

**An exploration of the determinants of the Irish dairy sector's  
performance over the next ten years in the post milk quota era**

Research dissertation presented in partial fulfilment of the requirements  
for the degree of  
Master of Business Administration in International Business Management

Griffith College Dublin

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2<sup>nd</sup> September 2015

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I certify that the dissertation entitled:

*An exploration of the determinants of the Irish dairy sector's performance over the next ten years in the post milk quota era*

submitted for the degree of Master of Business Administration in International Business Management is the result of my own work and that where reference is made to the work of others, due acknowledgment is given.

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## **Dedication**

This dissertation is dedicated to my wife Mary for her unwavering support in its completion, to my baby daughter Alice who was born during the course of the MBA, to my parents Eileen and Peter for their guidance and to my sister and brother, Suzanne and Brian, for their words of encouragement.

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## **Abstract**

**Title:** An exploration of the determinants of the Irish dairy sector's performance over the next ten years in the post milk quota era.

**Author:** Colin Fogarty

The removal of the EU milk quotas on April 1, 2015 after more than 30 years since their establishment is viewed as a significant growth opportunity for Ireland and the EU overall. The primary reason for deciding to end milk quotas is due to the considerable increase in consumption of dairy products in recent years, especially on the world market. With this trend projected to continue into the future, the previous quota regime is viewed as a measure that prevented Irish producers from responding to growing world demand.

The objective of this thesis is to develop a ten year forecast for Ireland in a post EU milk quota era. The central question that this dissertation leads from is establishing the impact that the abolishment of EU milk quotas is having on the current milk price in Ireland. From there, a short to medium assessment of how Irish dairy production is likely to evolve in the next one to four years is projected, followed by a forecast of Irelands long-term prospects up to and including 2025. The target markets of Irish dairy produce are then assessed including Ireland's production strategy. Finally, an in-depth assessment of how farming structures will change as a result of EU milk quota removal is then forecasted.

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## List of Abbreviations

AGM	Annual General Meeting
ASB	Auckland Savings Bank
CAP	Common Agricultural Policy
Co-op	Co-operative
CSO	Central Statistics Office
DAFF	Department of Agriculture, Fisheries and Forestry
EMB	European Milk Board
EU	European Union
FAPRI	Food and Agricultural Policy Research Institute
FBD	Farmer Business Developments
FH2020	Food Harvest 2020
FTA	Free Trade Agreement
GDT	Global Dairy Trade
ICMSA	Irish Creamery Milk Suppliers Association
IDB	Irish Dairy Board
IFA	Irish Framers Association
NDC	National Dairy Council
NZ	New Zealand
NZ-China FTA	New Zealand-China Free Trade Agreement
TAM	Technical Acceptance Model
TPP	Trans-Pacific Partnership
UHT	Ultra-high Temperature
USDA	US Department of Agriculture

## **Chapter One**

### **Introduction**

#### **1 Introduction**

The researcher is eager to explore the particular area of the abolishment of European Union (EU) milk quotas as it is a recent event that affects various dairy sectors in Ireland. The impact which the removal will have on dairy prices, production, exports, farm structures and the economy on Ireland is of interest to policy makers and farmers alike. The purpose of this chapter is to provide background knowledge of the research topic of EU milk quotas and their impact on Ireland that will allow the reader to understand the subjects that are going to be discussed. Following on from this, the research objectives will be outlined and an overview of the subsequent chapters will also be provided as a guide to the content.

#### **1.1 Background and Content**

##### **1.1.1 Establishment of the milk quotas**

In 1984 the EU had a large surplus of milk produce and to prevent further increases it was decided to introduce a milk quota scheme as a measure of control over production volume and price. The milk quotas were introduced under the Common Agricultural Policy (CAP) of the EU and limited the quantity of production eligible for EU support by specifying the maximum desired output of production by country. Each EU country was allocated a national quota covering the total production of a quota year, starting on the 1<sup>st</sup> April and ending on the 31<sup>st</sup> March of each year. Therefore, from 1984 onwards, CAP put an effective limit on the amount of milk Irish farmers produced each year and if exceeded would impose penalties known as super levies.

As part of the CAP, the EU introduced an intervention price mechanism. When the actual prices for dairy products in the EU got below a certain guaranteed minimum level, known as the intervention price, then the surpluses in dairy produce were offered to the EU for intervention. Intervention is a purchasing scheme with the desired effect of removing surplus dairy products from the open market and thereby stabilising prices. In this indirect way the milk price for farmers is kept at a reasonable level. The levies on imports were also set at such a level that they bridged the differences in the world market price and internal price.

The imposition of the EU milk quota therefore protected the domestic dairy producer by a combination of guaranteed minimum prices in the domestic market, coupled with subsidised exports into the lower priced world markets and import restrictions by way of the quota.

### **1.1.2 Abolishment of milk quotas**

On April 1, 2015 EU milk quotas that were first introduced as part of the CAP ended. The EU had been preparing for the abolition of the milk quotas since 2009 when it reformed the national milk quotas system as part of a review the CAP and where upon it was decided that quotas would increase by one percent each year. This increase was set out in order to provide a soft landing for the ending of milk quotas in 2015 and their removal marks an important step towards the orientation of the CAP.

### **1.1.3 Europe's reaction to the milk quota removal**

Ahead of the removal of EU milk quotas, the EU Commissioner for Agricultural & Rural Development Phil Hogan stated:

*'The end of the milk quota regime is both a challenge and an opportunity for the Union. It is a challenge because an entire generation of dairy farmers will have to live under completely new circumstances and volatility will surely accompany them along the road. But it certainly is an opportunity in terms of growth and jobs' (European Commission 2015).*

The Financial Times has forecasted that the biggest winners of the milk quota removal are expected to be high-yielding, high-value producers in countries such as Ireland, the Netherlands and Denmark with less competitive countries such as Romania and Bulgaria suffering (Boland 2015).

However, the removal of quotas has not been welcomed in all EU circles. During the summer of 2015 many dairy farmers in both France and Belgium have blocked major roadways in protest at the low price they are receiving and over continued fears that the removal of the milk quotas is flooding the market with cheap surplus milk. The European Milk Board (EMB), the European umbrella of national dairy farmers' associations, has said that the end of milk quotas could push many small milk producers out of business because of competition from large dairy multinationals (Paun et al. 2015). The French Agriculture Minister Stephane Le Foll has declared an agricultural crisis and revealed that figures collected by his department show that some 23,000 French farmers are on the verge of bankruptcy (Forde 2015). Research before the removal of milk quotas by economists at the Institut d'Economie Industrielle in Toulouse predicts that the elimination of

the quotas would result in a loss to producers of €4 billion and a gain to consumers of €3.7 billion (Matthews 2008).

In a recent interview the Polish Minister for Agriculture Marek Sawicki highlighted why his country campaigned for milk quotas to remain until after 2015:

*'Only Poland and Portugal have lobbied for the preservation of milk quotas until at least 2020. This was not without reason. The world is not ready for the extra milk supply that comes after the quota disappears. In addition, Europe is not ready to sell its dairy products to countries outside of the EU. Our only hope is consumers in countries like China and India will eat more cheese, and in this way would let our surplus stock disappear'* (Veldmen 2015).

#### **1.1.4 The expected impact on Ireland**

The lifting of the quota has been considered as a key step in the invigoration of the Irish dairy industry. In an interview as part of this research a representative from the Department of Agriculture gave the view that his department were only anticipating positive effects for Ireland as a result of EU milk quotas removal. Minister for Agriculture Simon Coveney has stated that Ireland 'will be able to produce the right amount of milk that this country has the capacity to sustainably produce – to target markets for premium added value products across the world' (Irish Times 2015).

By framing this desire with the production targets set out by the Department of Agriculture's Food Harvest 2020 report, which states that Ireland will increase supply by 50% by 2020, it is clear that the Irish Government believes that the future of Irish dairy production is very encouraging. In line with the forecasted production level increases, the Government's export policies reflects their desire to see the expansion of Irish milk production capable of securing international market share and become the 'New Zealand' of the Northern Hemisphere.

However, Ireland runs the risk of leading itself into a dairy production future that is unsustainable. Sharp falls from a milk price peak in 2013 have continued throughout 2015, both pre and post quota, which has severely impacted Irish farm incomes. The Government's 50% increase in production target means that Irish farms are expected to increase herd sizes and see expansion of their produce into global markets. Instead, farmers find themselves faced with large super levies resulting from over producing in the run up to the quota removal, financing problems relating to capital investment for expansion purposes and a very low return for their produce. As a result, the removal of the quotas, in the short term, at least has undermined the strength that Irish farms once had.

Farmers find themselves in a position where the celebration of the lifting of the quota has been short lived and the dairy sector is left with the prospect of an uncertain future.

### **1.1.5 The New Zealand experience**

In agricultural circles there is a widely held belief that Ireland could have been the New Zealand of the Northern Hemisphere had it not been for the EU milk quotas. Indeed, much of the optimism for Ireland in the post EU milk quota era is based on the experiences of New Zealand, a country with a similar sized population, who share a similar climate and are also gifted with an abundance of grassland which makes them ideal for dairy farming.

Three decades ago, when the milk quotas were first introduced, Ireland produced the same volume of milk as New Zealand, at about 5 billion litres per year. Since then, New Zealand has moved to become a global player in the world dairy market by increasing their milk production to 20 billion litres a year while Irish output has remained relatively static. As a result, New Zealand is now the world's top dairy producer and accounts for a third of the world's dairy trade (NZ Trade & Enterprise 2015). The rapid expansion of dairy production in New Zealand has significantly changed farming structures with a 90% increase in the number of cow numbers nationally and a doubling of farm size and cows per farm over the last 20 years (Irish Farmers Journal 2014).

Due to the perceived structural similarities of the two countries, the lessons to be learned from the New Zealand experience have to be taken seriously. As an island economy with approximately four and half million people, New Zealand has to export the vast proportion of its dairy produce off-shore, much like Ireland where 85% of dairy production is exported (ICOS 2015). Like Ireland their dairy output is based on a seasonal milk supply, yet demand is constant all year round. Hence its problems in supplying consumer markets are no less than Irelands.

New Zealand's dairy production relies heavily on the continuing sales of baby milk and formula to Asia, and in particular China. In the post EU milk quota era, Ireland is hoping it will follow a similar path by targeting their exports to new economies which will assist in the expansion of production by 50%, as targeted in the Food Harvest 2020 report.

## **1.2 Research Purpose**

The research purpose of this dissertation is to forecast the impact of EU milk quota removal on Ireland concerning milk price, production, farm structures and the Irish economy. The researcher will present these impacts in the form of a ten year forecast for Ireland.

### **1.3 Significance of the Study**

The research is relevant due to the recent abolishment of the EU milk quotas and the relatively unknown short term and long term impacts of their removal on Ireland. The move to end a milk quota system after more than 30 years brings with it a large amount of expectations and uncertainties. The milk quotas were essentially introduced to halt the massive overproduction of dairy produce that had resulted in the infamous milk lakes and butter mountains in Europe. However, the limited research and commentary to date on the abolition of the milk quotas seems to highlight a situation where overproduction arises again, even though there is no logic as to why this problem could not occur. As with any free marketplace liberalisation in the form of an open efficient dairy market effectively leaves the dairy sector to fend for itself and this, in the short term at least appears to be how production will be regulated in the future. Through the simple laws of supply and demand, milk production and price are supposed to self-regulate themselves without involvement from a national or EU level. The researcher's interest in examining this issue stems from a desire to explore why overproduction could not occur again, now that Irish dairy market is free from EU milk quotas.

### **1.4 Research Objectives**

The researcher's objective is to highlight the potential impacts to Ireland over the next ten years as a result of the abolition of EU milk quotas. The primary research objective is exploratory research into how the removal of EU milk quotas has contributed to the current volatility of the milk price on the international market and within Ireland. In this respect, the initial question posed is historical as it deals with the impact of a recent past event. From this initial historical research basis stems several future forecast questions which have the objectives:

- To anticipate the movement of raw milk prices levels in Ireland in both the short term (one to four years) and long term (ten years) period.
- To forecast the level of dairy production in Ireland over the next ten years.
- To assess where Ireland will target their exports.
- To assess how Irish farming structures will change over the next ten years as a result of EU milk quota removal.

The outcome of this analysis is of interest to Irish farmers, politicians, Government, agricultural bodies and milk industrial professionals.



## **1.5 Structure of the Study**

### **1.5.1 Chapter One – Introduction**

Chapter One provides the reader with an introduction to the research. It provides background into the initial imposition of milk quotas, their recent removal, both Europe and Ireland's reaction and a comparison with the world's leading dairy producing country New Zealand. It also highlights the research purpose, the significance of the study and the research objectives.

### **1.5.2 Chapter Two – Literature Review**

Chapter Two provides a critical overview of the literature and research on the effect of EU milk quotas in relation to Ireland. The chapter focuses on four key areas which are price, production, farm structures and the economy. It also provides a conceptual framework for the research questions.

### **1.5.3 Chapter Three – Methodology and Research Design**

Chapter Three discusses the research methodology used to answer the research questions. It also outlines the research philosophy, approach, design and strategy while explaining the rationale of each choice. Limitations of the study are also acknowledged by outlining the reliability and validity of the data collected and steps taken to avoid interviewer and interviewee bias.

### **1.5.4 Chapter Four – Presentation and Discussion of the Findings**

Chapter Four presents the findings of this research, the approach taken in analysing the data from the semi-structured interviews and an overview of the forecast for each of the research objectives.

### **1.5.5 Chapter Five – Conclusion and Recommendations**

Chapter Five provides a summary of the overall research forecast and outlines the rationale behind the conclusions reached. An evaluation of the research tool used in the research is presented and opportunities for future research are highlighted along with a discussion of how this research adds to previous research on the topic. The chapter ends with a final conclusion and reflections on the research.

## **1.6 Conclusion**

This chapter has provided the historical background of the initial introduction of EU milk quotas and an overview of the reception of their removal from both an Irish and a European context. It has highlighted the differing production paths that Ireland and New Zealand have taken since the introduction of milk quotas in the EU in 1984. It has provided

details on the research objectives, strategy and significance of the research. Finally, it has provided a brief overview of the different chapters enclosed in the research.

## **Chapter Two**

### **Literature Review**

#### **2 Introduction**

This chapter will review the existing literature on milk quotas and their impacts on the dairy sector. It will provide a critical overview of the available literature on the articles, studies and commentaries with regard to the impact and abolishment of milk quotas. According to Saunders et al. (2009), reviewing the literature critically provides the foundation on which research is built. The chapter will begin by giving an overview of the literature on four key areas that milk quota removal effects namely price, production, farm structures and the economy. Finally this chapter will set out the framework in which the research objectives can be derived.

#### **2.1 Impact of EU milk quota removal on price**

The abolishment of the EU milk quotas in 2015 has been greeted with mixed sentiment across Europe. Some of the EU's twenty-eight member states see it as an opportunity for growth, while others consider it as a threat to their domestic production. Much of the literature surrounding the removal of the milk quotas focuses on milk production and the impact on farms. However, one of the major concerns as a result of the removal is the current volatility of the milk price, which forms the primary question of this research. The removal of the milk quota coincided in a year when milk prices both nationally and internationally are experiencing one of the most turbulent times in recent history.

As of June 2015, the Global Dairy Trade (GDT) auction, which is the platform for internationally traded commodity dairy products, took a huge 65% reduction versus June 2014 (See Figure 1). The latest predications are that milk prices will not improve over the next six months and likely to fall even further and world milk prices are extremely close to the lows last seen during the major crash in 2009.



**Figure 1:** Global Dairy Trade Price Index over 10 years (Source: Global Dairy Trade (2015))

In production terms for 2015, the US Department of Agriculture (USDA) have said that milk production globally will rise by 2.1% to a record 582.2 million tons as top exporter New Zealand sells the most ever and the European Union ends milk quotas on dairies that have been in place since 1984 (Mulvany 2015). For the US itself, the USDA in June 2015 stated that domestic output for May reached 18.7 billion pounds, the most in any month and is on course to reach a record 208.7 billion pounds this year. As a result of these production levels, data from the US Department of Agriculture (USDA) shows that dairies in the US Northeast dumped 31 million pounds of milk in the first five months of 2015, including 7.9 million pounds in May, which was 67% more than the same month last year (Mulvany 2015). The world's overproduction of milk has led to a global glut of supply on the world market.

In Ireland, as of August 2015, the Irish Creamery Milk Suppliers Association (ICMSA) estimate that the average milk price for the first four months of 2015 to be slightly under 30 cent per litre, the May to June 2015 price to be 27.9 cent per litre, 26 cent per litre for July and an average price of 24 cent per litre for the remaining five months of the year (McCullough 2015a). If all these forecasted prices transpire the average price of milk in Ireland for 2015 will be 28 cent per litre. According to the Central Statistics Office (CSO) milk prices fell by 24% from May 2014 to May 2015 and 5.1% from April 2015 to May

2015 (Hussey 2015). Teagasc, the Irish farming industry body, estimates that the average cost of production in Ireland is 25 cent a litre before labour costs (Burke-Kennedy 2015). This means that the current margin on milk that Irish farmers receive is approximately 3 cent for each litre of milk produced.

## **2.2 Factors affecting milk price**

The price of milk in Ireland and globally is being compounded by many converging global factors and not just the abolishment of the EU milk quota regime. These world factors include:

### **2.2.1 Chinese stock market collapse**

The collapse in Chinese demand for milk produce due to the 2015 Chinese stock market crash which began with the bursting of the stock market bubble on June 12, 2015 and has seen almost a third of the value of A-shares on the Shanghai Stock Exchange lost within one month. Overall, the Shanghai Exchange Composite Index has fallen 30 percent since June 2015 and this occurred after a period of prolonged growth that had seen the stock exchange rise by 160 percent since early 2014 (Kumar 2015).

### **2.2.2 New Zealand dairy market**

New Zealand has been the country hardest hit by the uncertainty in the Chinese stock crash and is a country that Ireland is eager to emulate in dairy production in Europe. According to one of New Zealand's main banks, Auckland Savings Bank (ABS), the overall price fell by 5.9% at a dairy auction in July 2015, with the price for white milk powder falling by more than 10% (Cummins 2015). Due to the prominence of New Zealand in the world dairy market the milk prices generated by Fonterra, a New Zealand co-operative (co-op) owned by New Zealand farmers responsible for approximately 30% of the world's dairy exports, are a key driver for milk prices globally. On August 7, 2015 Fonterra announced that it expects to pay its members NZ\$3.85 per kilogram of milk solids in the current season, ending May 2016 (The Economist 2015). This is less than half the record price of NZ\$8.40 it was paying farmers two years ago and below the breakeven point for New Zealand farmers (The Economist 2015). If New Zealand, and in particular Fonterra, continues to reduce prices then the impact on milk price will be felt worldwide.

### **2.2.3 Russian import embargo**

Russia's import sanctions on produce from the EU, US and other countries in retaliation for Western sanctions against Russia, due their invasion into Ukraine, has been a significant blow to Irish exports. The ban, which was originally introduced in August 2014, was initially expected to last one year. However, as of June 2015, Russia announced an

extension to the ban in retaliation for the EU's decision to prolong penalties over the Ukraine conflict. Minister for Agriculture Simon Coveney has revealed the loss to the Irish dairy sector from the Russian ban on imports will be €8 million (Sheahan 2014). Russia had also been the largest market for EU cheese imports. Trade figures for May 2015 show EU cheese exports are down 12% versus 2014 (Riegel & Ryan 2015). The indirect impact of the Russian import sanctions has also had negative consequences for Ireland. As a result of the ban, significant volumes of dairy produce and products that would have gone to the Russia market have now been forced onto the EU and international markets at a reduced price.

#### **2.2.4 US Dairy Market**

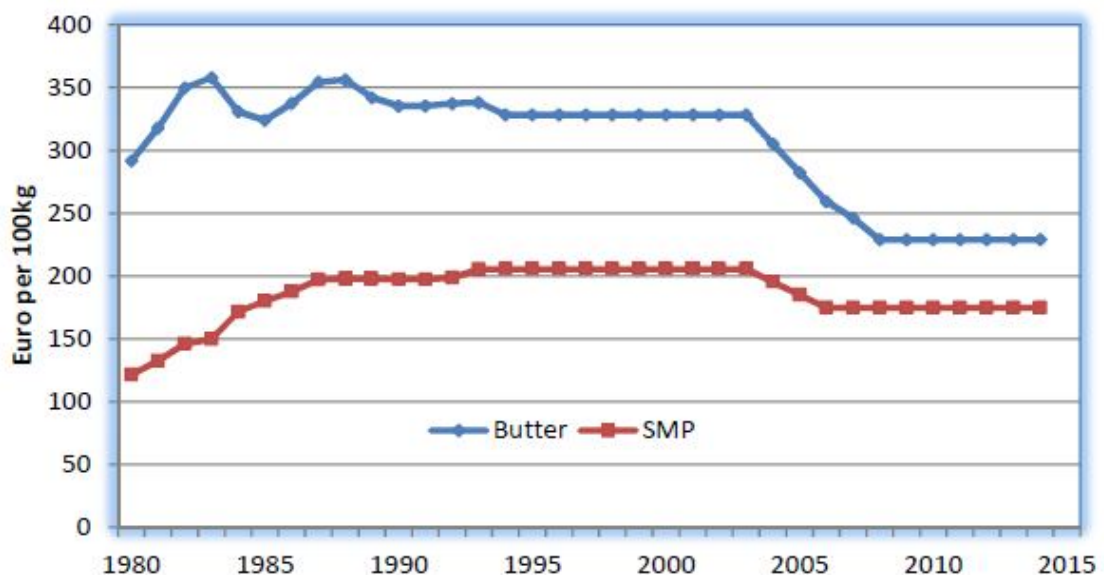
The US dairy market has been buffered by lower feed costs for farmers as a result of reduced demand for grain supplies such as corn and soybeans (Howard 2015). Much of this demand is driven by China. However, as a result of the China's stock market crash and the Chinese central banks decision to devalue the yuan, it effectively raises the costs of import for the grains for Chinese buyers. US dairy production is largely built on feeding cows grain such as maize. The availability of cheaper and more abundant grains for their herds has resulted in US farmers still turning a profit despite the fact that milk prices are tumbling. US domestic milk output for 2015 is set to be the highest ever for the fifth straight year (Mulvany 2015). As a result, supplies of raw milk are topping capacity at processing plants and compounding a global surplus even with though demand is improving (Mulvany 2015).

## 2.3 Political intervention in milk price

### 2.3.1 Overview

With the abolition of the milk quota scheme, the EU dairy sector will face a significant policy shift comparable with that of the introduction of the milk quota system (Bouamra-Mechemache et al. 2008). The removal effectively exposes Irish farmers for the first time since 1984 to the world market forces as opposed to New Zealand's farmers who have been totally exposed for many years. Williams (1993) states that often the results of opening a commodity market, which was previously isolated, from the world market is 'wide fluctuations in world prices which, in turn, can cause large fluctuations in the incomes of farmers or, in the case of exporting countries, in foreign exchange earnings'. He further argues that 'fluctuations can go beyond what a government is willing to accept and hence may attempt to institute some measure of price stabilisation'(Williams 1993).

Although the milk quotas have been removed, the dairy industry is not fully deregulated at a European level. As mentioned previously, one form of management is through intervention buying prices, which is designed to mop up excess supply of butter and skimmed milk powder (SMP) that are still on the market and put this produce into storage. Intervention buying provides a minimum price for milk produce and prices are set at low levels to ensure that they are only used in times of real crisis. Figure 2 demonstrates the decrease in intervention prices from 2004 to 2015.



**Figure 2:** EU Intervention prices 1980 to 2015 (Source: EU Commission via Donnellan et al. (2014))

According to the EU (2011), a reduction to the intervention price 'often but not always, leads to a drop of prices on the internal market and therefore the cut in intervention prices

bridges the gap between internal and world market prices'. Under this argument, the opposite should occur whereby if the intervention price is raised the world market should react and raise milk prices. However, post the EU milk quota era, in a situation of world overproduction resulting in oversupply, the impact of an increased intervention price may indicate a failure on behalf of the world milk market to self-regulate itself and perhaps a naivety on the EU in removing milk quotas altogether. Furthermore, the increase would likely create a short-term uplift in milk prices until the intervention price is subsequently reduced again.

### **2.3.2 Present situation**

At present the generally accepted cost of milk production in Ireland is around 25 cent per litre. The safety-net intervention price for SMP and butter, which is set by the EU Farm Council, currently amounts to 21 – 22 cent per litre. In June 2015 John Comer, President of the ICMSA, called on the EU Farm Council to 'immediately raise the intervention prices for butter and SMP to a level that reflects the cost of production across the EU and it is generally accepted this should be in the region of 28 cent per litre'. Many groups, including the Irish Framers Association (IFA), have stated that EU Commission is obliged by law to keep intervention prices under review by taking into account production costs and market trends (IFA 2015).

As of June 2015, Minister for Agriculture Simon Coveney confirmed that he will seek an EU milk price intervention but only when the timing benefits Irish farmers (Riegel & Ryan 2015). In early July 2015 EU Agriculture Commissioner Phil Hogan ruled out any increase in the intervention price on the basis that it would only delay an 'inevitable and necessary adjustment' in European milk supplies (McCullough 2015c). Minister Coveney is aware of the discrepancy between the actual cost of milk production and the intervention price by stating that he will ask the EU Commission to 'look at increasing both the volumes eligible and price paid for intervention to a level that provides a realistic safety net' (McCullough 2015c) for Irish farmers.

## **2.4 Impact of milk quota removal on milk production in Ireland**

Under the Department of Agriculture's Food Harvest 2020 report, a target of increasing milk production by 50% by 2020 is felt to be 'realistic and achievable' and will 'set the foundation for further expansion in subsequent years' (DAFF 2010). The Department's subsequent report, Food Wise 2025, avoids this level of dairy production quantification but builds on from this target. In terms of how this target is achieved, recent research has



concentrated on examining development paths, the identification of challenges and further growth opportunities.

Much of the Food Harvest 2020 is based on data from FAPRI – Ireland, a partnership which was founded in 1997 between Teagasc and the Food and Agricultural Policy Research Institute (FAPRI) at the University of Missouri. They have developed the FAPRI-Ireland model which has been used to estimate the future volume and value growth paths for agricultural inputs and outputs under Food Harvest 2020. Donnellan & Hanrahan (2012) outline that by modelling the agricultural production volume required to reach Food Harvest 2020 and determining the associated costs and volumes of input usage, the FAPRI-Ireland model identifies the critical market conditions required in order for the targets to be reached.

Läpple & Hennessy (2012) however specifically critique the likelihood of Ireland achieving a 50% increase in production targets by 2020. They conclude that this will be very difficult to achieve and that future potential milk output depends on the rate of structural change and productivity growth as well as how real milk prices move over the next number of years up to 2020 (Läpple & Hennessy 2012). Overall, Läpple & Hennessy (2012) conclude that the achievement of the Food Harvest 2020 growth target is unlikely based on current dairy farms land base. This means that significant improvement in Ireland's land transferability initiatives are required in order to meet the production targets for Food Harvest 2020.

Läpple & Hennessy (2012) also forecast that production in Ireland is expected to increase by more than in any other EU Member State, partly due to Ireland's favourable international competitiveness position, but also due to the relatively restrictive approach adopted in Ireland to the transfer of quotas between farmers. This forecast appears plausible given that Donnellan et al. (2009) argue that the restrictive quota transfer policies implemented in Ireland has resulted in a 'low output to resource ratio, small farm structure and a pent-up demand for production expansion when compared to Member States where a freer market for milk quota existed'. Therefore, the restrictions that milk quotas imposed on Irish farms have led to a strategic benefit in the longer term.

On the opposite side, as outlined by (Burrell 1989b), it has been argued that if quotas had been freely tradable, more efficient farmers would have been able to buy quotas from less efficient farmers. The result of this exchange would have been the EU quota being produced at minimum cost. This viewpoint is supported by many economic studies that quotas introduce inefficiency in a sector but that this inefficiency can be reduced if the

quota is traded freely between producers (Colman 2000, Hennessy et al. 2009). The trade-off is that Ireland is now in a post milk quota era, experiencing the benefits of having had a restrictive quota transfer policy and is now better positioned to increase production than many other EU member states.

As a comparison to Ireland, Denmark is a country that used quota exchanges to establish a biannual milk quota transfer exchange program as a way to more efficiently reallocate milk quotas to the best producers. In Sauer's (2010) research he investigates the effects of the introduction of quota transferability on the production structure of Danish farms as well as the probability of market entry or exit. Although this research did not examine milk quota abolishment, rather reallocation of quotas, the results show that the deregulation of the quota allocation mechanism in Denmark led to higher allocation efficiency of milk production (Sauer 2010). In other words, the research demonstrated that in a deregulated economic environment it was possible for the dairy market to self-maintain itself and for the strongest farms to survive. Hence a deregulation in the milk quota allocation system has shown positive effects on the milk farms efficiency over time (Sauer 2010).

In terms of demand to meet increased production levels, Knott (2014) presents the Tetra Pak Dairy Index report as of late 2014, which predicts that global demand for dairy products will increase by 36% by 2024. Most of that expected growth will come from the emerging markets of China, other Asian countries and Latin America. Knott (2014) also cites that the lifting of EU milk quotas in April 2015 might be expected to cause a further fall in prices but points to increasing global demand from emerging markets outstripping any growth and supply issues over the next ten years.

## **2.5 Impact of milk quotas on farms**

Huettel & Jongeneel (2011) argue that a milk quota system imposes a structural rigidity because it keeps economically inefficient herds and farms in production longer than otherwise would be. As a result, this reduces the availability of quota rights and thus hampers the growth of more economically efficient farms (Huettel & Jongeneel 2011). Under this scenario the structural rigidity of the quota scheme implies that the efficient production systems prevented the expansion of more efficient farms in Ireland. In a post milk quota era the previous support that the EU milk quotas offered inefficient farms has been removed creating necessary productivity improvements in existing dairy farms and the closure of those who are underperforming. This will result in larger, more efficient Irish farms in the longer term.

### 2.5.1 Cost of production

Research by Balcombe et al. (2007) of the Australian dairy manufacturing industry analysed the effects of deregulation. The authors found from their analysis that deregulation of the Australian dairy manufacturing industry has yielded an increase in the productive contribution of capital, energy and labour. The corresponding efficiency as result of deregulation will be recognised throughout the manufacturing supply chain, including farms, as production escalates. Increasing farm scale is one of the main strategies whereby family businesses try to reduce production cost per unit of milk and thus to become or remain competitive (International Farm Comparison Network et al. 2004). Ireland already has a relatively low cost of production basis due to cows being grass-fed. If the cost of dairy production in Ireland falls further in a post quota market then this will be another source of competitive advantage over other EU member states. This viewpoint is backed up by research from Binfield et al. (2008) where high feed costs for other EU member states has improved the competitive position of Ireland's grass pasture based production relative to grain-fed based milk producers in continental Europe.

### 2.5.2 Farm level numbers

Hennessey (2007) has further researched the impact of the milk quota removal at the Irish farm level. Taking the price and cost projections from the FAPRI-Ireland model (Binfield et al. 2007), Hennessey estimates the impact of a number of milk quota removal scenarios on farms. Figure 3 below details the number of farms producing milk in Ireland from 2001 to 2010 and this was used by Hennessey as a basis of future outlook and forecast.

**Table 1. Changes in the number of dairy farms**

	2001	2003	2004	2005	2006	2008	2009	2010
Number of farms with milk quota	27,814	26,623	23,767	22,386	22,042	19,103	18,930	18,294

Source: Unpublished Department of Agriculture, Food and Marine data.

**Figure 3** Changes in the number of Irish dairy farms (Source: Laple & Hennessey (2012))

As an overview, in 2001 there were 27,814 dairy farms while in 2010 there were 18,294 dairy farms. This represents an average rate of decline of 4.5% between these years. However, by Laple & Hennessey's (2012) own admission, 'it is difficult to reliably estimate how Irish dairy farm numbers will change when the milk quota is removed'. Although it can be argued that historical data used to form any basis of future growth assumptions becomes unfounded, Hennessey (2007) predicts that the number of farms ceasing milk production will accelerate in the initial years following milk quota removal. However, following this initial period the pace of restructuring may slow to a rate lower than that

recorded in the quota years (Hennessey 2007). There is little doubt that the end of the milk quotas will increase milk production right across Europe which, at a farming level, will mean the halt of production of smaller farms or their consolidation into larger farms.

