groups
- Overall herd management and production efficiency

Dairy Profit Monitor Analysis

The Teagasc Profit Monitor programme is an internet based system which allows dairy farmers and their advisers to enter physical and financial data online on their farm enterprises. The system is available through the Teagasc client site on www.client.teagasc.ie.

Results from Teagasc Profit Monitors from 625 spring and 111 winter calving dairy were completed for the year ending March 2006. The data is analysed on a per litre basis ranked by net profit per litre. Slight discrepancies in the totals in some of the columns are due to rounding to the nearest decimal place.

Table 3: Summary of results for 625 Republic of Ireland spring calving farms. Family labour is not included in costs of production

	Average	**Top 10%**	**Bottom 10%**
	c/litre	**c/litre**	**c/litre**
Gross output	**27.34**	**29.11**	**25.79**
Variable costs	3.15	2.56	4.40
Feed	1.73	1.47	1.81
Fertiliser	0.90	0.77	1.10
Vet	0.46	0.42	0.49
AI	1.23	1.10	1.62
Contractor	1.40	1.14	1.85
Other variable costs	**8.87**	**7.46**	**11.26**
Total variable costs	**18.47**	**21.65**	**14.52**
Gross Margin			
Fixed Costs	0.70	0.49	1.22
bour	1.24	0.88	1.48
Machinery	1.19	0.97	1.34
Car/Electricity/Phone	1.62	1.27	2.14
Depreciation	0.88	0.75	1.17
Leases	2.45	1.72	3.15
Other fixed costs	**8.07**	**6.08**	**10.50**
tal fixed costs	**10.39**	**15.57**	**4.02**
Net Margin			

Table 4: Summary of results for 111 Republic of Ireland winter calving farms. Family labour is not included in costs of production

	Average	Top 20%	Bottom 20%
	c/litre	c/litre	c/litre
Gross output	**29.64**	**31.36**	**27.59**
Variable costs	4.13	3.33	4.87
Feed	1.45	1.39	1.41
Fertiliser	0.85	0.76	0.89
Vet	0.43	0.36	0.48
AI	1.12	1.05	1.16
Contractor	1.57	1.29	2.01
Other variable costs	**9.55**	**8.17**	**10.83**
Total variable costs	**20.09**	**23.19**	**16.76**
Gross Margin			
Fixed Costs	1.50	1.13	1.89
bour	1.81	1.22	2.24
Machinery	1.10	1.13	1.29
Car/ESB/Phone	1.71	1.40	2.38
Depreciation	1.05	0.96	1.14
Leases	2.63	1.94	3.72
Other fixed costs	**9.80**	**7.78**	**12.67**
tal fixed costs	**10.29**	**15.41**	**4.09**
Net Margin			

Dairy Farmers are not achieving the potential profitability gains at farm level. Considerable scope exists to increase profitability through improvements in on farm efficiency. Continued liberalisation of milk quota constraints will allow increased expansion opportunities for viable dairy producers in the future. The future competitiveness of dairy producers in a more liberal trading environment will depend upon their ability to minimise costs for a given level of output or to maximise output for a given level of input. The following paragraphs examine key components of profitability among a group of dairy farmers who have completed profit monitors.

Milk Receipts

Increasing milk receipts should be one of the target areas to increase dairy farm profitability. The data in Tables 3 and 4 shows large differences in Gross output. Gross output largely reflects the milk price but also includes sales of calves and culls minus the transfer of replacements into the herd. Milk price is influenced largely by milk composition payments. The gross output is also influenced by herd fertility. If cows don't go in calf, sales of calves are lower but also the cost of replacement is higher. Furthermore, the opportunity to sell surplus replacements is reduced.

Variable Costs

Variable costs should vary in approximately direct proportion to the level of milk production and include purchased feed, vet, AI, fertiliser and contractor costs. Consequently dairy farmers can most readily control these costs. Our research modellers have shown that there is strong relationship between the level of variable costs and net profit per litre. The higher the level of variable costs, the lower the level of profit.

Tables 3 and 4 show the average costs of production. In particular there is a huge variation in purchased feed cost irrespective of the system of milk production practiced. On average purchased feed accounts for 35% and 40% of the variable costs of spring milk and winter milk production systems respectively.

Generally higher levels of feed input are not reflected in the level of output per hectare. Therefore it can be concluded that excessive levels of feed were fed on these farms without a corresponding increase in output thereby reducing profitability.

Overhead Costs

These are the costs that by definition do not vary in proportion to the level of milk production (although in Table 2 it can be seen that they increase substantially with herd size). They include non-cash costs such as depreciation. While they are a cost in the system, overhead costs are not as strongly linked to profit as the variable cost in an Irish context. However the implementation of the Nitrate Directive Regulation will mean that these costs will increase in the years ahead.

