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Report

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Harold Cowburn NSch

**Price risk management for the UK dairy sector :
cows looking over the hedge**

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NUFFIELD UK



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1. Executive Summary

Price risk management for the UK dairy sector : Cows looking over the hedge

The EU as a general rule would like to see the agricultural sector more market focused and less reliant on intervention:

- decoupled direct payments to active farmers
- the proposed ending of milk quotas in 2015 announced in the EU Mid Term Review
- the introduction of a policy for a 'soft landing' for the dairy sector whereby quotas in member states have gradually been increased year on year to mitigate the effect the quota will have once removed
- coupled with a growing linkage between EU and world dairy product prices

all suggest the EU dairy sector will see further change.

Price volatility in the rest of world's price for butter and SMP (skimmed milk powder) has been 3.47 and 2.24 times greater respectively than for EU products over the past 20 years and, with the EU commission influencing a move to a more globally based dairy market, it seems logical to assume that the EU dairy sector will become exposed to this volatility itself.

Extreme volatility in a sector such as dairy can cause several problems:

- Low prices could cause financial problems and ultimately threaten solvency.
- Extremely high prices result in product substitution which can be difficult /impossible to reverse.
- Producers/Buyers/the supply chain prefer stability for planning and building sector relationships.
- Extreme volatility can inhibit innovation and R & D.

How can a relatively small dairy farmer such as myself who has focused the home business on profitability mitigate the effect of this volatility and can the UK dairy industry do anything to, as a whole, manage price risk in the future?

To further compound the problems of volatility it rapidly became evident from my travels that the market signals to the dairy sector have been to encourage expansion and increase production: thus further distorting supply/demand balance. The way expansion has been driven on farm has been achieved by both physical growth in dairy numbers - with land and farms that had not seen dairy cows for several generations coming back into dairy production - and also by technological efficiencies that are being sought and achieved:

whether it be the grazing units in Ireland that are using computer software to maximize the use of grass,

ultra high welfare dairy units in Holland that seek to reduce labour via robots and systems management

or dairy farms in the USA that are looking to lower feed costs but maintain outputs by again looking at grass utilisation.

The European Commission is well aware volatility will become more of an issue in the dairy sector, but are unwilling to introduce 'heavy policies'. Farming unions across Europe are coming to terms with the fact that lobbying the Commission and respective governments is not a long term solution for managing price volatility.

The American dairy sector has been exposed to this volatility for nearly two decades and out of this has developed a risk management



strategy that has evolved to help producers manage risk using the **futures markets**.

Conclusions if dairy futures are to be successfully used are as follows:

- Volatility is key to uptake - every year volatility affects producers - uptake increases.
- Use of contracts, legislation and minimum price guarantees have only partial effect and cannot control the overall market, leaving both producers and dairies alike exposed.
- The use of Futures contracts has to be market led - end buyers (ingredients manufacturers) have to *want* the market and to have suffered the effects of volatility themselves to encourage prompt involvement.
- Hedge fund use for the dairy sector has to be viewed as a way of price insurance rather than a 'get rich quick' tool – it's a form of risk management.
- Knowledge of a producer's own production system and cost structure 'on farm' is critical before considering the use of hedge funds - such information is needed to establish price exposure risk/level. A bigger risk is not having a sustainable dairy in the first instance; risk management tools are not a bailout method for producers' businesses.
- The size, structures, and complexities of contracts were off-putting and dairies had to be involved to pool the producers wanting to hedge. Many producers use a brokerage service/price risk manager, such as DairyVisor.

- US Dairy trading markets are generally only interested in reliable *macro* market information on which to base their strategy. They pay for this from market intelligence agencies specialising in the dairy sector, such as Blimlings and Associates. Traders are happy to trade - they just want to see a margin!
- Due to lack of demand and knowledge the European dairy sector is sceptical as to the use of hedge funds for the dairy sector. Markets, traders and banks that deal with other sectors are also poorly informed about the use of hedge funds for dairy - e.g. what it can offer and knowledge of product (how is it traded when it's liquid? SMP etc. and use in ingredients). Education of traders, producers, processors and banks is a corner stone in the development of a credible European and UK dairy futures market as it was and is in the US.
- Bank information and involvement is important and needed for supporting farmers.