To conclude, it is highly likely that the number of existing dairy farmers in Ireland will decrease over the next five years but the expectancy is that milk production will increase overall. It is also forecasted that significantly more land will need to be reallocated to dairy production and an influx of new entrants will be required to achieve the Food Harvest 2020 expansion target (Läpple & Hennessey 2012).

## **2.6 Impact of milk quota removal on the economy**

### **2.6.1 Economic benefits of quota removal**

From the research into Danish milk quotas, Sauer (2010) suggests that in the wider economy the costs of quotas are mainly borne by the consumer and new market entrants, with the latter being confronted with either higher direct or indirect costs of market entry. This view is backed up by other research focusing on the impact of the milk quota scheme on farms (Burrell 1989a; Naylor 1993; Barichello 1995) which concludes that the milk quota scheme, in combination with high product prices, leads to large farm rents and that it is mainly the initial holders of any quota that benefit from the system. In this sense, milk quotas can be viewed as being a barrier to entry for new farmers. With quotas now abolished, these arguments suggest the removal will lower costs to the consumer and remove barriers for new Irish farmers, whose entry into the dairy market is necessary for Ireland to realise its Food Harvest 2020 targets.

Research on the Dutch dairy sector by Boots et al. (1997) analyses the efficiency loss due to distortions in quota trade by using a simulation exercise applied to potential quota trading from 1992 to 1993. The simulations show that free tradability of milk quotas would increase profits by 9% for farmers (Boots et al. 1997). Boots et al. (1997) conclude that economic gains can be obtained if restrictions on quota trading are removed. The increased capacity generated in Boots et al.'s (1997) research resonates with Irish farmers and producers, who in a post EU milk quota environment are able to increase production and, as a long term result, increase profits.

Colman (2000) summarises the existing theories on the economic effects of quotas on agricultural production (following Burrell 1989b; Dawson 1991). Colman (2000) found that a large number of inefficient producers remained in milk production as a consequence of the quota restrictions. In contrast to this argument, Barichello (1995)

suggests the opposite effect, arguing that the value of the quota might provide an incentive for farms to cease production, thereby creating 'space' for others to grow. In general, however, the relevant economic literature on quotas suggests that by restricting quantities supplied, the imposition of quotas generates economic inefficiency relative to price supports (Alston 1981).

### **2.6.2 Employment benefits**

In considering the employment benefits to the wider economy of milk quota removal, Miller et al. (2014) considers achieving the Food Harvest 2020 growth targets using various employment intensity scenarios which estimate the direct impact on agri-employment and the additional employment effects on related sectors. Miller et al. (2014) believe that 'the employment potential identified from the analysis with marginal employment coefficients, of around 16,500 jobs, should be seen as the plausible outcome' if Food Harvest 2020 is achieved. Achieving these targets would make a significant contribution to helping the Irish economy recover from the recession and the high unemployment levels of recent years (Miller et al. 2014).

### **2.6.3 Industry investment and consolidation**

According to Dennis JÅnsson, President and Chief Executive of Tetra Pak Group, a lack of European processing capacity is a big potential obstacle between the raw milk producers and consumers at home and abroad from an EU perspective. He states that a 'rapid investment in additional processing capacity is a real requirement. The European Commission reported in May 2014 that processing capacity in Europe was operating at saturation point' (Knott 2014).

However, major investment in dairy processing has already begun in Ireland. Minister for Agriculture Simon Coveney said €2 billion has already been invested in Irish farms since 2007 and Teagasc estimates that the removal of quotas could create 15,000 new jobs in the next 5 years (Healy 2015b). In late 2013 Glanbia plc announced its intentions to build a new ultra-high temperature (UHT) facility to produce long-life liquid milk and cream for export to emerging markets. The plant has already started to manufacture a range of standard and fortified UHT milk and cream products, including export versions of Glanbia's Avonmore milk brand.

Overall, processors including Glanbia plc, Lakeland Dairies and a variety of smaller co-ops have ploughed an estimated €1 billion into expanding production facilities in Ireland in advance of the end of the quotas (McCabe 2015). Lakeland Dairies, which is the Irish

States second biggest co-op, is targeting a 30-40% increase in production by 2020 (Burke Kennedy 2015). However, for many commentators there are simply too many companies and co-ops competing against each other for the same aim with little or no diversification of products in Ireland.

One of Ireland's biggest dairy farmers, Tom Browne, who milks around 850 cows, forecasts that major consolidation of dairy processing co-ops will be required to cut costs post EU milk quotas. According to Browne, 'there are way too many co-ops. We have 20 management teams when we ought to have two – and farmers are paying for that' (McCabe 2015). Against this backdrop maximising the capacity of existing dairy installations should also be a key priority. According to Dr Martijn Fox, food process scientist with Dutch research organisation NIZO food research, 'the driver for process improvements is most often capacity, with other benefits like saving energy and improving yield happening at the same time' (Knott 2014).

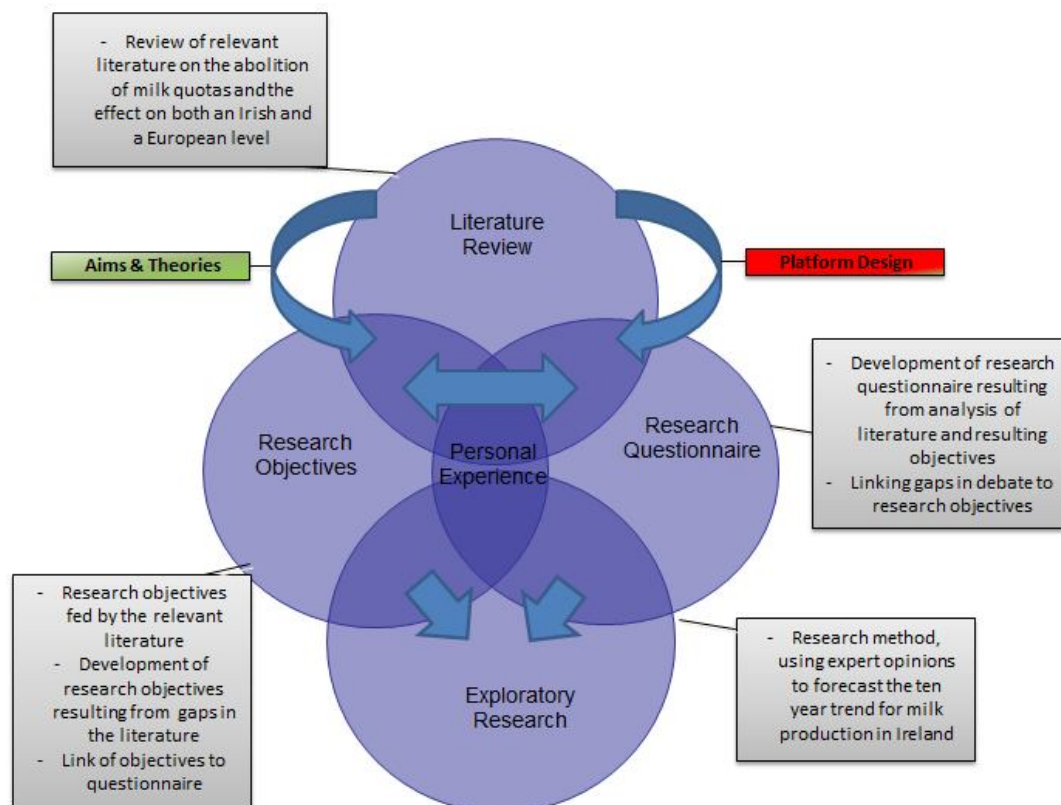
## **2.7 Summary of the impact of milk quotas removal**

In summary, the removal of EU milk quotas is going to vastly affect the dairy sector in Ireland. In terms of the imposition of milk quotas, the overall weight of literature suggests that quotas tend to slow down structural change and introduce inefficiencies. Their removal creates immense opportunities and uncertainties. The results of research by Huettel & Jongeneel (2011), although they deal with historical data, suggests that the quota abolition in 2015 is likely to affect structural change in the dairy sector. However since the new no-quota regime will differ markedly from the pre-quota situation, no easy generalisations can be made (Huettel & Jongeneel 2011).

## 2.8 Conceptual Framework

The conceptual framework below was specifically designed in order to collate information for use in manifesting the various sources of data on milk production and the impact of the abolishment of EU quotas. The purpose of the framework below will be to coordinate all applicable information in a concise format for the purpose of making conceptual distinctions and to organise ideas.

### Conceptual Framework



**Figure 4** Conceptual Framework (Source: Original, Fogarty (2015))

This conceptual framework develops through four key stages namely:

- The literature review that feeds both the research objectives and the formation of the research questionnaire based on the gaps in existing academic research.
- Identification of the research objectives concerning the removal of EU milk quotas.
- Development of a research questionnaire to be presented to selected interviewees. This is cross referenced to the research objectives, through personal experience, to ensure that the questions are linked to the achievement of the objectives.

- Exploratory research that's success will be derived from the recognised research objectives and is in-built into the research questionnaire for development of the ten year forecast.

The conceptual framework is presented as the overall guide for understanding the impact of the abolition of the milk quotas and resulting policy decisions based on insights from the relevant worldwide literature and organisations. The viewpoints expressed in the literature have been filtered through and the aims and theories have been brought into the interviews by design of the interview questionnaire. These aims have been aligned with the research objectives so that those who have technical experience of the dairy sector, such as academics and professionals, are adequately assessed on their opinion.

## **2.9 Conclusion**

This chapter presented a comprehensive review of the literature on milk quotas, their impact both in terms of implementation and abolishment, and the forecasted impact on Ireland in the areas of price, production, farm structures and the economy. Based on the literature review, the observations of the researcher outline that there is scope for further research to achieve the objectives outlined in Chapter One. As the research objectives cannot be answered by a literature review alone, the researcher will endeavour to achieve the objectives through conducting primary research, the methodology for which is outlined in Chapter 3.



## **Chapter Three**

### **Methodology and Research Design**

#### **3 Introduction**

The previous chapter focused on the literature surrounding the subject of milk quotas and their abolition. This chapter will outline how the research was undertaken by describing the research design. Research design is the logical sequence that connects the empirical data to a study's initial research questions and, ultimately, to its conclusions (Yin 2002). Initially the chapter will set out the research overview followed by a discussion on the research design, paradigm, methodology and strategy that will guide this research. It will also provide a description of the theoretical basis of the chosen research methodology, how it will be implemented and acknowledges the issues and limitations of the research.

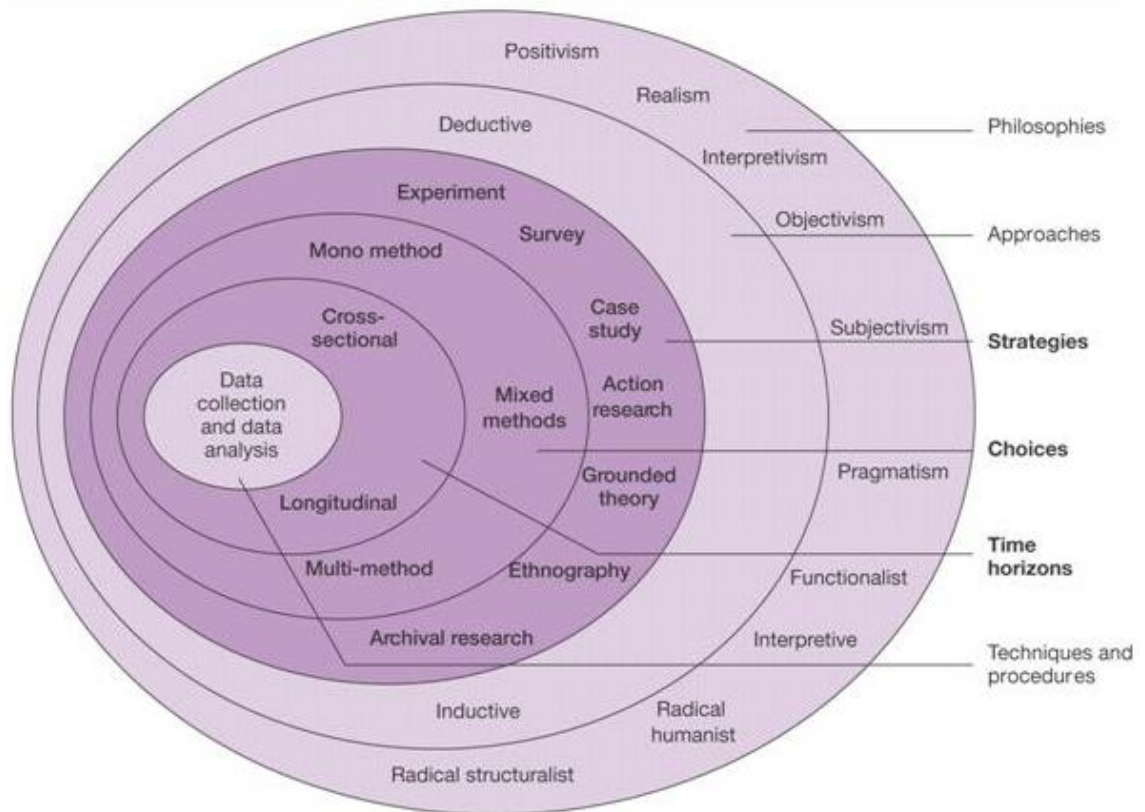
##### **3.1 Research overview**

In line with the primary research question of how the abolishment of EU milk quota has contributed to the current volatility to the price of milk in Ireland, the researcher has used a qualitative research technique as the primary research method. Based on the subject matter uncovered during the literature review on the area of milk quotas and considering the research objectives, the research design, paradigm, philosophy and approach have been outlined by the researcher. In order to validate the quality of the data collected during the data collection process, secondary data research was undertaken of additional articles and publications. Overall, considerable thought and time was put into the research design phase.

##### **3.2 Research Design**

Although research can mean different things in differing situations, there is a general consensus that research is a systematic and methodical process of enquiry and investigation with a view to increasing knowledge. As mentioned by Saunders et al. (2009), research refers to the way people initiate the finding of facts in a logical system. This helps researchers' develop their understanding of a subject and consists of a specific set of a series of activities with tangible and intangible inputs and outputs (Maylor & Blackmon 2005). As outlined by Robson (2002), to conduct the research the appropriate process should be applied since the method of data collection has a dominant influence on findings.

The researcher takes guidance from the research design method of the research 'onion' developed by Saunders et al. (2009) in Figure 5. Saunders et al. (2009) state that the research question is at the centre of the research 'onion', layers of which must be peeled away to reach the central point. The first layer relates to research philosophy, the second layer is research approach, the third layer is research strategy, the fourth layer is choices, the fifth layer is time horizons applied to the research and finally the sixth layer is the data collection method.



**Figure 5** The Research 'Onion' (Source: Saunders et al. (2009a))

Through the research 'onion', the researcher outlines how the research philosophy, approach, strategy and methodology were chosen for the post milk quota forecast, emphasising the rationale for the approach taken and the justification for the methods used. Based on the 'onion', the researcher opted for a mono-method survey strategy that is interpretive and offers a cross sectional viewpoint through an inductive approach.

The research undertaken was exploratory. This offered a valued method of identifying 'what is happening to seek new insights; to ask questions and to assess phenomena in a new light' (Robson 2002). The advantage of exploratory research is that it seeks to understand the problems associated with determining risk probability through a process

that acknowledges the difficulties in assessing the precise details of the problem (Saunders et al. 2009).

### **3.3 Research Paradigm, Philosophy, Approach and Methodology**

#### **3.3.1 Research Paradigm**

A research paradigm is a belief system that guides the way this research is performed, or more formally establishes a set of practices. This research is influenced by the interpretivist philosophy. Other philosophies that could have been considered for this research were discounted as interpretivism focuses on understanding the phenomena being observed. Interpretivist philosophy is founded on the theoretical belief that reality is socially constructed and fluid and, therefore, what we know is always negotiated within cultures, social settings and relationships with other people. The interpretivist approach aims to understand the social world which is achieved through an examination of the interpretation of that world by its participants (Bryman & Bell 2011).

The collective group selected covers a broad range of individuals within the milk industry in order to obtain different viewpoints and interpretations on how the abolishment of milk quotas will impact Ireland over the next ten years. The challenge of the interpretivist researcher is to move into the social world of each group member and understand the perspective of the abolishment of EU milk quotas from their view. Carson et al. (2001) describe the interpretivist approach as allowing 'the focus of research to be on understanding what is happening in a given context'.

#### **3.3.2 Research Philosophy**

Saunders et al. (2009) define the research philosophy as an all-encompassing term which relates to developing knowledge and the nature of that knowledge. It depends on how the author acquires information in the course of the research which results in the collection of effective and appropriate data. The objectives of this research are to forecast the implications for Ireland of the removal of EU milk quotas over the next ten years. As such, qualitative research is the most suitable method as it focuses on the experiences and opinions of the participants (Denzin & Lincoln 2005). This focus on expert opinions is vital to the success of the research objectives as it provides perspectives from which to forecast the impact of EU milk quota removal, making this research exploratory and inductive in nature as it focuses on 'how and why questions' (Yin 2009).

#### **3.3.3 Research Approach**

The research approach chosen is the inductive approach, which is consistent with the interpretivist paradigm. Saunders et al. (2009) believe the inductive approach involves a

higher degree of uncertainty due to the fact that the researcher is moving away from specific observations to broader theories and conclusion, which is consistent with this forecast on the future of the dairy sector in Ireland.

#### **3.3.4 Research Methodology**

The researcher has chosen a qualitative research methodology for this dissertation. Qualitative research is used to gain an understanding of underlying opinions and motivations. The use of quantitative research, which is generally used to quantify an issue by way of numerical data, was rejected due to its effectiveness of gaining specialist insights. As a research strategy, qualitative methods are characteristically inductivist and interpretivist, both of which have been subscribed through the research paradigm, philosophy and approach. Qualitative research methods used in this study were qualitative interviewing and the analysis of dairy sector reports and documents. The primary qualitative research method involved semi-structured interviews with an expert panel. The secondary data method involved analysis of official reports from government bodies and of published articles from organisations within the Irish dairy industry. As the subject of milk quotas is particularly relevant and a developing story at present, online content, current newspaper publications and specialised databases were also used. After formulating a primary research question based on the findings of the preliminary investigations, appropriate subject experts were then identified.

### 3.4 Research Strategy

The researcher began this forecast survey by examining the Delphi technique as a research tool for qualitative research. The intent of the Delphi model is to create a method, using expert opinions, to forecast long-range trends related to the military potential of future science and technology and their effects on political issues (Gordon 1994; Linstone & Turoff 1975). Gutierrez (1989) defines these experts as a 'group of knowledgeable people: those who can provide relevant input to the process, have the highest authority possible, and are committed and interested'. By sequentially polling the experts' opinions, interspersed with feedback of information on the just-previous poll to the experts, consensus is generated (Welty 1972).

The researcher did not adopt a full Delphi model for this research due to the availability of the panel, the evolving issues regarding the dairy market and the researcher's time capacity. The researcher did, however, adopt some of the critical guidance for the establishment of a Delphi model.

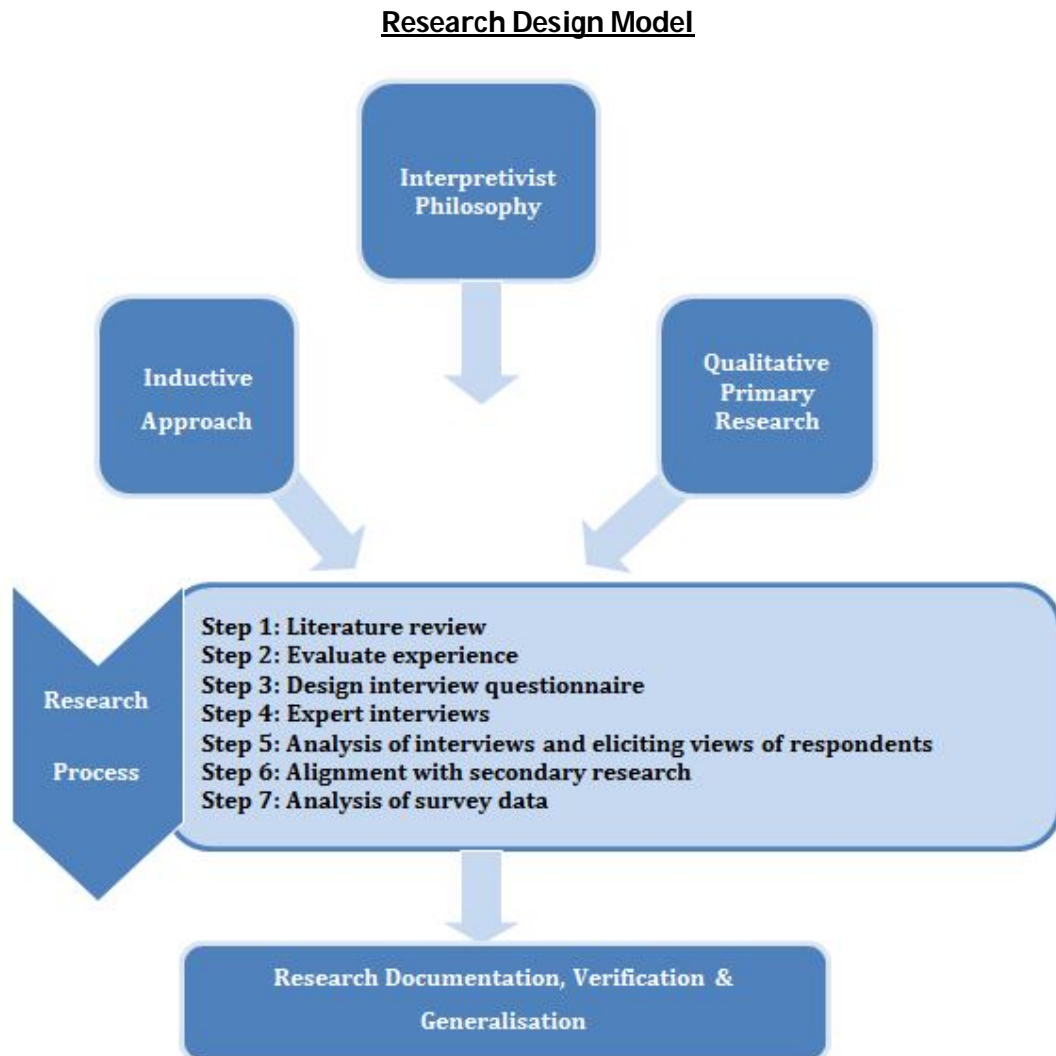
There are no defined rules in selection of the sample size but Skulmoski et al. (2007) provide guidance on the factors that should be considered when selecting an appropriate range of candidates, most notably:

- Large or small sample group: Where the participating candidates are viewed as comparable (homogeneous) then a smaller sample may provide sufficient results.
- Manageability versus decision outcome trade-off: In selecting the sample size group there is a trade-off between reducing group error and an increase in decision quality. Above a certain sample size threshold, managing the process and analysing the data becomes cumbersome in return for marginal benefits.
- Internal or external verification: A larger group leads to the verification of the results being more convincing. However, a smaller sample can be used with result verification conducted with follow-up research.

As a method, the model focuses on the identification of expert opinions as a crucial factor for the exercise to select appropriate experts. This led the researcher to choose highly qualified and positioned candidates from industrial, agricultural and political backgrounds within the dairy sector as outlined in the selection of participants, at 3.4.4.

### 3.4.1 Research Design Detail

The research design model is outlined with the interpretivist philosophy, the inductive approach and the qualitative methodological approach all feeding into the research process to deliver a high quality research dissertation. The research design adapted by the researcher is illustrated in Figure 6.



**Figure 6** – Research Design (Source: Adapted from a Delphi model from Laick (2012))

### 3.4.2 Secondary Data Analysis

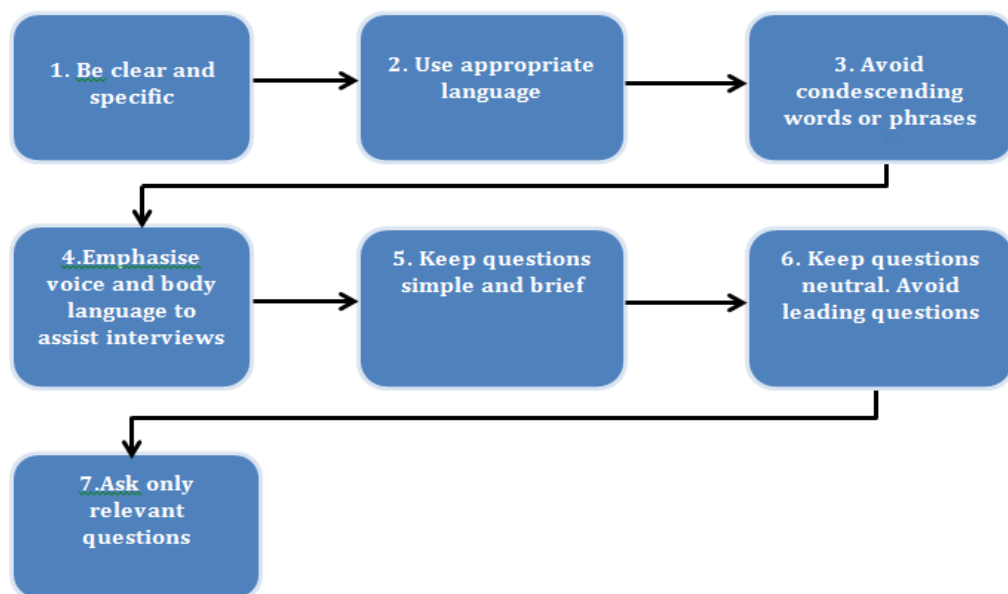
Secondary data research involved the interpretation and analysis of official reports and published documents that contributed to the viewpoints of the subject matter experts. This literature provided the researcher with the ability to decipher whether or not it is possible to answer the research objectives, and also provided the researcher with sufficient information as a guide for further exploratory primary research of a qualitative nature.

### 3.4.3 Primary Qualitative Research, Exploratory & Descriptive Methods

The primary qualitative research method used in conducting this research was a series of semi-structured in-depth interviews. Milena et al. (2008) share their insight into in-depth interviews as a tool which is designed to paint a vivid picture of the participant's perspective on the particular research topic. This form of interview gives an opportunity for the researcher to gain detailed insight into how people interpret and work in their given sector (Milena et al. 2008).

Commonly there are two forms of interviews, with these being structured and un-structured. With regard to this research, structured interviews, and in particular semi-structured interviews, were viewed as more applicable given the subject matter. The semi-structured interviews included the specific wording of seven questions and were sequenced in the form that the researcher preferred. Semi-structured interview questions are referred to as an interview guide because their purpose is not to dictate the overall interview but to guide topical conversion (Collis & Hussey 2003). Pre-visibility of the questionnaire was given to the interviewees by email before the conducted interview to allow the interviewee to understand the course of the interview. The main benefit of this type of interview is the reliability aspect of the information, provided the questions delivered are well worded.

In order to complete each interview in a suitable manner, Kervin's (1992) model, below in Figure 7, was used to enable the researcher overcome any challenges throughout each interview.



**Figure 7:** Seven Guidelines to the Interview Process (Source: Kervin (1992))

### 3.4.4 Selection of Participants

The interview forecasting method involved a diverse panel of experts with interests in milk production at industry, political and agricultural level. According to Dawson & Brucker (2001) the candidates should be 'chosen on the basis of their position and expertise in the professional service sector, and therefore qualifying them as experts or oracles'. The experts are, in interview date order:

<b>Name</b>	<b>Organisation(s)</b>	<b>Position</b>
Ciaran Calvey	Kellogg Europe Trading Limited	Regional Dairy Buyer for Kellogg Europe
Michael Berkery	FBD Group, IFA and farmer	Chairman of FBD Group and former CEO of the Irish Farmers Association (IFA)
Anne Randles	Ornua / The Irish Dairy Board	Company Secretary
Thia Hennessey	Teagasc	Head of Agricultural Economics and Farm Surveys Department
John Downey	Department of Agriculture, Food and Marine	Meat and Milk Policy Division Unit
Gary Nolan	Irish farmer based in the South West Missouri, USA	Self-employed farmer

**Figure 8**– Table of Interviewees (Source: Original work, Fogarty (2015))

### 3.5 Collection of Primary and Secondary Data

#### 3.5.1 Sources

Representatives from across the dairy industry were the main source of primary data through semi-structured interviews. For secondary data, the Griffith College library and online database was used to review relevant literature, as well as peer-reviewed websites and additional academic journals and books. Agricultural and industry publications were sought from official online sources for useful background information.

#### 3.5.2 Access and Ethical Issues

According to Denscombe (2007) researchers should be ethical when collecting and assessing data by respecting the rights of those participating and operating with honesty and integrity. As part of the study, confidential semi-structured interviews with the selected participants were conducted, recorded and transcribed. Professional confidentiality involves the expressed requirement that a person's information not be



divulged in the transaction of professional duties (Boyle 2014). A confidentiality agreement letter was sent to the interviewees before commencement of the interview. A copy of this letter can be seen in Appendix A. Before commencement of the interviews, clear guidance was provided on the purpose of the dissertation so each interviewee was aware of what was being discussed and that the findings that would be presented for the research only.

### **3.6 Approach to Data Analysis**

#### **3.6.1 Sampling technique used**

In order to collate different views of Ireland's progression through the post milk quota era, the primary research method selected was to conduct semi-structured interviews with professionals with varying interests in the development of the Irish dairy sector. This cross sectional approach was used in order to account for any biases which may be introduced due to the participant's personal viewpoints, intrinsic ties to their organisation or position.

Six interviews were carried between July and August 2015. The interviews were carried out through a combination of phone and in person interviews and all the interviews were scheduled for 45 minutes (approximately 5 minutes for each question topic). The interviewees were all with Irish participants and came from various fields of the dairy sector.

Prior to the interviews being conducted the interview questionnaire was issued to each interviewee. The questionnaire contained details in relation to the nature and scope of the interview. Appendix A & B can be referred to for the letter of consent and a copy of the interview questionnaire. The interviews were semi-structured in nature and centred around the research themes in order to maximise the time available. The themes being explored during the course of the interviews were:

- The extent to which the removal of EU milk quotas has contributed to the current milk price volatility in Ireland and internationally.
- A forecast of how milk prices will move in the next 1 to 4 years (short term).
- A forecast of how milk prices will move in the next 5-10 years (long term).
- A forecast of how the level of dairy production in Ireland will move over the next 10 years, taking into account the Food Harvest 2020 targets.
- A forecast of where Ireland will target their exports in a post EU quota era.

- A forecast of how Irish farming structures will change over the next ten years as a result of EU milk quota removal.
- Other impacts the EU milk quota removal will have on Ireland.

The semi-structured interviews were recorded with the use of a digital recording application and consent for recording was sought from the participants beforehand. Once each individual interview was completed the data was transcribed and a copy of all the transcripts can be found in Appendix C – H.

The researcher chose to carry out one interview by telephone. This was due to the location of one of the interviewees (Athenry, County Galway) and an objective decision on behalf of the researcher was that this method best captured the data in order to maximise time. The researcher carefully considered the limitations of telephone interviews, as they can miss the contextual and behavioural detail and the commitment of respondents (Thomas 2009, Fowler 2009). The lack of physically immediacy with a telephone interview may reduce the social nature of the meeting which can create a relationship and open doors to 'more scope to collaborate in the co-production of data' (Irvine et al. 2010). However, the argument may be made that a greater volume of data generated from face-to-face interviews may not necessarily mean greater quality or validity of data (Irvine et al. 2010).

### **3.6.2 Analysis techniques**

The interview material documented and collected from the primary research was carefully analysed and interpreted. The responses in the interviews were analysed through the use of coding in order to categorise data outputs with the aim of capturing forecasts, outlooks, visions and patterns. According to Bryman & Bell (2007), coding is generally the starting point in the analysis of qualitative data. This allows the researcher to categorise data, identify characteristics and link the data to different areas of current research topic (Lofland & Lofland 1995). Coding in this regard does not constitute overall data analysis but instead forms part of the analysis.

By analysing the primary data with the secondary data analysis of industry reports and documents, the findings were peer reviewed. Through this procedure, the aim was to help ensure that the appropriate issues raised had been identified and that applicable reasoning had been applied to the forecast outcome. Through this analysis technique, the resulting research output proved invaluable in concluding the findings and observations for the forecast of the Irish dairy sector.