Spring Versus Winter Milk Production

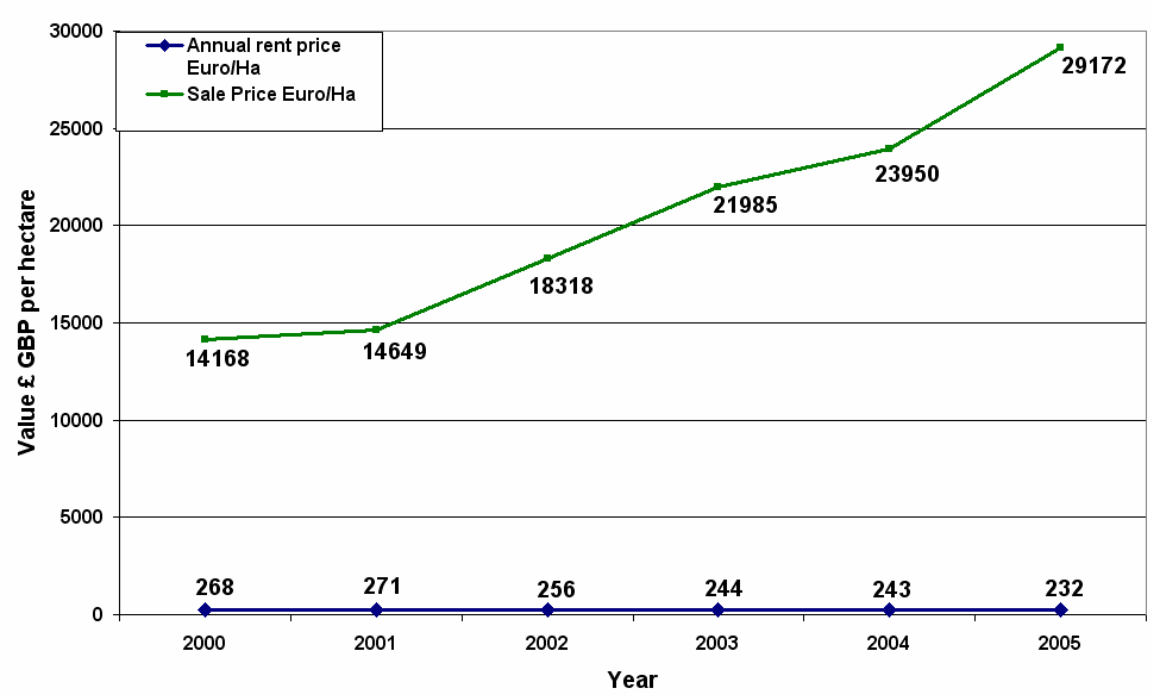
Essentially those farmers involved in spring milk production produce milk in line with the grass growth curve. Winter milk producers produce milk all year round. As a result feed costs are much higher but this is offset by higher winter bonuses in milk price. However machinery costs and labour costs are also higher. The bottom line however is that net profit per litre is the same. This has been the trend for many years. Even though the price received for milk is higher the costs of production, particularly feed costs erode this benefit.

Future Influences on the Cost of Milk Production in Ireland

Land Price

Land prices in Northern Ireland have always been among the highest in the UK. Normally, in the last few years, less than 1% of the agricultural land area is sold each year thus a low supply of land onto the market keeping prices up. Since 2002, house price inflation has commonly been in excess of 20% per annum. This has tended to feed into land prices through higher prices for development land and building sites. Also, UK inheritance tax rules mean that agricultural land is exempt from the tax. This has drawn external investment money into the land market. The result has been that purchase price for land has risen steadily as seen in Figure 7 while annual rent price has remained static. Anecdotal evidence suggests a continuation of this trend with some parcels of agricultural land changing hands in 2007 in excess of £70,000 per hectare.

Figure 7: Annual rent and purchase price for agricultural land in Northern Ireland 2000 – 2005 Euro/Ha



High land values have a number of influences of the economics of dairy farming. They push up the opportunity cost of owning land and thus the full economic cost of milk production (although the many owner occupiers do not see any change in their cashflow or profit as a result). High land prices also offer the alternative of ceasing milk production and selling land to release the large amount of capital tied up in a dairy business. Developing farm businesses find it almost impossible to purchase land for expansion. Many of the larger dairy businesses in the country are renting substantial areas of land to supplement relatively small owned areas. Approximately one third of the land area is rented out on an annual basis.

Single Farm Payment

Full decoupling of the EU Dairy Premium occurred in Ireland on the 1st January 2005. Dairy farmers Ireland thus receive a decoupled payment each year. This does not influence the cost of milk production but many dairy farmers have used it to subsidise their business in periods of poor milk price as in 2006 (see Figure 3). The future of this payment will affect the number of dairy farmers remaining in the industry. It is seen by some as a guaranteed income after stopping milk production and thus could be seen as both an indirect subsidy to those in milk production and a route for some to exit the industry.

Nitrates Directive

Northern Ireland and the Republic of Ireland have recently implemented the Nitrates Action Programme. A requirement for a specific number of weeks slurry capacity (varies depending on location) will add costs to a number of dairy farms (although capital grant aid is available towards the cost of storage in both jurisdictions). Many dairy farmers will also have additional land rental charges in order to meet the limit of manure nitrogen per hectare (this is also dependant on the EU granting a derogation to 250kg/Ha in Northern Ireland. A derogation is already available to farmers in the Republic of Ireland).

In summary, milk production in Northern Ireland is competitive within the UK as evidenced by the migration of milk quota to the region since 1994. In terms of "cash costs", milk can be produced at a lower cost than many other countries. Full economic costs are likely to be higher than other countries

given the high wage rates in the country and exceptionally high land values. Cost inflation in the future will certainly threaten many of the competitive advantages that Northern Ireland from being a good area for growing and grazing grass.

Dairy farmers in the Republic of Ireland are very exposed to influences of international decisions such as W.T.O., continuing EU agricultural policy reform, the Nitrate Directive and further environmental legislation, international production and demand for dairy produce. This due to the fact that Ireland is largely an exporting country of agricultural products. However, the medium to long term outlook for milk markets are good; supply is growing at around 1% and demand is growing at 1.5 to 2%. While the world economy remains strong, and China in particular continues to grow, then the outlook is favourable.

New Zealand and Australia have 20% more of the world trade market now than they had 15 years ago; but growth in production has slowed down. The US increased milk production last year by 4% - which is a concern. This was drive by high milk prices in 2004 and 2005. South America is the continent of greatest potential, but probably lacks the necessary skills to expand production significantly in the medium term. Because of worldwide demand for grain and recent changes in Europe, grain price are likely to increase. This will favour low cost grass based systems of dairying, with lower meal and labour demands.