### **3.6.3 Limitations of the research**

The research was conducted over thirty-two weeks part-time. The majority of the initial first sixteen weeks was spent on the review of literature, academic articles and expert opinion. The researcher had good access to professionals from dairy industry due his professional background and contacts within the food area but was limited in performing a full Dephi study due to the availability of the expert panel. It also proved difficult for the researcher to maximise a bigger sample size due to the availability of certain selected candidates and their limited time.

### **3.6.4 Data Validity & Reliability**

Validity and reliability are, according to Yin (2002), the trustworthiness and creditability which the research contains. The researcher adopted the interpretivist approach in the collection of primary data and strived to mitigate the circumstances that would question the creditability of the research findings from both a validity and reliability perspective.

### **3.6.5 Interviewer/Interviewee bias & Generalisation**

Subjectivity and personal bias are key issues in qualitative research where findings are heavily reliant on the researcher's interpretation of data (Bryman & Bell 2007). Generalisation presents another challenge as findings from qualitative research are context dependant and, therefore, their interpretation may not be applicable to all situations which would impact the external validity and creditability of the research. The researcher attempted to minimise interviewer bias and generalisation through an open pragmatic approach as outlined in the research design. The wide demographic of the interviewees selected across the dairy environment is reflective of this approach.

### **3.6.6 Conclusion**

Chapter Three has discussed the methodology chosen for this research. It outlined the research objectives and detailed the research design, paradigm, philosophy, methodology and strategy. The data will be gathered through semi-structured interviews with individuals from across the dairy sector. The interpretivist approach was chosen to allow for differing points of view. This approach is inductive in nature, in that information discovered will lead to the basis of forecasts. Limitations of the research were also acknowledged as well as ethical considerations that were adhered to throughout. Chapter Four will discuss the findings of the research under this methodology structure and present the forecasted viewpoints of each of the interviewees.

## Chapter Four

### Presentation and Discussion of the Findings

#### 4 Introduction and Overview

This chapter will examine the data collected from the primary exploratory research which was collected through a series of six semi-structured interviews with experts from across the dairy sector. The results of the primary research will then be compared and contrasted with the findings from the secondary research. Using the overall research question for guidance and with the research objectives in mind the researcher will assess the summarised tables of the primary research and will use the findings to forecast the research objectives.

##### 4.1 Primary Qualitative Research Analysis Approach

With the primary research question and research objectives in mind, the researcher has taken the following staged approach when analysing the six primary data research interviews.

###### Stage 1:

Summarise the responses of all six candidates from the semi-structured interviews with key points outlined in the context of the research questions. Full transcriptions of each interview are set out from Appendix C to H.

###### Stage 2:

Compare and contrast the responses outlined in Stage 1 through the key themes, commonalities and conflicts expressed in each interview.

###### Stage 3:

Highlight and analyse the themes and expressions from the interviews in relation to the research objectives and any secondary viewpoints that may be deemed relevant.

###### Stage 4:

Summarise and compare the findings of the qualitative primary research with the data gathered through the secondary research of the literature review.

## 4.2 Primary Question Response Summary, Qualitative Findings and Themes

**Question One: From your perspective, how has the abolishment of EU milk quotas contributed to the current volatility to the price of milk on the international market?**

<u>Interviewees</u>	<u>Responses</u>
Interviewee 1 - Ciaran Calvey	The removal of the EU milk quota, together with low demand, is a big factor in driving the price of milk lower.
Interviewee 2 – Michael Berkery	The abolishment of the EU milk quota is not the major cause of the volatility.
Interviewee 3 – Anne Randles	There has been some impact but the removal of the EU milk quotas has not been significant.
Interviewee 4 – Thia Hennessey	The current slump in milk prices that we are experiencing at the moment is unrelated to EU milk quota removal.
Interviewee 5 – John Downey	The abolition of the milk quota has nothing to do with the drop in milk prices in Ireland.
Interviewee 6 – Gary Nolan	The abolishment of EU milk quotas is not directly related to current volatility, not even one bit.

*Table 4.1 – Summary of Question One (Source; Original work, Fogarty 2015)*

***Question One: From your perspective, how has the abolishment of EU milk quotas contributed to the current volatility to the price of milk on the international market?***

The general consensus of responses received as part of the semi-structured interviews indicate that removal of the EU Milk quotas has had an impact on the current milk price both in Ireland and on the international market but the impact is not as significant as other factors such as the Russian imports embargo, the China stock market crash, existing volumes of milk and the strength of the US and New Zealand production. The EU milk quotas were removed at a time when the milk price was already in decline due to these factors. Many of the responses indicated that the real problems of the fall in the current milk price in Ireland are being masked in the media by the coincidental timing of the milk quota abolishment on April 1, 2015. As noted by Nolan, 'the biggest contributing factors with price are (is) the simple ones of demand and supply'. On the supply side, the world's dairy market currently has an oversupply of milk due to global dairy markets being particularly strong over the past two years resulting in a production increase. On the demand side, active buyers are waiting to see if the price will continue to fall, which is future depressing the price. These factors coupled with world economic issues are essentially the main drivers of the decrease in milk price.

### 4.3 Objective Two Response Summary, Qualitative Findings and Themes

**Question Two: Where do you forecast milk prices moving in the next 1-4 years (short term)?**

<u>Interviewees</u>	<u>Responses</u>
Interviewee 1 - Ciaran Calvey	The milk price will be stable to what they are now for the rest of 2015. Milk prices will probably decrease over the next 1-4 years by around 5%. Prices will keep decreasing due to supply and continue to be volatile.
Interviewee 2 – Michael Berkery	I see milk prices continuing to fall for a period of 2 years and there's nothing on the horizon to shift that negativity. The world without quotas will result in a volatile price and, for long periods, a very low price.
Interviewee 3 – Anne Randles	I think we are rapidly moving towards the lowest point on the volatility curve. Future signals are that prices are getting very low. Prices will probably begin to recover in Q1 2016. Based on the 2 – 3 year boom bust cycle, we could see a boom again over this period.
Interviewee 4 – Thia Hennessey	Prices are going to continue to be volatile. We will see continued cyclical movements. There will be an upward movement in price. Demand will continue to grow faster than supply.
Interviewee 5 – John Downey	The milk price will be at the downside for the next 4 to 5 months and then start to come back up again. The price will start to go up again around March 2016 when the volume starts to increase again. There will not be a long bottom line.
Interviewee 6 – Gary Nolan	I can't foresee it being a long dip in milk price. By next June or July the price will see a lift. Over the next 1-4 years it will go from low to high over a cycle that will continue to see the price move up and down.

*Table 4.2 – Summary of Question Two (Source; Original work, Fogarty 2015)*

***Question Two: Where do you forecast milk prices moving in the next 1-4 years (short term)?***

The general consensus of the group was that, due to the dependence on world factors such as trade disputes, currency fluctuations, climate and weather, it is extremely difficult to forecast the movement of milk prices in Ireland in the next four years. However, broad consensus was that in the relatively short term, until the end of 2015, milk prices would at least remain at the 27-28 cent per litre mark if not fall further. Given that the price of production of milk in Ireland is approximately 25 cent per litre excluding labour, farmers can expect margins on milk to be continued to be squeezed in the short to medium term. The price will more than likely begin to recover during Quarter 1 and Quarter 2 of 2016 on an upward trend but will not reach the previous heights of 42 cent a litre in 2013. It is also very likely that volatility in price will continue over the next 3-4 years given the cyclical nature of milk prices and Ireland will again see another boom to bust cycle, much like that experienced by dairy prices in 2009.

Consensus was unanimous on the question of intervention price, with all interviewees forecasting that the EU will not raise this price, with Hennessey noting that 'it would be a complete reversal of EU policy'. Randles, although agreeing with the consensus that the intervention price will not be raised, expressed the view that it should be increased because the price was set 'such a long time ago.... and production costs have risen so dramatically since then, even within Ireland' which would be one of the lower cost producers of dairy. Farmers, no matter where they are located in the globalised economy, cannot be expected to produce at a cost of production higher than the milk price. The Russian market is also forecasted to reopen to the European market within the next one to three years which will be a boost to Ireland's milk exports.



#### 4.4 Objective Three Response Summary, Qualitative Findings and Themes

**Question Three: Where do you forecast milk prices moving in the next 5-10 years (long term)?**

<u>Interviewees</u>	<u>Responses</u>
Interviewee 1 - Ciaran Calvey	Demand for milk products from outside Europe to developing countries will drive prices upwards and stabilise them over the next 5 to 10 years, especially if Russia comes back to the market.
Interviewee 2 – Michael Berkery	Not changing my outlook from the 1-4 year forecast. Milk is now a free market commodity and subject to the same supply and demand factors as all other commodities. Threat from new entrants into market.
Interviewee 3 – Anne Randles	Need to look at milk prices in terms of margin. The return to farmers has got to be above cost of production. Prices will be 2 to 3 cent above wherever cost of production is situated.
Interviewee 4 – Thia Hennessey	Same as the 1-4 year forecast. A general upward trend that will increase volatility. New entrants into the production market such as China will have a big impact. Climate will be a major factor.
Interviewee 5 – John Downey	Irish farmers should factor for a price of 29 cent a litre and be hopeful that prices won't go below that. It's unlikely that prices will reach 41 and 42 cent a litre again. Continue to see volatility in price.
Interviewee 6 – Gary Nolan	The milk price will obviously inflate but it can't inflate much more. The price is now close to what industry is willing to pay for the produce. Irish farmers should factor for a price of 28 cent a litre.

*Table 4.3 – Summary of Question Three (Source; Original work, Fogarty 2015)*

***Question Three: Where do you forecast milk prices moving in the next 5-10 years (long term)?***

Again, the general consensus of the group was that, given the difficulties in forecasting the price of milk in the short term, it is also very difficult to forecast milk prices in the long term. Randles, Downey and Nolan framed their responses in terms of looking at the cost of production and the resulting margin on the milk price rather than the actual forecasted price, believing that the cost of producing milk is likely to rise on average each year meaning that milk prices will at least maintain a margin of 2 or 3 cent above the current milk production cost. Both Downey and Nolan noted that farmers will have to become better business managers of their farms and look to budget for milk price of 28-29 cent per litre when considering costs of production.

Berkery and Hennessey both pointed to the threat of emerging dairy economies entering into the market, with China in particular highlighted as improving its output. Berkery goes further by referring to Brazil as 'the elephant in the room' with 'immense potential to shift product'. His viewpoint is backed up by a recent article published post interview highlighting Brazil's low land prices, capacity to produce and vast domestic market (McCullough 2015b). Berkery also highlights Chile's potential while both Calvey and Berkery detail the production potential of Eastern European countries, in particular Poland.

Overall, the general synopsis was that the margins for milk going forward were not going to be significant and the myth of milk being the 'white gold' of farming should be dispelled. The media projection of Ireland becoming 'the New Zealand of the Northern hemisphere' was dismissed by many of the interviewees.

Regardless of how good Ireland's milk produce actual is, however, it is still viewed as a commodity only on the world market with no differentiation to other countries' produce. Therefore the milk price paid to Irish farmers will be led by the world commodity price much more than any other factor.

#### 4.5 Objective Four Response Summary, Qualitative Findings and Themes

**Question Four: How will the level of dairy production move (increase, decrease, remain the same) in Ireland over the next 10 years (FH2020 targets)?**

<u>Interviewees</u>	<u>Responses</u>
Interviewee 1 - Ciaran Calvey	Ireland is increasing production by 13-14% year on year. It's possible that Ireland will meet the 50% increase target of FH2020. Farms will need bigger investment if they are to reach New Zealand levels.
Interviewee 2 – Michael Berkery	I don't think 50% is achievable, I think that is a number plunked out of the air and has no basis in reality. I would be amazed if in 10 years time it ever happens.
Interviewee 3 – Anne Randles	We are on a growth spurt at the moment and that spurt is going to continue out to 2020. The 50% target is a reasonable assumption of where, overall, we are going to be. It will be less in the North, more in the South.
Interviewee 4 – Thia Hennessey	I think the FH2020 target of 50% can be achieved and it is likely to be achieved. It seems that there will be a push for a further 50% in the next five years after. The first 50% is achievable with our existing farmer base.
Interviewee 5 – John Downey	The 2020 target of getting from 5 billion litres to 7 billion litres is being done. In reality, you couldn't stop that condition (post quotas). The 2020 targets are definitely achievable.
Interviewee 6 – Gary Nolan	The FH2020 was probably a bit of a conservative target in that 20% was achievable with the milk quotas being removed and stock levels not changing. The FH2020 targets will be hit.

*Table 4.4 – Summary of Question Four (Source; Original work, Fogarty 2015)*

***Question Four: How will the level of dairy production move (increase, decrease, remain the same) in Ireland over the next 10 years?***

With the insights gained from the first three questions in mind, the researcher attempts to establish the link between the price of milk and the level of production in Ireland over the next ten years. This question was very much looked at in light of the Department of Agriculture's forecast via the Food Harvest 2020 report, launched in 2010, which stated that Ireland will increase its production by 50% from approximately 5 billion litres of milk to 7.5 billion litres by 2020. The majority of the interviewees agreed that Ireland was very likely to achieve this target and that a significantly large proportion of this increase will come in the five years of production post milk quota abolishment.

Berkery was the only interviewee who disagreed with this prospect, referring to the 50% as 'a number plucked out of the air' with 'no basis in reality'. Calvey highlights the need for 'huge investment' into Irish farms and without this investment it 'will probably hold it back'. Berkery seconds this in stating that Irish farmers will 'need to develop and expand'.

Hennessey, who had previously indicated in the Laple & Hennessey (2012) article 'The capacity to expand milk production in Ireland following the removal of milk quotas' that the '50% output volume growth target set in the Food Harvest report will be difficult to achieve' confirmed during the interview that 50% target can be achieved. Hennessey's prediction went further when forecasting that the '50% can be achieved, and it's likely to be achieved. And there seems to be a push for 50% more in the next five years' up to 2025.

#### 4.6 Objective Five Response Summary, Qualitative Findings and Themes

##### *Question Five: Where do you see Ireland targeting their exports?*

<u>Interviewees</u>	<u>Responses</u>
Interviewee 1 - Ciaran Calvey	China, the US and emerging markets like India, the Middle East and countries in Africa, such as Nigeria which is a massive market. Eastern European countries and Russia when the ban is lifted.
Interviewee 2 – Michael Berkery	China, Asia, possibly India. Africa has some potential & East Africa due to economic growth. The Mediterranean, North African Muslim countries such as Tunisia, Algeria, Morocco and Libya and the UK.
Interviewee 3 – Anne Randles	Current split of 70%/30% for Europe and rest of the world, will see increase in European percentage. Targeting Germany, the UK and US now on the branded side of Irish dairy rather than commodities only. China, Middle East and North Africa.
Interviewee 4 – Thia Hennessey	Emerging economies will be important. Set to continue with commodity production. There is room for more added value products such as baby formula or branded dairy.
Interviewee 5 – John Downey	China, the UK, the US and Europe as well as African and Asian markets and the Middle East.
Interviewee 6 – Gary Nolan	China. Smaller countries like Venezuela. Germany and France. Kerrygold and Dubliner cheese now in US Walmart. Can buy them in SW Missouri.

*Table 4.5 – Summary of Question Five (Source; Original work, Fogarty 2015)*

***Question Five: Where do you see Ireland targeting their exports?***

Following on from the questions about production and price, the researcher wanted to extract the potential export locations of Irish dairy produce and the types of possible products being exported. The majority of the interviewees highlighted that Ireland would continue with its commodity-led strategy of producing as much commodity dairy as possible to export. Many of the interviewees highlighted Asia and particularly China as the biggest potential markets due to the household spend on baby formula, which is estimated to be as much as 30% for Chinese families. However, Ireland up to now has not produced a finished baby formula product, rather the raw material for export only. Both Calvey and Berkery forecast the huge potential opportunities to grow Irish baby formula production, especially by Kerry plc and Glanbia plc, two of Ireland's biggest dairy companies. Nolan predicts that the two major baby formula contaminations scandals by Fonterra in New Zealand, which resulted in the deaths of Chinese children, can 'open that market considerably for Ireland' and, as a result, Chinese mothers will have no issue paying 'a couple more dollars' for an Irish produced formula.

The second most emphasised response was the potential increase in exports of value-added branded products of butter and cheese, such as Kerrygold, to the core consumer markets of the UK, US, France and Germany. Randles forecasts major growth in this area although additional market share will be required and sees a fantastic opportunity to leverage Irish dairy produce in the US. Nolan seconds this in stating that he now sees Dubliner cheese and Kerrygold butter for sale in the Walmarts of Missouri, with American consumers asking 'why is Irish butter yellow?'. Berkery points to the fact of Kerrygold achieving a 'fantastic premium price' in Germany where few food imports receive a premium.

The third forecasted growth sector is in the area of dairy nutrition. Glanbia's success in the US is highlighted by Calvey and Berkery. Calvey comments that extraction of whey protein is a 'supplementary part of their business and it's really growing'. Berkery notes that Kerry plc is investigating this area also.

Other export countries mentioned include the Middle East, due to their change in consumption habits to a more westernised diet, emerging markets such as India, Africa, Venezuela, Tunisia, Algeria, Morocco and Libya and also Russia when it reopens.

From the responses it can be forecasted that if Ireland is to be successful in their dairy exports they will need to differentiate their products from the competition in terms of the

Irish brand, the quality of the product (low level of toxins) and, in particular, that the produce comes from grass-fed cows rather than maize-fed cows.

#### 4.7 Objective Six Response Summary, Qualitative Findings and Themes

**Question Six: How do you see Irish farming structures changing over the next ten years as result of the EU milk quota removal?**

<u>Interviewees</u>	<u>Responses</u>
Interviewee 1 - Ciaran Calvey	Forecast many new farmers entering into dairy. Bigger investment in herds to increase their size and in farm facilities of sheds/parlours. Forecast less farms but bigger farms. No huge increase in employment as a result of quota removal.
Interviewee 2 – Michael Berkery	Dairy farming becoming regionalised. Removal of quotas will allow the good farmers to expand and move further ahead. Removal has freed up land use coupled with the improved leasing terms resulting in new entrants. Reduction in farm numbers by 2-3% a year. Co-ops working closer with farmers.
Interviewee 3 – Anne Randles	Increase in cows per herd of 65 to 150. Additional labour required on farms. Less dairy farmers. New entries into dairy farming. Age profile of dairy farmers will decline. More qualified farmers. More intensive grass-based farming.
Interviewee 4 – Thia Hennessey	Slow structural change and farms will become more specialised resulting in additional production. Land switch from beef production to dairy. Decrease in the number of existing farms. Increase to dairy herds.
Interviewee 5 – John Downey	Financial incentives through grant schemes for new dairy equipment for increased production. Land mobility will be a big constraint. Herd size increase.
Interviewee 6 – Gary Nolan	Continued investment in research and development. Benefits of improved leasing system. Reduction in the number of co-ops.

*Table 4.6 – Summary of Question Six (Source; Original work, Fogarty 2015)*



***Question Six: How do you see Irish farming structures changing over the next ten years as result of the EU milk quota removal?***

Of the seven questions posed to the six interviewees, the removal of the EU milk quotas was seen as having the 'most profound impacts' on the area of Irish dairy structures. The consensus of the group on the issue of Irish farms was that the number would continue to decrease post quota but not at an increased rate. Berkery forecasts that incrementally farm numbers will decrease 2-3% per year. The surviving farms are forecasted to increase in size through investment in larger herds, leading to greater milk production and improved facilities. Randles, Hennessey and Downey all highlight that the 2015 average number of cows per herd of 65 to 80 will increase to 90 to 100 and possibly as high as 150. New entrant dairy farmers will also enter into dairy production from a pool of former dairy farmers and existing beef farmers.

One of the biggest challenges forecasted is increasing land mobility for existing dairy farms in order to expand, which Berkery believes the abolition of the quota will help. The land leasing scheme introduced by Minister Coveney, whereby land can be facilitated into being leased to a farmer under a long-term lease with tax exemptions for more than seven years, has opened the opportunity for farmers to 'spend money on rented ground and farm it properly' according to Nolan. In addition, Downey highlights the work of the Department of Agriculture on the issue of land mobility by incentivising farm partnerships whereby a son or daughter can sign over a farm to be managed externally for a period of five years before deciding on a succession plan. Hennessey points out one constraint that would slow down the movement of land from beef to dairy production, namely the EU single farm payment.

Overall, Irish dairy production is forecasted to become more professional and specialised. Randles highlights that Ireland has 'a different breed of dairy farmers now than you would have had ten years ago', in that farmers are becoming pragmatic and business focused. Nolan highlights the world class research facility operated by Teagasc at Moore Park, Fermoy in Cork that has 'New Zealand farmers looking over here for current research'. Co-ops are also forecasted to work closer with Irish farmers in terms of maximising production and even introducing some capital grant or leasing schemes to help farmers increase production. Structural changes, overall, are forecasted to be slow but Ireland will continue with its grass-based production.

The general consensus of the group is that there will be no major increase in employment as a result of the removal of EU milk quotas. Randles and Downey both highlight that the

expected increase in the cows per herd will require an additional labour unit on the farm. Calvey forecasts that this labour may come from Eastern Europe, much like the construction industry, but only if demand for Irish dairy takes off over the next 10 years. Randles forecasts that 'real employment is going to grow' around ancillary services in dairy production.

Finally, the biggest structural forecasted change is the decrease in the number of co-ops in Ireland, largely through consolidation. Nolan comments that 'you don't need to be a wizard to know that we don't need 30 odd processing plants. We are less of a supplier than New Zealand with about 15 times more of the co-ops and process plants'. He forecasts that consolidation and amalgamation of co-ops will be inevitable due to how big the gap will grow between the small to medium and the large industry players, such as Glanbia, over their rivals in a post quota era.

#### 4.8 Objective Seven Response Summary, Qualitative Findings and Themes

**Question Seven: What other impacts do you see the removal of the quota having on Ireland?**

<u>Interviewees</u>	<u>Responses</u>
Interviewee 1 - Ciaran Calvey	Dairy industry expansion could become the new 'property bubble'. Farmers take out loans to invest in expansion and then dairy sector collapses. Increased demand for dairy from the middle class of developing countries.
Interviewee 2 – Michael Berkery	Social depollution due to pressure on marginal lands and fragile community areas. Some areas of Ireland will stop dairy farming overall. A higher educational standard for dairy farming. Climate will be an extremely important factor.
Interviewee 3 – Anne Randles	Environmental impact in terms of nitrates and manure spreading. Compliance with international environmental obligations will be a challenge for the industry as Ireland is positioned now to produce more.
Interviewee 4 – Thia Hennessey	Environmental challenge of achieving production targets but exceeding carbon emission's targets. New environmental quota to be put in place for production on farms. Potential dairy bubble. Two-tier farming system between dairy and other.
Interviewee 5 – John Downey	DAFF don't see any negative impacts in the removal of quotas. Quota removal will enhance our position.
Interviewee 6 – Gary Nolan	Revival of rural Ireland especially in areas of cheap land such as the Midlands and the West. Increased employment in these rural areas.

*Table 4.7 – Summary of Question Seven (Source; Original work, Fogarty 2015)*

***Question Seven: What other impacts do you see the removal of the quota having on Ireland?***

According to Downey, the Department of Agriculture perspective was 'not to have seen any huge downside to the removal of quotas'. The Department didn't feel it 'had to bring in any measure of any kind to protect farmers'. Any measures that they brought in 'allowed farmers to move upwards and onwards'.

Both Calvey and Hennessey forecast the potential of dairy production becoming the next 'property bubble' in Ireland with banks eager to lend money to farmers in order to invest in capital expenditure to increase production. Hennessey believes that since the milk quota removal 'people are being given the impression that anybody can make money on milk production and there's a risk' in doing so.

A secondary outcome of the rush to dairy farming is, as forecasted by Hennessey, 'the gulf between dairy farming and all other farm sectors, in terms of financial performance'. This, she believes, is an issue 'that's going to become even more pronounced in the coming years because dairy farms are going to expand further, and their income is going to get higher, and there doesn't seem to be any positive prospects for cattle and sheep farms' on the horizon.

Nolan forecasts that removal of the quotas will begin a revival of rural Ireland, with cheap land in the Midlands and the West being the areas of most opportunity. He notes that 'if these targets are met by 2020, by default, there is going to be employment there that wasn't there before, there is going to be more local business, and it's going to thrive'. Berkery echoes this viewpoint but believes that the movement to dairy farming in particular rural areas within Ireland will ultimately lead to 'a lot of pressure on marginal lands' and 'social depollution' as a result. This, he forecasts, will 'happen definitely in the less favoured areas of the country'.

The biggest impact that the removal of the milk quotas is forecasted to have on Ireland is the environmental impact and the resulting greenhouse gas challenge. Hennessey forecasts that if under Food Harvest 2020 'we get 50% more milk and don't have any contraction in the livestock sectors, we're talking about exceeding our greenhouse emissions commitments by 2020'. Randles forecasts Ireland will need to learn how to 'balance our ambitious plans for additional production versus our international obligations in terms of climate change'. Hennessey further forecasts that, as a result of these challenges, 'within the next five years we'll have a new quota, in the form of an

environmental quota on production in farms' that is likely to cover both greenhouse gas emission and nitrate levels.

#### **4.9 Conclusion**

Chapter Four has presented the findings of each of the research objective questions posed to each of the six interviewees. The collective responses for each of the research objective questions have been analysed through coding to forecast the impact on Ireland in a post EU milk quota scenario. A discussion on the common and conflicting forecast results has then been determined which has been set against the initial research objectives. Chapter Five will present the conclusion of this research as a formalised forecast for the Irish dairy sector for the next ten years and outlines recommendations for further research.

## Chapter Five

### Conclusions and Recommendations

#### 5 Introduction

The purpose of this chapter is to conclude the research in full, with an overview of the contribution of the research and the forecast derived. The research endeavoured to forecast the impact of the abolishment of EU milk quotas on Ireland over the next 10 years. This chapter will summarise the main findings relating to these objectives. The chapter will also outline the limitations encountered, provide an evaluation on the research tools used and offer suggestions for future research.

#### 5.1 Forecast on the milk price resulting from EU milk quota abolishment

##### 5.1.1 Forecasted milk price for the next 10 years

The primary research question has proved that the abolishment of the EU milk quotas has contributed to the current volatility of the milk price on the international market but the extent has been forecasted to be extremely marginal. Due to the early stages post-quota, the full impact on production has yet to be felt.

However, no matter how good the potential prospects are for dairy farmers over the next 10 years, the immediate urgency surrounds the fact that Irish farmers are struggling to cover the cost of milk production with the current low price. The latest official figures in Ireland put the average price per litre paid to farmers at 29.6 cent per litre, down from 34 cent per litre in January 2015 and 43 cent per litre for 2014, making milk cheaper than bottled water in many supermarkets (Burke-Kennedy 2015). Recent figures from the ICMSA indicate that Irish farmers have suffered a decrease of nearly €220m in revenues generated so far this year compared to the same period to July 2014 (Cronin 2015).

The forecast predicts that, in the immediate short term, milk prices for the rest of 2015 will remain flat or may slightly decrease in the approach to year end. However, by the end of quarter one and beginning of quarter two 2016, milk prices are forecasted to begin to rise again.

From here, the researcher sees no reason why the dairy industry will halt the historic boom to bust cycle over the next one to four years, despite the Irish Co-operative Organisation Society (ICOS) publishing a set of proposals to strengthen Irish dairy (Moran

2015). Therefore, once current over supply is cleared, which will be sold at a very low price, the forecast is that the price will rise annually by an average of 2% between now and 2020. This increase is in tandem with the predicted increase in demand forecasted by Rabobank's senior dairy analyst Kevin Bellamy (Bielenberg 2015). The forces driving this increase in demand are determined to be continuing global population growth, urbanisation and rising disposable incomes. In the longer term to 2025, milk prices in Ireland will continue to be cyclical and will stay 2 to 3 cent per litre above the cost of production to the farmer. Teagasc estimates that the current average cost of production in Ireland is 25 cent per litre before labour costs. This cost of production is forecasted to rise given the expected increase in herd sizes and essential investment in production facilities.

### **5.1.2 The intervention price**

The research forecasts that the EU intervention price for milk will not be raised and that the EU will have limited involvement in affecting the milk price going forward. This is despite the fact that Minister for Agriculture Simon Coveney has called for an urgent increase in the EU intervention price to help support Irish farmers as of July 2015. The EU Agricultural Commissioner Phil Hogan has played a large role in the EU's effort to lead the EU agricultural sector off intervention by insisting that farmers must obey the 'market signals'. Intervention has in the past proved to be an expensive method to regulate the price of a commodity. Ireland's own history with intervention has been controversial, particularly during the 1980's when intervention butter had to be stored in two refrigerated ships in Cork harbour due to a lack of available land-based storage and at a cost of IRE£1.4 million (Oireachtas Debates 1985). From a budgetary perspective, a cheaper alternative is to regulate the supply of the commodity, which was the reason that milk quotas were introduced in the first place. Going forward, the EU is no longer interested in regulating the milk price and therefore the intervention price will not be raised in the foreseeable future.

### **5.2 Forecast on the milk production resulting from EU milk quota abolishment**

Milk production in Ireland is forecasted to increase after the abolition of quotas by approximately 3 - 4% per year during 2015 to 2019. This forecasted increase in milk production will be delivered through farmers growing dairy herd numbers from a current average of 65 cows per herd to 100 cows per herd. There will also be an increase in yield per herd led through investments in capital and improvements in herd productivity and efficiency. It is forecasted that Ireland will achieve the Food Harvest 2020 target of increasing milk production by 50% ahead of schedule. These forecasts appear to mirror the actual situation that is developing in Ireland in the relatively short period since milk

quotas were removed. Minister for Agriculture Simon Coveney has stated that milk production has grown from 1.47 billion to 1.65 billion litres between April and May 2014 and April and May 2015, and this represents an increase of 12.2% in the volume of milk collected during these periods (Fitzgibbon 2015). This forecast predicts that this level won't be maintained but, on balance, the production level increase will be 3 to 4% over the next five years.

### **5.3 Forecast for the Irish exports resulting from EU milk quota abolishment**

#### **5.3.1 Production quantity and quality**

More than 85% of Irish dairy production is exported and Ireland has access for dairy products to over ninety countries worldwide, with one third of the value of dairy exports going outside the EU (Coveney 2014). The current strategy decision options for both Irish farmers and dairy companies are to seek a high level of milk throughput in order to gain cost leadership or to achieve market leadership through added value. It is forecasted by this research that the Irish dairy industry must concentrate more on value-added produce for growth, such as butters and cheeses, while still maintaining and increasing production for scale on world markets. This approach will require two differing growth strategies for both value and volume.

As a pure commodity, Irish milk will always be viewed as the same on world market regardless of where or how it is produced. However, as an added value product with a strong brand presence, such as Kerrygold, Irish produce differentiates itself from its competitors by distinction through its grass pasture-fed based production, a trend that is likely to become increasingly popular with consumers as it is viewed as more organic and wholesome. Groups, such as the National Dairy Council (NDC), should continue to promote Irish dairy excellence through the message of quality over quantity. The long-term benefits of this approach will be more substantial due to customer loyalty and to quality branded products over a generic commodity.

The success of Irish produced protein products by Glanbia in the US highlights the effectiveness of this approach and the quality that is portrayed by Irish based dairy production. Following on for this, the opportunity exists for an Irish produced and branded baby formula, both domestically and internationally. It is clear therefore, that the ability to develop world class produce for the international market is vital to the success of the Irish dairy sector.



## **5.4 Implications of the Findings for the Research and Forecast**

### **5.4.1 Expansion concerns**

The research reveals that the continuing uncertainty in the milk market has heightened fears of a milk bubble in Ireland much like the property bubble that happened in Ireland during the Celtic Tiger era in the late 1990's. On one side, supply is beginning to outgrow demand causing prices to fall. On the other side, the lifting of the milk quotas has led to increased investment in the milk industry, propelled by the forecasts that Irish productivity would increase significantly. Research by Teagasc, which was sponsored by Bank of Ireland, highlights that the average level of debt on all farms (farms with and without debt) in 2013 was €24,000, with dairy farms recording the highest level of debt at an average of approximately €62,000 for all dairy farms, and an average of approximately €94,000 for the sub sample of dairy farms that have debt (Thorne et al. 2015). The research also concluded that investment in the order of €1.5 billion would be required if milk output is to increase by 50% over the next 5 years as set out within Food Harvest 2020. The bulk of this investment will be undertaken by existing dairy farmers and it is imperative that such farmers engage in rigorous financial planning in order to protect themselves in times of low milk prices (Thorne et al. 2015).

While expanding production, Irish farmers and producers will need to maintain high standards in all stages of production. History has shown the impact a quality scandal can have on a food industry. Ireland's beef industry suffered greatly during the Irish beef scandal of the 1980's. In 2008 New Zealand also had a dairy contamination scare which saw 300,000 children become ill and 6 pass away. Any significant scare or safety issues arising in Irish dairy sector would damage Ireland's reputation and hamper its access to the bigger dairy markets. Irish farmers again would be left suffering with large investment loans without the ability to generate revenue in order to make the repayments.

Therefore, it is vital for Ireland to take insights from the New Zealand's experience of milk production growth over the past thirty years. Ireland needs to avoid a high debt exposure build-up in the dairy farming sector as has occurred in New Zealand (Irish Times 2015a). Investment in farms needs to bring with it an objectivity and strategy so that, in the rush for increased production capacity, farmers do not become burdened with a weight of debt that they cannot repay, much like the Irish property bubble experienced after the Celtic Tiger era.

At an industry level also, the line between investment and over-investment needs to be carefully walked. Our largest dairy manufactures include Glanbia plc, Dairygold Co-

operative Society, Kerry plc and Lakeland Dairies. Together have invested just under €1 billion in development projects and will be competing in both the national and international markets, though most also work together under the banner of the Irish Dairy Board (IDB), soon to be rebrand as Ornu, which exports to over ninety countries worldwide.

#### **5.4.2 Moves towards a US model of farm management**

As an implication of the removal of the EU milk quotas, this research forecasts that Ireland will have two major changes that are driven through the desire to expand. Both changes are derived from Ireland moving towards a US style method of dairy farming. The first change forecasted is led through the efforts in the Department of Agriculture through their work in forming farm partnerships. This will lead to a shared milker type model whereby the farm owner could lease out his land to a willing farmer and receive a percentage of the farms profits. This percentage will be split somewhere between the 60/40 mark in favour of the farmer. The outcome of these farm partnerships or shared milker models will result in a more productive use of Irish farmland and greater outputs from herds.

The second major change will result in a restructuring of the agri-banking model methods deployed by Irish banks, driven by Irish farmers' decision to increase herd sizes. At present in Ireland due to fears over disease and illness an Irish farmer cannot borrow against the equity present within their existing herd. Under the US banking model, the America banks are willing to take the existing farm herd as collateral and issue borrowed debt against the value of this asset. This allows the US farm to leverage on his existing herd for expansion in the herd size. This change to Irish banking is forecasted to occur within the next ten years, as milk production in Ireland increases as mentioned previously. In comparison to world dairy producers Ireland has few herds of over 100 cows. In New Zealand the proportion of herds of less than 200 cows has declined considerably, as the proportion of larger herds' increases, and in the US the proportion of herds of over 2,000 cows has increased considerably (Donnellan et al. 2011).

#### **5.4.3 Increase in agricultural construction**

The Irish Government is already backing the expansion of the agricultural sector's success through support from Enterprise Ireland, the Department of Agriculture and Teagasc. In July 2015, the Irish Government launched the TAMS11 Dairy Equipment Scheme, under the Rural Development Programme, which will see €50 million being made available through grant schemes to help Irish farmers modernise their farms. This will also drive an increase in construction over the next three years, which will have wider economic and

social benefits such as employment and could lead to a revival in the construction sector overall.

#### **5.4.4 Consolidation of Irish co-ops**

According to the ICOS, there are currently 18 factory locations in Ireland made up of 13 powder plants, 9 butter plants, 8 cheese plants and 4 infant formula factories (ICOS 2015). As of May 2015, the President of the ICOS Martin Keane told the AGM that processors should consider further rationalisation and warned them against short term competition for milk suppliers (Farmers Journal 2015). Further co-operative consolidation would lead to improved processing competitiveness and cost efficiencies through rationalisation which would help improve milk price returns. The move towards consolidation will lead to smaller dairy producers becoming merged together or being acquired through acquisition by the large co-ops. As Irish farmers have the freedom to choose which co-op they wish to supply, this will reinforce this consolidation process.

#### **5.4.5 Environmental Concerns**

The Irish dairy industry as a whole will need to be conscious of the 'green' agenda when making significant production decisions. Ireland will likely be impacted by a 'new environmental quota' in the very near future, whereby any expansion plans will need to be balanced against the regulatory requirements of climate change, carbon emissions and water pollution. Again, understanding New Zealand's experience will prove to be vital to Ireland as the pace and nature of their expansion in the last two decades has resulted in significant environmental problems.

Despite Minister Coveney stating that he will face down any demands that the Irish agri-food sector should stall expansion because of environment concerns (Healy 2015a), it's likely that these new limitations will be brought in at an EU level and will be guided by the outcome of the United Nations Climate Change Conference to be held in Paris in late 2015.

#### **5.4.6 Two tier farming sector**

The removal of the EU milk quotas will step-up Ireland becoming a two-tier farm sector, divided between dry stock farming of cattle and sheep and dairy farming. The Teagasc National Farm Survey for 2014 found that the economic viability of farming improved in 2014, with 37% of farm businesses found to be economically viable, but this was driven by the strong performance of the dairy sector (Hennessy & Moran 2014)

Commenting on the report, Thia Hennessey has stated that 'we are increasingly moving to a two-tier farm sector where in 2014 over 80% of dairy farm businesses were viable

compared to less than one in five cattle farm businesses' (Ryan 2015). This research forecasts that the removal of the EU milk quotas will increase the number and rate of Irish farms moving into dairy farmer over the next ten years. The research also forecasts that farming in Ireland will be more regional based, with areas such as the West and the boarder countries suffering most due to it being economically unviable to produce there.

## **5.5 Contributions and Limitations of the Research**

### **5.5.1 Research Contribution**

The contributions of the participant interviewees were of outstanding quality, as they shared in-depth knowledge of the Irish and international dairy industry. The contribution of all the participants was noted by the researcher and gratitude was extended for all their help and involvement.

### **5.5.2 Research Limitations**

The research was limited because of the available literature, the initial Delphi model chosen and in the perceptions of the small interview group selected.

The literature reviewed and assessed as part of this research, although vast in terms of studies evaluating quota transfers and forecasting of Ireland's performance from a pre-abolishment standpoint, fails to adequately critique the risks to Ireland's dairy industry in the post EU quota environment. This is inevitability due to timing, as quotas were only abolished in April 2015. Due to this timeline, very few academic papers actually exist on the effects of EU milk quota removal.

Due to time limitations and the capacity of the selected candidates, a full Delphi model was not deployed which would have benefited the research due to the diversity of the opinions given. According to Adler & Ziglio (1996), the participants in such a study should meet the requirements of having sufficient capacity and willingness to devote to the research as well as having sufficient time to participate. As a result, repeated questioning of the experts in order for them to refine their views and a discussion with the experts of the overall findings did not take place. The output from these stages would have added more weighting to the research.

The research was also conducted with a relatively small selection of candidates who have specialised knowledge of the dairy environment within Ireland. To expand the results to an EU level or internationally would have involved a broader selection of participants from different areas across international markets. Therefore, although there are commonalities that can be taken from the research findings that can be applied to other

international markets, this forecast is limited to an Irish perspective. The research also does not look at the impact of the EU milk quotas from a consumer's perspective. In selecting the candidates, it was decided that this contribution would not have added much value and that it would have been difficult to find a consumer viewpoint that represents the Irish market as a whole.

## **5.6 Evaluation of the Research Tool**

The researcher did not adopt a quantitative approach as part of this research. The researcher suggests that a mixed methodology approach of both qualitative and quantitative research would also have added value to the research. Triangulation could have then been conducted involving the literature review, the qualitative data from the semi-structured interviews and the quantitative data such as a questionnaire. Triangulation of the results would then have given the researcher different perspectives on how to forecast the objectives at hand. This method is suggested due to the triangulation of research that would occur as a result. The reason for this is to ensure the results and outcome of the project are precise (Flick 2009).

## **5.7 Recommendations for Future Research**

### **5.7.1 Free Trade Agreement**

The EU must explore the possibility of Free Trade Movement agreements with emerging and developing countries in order to open the Irish and other EU dairy markets to easier worldwide investment. The New Zealand-China Free Trade Agreement (NZ-China FTA) has proved a huge success. Dairy exports have a value of NZ\$363 million (average over 2004-2006) and amounts to 18 percent of New Zealand's total exports to China (NZ Ministry of Foreign Affairs & Trade 2015).

Further to this agreement, the world's biggest regional trade deal, the Trans-Pacific Partnership (TPP), is currently being negotiated by twelve nations, including the US, New Zealand, Japan and Canada, and is estimated to cover about 40% of the world economy. The deal seeks to combine bilateral questions of market access for exports with one-size-fits-all standards on issues ranging from workers' rights to environmental protection and dispute settlements between governments and foreign investors (Press & Reuters 2015). New Zealand is pushing the deal to significantly open dairy markets with a view to increasing their imports to the US, Japan, Canada and Mexico. In order to remain competitive, the EU must explore developments of similar trade agreements.

### **5.7.2 The importation of baby formula into Ireland**

From reviewing the literature, it has been noticed that a large amount of baby formula is actually imported into Ireland. O'Callaghan (2014) highlights that for 2013, Ireland imported a milk equivalent greater than 550 million litres for lactose imports; a milk equivalent greater than 450 million litres for whey imports; and a milk equivalent greater than 270 million litres for skim milk powder (O'Callaghan 2014). The Irish dairy industry does not seem to be expressing a significant amount of concern that Irish import values of baby formula and whey protein increased from €27.02 million in 2010 to €131 million in 2013 (O'Callaghan 2014). The argument that Ireland is ready to follow New Zealand and become a leading global dairy exporter seems incomprehensible when Ireland imported a milk equivalent of 1.2 billion litres of product, which equates to one-fifth of Ireland's existing milk produce. If Ireland is not consuming what it produces, this could have the potential to cause great reputational damage in the future. This issue requires greater investigation along with Ireland's ability to produce, brand and market an Irish-made baby formula for both domestic and international consumption.

### **5.7.3 Job and skill levels required for expansion of dairy farming in Ireland**

The removal of milk quotas has been highlighted as a benefit for additional employment with more people required to work on farms due to the increase to the dairy cow per herd population. The IFA has estimated ending the quotas could create 9,500 extra jobs in Ireland, and upwards of €1.3 billion annual additional export revenue (English 2015). However, traditionally Irish farms have not entered into external employment for the running of their operations with many remaining family based. The option of external employees for farms creates issues such as employment contracts, employee rights and health and safety requirements that many Irish farmers will wish to avoid. Potential farm workers also need to have the necessary skills required to work on a farm which are increasing becoming specialised which requires education and training.

One of Ireland's largest farmers Tom Browne has questioned the creation of all these new jobs, especially at the Irish farming level. 'We have been told the end of milk quotas will create thousands of Irish jobs, but at farm level it is a very different story' he said. 'Nobody has trained in farming in the last five years - so there is a huge skills gap' (McCabe 2015). Further research is required into the Irish farm labour requirements post EU milk quota removal and an analysis of the potential skills gap that may exist as a result.

## **5.8 Final Conclusion and Reflections**

The overall findings presented in this final chapter contribute significantly to the existing literature and research on the impacts of EU milk quota removal. Through analysis of the interviews, the forecast was considered to contain a broad base of the resulting implications of the EU quotas removal. In concluding this research the limitations were outlined and explained, including an evaluation of the qualitative research tool used. The researcher also highlighted areas for future research which will further expand on the understanding of Irish dairy production for the future.

In the run up to the EU milk quotas being removed, Irish farmers were presented as being held back and restricted by the EU milk quotas over the past three decades and that the abolition of the milk quotas would herald a new era of growth and success for Irish dairy production. Expectations continue to be that many Irish farmers will reap the benefits of expansion and the financial gains that production will bring. From an Irish perspective however, what seems to be missing from this perceived perception is how the EU milk quotas were of considerable benefit to both Irish and EU dairy farmers. The EU quotas ensured stability for the milk price and allowed some farmers to produce on a scale that best suits their own personal circumstances and resources.

However, there is little doubt that the abolishment of the EU milk quotas has brought about a significant opportunity for Ireland. As a country with a distinct natural benefit of grass-based production, Ireland holds a competitive advantage from its European rivals in this regard. Both farmers and producers have recognised the opportunities Ireland now possesses and have geared up for EU quota removal by investing in capital to increase production. Both parties must realise that sustainability will come in the long term and will be determined more by economic trends and the global population than by personal investment.

As a result of the research forecast, it is clear that success in the dairy sector is not a definitive outcome for Ireland over the next ten years. The international dairy market will continue to be extremely competitive and the decision to remove the quotas unfortunately coincides with milk prices being at their most volatile for many years. All parties involved in the Irish dairy market must play their part to ensure the sustainability of dairy production so that Ireland's great tradition of high quality produce continues into the future.

## Post-Script Analysis

### **Self-Reflection**

After conducting this research there are several distinct attributes that the researcher feels confident to have enhanced and learned about himself.

Research skills: The researcher has truly enjoyed the exploration of the research topic due to its relevancy and presence in the media at present. On reflection, this research has enhanced my understanding of consistency in the structuring of a dissertation. The framework of relating data gathered to the research question and subsequently to the objectives and recommendations established ownership of the research. By having this structure in place, I was able to maintain control over the research which allowed me to develop the skills of being able to collate and present information in a concise and articulate manner.

Time management: The ability to time-manage research is one of the greatest learnings that the researcher has taken from this process. The relevancy of time management was felt hugely in the latter stages of the research, especially in the findings chapter where capacity was required to analyse the information collected so that the most relevant data formed the answer to research question. I also had to ensure that enough time was available to document the conclusions and recommendations so that the final chapter did not fall short of the previous extensive work that had been undertaken during the research.

Organisational Skills: Arranging the time and location for each interview proved difficult, especially over the summer period, with candidates travelling for business and personal reasons. The ability to be flexible and maintain interview commitments proved vital in completing all six interviews. The process has highlighted the necessity to organise interviews in advance due to the limited timeframe and the logistical difficulties involved in conducting research.

Communications Skills: Arranging access to each of the six candidates resulted in the utilisation of my communication and networking skills. It also highlighted the benefits of having a strong professional network through friends, family, work colleagues, classmates and through online networking sites such as LinkedIn. This process further developed my oral and communication skills, being able to conduct an interview and discuss the topic



thoroughly while ensuring that each of the questions asked was appropriately answered. I also made a concentrated effort to build rapport with the interviewees in order to leverage additional information to further benefit the answers to the research questions.

### **Problems and Challenges Encountered**

Access: The ability to access some interview candidates proved difficult, especially those in remote locations such as Athenry, County Galway. The decision was taken to conduct this interview via telephone. This was not taken lightly due to the benefits in conducting interviews face to face, such as building rapport and the reading of body language. However, for the benefit of time management the decision was taken to conduct this interview over the telephone. I feel that this decision was justified due to the strong responses received from the interviewee. Any adverse impact of this interview being conducted via telephone was therefore minimal.

Research methods: Methods of data analysis such as coding were new to me and so particular focus and attention was paid to this area to ensure that it was performed correctly. In analysing the interviews I looked for distinct concepts and themes that were common in the data collected. These formed the basic units of my analysis, and the previous alignment of the questionnaire, broadly ensured that themes and opinions, although conflicting in certain circumstances, remained categorised for each research question. The use of open-coding in creating this first level of analysis made it easier to draw findings and recommendations. The concepts and themes were then transferred into the response tables as documented in Chapter Four, which proved to be a very effective way of organising the responses for the research. Coding was then used to confirm that the concepts and themes accurately reflected the responses and also to explore how each are related. A lot of time was spent on this area and I feel the output is more effective because of this.

### **Lapses in Judgement**

Delphi Model: In my original dissertation proposal I suggested that research would be conducted through a full Delphi model. This would have involved interviewing each candidate at least twice to ensure that opinions hadn't changed. Through feedback from my supervisor of his own experience of using such a model, it was evident from early on that a full Delphi was not possible in such a short period of time. An adaptive model derived from the use of qualitative primary and secondary research was used instead. In

hindsight, a proposal to involve quantitative analysis, such as a quantitative questionnaire, for triangulation purposes may have been used as well.

Interview Process: Some of the interviews ran over and some ran shorter than the 45 minutes scheduled due to factors such as comfort of interview setting and time capacity of the interviewees. Although I am thoroughly confident each interviewee answered each question fully and to the best of their abilities, I would set the parameters of time more firmly in future. Although I would not change the outcome or output from any of the interviews conducted, it could be argued that if a candidate was allowed more time in responding then more weighting could be placed on their responses. I was aware of this issue in analysing the data and I also endeavoured to ensure that the rapport created between the interviewee and I did not create a barrier to constructively critiquing their response.

Respondents: The researcher is very thankfully and appreciative to all the interviewees for their time and contribution to the research. The access to one further industry candidate from Glanbia plc did not occur at quite a late stage but it is felt that the absence of this contribution did not damage the relevancy of the overall research or the findings and its conclusions.

### **Skills now being utilised**

Communication Skills: In my current professional position I have continued to deploy many of the communication skills that I used in preparing this research, in particular those of clarity of message and preferred methods of communication. In my professional environment, the use of email and instant communicator has become over whelming. As a result of this research, and in particular following on from the interviews, I have chosen to revert to more face to face conversations and telephone communications which I feel benefits connections and relationships in the organisation overall.

Organisational Skills: In order to complete this research in the timeline required the application of forward planning and organising have been essential elements in its achievement. The undertaking of this research has provided me with a thorough insight into the hectic nature of project management. As a result, I am more confident of my organisational abilities and their application in effectively managing a wide range of tasks at the same time.

Time Management: By preparing and completing this research while maintaining full-time employment, I have built on the core skills of effective time management through action planning, prioritisation and perseverance. As a result, I can now confidently demonstrate proficiency in this area which will be an invaluable ability for progression in my professional career.

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## Appendices

### *Appendix A – Confidentiality Agreement Letter*

Dear Sir/ Madam,

This is a confidentiality agreement letter which states that the information which I will receive from you, either orally or written, or any other employees from your organisation, will be treated as highly confidential documentation and information. I can confirm to you that all the information obtained from you regarding your organisation or your position will be used only for the means of productive material for the purposes of this dissertation.

If you have any queries, suggestions or concerns, you can contact me by email and mobile. My contract details are:

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*Appendix B – Interview Questionnaire*

From your perspective, how has the abolishment of EU milk quotas contributed to the current volatility to the price of milk on the international market?	
Where do you forecast milk prices moving in the next 1-4 years?	
Where do you forecast milk prices moving in the next 5-10 years?	
How will the level of dairy production move (increase, decrease, remain the same) in Ireland over the next 10 years? (FH2020 targets)	
Where do you see Ireland targeting their exports?	
How do you see Irish farming structures changing over the next ten years as result of the EU milk quota removal?	
What other impacts do you see the removal of the quota having on Ireland?	

*Appendix C– Ciaran Calvey - Regional Dairy Buyer for Kellogg Europe*

Colin: I'm here with Ciaran Calvey, regional dairy buyer at Kellogg Europe. I'm going to ask him a few questions regarding the removal of the EU Milk quotas. From your perspective, how has the abolishment of EU milk quotas contributed to the current volatility to the price of milk on international market?

Ciaran: At the moment obviously dairy is at an all-time low in terms of price. It's basically supply and demand and what it's done in the past few months, it has rapidly increased volume within in Europe, so it's obviously just affecting the EU. I was looking at some stats there. Of all the EU countries, there are only three countries that have gone into the plus percentages and that is Ireland, Poland and the Netherlands. The Netherlands were only slightly up by 1% but Ireland being the biggest one - which from your question is where you are focusing - went up by almost 18% in terms of volume and that's just from looking at June last year to June this year. So it's basically, what's that, end of April, so its only three month so it's gone up nearly 17% so that's obviously going to affect the price. And this - I might be getting ahead of myself when I mention this - but the big thing volatility wise in the market at the moment is that Russia have a ban on EU dairy and its what's really keeping the price down low because Russia take out a huge volume of milk, not only cheese, butter, skimmed milk powder from European countries and that's probably why you see the big increase in Poland as well.

Colin: Because they - Poland - are delivering?

Ciaran: Yes, yes. They deliver as well there. But funny enough, if you look at the big producers, that would be Germany, Holland and the UK - they haven't really increased too much because their quotas. They are just doing the same as they were before so they are at capacity. Especially in the Netherlands, countries like that, they are not going to expand too much because either they don't have the land for it, its dedicated for other crops. Those countries, you see the big super farms, they would have had those big quotas anyway. So it's not.... At the moment it doesn't seem to be affecting them more but milk prices you can see them coming down and that's down to volume and the Russia piece. If Russia was to come back into the market, it would slightly go up as well. The other thing that is driving that as well is China, the economy is going down. And they're not buying as much at the minute in China. Other factors then to take into consideration is....

Colin: I suppose what the question is that is the EU quota contributing to driving the price down?

Ciaran: It is because there will be a lot more demand out there and it's going to be - I'll speak more about it - but yeah it does have a big factor of it. Yeah.

Colin: In terms of driving the price down lower

Ciaran: Lower definitely yeah. And the other thing around that a lot of people because there's so much demand out there they might just buy at spot. So they might buy a little and wait for the price to go lower. So they are not..... They have not seen a huge drive from buyers to start buying milk products at the minute. And they are holding out to see how low it will go.

Colin: Where do you forecast milk prices moving in the next 1-4 years?

Ciaran: I'd say it'll probably decrease over the next 1 to 4 years. In my own opinion, in and around five percent. It will be stable for the rest of the year. And again it's a hard one to predict because if you look at milk prices – movement - have in the last five years, they are up and down just like a roller-coaster, the graph and it's hard, even the guys that are buying huge volumes of milk, they are finding it very hard to predict and what to do, go short or go long. So I'd say it will keep decreasing because countries like Ireland and Poland will start milking more. So there will be more supply than demand. It's just again, Russia have a big part to play in it. If they come back into the market it will stabilise it out. And which they will in the next 1 to 4 years.

Colin: But haven't Russia, they have increased their ban. They were due to come out of the ban in August this year?

Ciaran: Yeah, so it's going on for another year. But within that I reckon they will be back into the market in the next 4 years because I don't think that they would be able last.

Colin: So you say decrease by 5% approximately in the next 1 to 4 years.

Ciaran: Yeah.

Colin: Where do you forecast milk prices moving in the next 5-10 years?

Ciaran: I think the demand for milk products will increase. So from outside Europe the developing countries, the likes of India and China they're starting to eat more like westerns so they are consuming more dairy. On that there was a study in China saying that there are lots of those people in that region who are lactose intolerant. So it was having a bad effect on them as dairy was not in their diet for the last hundred years. So they are trying to prove that they shouldn't be giving their kids dairy products. So it's a big thing for

Chinese family to give their kids milk. And previously it wasn't so. That is what is driving the demand in China. They take a lot of skimmed powder and different things like that from New Zealand. So they have a big part to play, but other developing countries like India will take up that surplus if that happens. But I reckon that it will stabilize over the next 5 to 10 years and, again at that stage definitely, Russia will be back in the market. Hopefully they will meet each other, demand and supply.

Colin: And then I suppose from an Irish perspective, in terms of skimmed milk if we are trying to get into that market, do you see that?

Ciaran: Yeah, it's a big opportunity for Ireland and what we are producing at the minute is on a very small scale as to what New Zealand provides China. A smaller country like New Zealand is predominantly providing for a Chinese market. It's definitely something Ireland can tap into.

Colin: Do we have the process capabilities?

Ciaran: Again, we have the capacity. Glanbia have invested a lot into drying facilities, which is to make skimmed powder, and that is what happens to all that surplus milk - tends to go into either making baby formula and stuff like that. There is obviously a big market for it. The other thing I was reading they reckon that they can turn surplus milk into cheese and sell into the UK as cheese prices are, for some reason, it is cheaper to make it and sell it than the UK. Or actually to send the milk into the UK to manufacture. Because a lot of cheese manufacturers in Ireland if you were to go to the shops and you pick up say Wexford Cheese and you look at the back of it you will see a UK badge. So it's Irish milk but manufactured in the UK. So they send it over there under an Irish Company. So the reckon that's where a lot...

Colin: Its Irish product that has been shipped into the UK?

Ciaran: The raw material, manufactured there but sold there but under say Wexford cheese. So you see it here, they actually ship it back here. It's amazing, a lot of cheese companies, I think Kilmedan and Dubliner are the ones, not the only ones, but the ones that I have seen. Next time you are in Tesco take a look at the back. IE its manufactured and produced in Ireland, if its GB it's part done in the UK or maybe it's been done up in the North. So that's where a lot of the increase is going.

Colin: How will the level of dairy production move (increase, decrease, remain the same) in Ireland over the next 10 years?

Ciaran: In Ireland at the minute we have said it has increased by something like 13 to 14 per cent year on year. There is talk that Ireland could be at a level with New Zealand in terms of production of output because New Zealand - being of a similar size to Ireland, and I think 10 - 15 years ago, before they got into China, they had a similar output as Ireland and they reckon Ireland can turn into the same way. But I did as part of my thesis I focused on New Zealand, I looked at the dairy sector on cattle and how an Irish company could send some of their materials that they make here for the dairy industry out there. They have very big farmers, like big herds but they don't invest in machinery. For Ireland you need that big investment so maybe that will hold them back.

Colin: Why isn't that investment in machinery required?

Ciaran: Because they keep their cows outside all year around. It's the same in Ireland but we keep them inside for maybe four months a year, four to five months, depending on the weather. In New Zealand they just keep them out the whole time which can... I means there's arguments that, they would say that it's bring them inside and here we would say it's bad having them outside. Plus their milking parlours are very basic in comparison to what they are here. It's very labour intensive out there. And it's not here, it's very automised in Ireland especial on a big farm.

Colin: And just in terms of Ireland and the 2020 targets – they are talking about increasing production by over 50%?

Ciaran: Yeah, it is possible that it will go that way. Irish farmers need huge investment into their farms and that's what will probably hold it back. I can send you on a very good article after this but it's almost going to be like a bubble where people will invest too much into it and then will they get the output? Because if the milk price stays so low. I think any (Irish) farmer that has a decent capacity at the moment will double their production because all they have to do is just buy more animals. I wouldn't say it will be far off that.

Colin: Is that not the risk then for Irish farmers that they either go the way of investing to increase production, but if they don't do that and just stay as is they will be swallowed up?

Ciaran: Yeah, it's kind of a catch 20-22.

Colin: Yeah, a double edged sword.

Ciaran: Yeah, it is I think as I said, on one sude they have to invest and then on the otherside if they don't they'll fall behind, and if they do they might get the price for it. The



EU will probably have to step in and subsidise them in some way. That's the only thing going for them but it is a risky investment.

Colin: I think there is an initiative just launched by Simon Coveney that allows a capital grant for farmers to invest?

Ciaran: Yeah, they have that and I'd say there is something along those lines. They do get one every year. They get their grant every year. Around November or something like that.

Colin: So you feel that the level of production will move up by that 13 – 14%?

Ciaran: Yeah, definitely, it's increased by nearly 13 in a couple of months, I mean it's going to go huge now. Farmers could potential dry off their animals and stop milking them for certain months of the year because maybe they don't have the money to keep doing it and it might slightly level off towards the end of the year. But I'd say come the winter time will give a good indication if that volume is still going up because that's typically the time where you have to house the animals and feed them. They are not just out on the grass.

Colin: That's the seasonality effect.

Ciaran: Yeah, that's correct but it will be interesting enough to see how much the decline will be as opposed to last December.

Colin: Where do you see Ireland targeting their exports?

Ciaran: Yeah I'd say, I think it will be to the company's like Glanbia drying off their milk to powders and focusing on the Chinese market and emerging countries, say like India. I know from speaking to suppliers that Africa take a lot of milk that is, say like condense milk. I know they don't really manufacture that in Ireland but those long shelf like milks, the North countries of Africa and Nigeria is massive market for dairy products because they can't actually make it themselves. And that's the one thing Ireland have to have is a good name around dairy so it'll be easy to market. But I definitely think markets like India and China they have to target.

Colin: Okay, just on India and China – is there not the argument that they are at capacity themselves?

Ciaran: Yeah, and the other thing is that the economy – the stock market in China is going really badly at the minute. They are not going to have as much money to spend

because milk powder is like a luxury product you give your children cause they see it as so good for them because Westerns do it. So that does have an implication. That's why I'm saying India, they need to focus on. And that is all potential there. And maybe Africa, countries like that.

Colin: What about within Europe itself – is that an option?

Ciaran: I suppose Eastern European countries, the likes of Russia as well. That's a huge potential as well.

Colin: But in terms of Ireland exporting in Europe it's kind of a...

Ciaran: As I said it's kind of more niche products. I mean if you have a cheese and it's an Irish cheese it's seen as a very an expensive product or a luxury product maybe in Europe. Definitely the UK is a big market, always has been and I think always will be. The other thing going for Ireland is the Euro at the minute is very cheap so they are more inclined to buy Irish product more so than a UK product because you have to buy sterling. So they kind of go for them in that sense. It will be interesting to see what the UK do in the future; if they go and exit the EU they'll still have that relationship there with Ireland. But other countries might not feel that they want to trade with them.

Colin: So the Greek crisis could be as benefit really?

Ciaran: In that sense, yeah, you see it with other products here. Countries that didn't traditionally buy in Europe are starting to buy in Europe in food in general because it is cheaper to buy in comparison to the dollar and they get real value for their money.

Colin: What kind of countries?

Ciaran: Middle East. And again that's another market that's kind of become more westernised, drinking dairy and dairy products and we see that here in Kellogg's. So that could be another market that here in Ireland that they target for exports. And then again the US would be another one. You see it with the beef that is now being sold in the US again.

Colin: But again, from certain reports I've read the US market, parts of it – regionally maybe – are inundated with milk.

Ciaran: Yeah, it is true but again it would be around the cheeses and the different things, the Irish product kind of thing. Not so much the powders, I don't think they'd do as well.

Colin: Okay, so in that sense, Ireland has to be smart in what it targets, in terms of the foreign countries it is looking to export into rather than just producing the same product that basically the rest of Europe is producing.

Ciaran: Exactly. The other thing is, the market – the Irish market itself – we import so many UK products especially in yoghurt. There is some static out there – a certain percentage of yoghurt is from the UK. You see it on the shelves in the supermarkets predominately. The likes of Muellers and different products like that yoghurt. So I think there is a big opportunity there for Irish manufactures of yoghurt and cheese and different things like that to sell more Irish yoghurts.

Colin: Just on that, importing in – we also import a lot of baby formula as well?

Ciaran: Yeah, and again that is around the brand, the brand names.

Colin: So we really need to stronger on the marketing side?

Ciaran: Yeah, it'd say so. I wouldn't know so much about baby formula but from what I have seen it's kind of like your branded products. They tend to be from the UK , Germany and other places like that. Again, that's a new market to Ireland because we didn't have those facilities in the past and they have those facilities now. You're right because we probably export more cheese, and then we import cheese. The dairy industry is very interesting that it doesn't make sense that you are exporting powder and then importing it home.

Colin: The finished product really?

Ciaran, Yeah, exactly. I don't know if there are many Irish companies that manufacture baby formula now that's for the readymade environment. Obviously they manufacture the raw materials of it but do they actually pack it and sell it here?

Colin: How do you see Irish farming structures changing over the next ten years as result of the EU milk quota removal?

Ciaran: It'd say there's going to be a lot more farmers actually getting back into milk. In the 90s a lot of farmers left milk, and 80s, because there just wasn't any more in it. Obviously they have to have land so a lot of farmers went in tillage because it was easier to do and they weren't working every single day of the week like, every morning and every day milking cows. It was less labour intensive. So you might see a lot of farmers going back to actually traditional milking. But again there's a big investment in that. Then farmers

that have big enough dairy farms are going to invest more in their herds, increase their herd size, and then into their facilities like their sheds and milk parlours. It's a big investment so I'd say you'll see a lot of them taking out big loans which they can do because their land is worth... If you have a farm that has 100 acres and the land is typical up to maybe, depending on the county, 11 or 12 thousand euro an acre, so potential the farmer is worth over a million, so they can get that loan off the banks.

Colin: Just on that, here you saying about more farmers going back into dairy – is there a consensus that we'll see less Irish farms – a decline in that?

Ciaran: Yeah, what's happened over the last few years is that you see less farms but bigger. I heard that certain farmers are reinvesting in it as they see it. But a lot will sit back and see how it goes. If they are not going to get the price then their obviously not going to invest in it. I personally do think that there will a few farmers getting back into it if they can see that there's a good business to be made. And that obviously goes back to the other questions. Obviously demand is there, if the right price is there, that's when they will do it.

Colin: Would that be in ownership of farms or leasing farms?

Ciaran: Traditionally in Ireland it's more ownership of it but they probably will go down that route. People who actually don't want to work on the farm, the 2nd or whatever the next generation is – they will just lease it out and have their own job. You see a lot of farmers now that they have a job and a farm but it's not dairy because dairy is 24hours - 7 days of the week, every day of the year. That is the element that puts them off. In the UK the structure that they lease their farms out but they own the farm, they have a manager. They are massive farms. Our holdings here are a lot smaller

Colin: Would we see an increase in jobs as result?

Ciaran: Yeah, personally I don't think there would be a good living but what a lot of farmers do actually – smaller farmers they go out and work on these bigger farms and then go back to their smaller farm at night. What they do in New Zealand is they get people from other countries, a lot of young Irish people go out there and work to get that experience on dairy farms but what they have is a lot of Phillopenos, people from different countries like that that come to New Zealand and work the farm as cheaper labour for the farmer. So maybe that's the thing where we are going to have to get the cheap labour to come in say from Eastern Europe to come in and help boost it.

Colin: Much like the construction industry.

Ciaran: Exactly, yeah, you'll have that demand there. Because I know it's hard to get people to do it. They get a lot of students. Some lads that go to agricultural college and did a stint working on a farm for work experience.

Colin: So that could be a general trend we see in the next while.

Ciaran: Yeah.

Colin: Jobs in commercial / manufacturing, do you see a huge increase on that?

Ciaran: Yeah, if you look at the likes of Glensik yoghurts and dairy – I think they were originally Tullamore dairies. But that's what they were, they were a dairy company. They went into yoghurts and cheeses and different things. I think you'll see more companies like that investing in products like making yoghurt, butter and cheeses. And it's 100% Irish, natural, organic and I think that sector is really growing. It's big in Cork, Wexford and Tullamore obviously being from Offaly but I think more regions could maybe get into that and brand it as a more local regional - product. So you have special cheeses from Wexford and yoghurt from different places. I think that's what they need to get into in Ireland and promote from within the Irish market, because they have that demand there for it. So potentially there are more and more companies popping up like that. You have small home based companies making their own products. I know a farmer there who makes his own ice-cream and he delivers into restaurants. There are those niche markets for those local companies. You have a dairy farmer and he goes into something else on a smaller scale and sees how it grows. Again it's a lot of investment. And if you are going retail wise it's very hard to get into.

Colin: Isn't very difficult for those niche things to have a lot of volume?

Ciaran: Exactly, yeah, but it's that bit cheaper because there is so much milk out there. One thing in Ireland that seems to be more going to – and you see it in the UK as well – is buy local, buy Irish and think that will really help them grow a brand. So hopefully they can do that.

Colin: But the bigger opportunities are generally the formulas, the proteins?

Ciaran: Yeah, and that's one I actually didn't mention. Glanbia's sector, their protein. It's a supplement part of their business and it's really increasing, They have done a lot of work out in the States. If you just look up Glanbia on their nutrition side it's

massive. You have the protein milks and the way they are advertising them now. That's a good product and it's really growing. But again, you have to be a company like Glanbia to have a drying facility where you are making powders and wheat proteins and things like that.

Colin: And have the capital investment to do that?

Ciaran: And that's the way the market is going, towards more like, it's not being on diet it's eating the right things and protein is the big buzz word at the moment.

Colin: I suppose with the big bodybuilding type market.

Ciaran: Exactly, it's fitness. It's really a growing sector.

Colin: What other impacts do you see the removal of the quota having on Ireland?

Ciaran: It could go back to – the reason they brought this quota in was that there was too much milk and they actually made it into butter and there's thing called butter mountains. So hopefully it doesn't go down that route. Potentially it could and they might say you have to pull back there. The other countries are just going with the steady milk level, maybe peak, maybe drop but the likes of Ireland will just go hell for leather. Milkers have the capacity they have their cows out on grass. And it's just that the climate is really good in Ireland for that. For example, if you look at Germany and Holland they'll be going through a drought this time of year. We don't have a drought, there is plenty of grass grown so the farmer can rotate his animals on the land so he doesn't have to put them inside, he doesn't have to feed them extra feed, they are just out on the fields. He just has to maintain his field. In that sense that's why we'll produce so much more. So it could be over supply. The other part could be that it gets to a point, where the farmers say, right, it's not worth my while doing this because it's costing me more to manufacture the milk than I'm getting in the price. And that again, they'll bring in quotas again and drive the price up. So that's another big thing. The other thing is it could just be like the property bubble in that he invests a load a money into it, they have these big farms and all of a sudden – without sounding too bad, the backside falls out of it. They can't afford their farms, they have to sell farms and they are left with huge loans.

Colin: Could you foresee a time when they do bring back in milk quotas?

Ciaran: The next five years will probably say a lot but again if that demand comes from outside Europe for dairy products for protein products. As I said, you see it not only in dairy, these countries are starting to drink more alcohol where as they wouldn't so.

Alcohol is becoming more popular so Africa is probably an area that's going to start to become more westernised when they get more money. There's a growing population of middle class people in Africa. We have seen that in China and India so that area, especially in the Middle East, where they are starting to change their trends. That might increase the demand. There needs to be a big increase in demand.

Colin: Looking at the situation as it is now – with the US being a little bit at capacity, the Chinese stock market falling, the Russian embargo – currently we feel that we don't really have that demand?

Ciaran: Yeah, with Russian being blocked. They don't have that demand at the minute and that's why we are saying what are we going to do with this extra milk. They'll dry a lot of it into milk powder. They'll make a lot into cheese. Different products that have a longer shelf life rather than just raw milk. It will be interesting to see if supermarkets bring their shelf prices down on milk. I haven't seen it yet. It's something they are very very strict on.

Colin: So we might not see that benefit come across to the customer at all?

Ciaran: We haven't seen it yet.

Colin: And in terms of you buying on behalf of the company?

Ciaran: I've seen a big drop in it. But again, a lot of that is driven by Russia because the products I buy are the products Russia would buy. Again it depends on the region I'm getting it. You have all these different market prices in Ireland, England, Germany, Holland. They all have their different prices.

Colin: From a farmer perspective they are saying that they are not able to recover for what they are producing at the moment – do you see an intervention price coming in the EU?

Ciaran: Yeah, maybe they will step in and say we have to increase it. I don't know how they can do that. Is it a thing where they try and get back into the Russian market? But there will be something like that otherwise it's just not going to be viable for farmers to produce it. The other thing just to kind of mention there is the price of diesel and other overheads, the price of grains that feed their cattle, has decreased as well so that's keeping them in a good place. And then weather plays a big part in say Ireland and the UK. If it's too dry in continental Europe they are not going to milk as much and if it's too wet here the grass isn't going to grow so they're not going to have to have enough silage to cut in

the summer, they are not going to have grass to eat in the summer so it leaves them having to cut down on their production because they don't have enough feed for the animals. Or they will have to go out and buy it which will cost more so that's another impact you can't control. So the weather will play a big part.



*Appendix D - Michael Berkery - Chairman of FBD Group and former CEO of the IFA*

Michael: Basically, the mainland European German, French, Italian axis if you like, obviously had a base cost of production for milk and they had through national schemes and through the CAP, manoeuvred a situation basically for the world to make the price, either through subsidy or through various quantitative limitations they were able to get a price reasonably close to the cost of production, so there was a stabilising of the farm population. Basically, the status quo in those countries. And then, in from 1982-83 on roughly, Ireland doubled milk production between 73 and 83, and that was stimulated, of course by the high European price, which was, this price that was the target price, if you like, for the German, French, central axis which obviously our comparative advantage, catapulted us through to that. We were able to double the value.

Colin: Comparative advantage being grass based production?

Michael: Grass production, yeah. Climate obviously and weather conditions, and all that. Coupled with that, the Brussels, the Flogia Fund, which is the structure fund in Brussels, granted the building of all the drying plants, in Mitchelstown, in Kilkenny, in Ballyragget, in Charleville, in the north in Bailieborough and so on, so you got basically free processing plants, gifted from the Flogia fund with very little capital funding required because they were priced in a way that the grant went a lot of the way. Coupled with that, you had the floor price, which was actual intervention.

Colin: Intervention price, yes.

Michael: So that bought into public storage, the two primary products, fat, butter, and protein, skimmed milk powder. Casing and cheese were to develop subsequently. So now you had basically fantastic certainty. You had a very low cost manufacturing process. You had some comparative advantage around grass in Ireland and climates, and so on, which is not as big as it's made out to be, but it was there at the time, and yet the certainty on price, which was probably thirty to forty percent above the traditional Irish price.

Colin: Yeah.

Michael: And there was green pound devaluation – various things happening - so you had the perfect stimulus climate to double milk production. So any notion that we started herculean development - is false -, there was an explanation, there was an economic underlining logic behind it, and at that point then in 1983, we had doubled output in the ten years, the Dutch had through a quirk found the industrial product corn gluten. By the way, to allow all this to happen you had very high tariffs at the European

borders as well. This is before pre-WTO or pre-GAFF so you had the high border tariffs for all of Europe. But the Dutch found a chink in that gap, with a by-product of the ethanol industry of the United States, called corn gluten, which is maize corn –beautiful product, fantastic product – for cows, but it was tariff free, because when the agri-tariffs were being put in place back in 1948, or whenever it was, corn gluten didn't exist. The big American sweetener corporations or the big sweetener users and corporations were using sugar, what with a completely distorted a sugar regime in the United States that had sugar price for sugar beet and sugar cane at a very high price. So, a substitute product, very cheap base corn, could be distilled to produce a sweetener - fructose and sucrose product. And the by-product of that was this wonderful stuff for cattle, to produce milk. The Dutch found it, shipped it into Rotterdam without any tariffs, and beat the French who had cereals and could only feed wheat, or barley and grain to their cows, but that was tariff-protected. So the Dutch subtly were producing 30 per cent of the landmass of Holland in milk, in sheds, indoors, and the slurry from the cows was the only limiting factor, actually in Holland at that time. So, it was against that backdrop. It was actually the farmers of Europe that voted for the milk quota. Yeah, the first time I ever heard of the milk quota being introduced was in 1983 at the German farmers convention in Bonn, and it was the farmers who produced, who were proposing, the German farmers, to stop the Dutch from continuing taking more and more corn, to stop Ireland from doubling their milk production within the next ten years. And, suddenly they...the triangle again, the German, French, Italian axis, saw a competitive pressure. The other thing that was happening –we never really sold any of this milk that we produced between 1973 and 1983. We put an awful lot of it into intervention. So, suddenly you had public stores full, with the ships anchored down at Cork harbour, we ran out of land store, so we had to bring refrigerated ships in Cork harbour and fill them up with butter. So now there is a public scandal. So that all created a climate - I opposed quotas in Ireland, absolutely. We ran a massive campaign, in 1983-1984, against quotas in Ireland, on the basis of comparative advantage etc, etc. Garth Fitzgerald was a leader in opposition, that was the only time he ever said anything about agriculture was about the milk quota, but he was able to understand the macro impact and so on. And because of our farm population, the impact on Ireland was much greater, say, than on an industrial country and so on, so there was a big argument about that. But, that's a sort of snapshot, Colin, of how milk quotas came in, it was to preserve a European price. Now, we have suddenly abandoned all that and said, "we can take on the world". But, I can tell you to this day, the dollar exchange, climate in New Zealand, U.S. maize corn prices... In any case you're going to have huge volatility, because from 1984 to let's say 2004, in that twenty-year period the price was very stable, or almost upwards. So,

what I'm saying to you is to really make some shot at the future, you need to take about twenty percent of your paper, should look at, in my view, the factors that produced the European milk prices as it was. They no longer exist and will never come back. But, it's against that backdrop, we have to really question, I think, the things that will have to happen in Europe, because in a world trade situation, volatility, all this production - not one litre of the extra milk produced will be consumed in Ireland. We are at saturation point. We're at 800% self sufficient in milk or whatever it is. Every single litre we produce in Ireland will have to be shipped, into an international market. Ok, we are moving up the chain towards baby-food in China and so on, so is China going to do domestic production - to some extent, they won't replace, but we will be toe to toe with New Zealand, other temperate zones in the world and particularly United States. Because their system is based on this maize corn, not grass, so the ethanol program in the transport, the clean air program, which had a compulsory ethanol take-off, in the tank, the gas station had to have a certain protection and that was across virtually all states in the end, that itself created a massive supply of this by-product ethanol, brewer's grain type of, and that of itself has been a huge stimulus to milk production in the United States. So, the dollar, the milk-corn ratio...

Colin: Yeah, because they're getting cheaper corn at the moment.

Michael: Precisely, but that can change for climate reasons, it can change if the ethanol program was weakened or whatever, so there's various movements there. But the milk corn ratio will be crucial in the States, the exchange rate will be crucial in the States. It will impact on Ireland, right. The other massive influence on the world price is obviously New Zealand.

Colin: When you say New Zealand, why New Zealand?

Michael: Because the low cost of production.

COLIN: It's all done indoors. Because they don't use any heating\_\_

Michael: Incredibly low cost of production. Massive scale...very competitive labour rates..., they've just last week they announced a reduction in the interbank rate in New Zealand, which is to weakened the dollar, which is to bring them back to be competitive again, and the elephant outside the room is Brazil in South America - immense potential to ship product. A, they have to get the standards up international trade standards, but they will, they can. And capital will flow there, if its rewarded on the basis of again low-cost maize corn production, soy bean production, all ingredients that they can use to produce

milk, without grass – it's another use of land, but its one of the highest milk, because you get fat and protein from the animal, including some very valuable human nutrition protein, including infant formula nutrition. So, capital will flow there, and our competitiveness will be constantly tested in the bottom of the troughs, as we go from, I don't know what the extent of the drops might be, or the frequency of the cycles. But there will be cycles with great troughs, I'm not sure even about the great peaks, but there are certain to be great troughs. Because the troughs will be the insurance period, for how long they can stay in the market, how long Ireland can stay in the market, against New Zealand, against the United States, and potentially against Brazil. Within Europe, it's possible, that Scandinavia, parts of the Iberian Peninsula, parts of Italy, parts of the mountains in Eastern Europe - areas will lose milk, but its equally possible that say that countries like Poland, Hungary, Czech Republic, where they can grow a combination of grass, and wheat, and maize corn. Climatically, they have longer winters and they have to have more expense with insulation and that, to carry stuff say, from October until May, so they have a longer winter, but when they are growing they have much more sunlight, much more ultraviolet light, much more rapid growing season, and they will get much higher yields that we're able to get in in Ireland, because the season is shorter, but the growth curve is way steeper. So, that's the other factor that will impact our competitive position within Europe, because while the big macro ones are going to be New Zealand, I would say US first because of the scale, New Zealand and potentially South America. Then within Europe, from the consumer products, say, UK they have lost milk production year and year and year for the past 10 years, and the strong pound sterling, which is fantastic for us, and this is absolutely crippling them, is crippling them, because Dutch and Danish products are flooding in, replacing UK, because of the competitive advantage of the exchange rate for the euro area. The Danish Kroner is pegged to the Euro so they float pretty well with the euro so they're weak at the moment.

So, we're getting fantastic advantage in the UK, and to an extent the French, so the exports out are of Ireland, Denmark, Holland, and to a lesser extent France...the others are all inward looking home based. Poland will be the exception it that where they have the potential to expand...Finland has a tiny bit of traditional trade with Russia going back to the old communist regime...but by and large the big export will be Holland, followed by Ireland, followed by Denmark, and then France. So, if you like, what does that all mean? The interconnectivity on the supply side, on the manufacturing, we have never been able to really build a consumer product space in Ireland, because, we are more domestic, 4 and a half million people, so it's been commoditized, is being bulked, it's been generally frozen or dried. And there's a fundamental law in agri-food if you freeze something or dry it, you have flexibility but you have less value.

Colin: Less value?

Michael: Yeah you halve the value. Okay, you can stack it and store it, you can take it off season, you can take it to China and all the rest, but by and large once you freeze and dry it – like a litre of milk in Superquinn or in Tesco or whatever, compared to a litre of reconstituted milk in China, is about twice the value to the producer and to the industry – it's almost twice the value.

Colin: Twice the value here?

Michael: Yes. Because its fresh liquid and just delivered. So, once you dry it, and it has to go reconstituted and all that, it's going to halve the value. That is why we are so exposed---say, the States will have 7-10% of the total production exported, of course it will impact our entire market, but not to the extent here, where our entire price is dependent on 80% exports, so whether it's exchange rates, trade barriers, sanctions with Russia, they're hitting us hard at the moment.

Colin: I might just start off with my first question, so, from your perspective, how has the abolishment of the EU milk quotas contributed to the current volatility of the price of milk on international market?

Michael: Of itself it's not the major cause of the volatility. It has perhaps in terms of sentiment, destabilised confidence in the expectations that Europe will deliver more milk onto the market. That hasn't really happened in reality yet, what has destabilized the market is US production, albeit with a high dollar, the New Zealand dumping on the market, New Zealand's milk price has halved, from...their season's just starting now, this week, and they're expecting their price today will be half the price the average price for the 2014-15 season.

Colin: Have they done that as a reaction to what happened in Europe, or is it more trying to get their product to China?

Michael: No, no, to get the product to China. Get the products to China and probably some...that's a strategic move on their part...they took a view that if you produce it, we'll sell it. That was the Fonterra mantra. But now Fonterra can't sell it. So, the consequence of that is – to reduce supply you have to have redundancy. So the farmers have to go business mode. So, I would say, the abolition of quotas in Europe has added somewhat to the instability, but the volume has not caused the problem.

Russia, the concerns in China, and the slowdown in the volumes that were earmarked for China, the New Zealand supply situation...if you look at New Zealand, they have this commodity index, they have this commodity auction, where every two weeks they auction, and actually, I know from somebody who's living in New Zealand, that they have to actually withdraw half of the quantity that they intended to auction last week. So the market knows that, that's in the background. So, it has the potential to increase the...no doubt in the short term, it depends how the prices plays out here...if in the short term the price remains what it is, then abolishing quota will help to destabilise the world market, but on the other hand, if the price signals result in supply not much greater than where it is, then is not going to have that much effect on the world price, and the Irish price is directly related to the world price.

Colin: Just, you touched on Russia there, is Russia a huge problem for Ireland, because things I've read, you know, it doesn't seem we export actually that much...

Michael: No, but every market that's closed off, is always...it feeds back to the supply chain, and the Chinese know that the market knows that Russia is out. The North Africans, countries like Egypt in the Middle East, big importers of powder, they know that China is out, so they stand off, and watch the stocks build up a little bit. This is a perishable product so as the stocks are building they can take positions that will weaken the price, in the expectation that the price will be weaker rather than stronger in the future, so until the cycle reaches to the point where sentiment says "supply is tightening", then people will have to cover themselves forward with quantities and petty price, and they will do that, but in the short term everybody is shortening on orders, and that is exacerbating the price – the downward price pressure. But in the absence of quotas, the price regime is the only instrument to determine supply, so that's the tough place for farmers. They have never been in a situation previously in Europe, certainly in the last 30 years where price was the only instrument to determine supply. Previously, there was a manipulation of different routes, that all helped to maintain the price and dampen supply, put some cap on supply, and the concept being that again the mainland European countries, were domestically focused always anyhow, so they always thought, "well, supply should be targeted to the domestic demand". Ireland was the exception to that, Holland was the exception to that, and Denmark, but except for that, in all the other countries pretty well milk was a sort of localised activity. The outcome was the political system, the agri-policy system, tailored supply to demand. Now, exclusively price will determine supply. And therefore if there's excess capital in some countries in Europe, or Europe collectively it will be extinguished through just price and people going out of business. And that has never happened, really,

since the war, since the 1950s, never happened in Europe. New Zealand has always been in that situation.

Colin: It has been open?

Michael: Open. But in the boom time - I've seen three busts in my lifetime in New Zealand -but in the boom time New Zealand just expanded very, very rapidly, and as I said, the Fonterra message, you produce it we'll sell it. You know, as a manufacturer retailer, you have to temper your production line - it has to be singled by the price and the volumes that you can place. There are no instruments available really yet, to hedge or to try to blunt the strong price signals.

Colin: So, just continuing on the next question, where do you forecast milk prices moving in the next 1 to 4 years? Sort of short to medium term. So, I think we are at a very low base here in Ireland. I think we're talking about 28 cent a litre at the moment. ....

Michael: That is not low base, we could go a lot lower than that.

Colin: But, if we go talk about the price it took to produce maybe being as, you know, 22 cent. I think they say without labour

Michael: That's a Teagasc figure – 22 cent without labour, and without capital, neither of which is...the bank manager has to be repaid and the guy is...you know, the minimum wage is now is 10 euro an hour, so, you can't do that, but it is more than 22 cents a litre I'd say the cost of production. More like 25c , 26c a litre even on the good farms... and even if is not quite that, without capital, without capex and updating and breeding and all that you need - you're eroding your competitive base if you're below that price for long, but I think you could be there. I mean if the dollar was to weaken in the morning, there would be an avalanche of US butter, cheese, powder, onto the world market, and they want to get a bit of China. I mean, the geopolitical thing with China and US is to sell things to China. They have other issues – security and stuff - but they will want to sell stuff to China. India is another big market, but the Indian economy is pretty flat, you know, they haven't made up much progress in the Indian economy, and it has a billion plus people, and, they do like milk and so on, but they like buffalo milk and they do like it fresh they don't like reconstituted milk. So, I mean, I think you're looking at.... All the best figures I have all show me that there's probably, ok: - a low price will stimulate demand there's no question. But where is the happy point? Where is the goldilocks point between the low price stimulating demand, and the farmer going bust. So, I think the price could go lower, and in some ways, for a stable future, great price excess stimulates new capital into the

business, it just exacerbates the whole cycle again. And maybe this is a valuable early warning that the brave new world of no quotas is not at a high price. The brave new world without quotas is going to be with a very volatile price, and for considerable periods a very low price. So, sustainability now becomes the big objective fear, and even if this paper was focused around sustainability, it's going to mean cautious expansion, conserving some, private hedging within your own farm, so you're not exposed to have a heavy debt burden, for example, and that you have some reserves to go a 2 year cycle, cause you cannot turn off milk production. Given the biological cycle with the female bovine, is really a 2-year cycle to turn off supply or turn it down, because you must have the young breeding heifer, you must bring her to maturity, then you must bring her one more year to get her to have milk. You need to go through the calving cycle to have milk...So you're looking at 2-years cycle, so there's nothing I can anticipate on the horizon that is going to shift the negativity right now. New Zealand are going to calve as many cows this year as they did the last year, there's no reason to believe that the productivity of those cows is going to decline all that much, cause is not dependent on feed, it's different than in the United States, they can just pull back on feed, so they can pull back from the output of the cow. Here, farmers generally actually want to produce more when prices are bad in order to try to compensate for income. So, I think you're looking at...I don't want to put a price on...

Colin:           No, no, absolutely, but I suppose you see them continuing to fall...

Michael:        I see them continuing to fall. Or certainly...I see them continuing to fall. Now, would Russia being reopened make a difference but not that much, they won't shift the volume. If stocks build up, which they are in New Zealand, they have last season stock that they're trying to shift, and they starting to bring in, they've had four months with no production, and they were holding old stock last week, and they're going to bring in new stock that they started to build up next month. That's going to hit the fan, and if they weaken the New Zealand dollar to save themselves that means they're going to be in the world market in a very disruptive way, but to be honest with you, that's a strategic objective of theirs, to suppress production in Europe and in the US, that they can do it, "we are the world beaters, we are the All Black milk producers, that's how it is, nobody's going to beat us, with the weak New Zealand dollar, we can ship to China and nobody will beat us in China, we'll even give 20 percent discounts, we'll give extra volume to China, and stuff like that, to everyone out of China" so there going to fight like hell. When they're doing that they are going to cause a lot of attrition, they are going to cause a lot of damage to the world price and consequently to our export price, and consequently to domestic farm gate price.



Just now, because I see the... even if something good happens in Russia, or China, I just, its the tiny marginal surplus that caused the problems in price. I traded commodities in my early years. I didn't have to know where I was going to be able to get pork bellies but somebody had them on offer, and I could bargain in the London market on pork bellies, on the basis I knew somebody could cover my contract. So it's a bit the same here, its that marginal 2-3% production, whether that comes from a weak New Zealand dollar, or a very cheap corn price in the US, or you're going to see Dutch farmers going to Brazil, to bring their technology, their Dutch capacity in processing right away through, they will build it in massive scale operation in Brazil, possibly even Argentina but I think it's too unstable so I think they'll go to Brazil more. On the other hand, could there be some major disruption in Brazil that would upset things – these things are all possible - but I think we're at a point where supply exceeds demand by maybe up to 5% and by that overhang in the market, we're going to have to cope with the low price, struggle to maintain our output, we may well even at 28 cent – you certain won't get much expansion - but what will happen I think is that we produce a little bit of extra output but farmers will be squeezing more out of their existing cow numbers, to try and get compensation for the lower income...no, I think we are looking at a period of 2 years.

Colin:           So then I suppose looking at a longer period, where do you see milk prices moving in the next 5-10 years?

Michael:        I don't think generally I'm changing my outlook because if I compare, say, with other free market commodities, like wheat, or maize corn, or protein and soy bean, oil crops, rapeseed oil and you know, if you track any commodity index in the last 20 years its always gone way down. Milk was always different because of the regulation of milk; milk is always somehow special, sugar, beef prices have gone just... well there are a bit volatile but they've generally gone flat as well, over the last 20 years, so I don't see milk price...once it was incorporated into a free regime and while you have New Zealand or possibly Brazil coming into the...say for example, I know, Chile, there is quite milk industry being building in Chile, they have a temperate zone in the South with is not dissimilar to the Northern hemisphere ...and, there's a lot of New Zealand people gone to farm in Chile. So, once they start producing milk powder of a standard that is internationally tradeable for human consumption - the first phase will be animal consumption, but the next phase will be human consumption - and once they get to that phase, again they are another supply side on the market. Incremental productivity, better technology, and demand, you know - pretty so-so.

Colin: So, you see the real threats, New Zealand we established, but also from areas that haven't been widely talked about like Chile, Brazil, other South American countries?

Michael: Correct. Yes, yes, exactly, I'd say maybe Brazil and Chile. Argentina would be except for the instability. They have plenty of maize corn, they have plenty of soy bean... Argentina has phenomenal volumes of those products which are shipped into Europe. If you take the cows to the feed, you ship the finished product to Russia and that's the logical start of evolution over time, so, big landmass players, are going to dominate the price, where as we have had because of our quota regime and our countryside management, you know, the dairy co-op, we have been shielded forever, basically. We've always been.

Colin: And has the milk quota shielded us?

Michael: Absolutely, oh, absolutely, beyond, you know it became the back door of the whole thing, if we could only get rid of the quotas, we have, which are the ...we knew that the milk quota pool was 3 foot deep. Now we have no idea where the bottom is.

Colin: But then why has the government, you know, celebrated the fact that the milk quota is gone?

Michael: Because Coveney is a politician. A very short term politician, and of course it allows, individual freedom, and with individual freedom comes individual risk, and individual managerial requirement. When the old regime was there, ok, you couldn't, the individual farmer couldn't act too foolishly because he was at a quota of how much he could produce, and he would pay a massive penalty when he exceeded production. So, and that was not to be bloody minded by governments or by Brussels, that was the match supply to demand to enable him to be rewarded from his work, that all became lost in WTO, and international trade and all that so now, whatever Coveney would celebrate – it was always going to be a very short period of celebration because the real world is you're competing toe to toe with New Zealand; the vagaries of Russia, when Russia was pulled. Ok, fantastic, stand up to Russia. But it's on the back of dairy farmers at the end of the day. You know Kellogg's are still shipping to Russia probably...but we're here so we take on Russia, in pork and chicken, and primary products, and the industrial products they didn't get hammered in Russia, right? Coveney was not thinking, when he was champion. It was fantastic of course, but it was extremely naïve to say we can get rid of the quantitative limitation and there is no impact.

If Kellogg ran their machines, turning this stuff off, big lorries coming in the back, stacking up, what would the price of Kellogg's be today?

Colin: We do a little bit of that don't worry.

Michael: A tiny bit, but you do turn off the machine. Look at a point compare milk production with Kellogg's. It's the simplest thing, look at the elements you have on your levers, and those levers all signal back to the production chain value and the volume...But if milk, if you've no control over the supply, there's thousands of millions of dairy farmers in the world, making individual decisions, chaos. Just chaos. Imagine if there was 50 Kellogg factories, just pretend for a minute that Kellogg was a generic product, and not a branded product. Where would the price be? Because some guy would risk capital somewhere, and would start off a new Kellogg man, up and going, and he would set up the price for all Kellogg, for all the other 49 Kellogg, maybe not initially, but bit by bit he could determine the price. I don't know how million dairy farmers there are in the world, you can google it up...all making individual decisions. And, the tendency would always be to respond instantly to the price signals, the price signal is strong so all go up there, now we're all up there to get back from that position, is slow, attritional, very painful, and there is an immense resilience to drag this out. If you'd have 50 Kellogg's, 4 or 5 would go bust immediately, and the bank would just close them down and liquidate them of production or business. In this case they won't, they'll fight on, for 2 more years at less than the industrial wage, in a survival mode, that won't change the current, in all the bits and pieces, they'll struggle on in survival mode, they'll pay no tax for a couple years and maybe scale back, to turn down the supply in milk, is a 2 years two year turn around time...and while that's going on, a lot of grief, That's not very optimistic.

Colin: No, no, no, that's fine, that's being real I suppose.

Michael: I think unfortunately that is how it will play out.

Colin: Just onto the next question, how will the level of dairy production move, increase, decrease, remain the same, in the next 10 years in Ireland? I suppose I frame that on the back of the Irish governments 2020 targets.

Michael: I don't think 50% is....I think that's just a number plucked out of the air. I'm sure that number that has no basis in reality. We're good at.... I was down at Moorepark at the opening in July, and I was really really impressed by the number of good young people coming to the industry.

Colin: Into farming?

Michael: Into dairy farming, into production, into farming - oh yeah. . There's a lot of land that is suitable for dairying, that'll need capital to develop and expand, but if...

Colin: But isn't the government backing it in that they're giving capital grants?

Michael: No, no capital grants, tiny for environmental, Brussels doesn't allow capital grants - maybe for environmental or pollution, something like that, environmental or animal welfare...there tiny they wouldn't really switch on and off a decision but there is some few bob around. But they are very marginal, relative to cost of new machinery. Not enough to cover milk tanks or extra cows...and I don't know what the capital cost of an extra cow would be.

Colin: But then I suppose just in terms of the production you don't see that at 50% increase?

Michael: No, I would be amazed in 10 years time if ever happens, and, ok, if German production was to decline rapidly, we can sell more Dairygold products in Germany, we can in theory get a perfectly new market comparative advantage should win extra production for us, we are not a huge producer in the context of total European production anyway, so its conceivable that we could get an extra production through into a retail market say like in Germany, but, like, is just hard to see the French... While we're in the European Union and there's common rules and all that, the French have so many ways and means of stabilizing production - they very various convoluted groups and societies generals and all this type of stuff ....On the other hand, if the economy here was strong enough to offer alternative employment, a lot of people are going to choose - they're not going to insist we have to go dairy farming - and the mothers and fathers of the little johnnies and the little eileens or whatever they are, they're going to steer them away from this...they're not going to be, during, say... the real negative times of the economy when agriculture was perceived as unwell the agri-colleges were booming, the points for agriculture in UCD went up - and that's all now tapered back again, so, because alternatives are perceived as.., there's always a push and pull effect, on the sentiment towards expansion. I think there will be some expansion but at 25 c a litre it's just not possible, banks will not fund new land, new buildings or new activities, ok? They're guys with established herds---who will be able to leverage and keeping some breeding stock, whatever, they will be around for some ... 50% expansion and every litre of that has to be sold in another market outside Ireland. We will have to have very clever marketing, we do

a bit of butter, which is lowest really in the hierarchy of products, its the lowest,... but like the soft cheeses in France, I mean all the hard cheese, I mean most of the Irish cheese is mostly used for pizza toppings, is not really consumed in the table, you know? That's where the vast bulk of all the industrial cheese goes. So we don't really, we're not really producing very much cheese, that you can go into a supermarket in Germany, France, or UK. There's nobody really, there's very little, the Irish Dairy Board, they have a bit of stuff in the UK, but its made in England...but its blended cheese from Ireland...but the vast bulk of the stuff is butter, and ...to... shift butter into say mainland Europe we need a decline in their domestic production, I'd say over 10 years that should really happen through comparative advantage...and if our breeding techniques are good, if our technology is good, our manufacturing side which is very efficient – it's to be paid for - that's all borrowed money that has to be repaid, and serviced in the meantime, and depreciated, so, that has a cost all the shiny stuff that has come in is an investment that has to be repaid and depreciated.

Colin: But is that not the risk the farmers sort of run, they are being asked to produce as much as possible, and to do that they need to take out loans as capital, and maximize production, at a cost of debt, or stay as they are only to be put out of business if the prices increase doesn't increase, they are caught between a rock and a hard place.

Michael: Yeah, yeah, but that's all over that's not unique to Ireland. If you see the numbers in New Zealand, I mean I've seen four big busts in New Zealand, and each time I'd say they probably lost a quarter of the farmers, and they have corporations coming in, external banks form corporations with guys really managing large herds; we don't have a history of that in Ireland because land ownership was so fixed to the individual, the farmer and family and all that. We don't have the same mobility that they have, or in Europe generally, say we don't have the same mobility as have in the States or in New Zealand. But if you take, the UK, the 60 million people to feed, for 10 years they've just gone decline, decline, decline, and they have the best product because it was fresh milk. The highest margin product produced in dairy is fresh milk, and they had that right on their doorstep, but I think they lost that, bit by bit it was replaced by imports, and their entire manufacturing industry has largely been cheese and butter and its actually being replaced rapidly...so there is no entitlement, you need to supply your whole market if you're not competitive, and they had fantastic capital grants, fantastic sheds and structures and houses, light years ahead of Ireland back in the 1980s, and scale, like 100 -150 cows units in England and East in Scotland were common place back in the eighties; we were probably at 40 cows or whatever. But a lot of our guys have survived with their 40 cows.

And it comes back to your cost base again, if you're taking €50,000 a year out of this and you can live with €50,000 a year you can survive a long time milking cows and nobody will get you, but if you go up to 300 cows and you have debt up to €2,000 a cow, and interest rates were to go up a little or something else you're much more vulnerable than the guy with the 50 cows. Unfortunately that's the reality of, I suppose, this unique individual multi-production unit system. In manufacturing its consolidation, consolidation, consolidation, has led to some controls on the supply side. The weakness here is in the absence of any statutory controls, and basically they would all be incompatible with world trade rules anyway, and the fact that that you don't have any tariff protection, the old regime worked because you had border protection...20, 30, 40%, so to get a ton of cheese...like, for example when UK joined the European Union in 1973, they were taking in hundreds or thousand tons of New Zealand butter, that disappeared within 3 years. We supply that market; Holland supplied that market; the tariff wall was so high. That couldn't happen today and will not happen again because the tariffs are never coming back...unless the world is completely disintegrating...so, price is the only instrument now to determine supply and that being the case, Ireland will end up increased by 50%? Oh, I don't know. If we do it it will be though competitiveness, competitiveness at production, it will also have to require is competitiveness in marketing, in getting a higher... in branding Ireland...not necessarily, you must brand Kerrygold – a brand, a product you can buy in the shop - that's all the bullshit for the ministry, don't believe any of it, it's a lot of hot air. Ultimately you cannot buy Ireland in a shop. You must be able to brand, you must have a product at the back of that...but ultimately you cannot buy Ireland in the shop but you can trade off the back of the green and the image and all that kind of stuff, that's good, but you must still have a Kerrygold, a Dairygold, something in the shop. Interestingly the most successful agri-company Kerry have never branded anything. But in the world they haven't branded anything, no. They don't do brands, they are right just behind the brands, they supply all the protein behind the brands, they supply all the cheese for the pizza, they supply baby-food to the big brands, there is no Kerry brand. You can't really buy any Kerry products in the shop, they supply Kerry ingredients. The cost and the margin go to Kellogg's. They're happy to...they know their limit they go to that point. They didn't try to make Corn Flakes, nor...I doubt... they have the slightest intention of making Cornflakes. They'll try to ratchet you up to the best yield they can get, on every ton of product he's shipping into you and you know he'll work with your labs and stuff to tweak it for the future but that's as far as they're going to plan in the future, I doubt. And that's the difficulty to get that you don't take all the good out of this and say you know in Germany, the brands and all that, take all

the good out of this and they leave us at the back end of the chain just taking the commodity price and were not strong in that Ireland inc, in that area.

Colin: So, just in terms of level, do you see it remaining the same or..?

Michael: I think; I think that groups like Kerry are strong enough. They are close to do something with infant-formula, that would give Kerry a huge..., ok they're against, they're against Nestle, nutrition companies... and interestingly, Fonterra who have a massive control of the New Zealand dairy industry haven't really gone there either, but Kerry just might, with the combination of what they know from dealing with you guys and in consumer markets, if they were to go there on an infant formula brand say in China, they'd have the financial muster and clout to be able to sustain it for 2-3 years to get it up and running. It maybe just a risk they wouldn't take, they'd prefer to take a margin from the companies that are already established...they might not, I'm sure they would be repercussions if they would disrupt those supply chains...but, short of that, and some decent things are happening with the Dairy Board, the dairy board would be worth talking to, Lane is a very good guy, very good fella on the dairy board, well worth talking to...he'd be a lot better in marketing than I am, but that's an area where were certainly...we're vulnerable, and surely commodity suppliers, and the proportion of the total output that is going to any brand or any stable price supply arrangement for say, a year in advance or something like that, is far too low. So the spot price that the NZ auction will throw up next week, will be the central discussion at the board of Dairy Gold in 3 weeks' time when they're fixing the price of milk for June. It's that...they're that thin in pricing and capital that they have to transmit immediately their clearing price back to the farmer. Where they're doing some far greater proportion in one year contracts or so on, you would know that at least 50% of your product is getting away on this stable price with kind of volumes and so on fix, and where today its the spot price that's signalling immediately to the farmer price, and that's universal in Ireland.

Colin: Where do you see Ireland targeting their exports?

Michael: I think where they will, and where the reality...it depends on where we have the technical and the product capacity to target. The bulk stuff will continue to go to the... for reconstitution, in you know, China, Asia, possibly India. Asia, generally countries in South East Asia where there's you know, significant domestic growth, Kerry are set up in Singapore that, that reconstitution plant in Singapore...you know that sort of...French Asia if you like. Animal protein including whether its cheese or derivatives of, or even sausages or meat will have a dairy protein, you'll boost a cereal content of a lot of that

retextured stuff with dairy protein -so, that's all potential, and Africa has some potential, West Africa seems like a basket case at the moment, but maybe East Africa might have some potential, as there is some economic growth there, I would say traditionally the Mediterranean, the North African Muslim countries would have been potential, but now their populations are pretty static, but they have tourism and stuff...they were gaining GDP and that could follow, and we have traditionally sold a lot of product in there to Tunisia, Algeria, Morocco, right across Libya, of course, Egypt, right off to the Iran-Iraq over the years, so and they're not going to produce milk locally, so there's potential areas...but the real return could be in Europe at the higher priced end of the market, leveraging off "dairy gold" product in Germany which is very highly regarded, very high quality, getting a decent price...they say here of course they're getting a fantastic premium price, I think its getting a bit better than the home produced, which is an amazing achievement in Germany, because nothing imported gets that premium price, I think there's hardly any other commodity, activity or service, where German pays more for an imported product, Dairy Gold is getting that, or Kerry Gold is getting that...so I think there's a lot of potential there. And to bring cheese, and other... we probably can't really get yogurt there, is just logistically too far. UK, I mean at the moment is fantastic with the exchange rate, its 60 million consumers very close to home, we have distribution chains, channels there, all the big players have their own distribution systems in the UK, and in fact its not too difficult to truck it to the UK anyway, so the problem with the UK is it has been hugely competitive in pricing, that it hasn't really been a rewarding place to go, and the fact that there's been disruption, either by their own internal decline, has made it a bad place...Scandinavian countries, possibly, but they're small, I mean. So there's a theory that were going to export to the US, but I cant see it...might get a tiny niche market, with Kerry Gold butter, on the East Coast, but in terms of serious play in big commodities like casing or milk powders, the US is going to be always a better place. Just don't see it there.

Colin:           And, what about China, is that, you know, at the moment, maybe in the short-term not viable I suppose with their stock market in such decline..?

Michael:        Oh there all there, absolutely. But what is inescapable, is the numbers and the... even if it was to go over the cliff for a while, the numbers are there, and the middle class, the evolution to the middle class, is a body of consumption, that you don't need to sell, you wouldn't have to sell each of them a pint of milk, you don't have to get big volumes in there, but remember, New Zealand will be there ahead of us on price, the US is going to be there very competitively, and they are going to try to stimulate the production internally in China, which might be not totally commercial but they are going to do it for



logistical food security reasons, and so on...and I've seen evidence of that, I know they're going to do that.

Colin: So, then why would people go to Irish products, then?

Michael: In China?

Colin: Yes.

Michael: On price, basically, if Kerry can evolve some close to the consumer infant formula, and they're very close to it now, that would give you reliability from a clean country, for infant formula, which definitely from my understanding of the middle class, the attitude surveys and all that from China, say, a young mom in China is going to a source from almost any place but China, because of all their internal hazards, plus, generally in the major urban centres which is China, really, they're well aware of the environmental conditions around which they live, and so on, so, the extra premium bit of investment, they're going to make, if they have one child or two children or whatever, is going to be in the next generation and therefore infant formula is a big, its sort of a, its not as price sensitive, and is a big prize, but then you're against Nestle you're against the established players, and... but I think Kerry could probably do it. Well, again, you know, if you don't have the old ways and the old structures, old overheads, and the old costs...but I mean, I'm sure if you were to design me a lean mean Kellogg's tomorrow, you could do it as well. So I think Kerry are in that space, that they don't have any of the traditional inherited required overheads and components. But when you look at the pass by the new place they've built in Naas, the research centre, that's a formidable place. I know some people who, I'm very friendly with the chairman of Kerry, and that investment, is not without strategic intentions, and it has to be high margins because in truth you don't need R&D to deliver common gardener casing, or you know whatever, so they're going to extract, they're going to get their extraction from proteins Sports nutrition, is an area I'd say that Glanbia has done very well with in the US, sports nutrition for young men like yourself, and women, and younger men and women, and older men and women; there's a friend of mine now who has gone out to develop a business for older people, his idea is food nutrients, in their Tesco, not in the pharmacy, but on the food counter. So, dairy protein is very attractive in that area, and will be part of dairy, and all sorts of extracts coming into the...but certainly dairy protein will probably be the building block, and I'm sure the Kerry lab is looking around that as well. So that's real added value.

Colin: Bringing back to the farm level, how do you see Irish farming structures changing over the next ten years as a result of the EU milk quota removal?

Michael: I think definitely the milk quota removal, that will probably be one of the most profound impacts of the removal of milk quota, that the...one of the negatives of the milk quotas was that it fossilised the good and the bad production, there was no real competitive attrition, hard competitive and comparative advantage did not really accrue to the better person. I'm very close to the people of Moorepark and of Teagasc on the research side...but the transmission of new technology and the uptake and so on, is probably only in the 30% and they've been flogging themselves, beating themselves up, as they can't get up to the universal guys. Just the human resource capacity is taking out there, its not going to be there because age-wise these are people going through 50, or more than 50, so, overtime, that land isn't going to go away, it will be amalgamated. The leasing scheme - Coveney would do one very good thing on the land lease scheme. I flogged him for most of my time in the IFA, but he actually proved it again, it's a very attractive land leasing scheme, so, you can attach your land to the neighbours on a 10 year lease on up to 30 thousand tax free to the leaser, and it allows the establish farmer to the put a bit of capex in, they have better contracts now, so that enhancement is included in the rent, that didn't really exist in the past, so you had it for the 11 months, you raised as much as you could out if it, you put nothing back, and some other guy came along next year and bid you out or whatever, so, I think definitely the removal of quotas will allow the really good guys to go further ahead and expand. And will put immense pressure on the small areas, has serious implications for structural policy in Ireland. The West will struggle; the North West will struggle.

Colin: Why will the West and North West struggle?

Michael: The land, is the land, yeah, part of your beloved east Kerry will struggle, East Kerry will struggle, North Kerry will do ok, South Kerry will abandon milk...tiny pockets of South Kerry, right? But the marginal mountain milk will be gone, it was preserved by the quota, cause the guy had 30 cows in 1983, and had 30 cows in 2003, so in a 20 years' period... The competitive pressure of the guy in on the big low land in Castleisland was masked against the guy in the hills, or in the Shore valley or in the say, in places like the Blackwater valley, say in Cork. The Blackwater valley was capped, whereas the mountain milk in West Cork was equally preserved - that's a bit of a generalization because there was some loss of milk and milk quotas became tradable, eventually so that the Blackwater was there to buy quota from Cork – but once the price differential, you can

survive a lot better at 25 cent a litre in the Blackwater, than you can, if you are in a mountain overlooking the sea in the Beara peninsula. And the succession decision, its unlikely there will be a positive succession decision, if you have 40 cows in the Beara peninsula in West Cork, in 2015 or 2018 or 2030, even 2040, whereas on the Blackwater if you have potentially to get another another 30 or 40 cows, there's more likely to be a more positive succession arrangement inter-family or in family...so, freeing up the removal of the quota, has totally freed up land use or coupled with the leasing arrangements. Land ownership and land use have been fairly well separated now. Traditionally the only land available was the land owned, and a tiny amount of this, 11-month, one season grass growth - now you can have land use without...its conceivably that some really really sharp young people will could build up significant dairy herds without land. If I can have a ten year share milking arrangement with the landowner, I could actually acquire stock, get some bank credits, get some bank sort of record built and bit by bit I could built up.

Colin: So you see the new generation sort of coming in, leasing land?

Michael: Yeah, a lot more, but is not going to be...its not going to completely revolutionized, but it will certainly be there, I think the models are there and certainly through Teagasc, the state, through Coveney, through the co-ops themselves - remember the co-ops have a lot of stainless steel that's only going to work for 5 months out of the year, so it has 12 months depreciation, finance on it, so they're going to want get shoulder mills in the spring and the autumn, they are going to want to get certain peak milk -so, they will have a lot of intent of to stimulate the better guys to go ahead, and while they might not get a huge expansion, but the individuals will, that equals incomes, the possibility of paid labour on the farm, which is not really a viable option today, below 10 cows its not really a viable option, so, everything above basically requires about 30 cows to pay, skilled farm worker, skilled stock person, so on, but that takes about 30 cows, so the decision to go stay at a 100 or go to a 130 is a marginal decision which if you're 50 plus you're not likely to jump for, but if you're 30 and you say, when we get to 200 cows and I'll we have the next 70 for myself and between the man a woman and myself, he gets 30 cows but the marginal gain is attractive. And the owner of the farmer land isn't tied 7 days and and all that so you have more social working conditions, and that, so there's a positive around that. Would all mean at a 50% increase, I don't think so, what it will mean is sustainability will be improving all the time.

Colin: But it could mean, you know, new opportunities in terms of jobs,..?

Michael: Yes, it could.

Colin: Overall, do you see reduction in the amount of farms?

Michael: Oh, yeah, absolutely, no question.

Colin: How much do you think that will fall over the next...

Michael: Well I think incrementally, 2-3% per year...it depends again if alternatives were there, the pull and push factor, if there are alternatives in construction people will just give up after 10 years and live in the home, keep a couple of acres, maybe a cow, whatever, the hobby farms sort of concept but the main bulk of the land will go to...I was on a farm on the weekend was about 150 acres, just on a 10-year lease, and the guy is only in his early fifties. But he's just moved into town and he doesn't really have a successor, people...two farmers have leased it between then and now its at about 500 cows and that's a big.... they're learning, and they're comfortable with managing 500 cows...cap it around that, the labour, the strategic planning and all that, dealing with Glanbia they're developing a...that wouldn't have been common in Ireland, say even 3 years ago.

Colin: So it is more that the co-ops like Glanbia will work with their farmers?

Michael: Yes, putting that together, doing a bit of matchmaking, and they will want to keep the volume up naturally, and expand it, but they're doing some of the matchmaking because they're...some people would be intimately, they'd know their own situations...they're constantly in the lookout for that.

Colin: Just my final question is, what other impacts do you see the removal of the quota having in Ireland?

Michael: The social depollution...it will put a lot of pressure on marginal lands, fragile community areas. The...because the area that I saw, the 150 acres...that's on the low land, that's really good land, but the...30 cows which survive the traditional phase of the 1960s-1970s because of the milk quotas, they will come under pressure, there's unlikely a succession – they will go out of milk. Just give up. Once that happens, they will never go back into milk again. It maybe possible that there is some act of dairy farming there, that would amalgamate that land, but there are areas where they will just give up milk full stop. And that will always be the higher attitude yield, the less productive land, the more difficult land, the more expensive land, the longer winter, the later spring, more feed required, more slurry storage, they have to have a capex, they look at the cost of bringing this farm to the standards for the future...no, they won't do it. So, that's what's going to happen definitely in the less favoured areas of the country, it will happen. I

suppose the... educational standard entry level, for any involvement, around modern dairy, is going to have to have much higher educational standard, a much greater managerial reward, you know, structured concept than in the past, and I think any free market system after each crash, after each drop period, there is a lot of causalities that these people will be out of business. So we haven't had any experience on that because of the stability around quotas so that's going to happen.

Am I unduly focused on that? I don't think so, it probably won't happen by way of a big, visible crash, but I think you will have a continuous exodus out of milk, and the number – there are only 12,000 farmers in NZ, probably producing more than 10 times our average output, so that's a case of free market, and I've seen in a couple of the crashes in New Zealand where literally cows starve to death. That wouldn't be tolerated in Europe, farms are just abandoned. And I saw I was a farm in New Zealand one particularly year and the cows are literally struggling to get to the calving season, and they were just standing in these free lots without food, and they maintained themselves off their back, and some of the management practices...get them to survive, is just so cruel, never be tolerated in Europe. So again, that's a rather pessimistic note to get to towards the end of this. When you're struggling at 25 cent per litre, and even if you look at the UK today, its completely out of character, you see British farmers driving tractors on the roads , these farmers didn't do that, and they certainly didn't protest in Northern Ireland, never ever ever ever would they protest in North Ireland. So it just goes to demonstrate the pressure if you like, and that's not a climate where you go have new entrants of new people coming into the industry because the signals are all going to be negative around that so, I think each cycle and milk cycles haven't really settled yet, because there was so much manipulation of milk over the years, both in the US. The US had the efficiency payment system, which basically kicked in as a safety net so it was presented as another sort of subsidy, well, it was denied it was a subsidy but effective it was, that you never really experienced the full troughs at the bottom. So what happened was, when the world market picked up, the American production machine was ready to go again, but if the Americans cant do that anymore, Obama, the Democrats certainly won't do it in the States. It's this exchange rate, who can predict exactly, Climate will definitely have a major growth, because the alternative to grass is clearly cereals, and protein from soy bean. And climate change will have a massive weight on that. Oil, the dollar price of oil has a bearing on it, because oil, whether its fertilizer for growing crops or the cost of producing a ton of cereal in the States, or have a significant oil component in that, so that will have a bearing on it. Ultimately the small farms in Austria with 40 cows, producing a bit of cheese and selling it to affluent German or Italian consumers, they'll survive a long time, we might not think is a clever system, but

they'll survive for a, long long time and you know, the Austrian environmental system helps them to get bits of land grants and stuff like that, they'll survive a long time. But it doesn't follow that the major scale very exposed producer, the moral is...if you're gearing up to produce and sell commodities in a volatile market, you better be the leanest and the meanest in the world to survive, otherwise its only a matter of time until you will not be able to stay the pace and that's one of the positive thing's probably of this downturn right now, the signalling call to a new generations of dairy farmers in Ireland is "this is not the Panacea that is promised by Coveney", it is a new world, a new paradigm, a new environment, but that has its own risks, and in the decisions we take we've got to keep the risks in view as well as the opportunities, and I think that's the big difference of the world that we're facing as from the world we come through where there's certainty and a reasonable amount of security, and definite quantum, and extended off that was the price, and deducted from that was the income, and if you had a very good quota, like in 1983, there were very few things in the whole world that a farmer could have done to milk cows in Ireland between 1983 and 2010, they were by far the most profitable thing any farm in the world could have done in that period, but it predicated on a very good milk quota, say you had a 150,000 gallons quota...if you were living close to Cork city, and you had 150,000 gallon quota, and you were a good farmer anyway, you were capped, you couldn't expand, you could extract a lot of cash out of that, really profitable. On the other hand if you were in Castle Island, were stuck because of disease, and you had immediate quota, and you had a good bit of land in 1983, and it was a drag on your earning capacity, because you could have easily produced milk at a competitive price, but you were prevented from doing it by statute. So now the real race is on with competition, with competitiveness as the only real yardstick as you say in every other business.

*Appendix E - Anne Randles – Company Secretary at The Irish Dairy Board (Ornua)*

Colin: From your perspective, how has the abolishment of EU milk quotas contributed to the current volatility on the price of milk on international market?

Anne: There has been some impact but I wouldn't think that it has been significant. What you need to understand is where and how we got to in terms of volatility prior to where we are today. And the origins of the current volatility stem back a lot more than since April, 2015. They go right back into 2013 and so I think there is a sentiment issue right there and there is no doubt about that. But if you look at Ireland, Europe has increased production this year by less than 0.5%, year to date. Now, admittedly, production is increasing quite dramatically since quarter one from April, May, June, and onward. We are seeing significant increases in milk production within Europe. But if you take a year today for the figures that we have, we're probably no more than 0.5% of year on year.

Colin: That's Europe overall?

Anne: This is Europe overall. Obviously, Ireland has differences. It differs in Ireland but you can't isolate Ireland from the rest of Europe, and you can't isolate Europe from the rest of what is happening globally and the global markets because there is too many connections between the whole thing.

So, volatility has been driven by a significant growth in global milk built production. And probably origins back to 2013 driven largely by a strong demand in China and that has been a significant growth driver. And there has also been quite good – cross the board – commodity crisis. But within the dairy-specific lay we have just had a confluence of good demand, a good demand in China, a good demand in the emerging markets, good economic conditions. We always look at weather events as well - because it is very very important in terms of dairy – So, there has been really no strong weather events which have impacted a particular region on milk production or anything like that. So, everything as usual confluences of all come together and made that there is a strong global milk production. And then since 2014, that demand in China has very much peaked and has come down very very considerably. And then we have had a couple of other demand shocks, and the main one would have been Russia, from August 2014. And that has led to the imbalance in the market between still-strong supply and demand situations. And farmers instinctively react exactly the same when it goes wrong. What they tend to do is hint to whole share of milk and increase the milk production rather than pull it back. Their immediate short-term response is always to try and drive it on and get more even though just for that

marginal extra milk. And it takes them a long time for that really to serve for milk supply to react to market realities. It is just what we are facing now, and that's the situation. So, I don't think that the abolition of quotas in terms of additional volume has had any impact on current volatility. But certainly in terms of buyer- behaviour, it has because buyers are looking at it and it is like in Ireland in terms of highest prices all the way up. And also it starts to come all the way down and everybody just pulled back to see what will happen in the very end. So, that is what buyers are doing. Commodity buyers are exactly the same – same motivation – they have seen the market turning and they are holding back as much as they can longer and longer. And they know that Europe without abolition of quotas is going to have strong production in 2015, all be it from the first of April not the first of January. And therefore they are seeing this as another reason that they don't have to worry about their supply being there and they are holding off as much as they can. So, yes ,it is a factor, but it is not a significant factor. And much much more important has been what has been happening maybe 18 month out, up to now primarily on the demand side and with strong global production.

Colin:           And what about China in terms of the stock market crash?

Anne:           Yes, it is very worrying because China is a huge driver on the global dairy demand and there have been worries right around the world. It has been a major driver in terms of investment and in terms of what we are going to invest into the dairy industry. And if you look at where the money has gone in terms of production capacity, it is almost been exclusively on the power side and that is driven by China one and probably emerging markets the second. It is very much China driven and maybe investments decisions have been made, back maybe in 2012-13 when China looked as if it's going to be boom time. And it's possible that investment decisions were made too ambitious expectations of demand from China. China probably will continue to import dairy products but not at the same rates of 2014. So, it is going to be much more moderate and obviously they are trying to develop, and they are developing quite successful domestic production, but also you can see that there are concerns there in terms of the true rates of economic growth within our economy. And therefore, whether that will have an impact in terms of dairy demands, there are two factors in China: one we overestimated maybe the demand potential there and two they have been successful on some other regions. They are successful at the moment in terms of developing their own industry. So, it would be concerning particularly when you hear about the stock market crashes and you read more about really what is the true economic growth potential and the current growth going on there in that economy.



Colin: Where do you forecast milk prices moving in the next 1-4 years?

Anne: This is the crystal ball one that if we all had we wouldn't be working in the dairy industry. I think we are moving rapidly towards the lowest point on the volatility curve. There is no doubt about that. Intervention is open now within Europe, volumes are going in. That is a safety net that is sending out a signal. Really it can't go much further than that. Having said that, the latest GDT auction, which is in New Zealand, the auction had another 9% crash there on Wednesday or Tuesday. So, that's further signal that things are getting very very low. There has to be a base there because farmers cannot continue to produce below the cost of production, and that is what is currently happening in New Zealand, and it is rapidly what is happening within Europe as well, and we are coming to the end of our productions, well, coming in the second half of our production system within Ireland. We are definitely off our peak and we are coming down to the levels of September and October. We are at the end of our season production for all intents and purposes. New Zealand are coming in to theirs. They are coming in out of a very very low milk price. You have to expect the farmers with a long season ahead of them. They would have to temper their production on the basis of their milk returns are going to be significantly building their cost of productions. They would really have to pull back on supplementary feeds and all the things they would do normally to drive on their productions so they keep it pretty tight. So, we have intervention opening, the returns are below the cost of production. And I think that is all going to have an impact on supply and we are an oversupplied market. So, you are talking about the market is re-balancing. So, the expectation is that we will start to see recovering prices probably in Q1 2016. And really what remains to be seen now is how acute the volatility curve is going to be because what we seemed to not being able to do since probably 2009 is we haven't been able to manage this volatility, which has got much more acute. Now, if Europe really pushes on in milk production that probably will add to the additional volatility. So if we turn the curve, if we re-balance the market, will that speed on demand, will demand come back strongly, and would that lead to a rapid increase in milk price again? We just don't know. But it does look as if that cycle, it is probably about a three year or two to three cycle these days, so over a four-years, you could see a boom back again. You just don't know. There is so many variables. And one of the biggest unknown variables we have is the weather one. The weather one is one of the biggest drivers in the volatility globally because it has such an immediate impact on supply.

Colin: Is that very much from an Irish perspective, as well?

Anne: Well, we have much more benign... It can get slightly cold. It is a horrible summer, but it doesn't really affect the grass growth. So, not really. It doesn't really affect Ireland as much. It doesn't affect us but the extreme heat you have in Europe that's obviously affecting supply. There's talk about an el Nino effect later on the air which is going to have an effect in New Zealand. So, those are the things. The issue with them though is that they are unpredictable. And what generally happens but what didn't happen and what probably led to the really difficult situation we have here in terms of the supply basis it had been very benign, there had been nothing regional, there is no dry woods or floods or fires or whatever it is that affected milk productions over the past 18 months and that is a very unusual situation. Normally, there is some region which is challenged in terms of milk production and therefore puts it a bit of a brake on it and that hasn't happened. So, that is really it. In terms of Ireland involved in this volatility, you have to put Ireland in the context of the total European and then the total global milk production. And while, yes, we have very ambitious growth targets and we are turning out a significant amount of milk over the last 3 months certainly. In the total scheme of things it is actually pretty small. Now, we are much more export orientated. We are the biggest surface producers within Europe so every additional amount that we produce is going to an export market and that makes other people nervous, I suppose, to some extent. But really in Ireland, producing additional ten percent milk over the month of July is not going to have any impact either on the European or on the global milk scene to any significance degree.

Colin: You mentioned New Zealand and their sort of price... Are they driving the price effect at the moment in terms of putting it down way below the price that everybody else can afford to produce at?

Anne: Exactly. Are they driving it down? They have this GDT global dairy trade auction which occurs every fortnight and the nature of this is that it opens up at 15 % below the previous month, which is, for various reasons why they do that. That is the way it works. But in a rapidly declining market, the market is really really over, that's not in balance. And all that is reason to really further have done pressure on those returns. They are an indication of market in terms of the market price. It does influence the rest of the market, yes, particularly on the powder side. So, it does have an impact, so yes, they are deliberately doing it, but it is becoming as one of the main reasons. The first move is definitely the GDT auction which does have an impact on the rest of the global market, particularly on the export side. I mean that is where the commodities are based. It's a baseline price for commodity.

Colin: And just to mention the intervention price. Do you see that being raised at all any time soon?

Anne: No, despite our best efforts, no, I don't think it's going to happen. It should, it definitely should because it was such a long time ago and it probably did reflect at the time production costs but production costs have risen so dramatically since then, so significantly even within Ireland and we would be one of the lower cost producers. Our cost productions about 26 cent a litre, the return intervention is 21 cent a litre. That's a significant loss if you are selling into intervention. So, it's not good. They should raise it but they won't for a number of reasons. And one of them is that they wouldn't get support within Europe and the 28 member states for a council decision and they wouldn't be sufficient across member states for a commission proposal to do so. That's one thing. The other one is that the commission believes that it sends out a bad signal. I mean at the moment, farmers have got to start pulling back from production. And if the safety net is below the markets return, even if this is below most countries' cost of production. It is still sending out a bad signal to farmers. And it's been said that the current direct payment that they are getting now is actually compensation for reducing that intervention price down to that level. So, there is compensation really in the market for that now. Many farmers would strenuously argue against that because it is a decoupled, many farmers are getting now and it may not be the farmers who are currently producing. So, there'd be a lot noise about that. But, no, I think it is politically impossible and they feel it's sending out the wrong signal even though I personally think it should be done because any company now, milk processor now, they are buying milk at a higher price. For example, in Ireland, it is still around 26-27 cent a litre. And if it forces them in to intervention, they are selling it at least on the protein side of 21 cent a litre. So, they are several cents a litre lost. And so it is not good.

Colin: Where do you forecast the price moving in the next 5-10 years?

Anne: I think you have to look at it in terms of not really the milk price but more the margin. You can't really predict how the prices are going to go but I suppose you got a clearer picture of where are costs moving to. So, where is the general cost of milk production. And obviously, in order for Ireland, Europe, and the world to have a viable and sustainable dairy production system, the return for the farmers has got to be above the cost of production. So, it won't be that significantly over a long period. It won't be that significantly above it but it could be maybe two or three cents above it but it won't be anything significantly above the cost of production, which is really acknowledged in terms

of the abolition of quotas. There is a number of reasons why quotas have been abolished but one of them is that there isn't going to be a significant rise in milk price over time and therefore farmers should be really allowed to expand out and produce more rather than as the margins are being squeezed further. So, where do I see milk price going, I really don't know but you can anticipate that costs on average, they do rise, and the costs of production are going to increase. And so milk returns are going to be 2 or 3 cents above whatever the costs of productions are going to be. But I don't think you can say anything more than that. They are certainly not going to be significant. It is just a commodity product. And every company is doing the best that they can to add value to that in their own way and everybody does that to a large extent. But ultimately it is driven by the commodity sector. And that is where the milk price is going to be and there can be dividends and various other end of year bonuses and that sort of thing that are not that well paid. But that is normally on the value added part to the business. The milk price to the farmer generally tends to be more commodities driven than anything else.

Colin:           How will the level of dairy production move (increase, decrease, remain the same) in Ireland over the next ten years?

Anne:           We are on a spurt at the moment and that spurt is going to continue out to 2020. I mean that 50% target that people are talking about - It is a reasonable assumption of where overall we are going to be. It is going to be less in the North. It's going to be more in the South. So, overall we are probably talking about a 50%. We have this latent potential within Ireland which had been held back by quotas. And so what you are seeing now is increased investment but also an ability for the sector to meet their production potential because we have a good comparative advantage in producing milk off grass here in Ireland, which we haven't been able to maximize that or really developed that or leverage that to any significant degree over the last 30 years. So, rural approaches is going to bring us back to where we were and say okay this is what we can do and that this has been of course an enormous growth in technology knowhow and development and everything else over the last 30 years. So, we can maximize all that. So, we, over the next 5 years, are going to be expanding quite significantly. But if you look at the comparative market force, which would be New Zealand, and they on average are now probably growing about 2-3% a year over a longer period. So, you would expect that once we have really caught up in terms of our potential production capacity, which will probably be in 5 years time, then after that you'd be looking at maybe a 2-3 % annual increase. We won't be probably as strong as New Zealand because we will have more constraints and primarily to do with land, land mobility and that sort of thing. New Zealand have an intensive extensive

production system, they are an extensive intensive production system for outdoors and the rest of it. But they have massive herds of farms, with 500 to 600 cows on average. We won't get to that because we don't have the land mass around the parlours to be able to have those big extensive farms, operating in Ireland, and we probably are subject to a much stricter environmental controls as well which will impact. So, I would see after we have caught up with our sales, hopefully by 2020 or even before in 2019, then after that we can expect around about 3% growth on average. Some years would be more. Some years would be less. And that's the way we would have expected.

Colin: So, you don't see us becoming New Zealand of the Northern hemisphere?

Anne: No. I don't and I don't think we have to. And if you look at what's happening with the New Zealand's farmers today, that's not necessarily something we need to be looking towards, and that shouldn't necessarily be our objective. We have a number of factors which mean we don't have to go down that route there. They are very much commodity. The one thing New Zealand can do is that they actually meet us in demands with anything that is standard. You get the standard powder because they have a 50 ton dryer, and that's all it does. It doesn't do anything bespoke. It doesn't do anything. It just spears out this powder. It is all the same great quality, I am not questioning that. It is the same. It is commodity. That's how they have decided to go. That's the route that they have decided to go. And the reason they have done that is because they have no domestic market and they have no internal market, like we have. We have a market of 500 million people on our doorstep, which we have free access into. They don't have that. They are also obviously much more preferable geographically than we are. Where they are, they have to be able to get that product off the island very very quickly and get it somewhere else. And that's why commodity works very well for them. We have a 500 million population market which we have total access to, and we also have a very good brand, in the Kerrygold brand, which we have leveraged very very well. And that's actually returning a value premium to the dairy industry. And we have been able to develop a consumer food business on the back of that, which New Zealand haven't done, haven't been able to successfully be doing. So, we don't have to go to the commodity global market we still have great core markets in Germany. We got very good access to States, we need better access into the States. We have a good platform to develop in terms of branding the businesses in the States. We also have the U.K. obviously which is very important. There are obviously key consumer food markets which are giving a premium to the industry. And we can develop that further within Europe, which is still a protected market for those who are trying to get into it. So, for New Zealand to come into Europe, they have to pay significant premium in terms of

import duties which makes them less competitive and they can't really to develop a strong market on the basis of that. We have total access. So, we have a number of different factors. We have also grown this whole sustainable orange and green image for Irish dairying which is really really important off grass based production. We have leveraged that very very well. It works really well on consumer foods. It doesn't work quite so well on commodity. Commodity customers are really looking for, you know, its price comparative. That's the real thing. Obviously, it has to meet a certain quality and specification, which they have no problem meeting. That is not an issue. But trying to really sell on a grass-base and taste different quality thing, "look at the colour of it -, that doesn't really work. You are not going to be able to leverage that. But you can understand the consumer side.

Colin: So, is that where we see Ireland's competitive advantage really being, in the consumer side on the high network products like the Kerrygold, that seemed so well abroad and marketing those products in Ireland. It is very good quality. No toxins, that kind of thing.

Anne: There is a danger that we could go down to find more routes and just more commodity and we have a point of differentiation which is very very important. How do you differentiate, from Kellogg's you know yourself – how do you differentiate your cereals out from everybody else. You have got to find the point of differentiation. And we have grown up seeing cows out in the fields and everything else and we think that's normal. But it is not. That is not normal in terms of if you look at the global dairy industry. Most cows are kept indoors in confinement units and they are fed grains, - they are not fed grass. So, what we have is really is idyllic. But what we have, it is a genuine production model that we have. And we have to really really use that as the point of differentiation. Now, we are not going to be able to develop an entire consumer-branded business in Ireland, given the size and growth of the industry. It is not good to be off completely on the consumer's side. We have to grow food ingredients very very much. So, there is a couple of reasons why the infant formula people have focused on having invested here in Ireland. And we are using that benefit, or the advantages that they see within the industry and we are exporting that out now in terms of focusing on the infant formula and that sort of thing, as well. It's quality. It's safety. But it's also unique. Quality and safety is very important on both sides. And then the grass-based production, the sustainable, the cows' outside graze and the outdoor grazing – all those are really really important for developing the brand of business.

Colin: Where do you see Ireland targeting their exports?

Anne: We have about a 75-25%, 70%/30% split at the moment between products in Ireland going to Europe and the rest of the world. The European market is probably growing on demand so it is probably growing by 1% a year, which is aligned with their population growth. While demand in Europe changes in terms of preferences for different types of products, the overall consumption in terms of milk solids does not increase more than 1% a year. So, there are areas that we can target and we are targeting those on the branded side in terms of introducing innovation and introducing new, different products on the dairy side to capture more market share with the market itself, it is not really growing that much. So, what we have done and I think that this is supported by the rest of industry is that we have targeted our growth in terms of our core consumer markets as Germany, the U.S, the U.K. So, that is the major focus in terms of growth but that's really though trying to find additional market share. Over and above that, if we are significantly increasing our production by 50% over the next 5 years and further on, we have to assume that that increment milk, that the majority is going to go to non-European countries. We would like, and we are very much focused on the T-pip and the negotiations because we see a fantastic opportunity for really really leveraging our business in the United States, if we can get in. But we are very much hampered by import duties more or less. We have maxed out our market access channels into the States. So, every increment tons of products we are putting into the United States of going in to fully import duty which is really prohibitive. It's slowing down our ability to grow that market but we have grown it very substantially now but we have grown it, and it's got to the stage where it could really tip off. It could lift off if we could get the market access. If we can't get the market in the States, it won't be the total solution. We have to assume that everything else is going to largely emerging markets. And we have ourselves, and I think most of the other dairy companies as well, have targeted, and we had targeted China, the Middle East, North Africa, some of the sub-Saharan countries, and we have Russia. So, it is like a four-legged stool. Now, Russia is not playing ball. So, that's has sorted back pulled back one of the legs of the stool. We still have three legs of the stool.

Colin: Do you divert that production for the Russian into other areas?

Anne: Well what actually happened that that it wasn't significant volumes because it was a five-year strategy plan that we had in place, which we were working on. Because if you think of it, we have been working really since 2010 and more, specifically, 2012 for the 2015 lift-off. So, a lot of the work we are doing in terms of the strategy and

our building of the market has been built on the back of anticipation of 2015 volumes. Are we putting in maybe non-European products or milk in powder or products in to those markets with a view then towards switching when the Irish product comes on line in 2015. It's been a bizarre situation for you know from a company that you are going to get this bizarre situation where additional, and could be a coming for you in three years time. Prepare for it. By the way, you don't have it at the moment So, Russia was a good case and point and we had done a lot of work there, investment there, in terms of a distribution structure that would work for us. How and what we were going to do, oh, we had all we had listings for all the various retailers we had launched Kerrygold but in very minimal volumes just to start it off with a view to ratcheting it up. So, when the brand came, we didn't lose market share because we hadn't really had significant volumes there but we have lost since closed up an opportunity for some markets to develop. So, it has costed us a fair bit of money obviously because you don't know the investment beforehand, but anyway that's where we are on that one. And we have had to know. We had to know that obviously opportunity was not there so we had to refocus on the other markets to a large extent. And they are difficult because the nature of emerging markets is out there extra risky and which is why a lot of companies are not in there at the moment or have not been there up to now. But it is where the growth is. These markets are significant. The demand for dairy is growing substantially. In some cases, it could be like 5-10 percent annually. So, you can't ignore them even though that they have their own challenges, let's say, in terms of development, and there will be problems in Russia's case and point. But Russia will come back maybe, could be 3 years, could be 5 years. They will be back and equally so the other markets that we are focusing on. There will be challenging and China is one as well. But you have to stick with them and these are long term plays. We have to stick with them. We have no choice. It is all we have to do and it is where the demand is. Africa is case and point as well, huge affordability issues, but major growth in terms of population, major growth in terms of economic development, supposedly income, rise of middle classes. All the various factors that you are looking for in terms of identifying the new markets and new market opportunities. But not without the challenges at the same time as well.

Colin:           How do you see the Irish farming structures changing over the next ten years as a result of the EU milk quotas removal?

Anne:           Well, they obviously will have to get bigger in terms of herd size, in terms of output. One thing which the quota was designed to do when it was assumption in the early eighties was to address the rates of retirement of dairy farmers off the land. And it was hoped that by limiting production and increasing obviously the return on that would



then give them a better income. It hasn't really worked. There is, over time, there is less and less dairy farmers on their farms getting bigger and bigger whether you have a quota or whether you don't have a quota. So, we don't anticipate really – I mean obviously there are new entries coming in and that is fantastic. Perhaps the age profile of dairy farmers will decline and we'll have younger ones. But I don't really see that this will stem the decline of the number of dairy farmers within Ireland. Please, don't quote me on that but that is... There is no reason why ... it is a trend everywhere and it is globally that it's a trend everywhere. So, I think that means we will be seeing farmers will get bigger and they'll get much more professional and they have already gotten much more professional. And you have got a different breed of dairy farmers now then you would have even had ten years ago. They are younger, they are more qualified, they know more what they are doing. They are much more pragmatic and much more professional and they are probably much more business focused, all this... which is fantastic for the industry, absolutely brilliant and they are capable of handling bigger units as well. I think we touched on it, in terms of how big they will grow. Well, the average is at the moment is about 65 cows per herd, which is very very low, very very small. And our stocking density rates are very very low as well. So, in other words, we don't have that many cows per hectare. All of that, you can imagine that there is going to be a smaller number of dairy farmers with bigger farms, more intense in terms of stocking rates but I think we still will overall continue to be a seasonal production. We still would be doing it off grass. There is no reason why that would change. Because it is showing again and again and again it is the most cost-efficient method of producing milk and any increase in that or any change in that would make no sense whatsoever. It would just increase the cost as I said because we're a commodity producer. Farmers have got to keep their cost down in order to be able to work from that margin. It has not to do with what is the milk prices, it is what margin we are getting from that milk prices. It's just the key for that and so that's where I would see it, I would see it still remaining on grass, and as I said it will get more intensive. But there is a limit to the extent of which you can intensify if you are remaining off the grass- base system, with the land-structure that we have, we don't have big prairies. We can't – you know – we really can't respond too big. So, I wouldn't see them. I couldn't put a finger on it but I couldn't see them asked maybe 150, average cows ... There will be some much bigger than that. The other point there is that I think the figure is about to get to a 110 or a 120 cows, you have to bring in the additional labour. So, that is a tipping point for farmers in terms of how do they expand, would they want to do that. And there is natural limit there, others will say once you get over then you might as well keep going. And expand to 200.

Colin: So, you don't see that creating at a significant amount of employment then in terms of farms bringing in the additional labour from outside?

Anne: I don't think so. I am not familiar enough with it. It is not an area of my expertise by any means what is happening at farm level, they are other people who should be able to speak much more confidently speak at that level. But, I wouldn't see it. I would see the ancillary services around that being much more important. And that's where the real employment is going to grow. And then of course in terms of the processing and the supply chain and everything as well. And that's always very significant.

Colin: Finally, what other impacts do you see the removal of the quota having on Ireland?

Anne: I think probably the environmental one is something which we don't talk about too much. And it's probably more a negative than the positive. So, I don't know whether you should be still depending on that but that is one which we will see a lot more and focus on. That has to do with environment locally in terms of nitrates and manures spreading and all that sort of thing and all that good stuff but also in terms of the specials in terms of climate change and Ireland's obligations under that. And you know we are expanding our herds. It is going to grow. It is going to increase our carbon emissions. We do have international obligations so there is a challenge there for the industry. I mean, how do balance our ambitious plans for additional production versus our international obligations in terms of climate change. It is a really interesting debate which is going to get a lot more heated, I think, over time. I mean I think it would be a shame that Ireland is one of the lowest carbon omitting dairy production systems within the world. And the world needs dairy products. The world needs to be fed, that we are constrained in terms of milk production to leave to all the countries who are actually omitting more carbon. It doesn't globally make any sense but sometimes it will still make sense. And intervention price of 21 cent a litre doesn't make any sense but that is where we are, politically speaking, so I think it is going to be a challenge that we all need to focus on. So, what are other impacts? Obviously, I mean the focus is in terms of the food harvest and not the food harvest, the latest Foodwise out to 2025 of any one of the foods. That is focusing on the value. We need to perhaps focus less within the future of the industry in terms of how much additional milk can we produce. It is more what value and what return can we get from that. And it is a very wise way of looking at it and the right way of looking at it. But that value is going to be in terms of export dollars coming back in to the industry so back into the economy. So, it is going to have overall a strong economic impact possibly just on the economy.

*Appendix F - Thia Hennessey - Head of Agricultural Economics and Farm Surveys  
Department at Teagasc*

Colin: From your perspective, how has the abolishment of the EU milk quotas contributed to the current volatility of the milk price on the current international market?

Thia: Okay, I guess it has contributed to the volatility of it, but I think the current slump we're experiencing at the moment is unrelated to the milk quota removal. Because overall you'll see that the aggregate milk production since the quotas was removed has hardly increased at all, I think it's less than 1%. And what's actually happening globally is that markets were very strong over the last two years and prices went up, and as a result production went up across the world, particularly from the US, and basically supply is running ahead of demand at the moment. Demand is falling off in line with lower oil prices and in line with some kind of trouble in the Chinese economy. It's those factors coming together really are depressing the milk prices at the moment, so the two issues are being confused a little bit in the media, because people are assuming because the quota was removed on the 1st of April, that prices have dropped as a result of that, but I think that's actually unrelated.

Colin: Okay, and just in terms of what's happening in China as well with the stock market losing a third of its value, is that also contributing then?

Thia: It starting to contribute to it at the moment, and probably will in the longer term. It's quite a recent development, I suppose, but you know from what I've read from different market reports it's definitely affecting consumer demand. I've also read from some market reports that often what happens next is, and we would have seen it in the property market in Ireland, when prices begin to fall rapidly like they have over the last few months, buyers in the market pull out because they're waiting to reach the bottom, they don't want to buy up in bulk now if the price is continuing to decline and that seems to be happening in the market at the moment. A lot of the very active buyers are waiting to see if the price will continue to drop and that's depressing the price further.

Colin: And how is New Zealand affecting the milk price?

Thia: Well the price has been falling month and month from New Zealand global dairy trade auction, but production seems to be contracting there as well at the moment, we'll be coming into the new season of milk production there in the autumn so we'll have a better idea. Prices have been falling there over the last 6-9 months as well.

Colin: Where do you forecast milk prices moving in the next 4-10 years?

Thia They're going to continue to be volatile. We've seen a lot of cyclical movements of both up and down since about 2007, very high in 07 and down in 09, etc. and that's something we continue to see because a lot of the protections that were there under intervention and all of that have been removed. And so it's very difficult to say where it will be but the very general trend will be on and upward, moving average but, there will be a lot of volatility around that and I think that will be difficult for farmers to cope with, and a lot of new coping mechanisms like forward contracting and so forth will become more common in Ireland.

Colin: Do you see the intervention price being raised any time soon?

Thia: I don't think so. It would be a complete reversal of EU policy. It makes no sense for them to move to a situation where they've removed the milk quota and then to increase the intervention price because you're going to get back to a situation you were in pre '84, where potentially you're going to have a lot of unwanted production. Think both of the high price, it's not affecting the market and I can't really see them going back to those types of policies again. I think what would be more likely to happen in a very low milk price year, is that they will have some sort of emergency package like they had in 2009, which would be more like a direct payment rather than an actual milk price guarantee.

Colin: So say it will continue to be volatile, is that on a movement downwards then?

Thia: No, at an upward movement, I would imagine. I suppose globally, demand will continue to grow faster than supply but there will certainly be the blips around that, like we're seeing at the moment where for various macroeconomic reasons, demand may fall off and because it's coming off a high price, supply might continue to increase. But in general I think there will be an upward movement and lots of volatility around that.

Colin: Moving from the short term forecast to a more long term, where do you see milk prices as moving in the 5-10 year bracket?

Thia: I suppose the same really. A general upward trend will increase volatility around that, it's difficult to say otherwise. Moving ahead long term, issues around climate change are probably going to constrain growth in a lot of the traditional countries like New Zealand, Australia, parts of the US. But there's a lot of new dairy economies emerging as well. Production in the Chinese economy for example is increasing.

Colin: Where else do you suppose to see increasing - you mentioned China there, is there anywhere else?

Thia: Well reports seem to suggest that a lot of developing countries will start to develop and increase their own dairy production. And many of the traditional European countries are contracting as well. So when we talked about quota removal, I think a lot of people think that will have the same implications across Europe as it does in Ireland but most European countries aren't actually planning to expand production at all, they haven't been filling their quota.

Colin: So do you think Ireland in the next 5-10 years is going to increase that production?

Thia: Yeah...you know the food harvest target of 50% more by 2020. I think it can be achieved, and it's likely to be achieved. And there seems to be a push for 50% more in the next five years. That may be more challenging; a lot will depend on the cost of new startups. I think the first 50% can be achieved with our existing dairy farmers. But it depends on the availability of land and the cost of new startups after that, whether we can achieve the next 50%.

Colin: Is that different to the paper you wrote in saying it would be challenging for Ireland to meet that 50% increase in production?

Thia Well that paper we wrote I think we said that the existing core farmers could depending on the milk price, supply about 30% by 2020 over the 2008 base and that the remainder would be made up by new startups. And I think we were talking about the number of startups that left, about a thousand, I'm trying to remember here now...So I think that is achievable, but beyond that, how many more startups can we get to achieve the next 50%? It's difficult to imagine.

Colin: Is that something you see as a trend? That there will be new younger farmers moving in?

Thia: Yes but I think it will be limited because I can't see the availability of land allowing that to happen on a grand scale. And the availability of capital, the cost of new startups. So I think that we hear a lot about conversions and so forth but I think there will be fewer of them converting from other types of farming to dairy. I think there will be fewer of them than speculated.

Colin: And how will the level of dairy production increase, decrease or remain the same in Ireland over the next 10 years in terms of 2020 targets? So in summary there you're saying they will reach the 50% increase target by 2020.

Thia: Yes. I would think that that's achievable. And I think that the kind of idea that you would reach another 50% in the next 5 years after that would probably be more challenging.

Colin: Where do you see Ireland targeting their exports?

Thia: I suppose a lot of the emerging economies will become more important. I think the types of products we'll continue with commodity style products. And milk powder, butter and, so forth. And then for the growing demand will be for those more likely be from non-European markets, developing economies, and that kind of thing.

Colin: You mentioned commodities...Do you think that's the best strategy for Ireland? Should they not be leveraging on the brands names we have, the likes of Dairy Gold and the high net margin profits we can yield off those products?

Thia: Yeah, to a certain extent, and it would make sense to do that, but when you're talking about the volumes of production exports that we have, when you talk about our seasonal supply profile, the strategy to date has been around commodity production. That is probably something that will continue to be the main focus of the sector, obviously where there's room for more value added products whether its baby formula or some of the branded butter products, that will be pursued. But for the most part I think that because of our location, our seasonal supply profile, and the size of our export market, that the commodity strategy is not going to be pursued.

Colin: How do you see the Irish farming structures changing over the next ten years as a result of the milk quota removal?

Thia: I think that the structural change will be very slow. And there's a lot of issues. I think the first thing that will happen is we have even on our existing dairy farms we have quite a low level of specialisation, so the amount of milk being produce per hectare is quite low because of the way quota was managed historically. It was very difficult for farmers to expand so a lot of them have a mixed enterprise where they're maybe rearing all of their male calves for slaughtering. So I think the first thing that will happen is that our dairy farms will become more specialised and that doesn't really involve any structural change but it could account for quite a lot of additional production.

And I think as for the actual level of structural change we'll see land use moving from beef production to dairy production will be slow and mostly because of policy issues the way the single farm payment is set up there's very little incentive for people to either sell or lease out their land, and because of the age structure being the way it is it's unlikely that existing beef farmers will actually convert to dairy because the average age is approaching 55 or 60 and the significant capital and labour requirement of changing from cattle farming to dairy farming makes it unlikely. So putting all of those issues together, I think, within the next ten years we'll see increased specialisation of milk production on existing dairy farms and some movement of land from other uses into dairy. But I think it will be slower than what you would expect if you were just looking at the economic forces.

Colin: Do you stick with the estimate in your paper regarding the decreasing rate of farms in Ireland?

Thia: Yes...the way the analysis was set up in the paper what we looked at first of all was exits from existing farms but then we looked at the new entrants as well so overall the number of farms may be static. But when we look at the existing population of dairy farms at the moment there will still be some exits out of that just for demographic reasons, people without a successor, and people who can't make money especially when you have low milk price years like this, people that have significant investments might be burned off and so forth. We will see that kind of structural change as well.

Colin: What about farmers increasing their capital investments?

Thia: Yes...we have an additional report that was released in January, an investment study sponsored by the Bank of Ireland. So, within that we have estimates of the capital requirement of meeting the first 50% expansion on dairy farms—I can't remember the figures but I think it was nearly around 1.2 billion would be required in investments across the board: animals, land improvements, buildings, and machinery equipment within buildings. So we have estimates presented there in terms of what existing farmers would need to invest and the cost of new startups, we've got it aggregated up to the sector level, so there's quite a bit of detail in that. And you'll be able to get that on the Teagasc website and that's our most recent up to date analysis on it. We'd be kind of still standing by those figures.

Colin: Do you see farmers increasing their herd size?

Thia: Oh yes. Certainly. As I was saying, for existing dairy farms you might find that the average dairy herd now is about 60-65 cows, and for those types of farms you

would see that they probably have the capacity, on their own land base and with their own farm facilities, to go up to about 80-90 cows without any major capital investment. And the reason we have a situation like that is because of the way the quota was managed. So we would expect to see they average dairy herd increase year in year out.

Colin: Overall, what other impacts do you see the removal of the quota having on Ireland?

Thia: Well I suppose the environmental one is the big one. The greenhouse gas challenge. And again we have a lot of reports that are available from my section of Teagasc where there's projections of dairy cow numbers and what that means for greenhouse gas emissions. So if we get 50% more milk and we don't have any contraction in other the livestock sectors we're talking about exceeding our greenhouse gas emissions commitments by 2020 and therefore were going to have to look at some ways for reducing that. So that will be one of the big challenges, so it is quite plausible that within the next five years we'll have a new quota, in the form of an environmental quota on production and in farms, whether that's covering greenhouse gas emissions and nitrates and everything else relating to farm activities.

So that's one issue—I suppose the environmental issue. I suppose there would be concern as well, I think, and this is probably reflected from the farm organizations, but there has been quite a lot of hype about the milk quota removal and that you could be looking at a bubble where people are being given the impression that anybody can make money on milk production and there's a risk of—you know we thought in the early 1970s when Ireland joined the EU when farm prices were up and farmers borrowed very significantly, interest rates were low at the time, so a very similar situation to what we have at the moment. Then farm prices collapsed and interest rates went up and a lot of farmers were in serious financial difficulty in that stage in the mid-70s. So that's another concern that the farm organizations would be very aware of—that there can be too much hype about milk quota removal, especially for young people, who weren't around the first time that happened.

So there's the environmental issue, the financial risk issue, and then there's—I don't know if you're aware of another report we produce yearly in our department, the National Farm Survey and year and year we're seeing such a gulf between dairy farming and all other farm sectors, in terms of the financial performance, and that's something that's going to become even more pronounced in the coming years because dairy farms are going to expand further, and their income is going to get higher, and there doesn't seem to be any



positive prospects on the horizon for cattle and sheep farms. So, it's an issue for the agriculture economy in general, that we're going to have this two tiered system; there's going to be a lot of issues around land use, structural change, and regional impacts of that because there tends to be the South East-North West divide. I think that's another kind of major issue facing the farm economy in general following the removal of the milk quotas.

Colin: So what you were saying there at the end, about the price, that it's a two tiered economy as well, between the dairy farms and the dry stock farming - do you see that it's the expansion of the existing dairy farms, but the fall off of the smaller ones?

Thia: Yeah, so we'll see average dairy farming going up, and that's due to a combination of things. It's smaller ones falling out of production that's going to push up the average anyway, but also just the average size increasing. And maybe some new entrants coming in there at a size that's above average. All of those factors pulled together will push average dairy farm incomes up year on year going forward. Setting aside the fact that we'll have low milk price years like we have now...

Colin: Yeah, that I suppose is what I'm trying to go against, with the milk price being so low -if the average farm income will be increased overall...

Thia: So obviously average farming, dairy farming income was about €68,000. So what we're expecting for this year is about €45,000. And hoping that this is an exceptional year of say a 3 year or 5 year average, so if milk prices return to somewhere closer to a normal level, say in an average of 5 years next year, you would expect to see dairy farm incomes—something similar to the milk price—on an upward trend on average across time, but with volatility around that. So what we would see happening is that as they're extending production, they're diluting their fixed cost base. They're becoming more efficient, more productive, and notwithstanding some low milk price years in general, they should be becoming more profitable. So we would expect average dairy farm income to increase. Whereas we can't say the same for the other farm sectors because the levels of profitability in that are so low. And because of the way the whole single farm payment system is set up, we're not likely to see any major structural change in that. So we're talking about dairy as a sector that going to take off, while the other farm sector is stagnating.

Colin: And because dairy farms are taking off do you see increased employment in rural areas a result of that, both at a farming level and an industry level?

Thia: I suppose there will be, but smaller than what some people would imagine. At the entry level you'd see that it's a very capital intensive industry, so drying and processing 50% more milk doesn't necessarily lead to more jobs. I think if you look up some of the reports of the Belview Plant that was opened by Glanbia, the amount of milk they can produce was huge, the amount of people that worked there was quite small. But I suppose it does create employment with all the construction jobs around producing those kind of plants and stuff like that, but they're maybe shorter lived than the actual jobs of processing the product. Then at the farm level I suppose...the growth of labour on dairy farms would be quite modest. I think that most production at the initial stages would be supplied by existing labour. But I suppose we'll see more inputs which will be purchased locally, and again the construction jobs doing facilities on farms...we have a study that says I think 7-8 thousand jobs with 50% more milk.

*Appendix G - John Downey - Meat and Milk Policy Division Unit – Department of Agriculture*

Colin: From your perspective, how has the abolishment of EU milk quotas contributed to the current volatility to the price of milk on international market?

John: It's a big question, and I tell you, I don't know what you know. I would suggest the reading material from last week and this week's Farmer's Journals - there are two very good articles on them. The issue of volatility, nobody has come up with... You know, it's so, obviously, unpredictable. As to what it's going to go and where we are going to go and both, nationally and on a world-level, it is very hard to determine it. I think, with the current pricing system at the moment, and taking Ireland in January 2014, the price of a litre of milk was something like 42 cents a litre. That was in January 2014. In January 2015, it probably had come down to about 25 cents a litre. Now, it has come down to 29 cents a litre. Now, was all of that caused by the removal of the milk quotas? We would say our line at this time, when price will go and we were saying 'what was going to be the effect of it', you know, we always knew about volatility. There was always an expectation that prices were high and they're all going to go down and going to go up, you know, that's the volatility as such – the situation Now, I suppose they have gone down further than we would have expected and for longer than we have expected before they have recovered.

But the issues that we would say that play more into volatility in Ireland that the abolition of milk quota in Ireland has nothing to do with drop in milk prices in Ireland, okay? That's it. I can make that statement confidently. The drop in milk prices in Ireland has nothing to do with the abolition of milk quotas in Ireland. As a matter of fact, the abolition is allowing farmers to produce more milk to kind of mitigate the drop in price because they are able to produce more of it at a lower price, and the unit cost would obviously be less, because they have all the infrastructure there to produce the milk. And they were constraints on how much they could produce up to now – so they are producing more, and that helps to mitigate.

The big factors we think that (effect) milk prices are .... milk prices are set by the global market, the commodity markets and the factors there are New Zealand and the United States. If they decide, particularly the United States even more so than New Zealand, if they decide they want... their milk is good value and they produce it - over produce - that will affect the world prices. So, to an extent volatility in one way is good for Ireland because it kind of causes the Americans not to over-- When the price is going up and down, they will react and they will stop producing and pull back if they don't want to get the prices. Whereas if there was a consistently strong pricing arrangement there, they would

consistently produce higher and demand the prices that the Irish will be getting would be lower. So, I suppose going back to your first question, the abolition of milk quotas has a contributed to volatility on the international market?

I would say the first point – it is coincidental. They have come down. Milk quotas, the abolition went on the first of April. The prices were coming down a long time before that. There is an increase in production in Europe now, particularly in Germany and Ireland. Ireland) by far the biggest increase, is in Germany is there too. The percentage base in Ireland is an increase of about 10 or 11%, whereas in Germany 2 or 3%. But that increase is probably because the restriction has gone and they can produce more milk and it's helping to offset the drop in prices. But the drop in price was coming long before the milk quotas were abolished. So, I don't know whether that's about a roundabout of trying to deal with it. It is more coincidental than an effect on it. The issues, I suppose, that caused the drop in price from a world point of view is we would see would be the strong production in the U.S. and New Zealand, and the Chinese - while we talk, there was actually a great market there -they were actually storing up rather than... it was a consequence...

Colin: Storing up their own production?

John: No, the European and international production of infant formula – they were buying it huge and suppose they were going to be on the market. But in actual fact it was a store up situation and they've stopped buying now. And the Russian ban as well, banned by Russia. They would be the things that will be causing the drop in prices, more so than the abolition of the milk quotas.

Colin: That is very comprehensive. Where do you forecast milk prices moving in the next 1 to 4 years? That's a sort of short to medium term.

John: It's impossible. As I said, in January 2014, it was up there (high). It is down there now at 29 (cent a litre). I think in the bad times in 2009, it probably was down to 28 or 27 (cent a litre), or pretty close to that. We would hope we beginning to bottom out and go back up. But you would think it is going to be going up and it is going to be down like that (peaks and troughs). Where that happens in four years? I think there would be more experienced people than I'd to suggest. I think what will happen – now obviously price is going down, production is going to stop, you know, it's going to go down in various places – Ireland will keep producing, the Irish will keep producing their milk.. But it will be the Americans and New Zealand, as well are forecasted to pull back on production as well. So, hopefully, we'll see we talk about here (Department of Agriculture) that we are going to

start to see a drop...a kind of a view that was held here when prices really started dropping starting, say, last October, November - that that wasn't too bad for Ireland, because Ireland's peak season is from start of March, April right through to the start of September. So if the price was dropping from October right through, we could live with dropped prices right up to March or April. As a matter of fact, that there was talk on that they would start coming back up again but they haven't started to back up. So, we had low prices through our peak season this year.

So, forecasting it over the next four years, I think it is just going to go up and down. But hopefully, the ups are long and the downs are shorter, but it will be those world events that will dictate it. I think a reintroduction of the milk quotas would do nothing for milk prices. If somebody starts suggesting 'bring back in the milk quota regime' that wouldn't in any way bring about an increase in milk prices.

Colin: Do you see some sort of—not milk quota replicate—but some sort of involvement again from a European perspective in terms of support?

John: I suppose there are different views in the European Union and Ireland, certainly, would fight as hard as possible to make sure there is no management control system coming back into place. The French would like to see some people come back in and are sort of there in the long grass and saying 'we told you so' and all this. But then, again, they are using the coincidence rather than the fact of it. There is always a danger if things are down there (low prices) there might a qualified majority within the E.U. for some sort of supply management control system. But I think it would be - having to make a big decision to drop it - I think it would take a huge effort to get it back in. So, I don't see any management threat. I think if there is problems is more on the product side, the intervention and things like that, there's that buying up of products off the market to keep the prices at a certain level. But I don't think there will be a management control system in place.

Colin: Could you see a rise in the intervention price?

John: I don't think it will happen soon anyhow. I think there is still a confidence despite that. It's been 40 years before but fundamentals and all that. You know, the dairy sector, milk is accepted worldwide as being a good ingredient for producing food produce. And only certain countries can produce huge volumes for the world trade. Ireland is a very small amount in that.. But I think there is a view that there will always be a demand and an increasing demand for milk products, particularly, the powdered format and things like

that. And that really, all we're trying to do at the moment is work through a surplus that was created and huge prices were paid for that surplus, and to get surplus out of the way. Obviously, some of the big producing countries will have taken a hit with the collapse in the prices and will have pulled out as well. So production won't be as high in these other big countries.

Colin: Just to summarize, in the next 1 to 4 years, I think, you were sort of saying ups and downs was in relatively short period a continued decline?

John: Oh, no... as long as I'm not quoted I'd say it's safe to say... I would hope, we're kind of got in there again to the downside, on the production side, for us. I would hope, when it comes to next March when the volume start to increase again, that that price will have gone up again. I would be hoping, I think a lot of people will be hoping, that it has about 4 or 5 months to get settled down and start coming back up again, from an Irish perspective, you know, to be of benefit to Ireland and that sort of thing. So I would say it has to turn soon. I wouldn't think there will be a long bottom line, you know, so hopefully by next March, that there would be upsurge on the price.

Colin: Okay, okay. And I suppose leading on from that, the next set of question, where do you forecast milk price moving, in say, the longer term being, say 5 to 10 years?

John: Yeah, see, when you said milk price, we're talking about milk prices in Ireland?

Colin: Yes, I am.

John: Yeah. We would always have advised. We were involved – when things were going good - new entrants coming into milk production and all that sort of thing. When they'd be drawing business plan, we always say 'Look, factor in a milk price of 29 cents per litre'. And I think, now we're back down at that end and it's very hard to know, but I would hope it wouldn't go below that. I don't think that... 41, 42 cents a litre was very high and it kind of camouflaged the other problems there, so I would think of it.... if people can accept the best price at 29 cents a litre, as being, look it costs about 25 cents a litre to produce a litre of milk. We get 25 cents a litre on a bad day, we'll be doing okay. And that we build on that, you know. That's where it needs to, you know, it will be going up and down like that unless some total substitute for milk or something like that. And the other big long-term threat to milk production is the green houses gases issue.

Colin: Ireland's carbon footprint?

John: Yeah, the carbon footprint because livestock would be one of the major contributors to greenhouse gases, but there's still a very strong argument that food products need to be produced and it's an unavoidable consequence that, maybe, you look at energy cost, the energy production and things like that rather than food production, to be looking for that greenhouse gas emission reduction.

Colin: It's not something that you think Ireland's going to be, almost like the milk quotas, be withheld by the compliance with those emissions targets?

John: It's the biggest thing that we are (facing) - I mean, a lot of our dairy thing was driven by what we called Food Harvest 2020, where there was a stand out sentence in it that we would increase production by 50% in the decade and that's going from 5 billion litres to 10 and a half billion litres, and we will do that by 2020. There will be no problem there. That now, because they don't let it run out, they have come up with another one that probably you have seen called Food Wise 2025. In that, the big thing about it is that their isn't as ambitious targets for dairying. Anything we do has to be environmentally-friendly, but even more important than that, it has to be quantifiable. Carbon footprint has to be measurable and all of that sort of thing. So that whole issue of carbon footprint and all of that would be a critical element of anything in going forward.

So you probably won't move as fast in production levels because there has to be mechanisms in there that quantify what the extra production is doing to the carbon footprint. That would be the main issue.

Colin: Okay, you mentioned Harvest 2020 there. My next question, I suppose, is how will the level of dairy production move—increase, decrease, remain the same—in the next 10 years, given this 2020 targets?

John: Okay, while the 2020 target to get from 5 billion litres to 7 and a half billion litre, which would be a 50% increase – and that's being done. In reality it couldn't really stop that condition. I mean, we were at 5 point something billion litres and you know...

Colin: And when was 2020 brought in as a target like that?

John: 2010

Colin: 2010, okay.

John: The target is the average from 2009-2010 years productions – which is about 5 billion litres and they said we'd increase so that by 2020 it would be 7 and a half

billion litres. So for Food Wise, I think they're looking at, maybe – or maybe by 2025 increasing it by another 7% or something like that. It's another increase but it's not as ambitious. Now, I just need to check and I didn't whether that's a 10-year target or a 5-year target. Any ambition in it is tempered by the environment issues, so that's the thing. So I think production - one of the indicators would be, and you have probably seen this before - in 1984, Ireland and New Zealand are both at 5 or 6 (billion litres of milk production a year) and then after 21 years, Ireland had gone from 5.1 to 5.6 and New Zealand had gone from 5.5 up to 19. So the capacity is there to produce. Now, we certainly wouldn't be trying to follow New Zealand (model) because there were huge institution and environmental issues. We wouldn't want to quadruple it (production) or anything like that, but certainly, go from 5 to 10 and mid to 15 billion litres, would be over a period of time, the capacity would be there. The issues that we have focused on to bring about the increase are I suppose coming from three areas and, obviously, the lifting of the quota - because cows weren't producing to their full extent, so the yields would be higher when you lift the quotas.

Secondly, in order to increase cow numbers, we needed to increase cow numbers by one third to get a 50% increase and increase genetics breeding and maybe on farm management, as well, you know, better somatic cell count, broadening the milking season and the compact carving and all sort of things and all of those things would feed into higher milk volumes. And all of them will be more refined now that quotas are gone and so there is capacity to go well beyond the 2020 target of 7 and a half billion litres

Colin:            Within that timeframe?

John:            Oh, beyond that then, beyond 2020. I say 2020, again price will be a dictator, but I think everything is geared to... because obviously production is one side of it, the processing capacity is the other side and the plants down in Belview and Michelstown in Cork, that they are all able to deal with a volume that has been produced in the region of 7 and a half to 8 billion litres. Now obviously if it's going to go higher than that, there's a decision that's going to be made in the next 5 years – big capital decisions as well.

Colin:            Okay. So broadly you think it's achievable?

John Oh, yeah. The 2020 targets are achievable definitely.

Colin:            Great. And where do you see Ireland targeting their exports over that period?



John: Yeah, well, I mean, obviously, the big move was the infant formula, you know, the powder thing and China, they move a lot to China. Now the gloss has kind of gone off China. They have strong focus now in the African countries. They're become more organized now than it was. In return, they probably have to get a good price down there but maybe they need to suffer for that in order to get into the markets and things like that. But China will still be there as well. That would be for the products that can travel the powders and various things like that. They would still see the UK and Europe for being very strong on the dairy product, you know, the cheeses and the yoghurt and all of that sort of stuff as well. But I think if they're looking for new markets, it probably would be that the African and Asian markets would be the new ones that we'll be looking for.

Colin: Yeah, and what about the Middle East?

John: Yeah, yeah. I suppose that, yeah, Bord Bia they have set up areas now in, I think, in Dubai and Abu Dhabi and a few places as well. If you look at Bord Bia's website look at their website - they would take you there, a good one, where they're developing new markets. I mean, we would make a point that we have markets in about 150 countries around the world. You know, there is some element of marketing in every country around the world for our various products. It's a question of how much you build it, depending on the local (contracts). Our Minister (Simon Coveney) would have visited a lot of place during his time. He would have been in Africa. He would have been in the Middle East, in Saudi Arabia and that you know.

Colin: Minister Coveney.

John: Yeah, Minister Coveney. He, obviously, was in China and the U.S. as well. So I think, certainly, developing new markets is a goal for them. They need it because, in reality, we only use 10% of the product we produce here. So there's no point in producing all that product, you know, we're not going to use it in Ireland. So we have to find new market.

Colin: And we'd be at capacity in terms of the milk we are going to take as well?

John: Oh, yeah, yeah, yeah. And I mean, we use 10% of both the liquid milk and the dairy products of what's produced in Ireland. So the other 90% has to go somewhere else out of the country anyhow.

Colin: Yes, yeah. So my next question. And how do you see Irish farming structures changing over the next 10 years as a result of the E.U.?

John: Yeah, this is one we work on the area. I've probably what we worked on the last few years, we feel that one of the ways to get increased production is to get to structure our farm level right and better. There are a few things we've focused on mainly by give financial incentives. The discussion groups and the knowledge transfer for farmers, to upscale their knowledge--their technical knowledge. That would be one of the critical ones that we've been working on that for the last two years. And we have teams like Milking Skills Courses and things like that in there. And the Cell Check program, which is educating farmers on mastitis control and reducing their Somatic cell count (SCC), because high somatic cell count affects the production. It has a limiting factor on how much the milk can be used. That would be one part of the infrastructure team.

The other one would be our grant schemes. We call them TAMS, technical agriculture measures and things like that. It would be for buying new dairy equipment or cooling equipment and all of that. We have a grant scheme for that as well to make sure dairy farmers have good facilities, good producing facilities there. They would be, probably, at farm level, the things that we will be doing and I suppose, the other thing is we would have about 18,000 milk suppliers at the moment. Now we think, that's going fall back, that the pressure of trying to get a good return for the milk, at the lower end of that may be three or four thousands just saying at farming until they die.

Now, the land mobility is probably the biggest constraint we have on expanding dairy production and we're putting up a bit of effort in this year into collaborate farming – farming partnerships and shared farming where were trying to get farmers together to form a partnership We're using the farming partnership for suggestion to make it easy for sons and daughters to... rather than having to sign the farm over, to get into a partnership for 5 years and then they make up the decision whether to continue with that or to hand it over. We have incentives there to encourage people to get into farm partnerships, as well. They're kind of the infrastructure things at farm level what we're trying to do.

Colin: You were talking about the milk suppliers, so do you see the level of farms actually decreasing?

John: Yeah, now, in saying that, when milk quotas started to fall, I think it was something like 76,000 milk producers. It's down to 18,000 now. What we see, we're on what we call, our discussion group call are knowledge transfer courses. We have and we use different types and different ones to tend – there's about 7 or 8 thousand of them and they're the progressive ones, who will take part in all in all of them. We are trying to bring

in schemes to get, maybe, another, maybe 5,000 of that middle group. Then there's a small group of 3 or 4,000. No matter what you do, they're just not interacting.

You know, they're not interested in learning new things. They just milk their cows and do. We're just concerned because the reputation, the quality reputation. They could be the weakest link as to say, so we're always concerned there that we have to make sure that the people who are at the bottom of that grouping maintain the standards of milk production and quality that's needed to make sure that the industry's reputation is not damaged. But I think, you know, while we wouldn't say it publicly at 18,000 at the moment, I think that would fall. I could see that falling back to maybe about 15,000 by 5 years from now. Part of that is that there's no successors on farms.

Colin:           And do you see herd size increasing?

John:           Oh, yes, certainly, yeah. I think the average herd size is about 80 or something like that, and that's another infrastructure issue that we're looking at because for it to work, it has to go, 100 is kind of a tipping point but if you go to a hundred, you really needed another labour unit on the farm. And if you bring another labour unit on the farm – and if you bring another labour unit on the farm 180 is almost too low, so you kind of make that big jump from 80 to 120, whether you bring on another labour unit. That's part of the education side of things that we are looking at and we are trying to either share farming or, again, partnerships, so that other people can come on and help the dairy farmer. But they have to be able to get two wages off the farm then. I think herd size, will, probably not all over the place, because that's a big - a one-man operation probably can operate 80 cows, but when it gone to a hundred, that need another person. But to have another person, there is no point in staying in a hundred. You need to bring extra in so that you can get your returns for it,

Colin:           And to my final question. What other impacts that you see that they're moving up the quota are having to reconsider the close [26:41 unclear]

John:           All of the things I've talked about the removal of quotas that we want to put in place because the milk quotas were going. We couldn't wait for the quotas to go. We don't see any negative in the removal of quotas. So, I suppose, in my answering you there, I probably didn't cover the impacts. We were waiting for quotas to go. We were doing all these things in preparation for quotas to go, for a post quota environment. I can't think immediately of any measure we were doing to mitigate the impact of the removed quotas. All the measures we were working on were to, exploit is probably not the right word -

once quotas are gone, we were now ready to enhance, to move on. Now,, some farmers will always say that there was a kind of a constant dare, he had this quota, he stayed with his co-op and he felt that the prices were steady. As I said, if quotas didn't go for another two years, prices still will be down where they are. They will have gone down anyhow. In the last year of quota, the price were gone back anyhow. So it wasn't because... quotas weren't guaranteeing high prices. I mean quotas were in in 2009 and the backside fell out of them. Quotas do not guarantee price. Quotas put a break on the ability to produce. And the unfortunate thing, I would say, for quotas, was it was restricted Irish farmers from capitalizing on the strong prices that were there for a few years. We hit a super levy and I have it on the table here if it's any use to you, you can have to put it on.....

You would see there, going back, we would kind of intermittently hit super levy there and then from 2000 on we would go into overproduce there and then there were a few years of nothing. Then with a high super levy in 2011 and 2012, that was kind of the start of the.... Then that was the bad weather year and then it went up. And then this year, we had a phenomenal over production issue, or super levy bill, it will actually work out around at €69 million from the estimated €72 million there.

Colin:           And that's all because farmers overproducing in anticipation of the milk quotas going?

John:            I suppose, making the point that you can't turn on and off production. You have to be building up. So they were building up, so that by the time the 1st of April came they were able to go further. You can see here now that, you know the figure. The percentage is probably a little bit back because the volumes – the EU did start to bring in some measures to allow the national quota to increase a bit. Not usually, you know. It doesn't have the extra quota allocation there, but there are a few things in the last few years, from 2009 that they allowed the quota to increase 2% per annum and things like that. I think the point I was trying to make was even with quotas there, and restriction and all that - prices did go up and down. It was volatility in these last few years in prices.

So to answer that point then, we would not have seen any huge downside to remove the quotas, so we didn't feel we had to bring in any measure to kind of protect farmers from that. The measures that we were bringing allowed farmers to move upwards and onwards.

*Appendix H – Gary Nolan – Self-employed Irish farmer South West Missouri, USA*

Gary: The share milker has a much higher return. Myself and my wife (Siobhan) have had 38% return on equity on six years. Return on capital for the land owner has been about 20 odd percent. But the risk is mostly on the share milker side, because obviously the farmer own is guaranteed his income, the share milker owns all the livestock, so basically all our money is tied up in things walking around on four feet. So you open to disease, your open to climate, your open to... your baring all the risk, so that's why we would have a higher reward than the land owner, they are very secure. They have a nice steady income there all the time. Basically, the role, the model that we are working too was for five years – build up to 1,600 cows and we purchased our farm to take over the 1st September. So the main difference as to why we are able to do that there (the US) and not at home (Ireland) is that if I went to AIB in the morning and if I owned a 1,000 cows in Ireland – they will not take the 1,000 as collateral. You can go into a bank in America borrow 2,000 dollars for a cow and they will lend you another 60% on top of that again, so they will actually leverage us 80% debt to 20% equity, basically in our own internal operating agreement we are in partnership with another Irish couple (Niall and Lisa Murphy), we decide that our business will always run 60/40 (percentage wise). Now we won't go over 60% debt even though the bank is quite happy to do so.

Colin: So that's your own personal decision to do so?

Gary: Yeah, the bank manager would happily let us go 80/20 (percentage). Could you imagine going into AIB or Ulster Bank and say 'I don't own an acre of land, my name is good, I have some cows, could I borrow some money off you?'. So basically it's a roly, it kind of... it starts to roll on. We bought 460 cows in 2009, for all of 2009 and basically as your herd grows, so we keep 30% replacements, you only need 10% so you are growing your herd 20% each year. That's recognised immediately on the bank's balance sheet so immediately you able to borrow more money off that livestock straight away. Over 6 years we have borrow 5 years, again, sometimes it's an add-on onto a loan and sometimes it's something separate but the banks will continuously push you in the right direction with collateral as long as your bottom line is black. We are lucky in that we have performed from day one and we a nice bank manager that drinks tea and scones and stuff like that.

Colin: There is something to be said for the personal touch like that?

Gary: Ah, yeah, that makes all the difference. That's kind of where we came from.

Colin: So, a very different model to Ireland?

Gary: Yeah. I was lucky enough, I got really good mentors, the likes of Michael Murphy and Kevin Cummins would be large dairy farmers in Ireland and New Zealand and straight away they instilled in me that farmers is for families and fun but can also be for profit. So I was quite lucky that way, I went to New Zealand straight away after college and that's were basically I learned the tools of the trade about dairy farming. Could you do the same here back in 2008 before we left? Absolutely not. The opportunity was not there. Can you do it now? It's getting close but the banks need to get onboard. You really need the bank to take the cows as collateral and give you some sort of a mortgage on your cows but I don't think they are any further way from that.

Colin: From your perspective, how has the abolishment of EU milk quotas contributed to the current volatility on the price of milk on international market?

Gary: I suppose from own perspective I don't think it is directly related, not even a little bit. The quota came off at the back of an extremely high milk price that was probably more coincidental more than anything, and if you go back to 2008 when we were still in a quota system, when we were still protected, you were having farmers producing milk for less than what it was.... they were getting paid less than the cost of production really. And that has happen continuous over a 3-5 year cycle over the past 30 – 40 years in a protected quota system. So for me, Europe hasn't really overproduced since the quota came on board, Ireland are a couple off percent ahead. France and Germany are a couple of percent ahead. The rest of them are actually back. It didn't really affect any world market, in my view. America is 1-2% ahead in production, they have probably affected more so than an EU milk quota coming off. Volatility and the world market is just something we (Ireland) have to get used too. And I think if we were sitting back here in 3 years time you could be talking about a very high milk price with a no quota situation.

Colin: What about the other factors that are going through world markets in terms of the Russian embargo, China and their stock market crash – is that bearing an impact? Or do you think it's mostly the US affecting the milk price?

Gary: I think the biggest contributing factors with milk price is the simply ones of demand and supply. And the big one's involved in milk are feed and fertilizer. They are the two big ones. Climate will probably effect milk production more so than demand and supply. You have seen failed harvests in Argentina and Australia. Six months later you are looking at a higher feed price, a thinner margin on the milk price. I always think that, it's always the simple ones (factors) of buyers, be it China, they will breed in and breed out. They will go through a phase of forward buying and storing. And then they will go through

of phase of not doing so much to drop the price. We have seen that in the last fourteen months with dry distillery grains that China would have had a huge demand for and all of a sudden they didn't continue the contracts and the price of those feeds dropped 40% in two weeks. Just on that.

Colin: Which is of a huge benefit to the US farmer then as they can pick up the feed cheaper?

Gary: Correct. So that's not a multifactorial thing. That is just a decision by one large purchaser deciding to squeeze a little bit for a short period of time to have a big effect. I really do think it's the simple ones like that along with weather and climatic conditions with crop harvests. If you say that America has the potential to be the biggest dairy engine, let's say, in the world, which they probably will be. 70% of their costs is going to be from feed so it's actually going to be the feed cost and the technology gain that they are making are producing cheap feed is probably outstripping the rest of the world, and it's going unnoticed. They are growing larger crops of maize with less water, less fertilizer in areas of America that would not be traditional for doing so. So there tonnages per hectare across all of their forages is increasing and this probably going to lower their cost base for milk production by default.

Colin: Where do you forecast milk prices moving in the next 1-4 years?

Gary: I'm a forever optimist. I think probably milk prices are being talked down by media more so than anything. The bones of it still is that demand was outstripping supply. Europe is going to grow slowly if not go stagnant. The New Zealand dairy industry is about to get a hiding in that they have gone away from their traditional grass based low cost system. They have gone into a North American European system. And now they are looking at a milk price that won't even cover cost of production. For me it's interesting that the companies, along with Fonterra, the likes of Farmwise LIC, Consultant Dexcel, Dairy NZ- they about three to six months ago, they began to focus on areas of offering a service that the bank would take over the farm. When you see things like that starting to be primed, they are obviously very very worried. They are heading into a spring now with a tax bill ahead of the previous year and with a very very low pay out. That is going to have an effect on milk price probably in 9 months' time. I can't foresee it being a long dip, maybe, into spring, but by next June or July I think you will see a lift. As a dairy farmer, obviously, the high milk price sometimes hurts as much as the low milk price in that it drives production which actually draws in the drop sooner and usually more heavy. That's what you basically have seen in the States is that last year's milk price, it facilitated

growth. In that from 2009 until last year you will find that farmers have been living off depreciation, basically that the 10 to 15% of earnings that usually went back into repairs and maintenance on those farms, and up grading those farms, wasn't being made, and the farmers were basically living off that. Last year replenished the stock. It actually allowed them to build up young stock because young stock is a huge cost to those large dairies and when times are tough they keep just the replacement numbers. They all seem to have kept more and along with the American attitude, they adopt technology much more quicker than anywhere else in the world, so along with sex semia and synchronized breeding, their national herd has actually improved quiet a lot because of 2009. They did a voluntary culling scheme and they basically got rid of an awful lot of bad stock and are driving forward. Milk price over the next 1 – 4 years – low to high in probably that sort of a circle of kind of a 1 – 4 year up and down. I think human nature tends to drive more of that than we like to admit too.

Colin:           Where do you forecast milk prices moving in the next 5-10 years?

Gary:           It will obviously inflate. It can't inflate much more, just because, I believe you at the closest limit to the limit to what that people are willing to pay for the produce. I would always be very wary of innovation in that, if especially milk and that dairy produce in developing countries is so important, and everyone knows, it is just so important to a nation to have dairy produce in their diet. If that keeps on creeping up to a level that they are not able to afford it, science throughout the years have always provided other options. Ten years is a long way out. If you think in a very short space of time – 50 years, 1975 the average number of cows in an (Irish) dairy heard was 8 cows - now it's 85 and that's only since 1975. They were milking them by hand in the 1960' to where we are now. I would be wary of what science will bring to the table about making other foods stuffs do similar stuff to what dairy is doing. 5 to 10 years down the road, what sort of system I think? I think the grass based system will explode when there is more off an emphasises put on where people want their food coming from. But, it's a kind of zig-zag thing that the people almost have to gewt the produce cheaper to be willing to go for the milk grass based.

Colin:           So is Ireland in a prime position to take advantage of that?

Gary:           Probably more so that anyone in the world, along with New Zealand. Will the price of oil and of fertiliser have a contributing factor in that? Who knows, because I can remember again in 2010 you were at \$100 - \$110 for a barrel of oil and they said it will never get below that again. Five years later they are down at half price or there, or thereabouts. So you know, trends change. Even though you think this will never happen,



we have short memories. I really think we have short memories. If held through what was forecast in 2010, basically North America dairy production would have went bust. That has not happened. The really good farmers in North America are doing extremely well, they have the cows outside. The only reason I say grass based production is that it is a greener healthier image and there still is a lot of the world that would actually benefit from it being in permanent pasture rather than it being road blocked. That has started to take hold. The politics in America is somewhat that it is better for the environment to have them in permanent pasture rather than for them to be road blocked 3 or 4 times a year and end up like a mess with a dust bowl like they had a couple of decades ago.

Colin: From an Irish perspective do you see the intervention price going up?

Gary: It's a tough one. I suppose, I guess. What's going to happen for that? I think Irish farmers are going to have to get used to operating on world market. And next February and March is going to be tough on them. You'll see a lot of IFA action. Whether it does as far as France and Belgium and they block roads, who knows? The one difference between New Zealand dairy farmers and Irish dairy farmers is that New Zealand dairy farmers are educated on the world market They understand it, they know where their produce is going. And they know that Fonterra, who is a farmer owned co-op – the same as Glanbia or anywhere else. They are not pocketing the money. Irish dairy farmers have a very poor understanding of that. They don't understand that the product that their co-op is selling on is now trading for less than it was 6 months ago and we are not going to be able to pay you the same price. Will intervention price change? No, I don't think it will and I don't think it should. It's time for everybody to build a business model that is capable of being profitable at 28 cent a litre and that is a robust system. That's where we need the gage it, that anybody can make money at 40c but the system needs to be capable of turning over cash surplus at 28 cent (a litre). If we can't do it in Ireland there's not many countries that can. We should be last man standing if it robust grass based and grass based.

Colin: How will the level of dairy production move (increase, decrease, remain the same) in Ireland over the next 10 years?

Gary: The 50% (of the 2020 targets) was probably even a bit of a conservative target in that there was probably a quick 20% to be had by the quota going and stock levels not changing, in that, quiet a lot of the national herd was being dried off early just for quota reasons. There was 50% more production by an extra four weeks in the back end, rather than drying off in November because we were going to over produce. Farmers were now going to milk on into December with nothing else changing, The 2020 targets

will be hit. Will there be a huge increase in dairying in the next 10 years in Ireland? Honestly I think it will be a very slow staged approach. It's already happened, in a way, that 15% to 20% has occurred. It's lucky the way it happened because most farmers have 15% more cows and we have 15% more milk income this year. And it just happens and it's going to lead into next year that milk price might be down 20%. Their milk cheque will probably be quiet similar at the moment. Compared to last year milk cheques coming in are probably similar to last year but it's just because there is extra stock. There is extra stock in the ground in every farm. The one thing that I can see happen is that pessimism will obviously come in next year when you see a milk price maybe at mid-20's (cents). It takes the shine off it. It will probably slow conversions, although it probably shouldn't because an opportunist of a dairy farmer, that is probably the time to get in. Stock prices will fall for animals. Maybe even rental prices will fall or even stabilise. For me, I'm thinking of coming to Ireland dairying. Last year certainly wasn't the time to do with the high milk price. Next year would possibility be a time to do it but I'm actually looking at three to four years down the line after another rise in milk price there will be another fall. At that stage the national herd will be extremely strong but dairy stock will be producing a lot of surplus female dairy stock. The price of that stock will be low in terms of buying the herd. That's the time for me as an opportunist to say.... The building infrastuture side of it is about to go with the new TAMs That's probably a sector that will grow more than dairying in the next few months. The constructing side is going go to go through a good side of it. Again 20, 24, 36 months down the line all of that will have cooled off. And I believe infrastructure will be cheaper. At that stage too, depending on world steel price, less say the actual labour involved in that should be cheaper at that stage. You can probably see it already that the cost of construction has started to rise. Even with TAMs, even with just usage. I think the cyclical nature of it. Targets are conservative but realistic. There is not going to be any major jump. Slow, steady curve and whether it's an S curve where it actually perks and troths after it – who knows? My view is that it possible might. The only thing that will change that is that were seems to be a difference in young peoples attitude. When I went to college I was in the class of '99. At that stage 68 out of the 70 class mates that I was in, was going into agriculture (but) were going into service agriculture. Talking to young people now, we have UCD students out on the farm for work experience every year .

Colin: To your farm?

Gary: Yeah, that hasn't inverted but all of a sudden now there are students who are actually wanting, not to do the service but to actually be on the ground predicting the

food themselves. That's the generation that is probably going to drive Ireland forward. They'll have the technical ability, there will now be now an environment that is welcoming to young people in that you can progress even though the banking will hold back but no quota you can progress. It's at a time that the age profile of the Irish farmer is on a tilting point, and over the next decade it's going to tilt. Land availability won't be such an issue I believe in ten years' time. There's no going to the active producers there at an age to actively produce the food. So young people coming through now, 20 year olds will be 30 year olds, they are going to have a good run at it and are probably going to have an opportunity that I wouldn't have had 6 years ago. I think it's going to be quite strong for them.

Colin:           Where do you see Ireland targeting their exports?

Gary:           Sure the easy answer is just China – is that what everybody says? It's quite interesting looking at it. The likes of smaller countries like Venezuela. Their government structure allows them to source food as long as it's a joint venture with Venezuelan somebody else. I'm pretty they are in the Cadbury's products down in Cork. It's smaller countries like that, that Ireland is going to invite in a nation that doesn't exactly want large bulky volume but wants traceability, wants dependability and want's the nice clean image that Ireland has. I think we will always be gobbled up on the world market so I think it's always going to be a value add, its niche markets. Baby formula, you've seen even in the last 2 years, two major major mistakes by Fonterra has open that market for Ireland considerably. New Zealand has no longer a clean image like it had even 15 years ago. It's tainted by two major food scares. Mothers especially are cautious buyers, baby formula is always one that if there is a house hold budget that will send a couple more dollars or euro somewhere, I think it will probably go on the baby formula. If we go back to our China situation, they were saying the household that is spent on baby formula can be as much as 30%, just on baby formula. You can see in their attitude how they preserve that to be so important to their children. It's going to be an exciting one to look at. Markets for Irish exports – the UK is always going to be a fantastic market. It's one in my mind where the UK has given up food producing. They seem to have just said that the country side is for leisure and we are going to buy in our groceries. That's basically what they are doing. We are the closet grocery market. They have always been a reasonable good neighbor to the point and fact that they gobble up a tremendous amount of produce from Ireland. Germany and France then. It's really satisfying to see that the Irish Dairy board has now even got into Wal-marts and is selling in America. I can buy Kerrygold and I can buy Dubliner cheese in South West Missouri, and you can visibly see those brands getting more

shelf space. People are buying them. The local Americans have even commented 'Why is Irish butter yellow?' French, American butter is all white because it's produced off maize and that's just the colour of it. New Zealand, Switzerland and Northern Europe is all yellow, it's all tastier. So there you have a pointed fact, that simple thing where butter is an Irish thing. That's probably why it's going to grow now and probably take a reasonable market share in North America now, just because of it.

Colin: What about access to get into the US – is that proving difficult?

Gary: At the back of it all I suppose I'm just a humble farmer. I wouldn't be aware of how easy or difficult it is. All I know is that if you take the Irish grass beef that has started to come into New York, it staggering the publicity that a couple of hundred ton of beef into North America, which would have 10's of millions of tons of beef traded, how much attention a couple of hundred ton (of Irish beef) has got. Are they worried about it? Absolutely not. At the end of it North America's beef market is the beef burger. We (Ireland) are dealing on high end cuts. It's not really going to affect what's happening. It's beef burger meat that drives the American market. A couple of small heffers going out is not going to really break them.

Colin: How do you see Irish farming structures changing over the next ten years as result of the EU milk quota removal?

Gary: It's a really good question. You have already seen – I'm going to talk about Teagasc for a moment – probably the biggest driver off what is happening in Irish dairy over the years is down to one man and a group of individuals, it's Pat Dillon in Moore Park and his team around him of Laurence Shalloo, Micheal O'Donovan and Brendan Moran. That infrastructure of continuous learning and adapting from the best, and the best at the time was New Zealand, has now left 300 acres just outside Fermoy as the mecha for grass based innovation and research in the world. Ten years ago you would have had the top 2% of Irish farmers travelling to New Zealand to investigate systems. You actually see now that New Zealand farmers are looking over here for current research. That's already happened. The Paddy O'Keefe building built down in Moore Park can facilitate more learning. The most important step of all Ireland's expansion has already happened – research. We have it, we have a group of people that's able to deliver it. Without it you can have all the opportunity in the world but without knowledge transfer you were next going to get there. You really were never going to get there. That stage has already happened. The Department of Agriculture under Simon Coveney are slow to change but they are changing. They facilitated longer term leases with tax exemptions with brown lease for more

than 7 years – that has actually open the opportunity for some to spend money on rented ground and farm it properly. Before it was con acre so you never knew if you were going to get it for next year. To tie it into a seven year lease and actually have the ground to do something with. The last process I suppose is.... I still believe we can process our milk much more efficiently. We have too many processors, we have too many bases to process it from.

Colin:           You're talking about the co-ops?

Gary:            Yeah, I really do think we have. And it's probably shaving as much as half a cent a litre off farmers A-price. Of the people you've talked to I'm probably the least educated on the system but you don't need to be a wizard that we don't need 30 odd processing plants. We are less of a supplier than New Zealand with about 15 times more of the co-ops and processing plants. That we have to change, whether it be amalgamations, buy outs, probably a little bit of everything but even though it's all parish politics and anti-amalgamation – overtime it will just be inevitable. You'll have the leaders of Glanbia and Dairygold of Kerry that would just perform so much better on the world market than the lower performers, let's say such as Lakelands, that the gap will become so big that farmers will vote for it with their feet. You are no longer tied to a co-op, if I want to change in the morning, I'll go and change.

Colin:            What other impacts do you see the removal of the quota having on Ireland?

Gary:            I think that you will have a rival of rural Ireland. I think that if the 2020 Foodhaviest is...

Colin:            Overall all Ireland or just in pockets?

Gary:            I think that the biggest rival is going to happen in the places that need it most. The cheap land in Ireland where the most opportunity is, is the Midlands and West. Okay, you are going to have growth in Kilkenny, you are going to have growth in the Golden Vale and the wider area. But it's already well farmed – there is not huge scope there. The scope is the Midlands and the West. And the Midlands and Mid-West is probably the area where rural life is on the biggest decline, If these targets are met by 2020, by default, there is going to be employment there that wasn't there before, there is going to be more local business, and it's going to thrive I think. I really think it's going to thrive. That is all local revenue that stays local. SME's like that, they contribute more back to local than any other business. Farming is a testament to that. All off the revenue usually stays, they are not off buying yachts sailing around the world. They are staying local and

spending local. So that's the biggest one post quota I think that I can see happening. It's like the West awakes in a way. The country is now back in a situation where agriculture is the driver. Maybe if that had stayed the way... It's well founded, it's solid, it's no bubble, it is just good business. It'll be there forever.