Most dairy farms, if buying in feeds/inputs, already use hedge funds by default. Over time dairies using risk management tools for milk sale have started to link to inputs:

X input and Y output = desired margin

But this takes time. Five years is a common period for a producer to gain sufficient confidence and understanding.

However those who have used the strategy successfully over that period have built sustainable and replicable business models.



2. Introduction

Firstly it has been a great privilege to have been awarded a Nuffield Scholarship.

I have been involved with agriculture all my life here in the UK. Having attended the University of Newcastle upon Tyne I returned home to Lancashire to farm in partnership with my brother David. We have taken the farm from a mixed livestock and cropping unit and evolved the business into an organic dairy herd on the 100ha farm, whilst also diversifying into retail, tourism and added value.

The farm has a strong ethos on education and educating the general public about generic agriculture, its methods, its practices and the work around and with nature.

This work has brought me into contact with numerous agencies and working groups that parallel, influence and support farming. These include regional development agencies, DEFRA task forces and the NFU (National Farmers Union).



Me - in the parlour at home



3. Study rationale

My work with the NFU brought me into contact with what the European Union is considering for the EU dairy sector going forward. The EU as a general rule would like to see the agricultural sector more market focused and less reliant on intervention. With decoupled direct payments to active farmers, the proposed ending of milk quotas in 2015 announced in the EU MTR (mid term review) and the introduction of a policy for a 'soft landing' for the dairy sector whereby quotas in member states have gradually been increased year on year to mitigate the effect once removed; all coupled with a growing linkage between EU and world dairy product prices it seems unquestionable the sector will see further change.

Price volatility in the 'rest of world price' for butter and SMP (skimmed milk powder) having been 3.47 and 2.24 times respectively greater than that for the EU over the past 20 years, and with the EU moving to a more globally influenced dairy market, it seems logical to assume that the EU dairy sector will become exposed to this volatility itself.

Extreme volatility in a sector such as dairy can cause several problems:

- Low prices could cause financial problems and ultimately threaten solvency
- Extremely high prices result in product substitution which can be difficult if not

impossible to reverse

- Producers/buyers/supply chain prefer stability for planning and building sector relationships
- Extreme volatility can inhibit innovation and R&D

To mitigate these problems the EU has focused on several areas including contractual relations, bargaining power, producer organisations and inter-branch organisations, but there is also a strong realisation that going forward there will be more price volatility in the future. Whilst a certain degree of fluctuation in prices is inherent to a normal market mechanism (and generally is acceptable by most stakeholders), extreme volatility is perceived as negative by farmers, industry and the trade.

- ❖ The main purpose of the study is to outline what options producers can take to reduce the risk of volatility
- ❖ Investigate what the use of risk management (hedging) could offer a dairy farmer/dairy sector
- ❖ This will be done by establishing the current position of the European dairy sector, and seeing how the US have managed price volatility



4. Places visited on study and why

New Zealand (for the Contemporary Scholars Conference)

Belgium, France and Germany

To gain an understanding of current political thinking on dairy and markets
July 2011.

Ireland

How expansion in the dairy sector was being managed and encouraged in a low cost system August
and November 2011.

Holland

How expansion in the dairy sector was being achieved in a high cost system
January 2012.

USA

History and evolution of Futures market, how traders work and communicate with users and the
dairy production systems used .
March 2012

UK

Dairy expansion UK, use of grain futures by the arable and poultry sector, traders and dairy brokers -
how they are structured and trading information, hedge fund/futures workshop, EU reform updates.
2011-12



5. Belgium/European Commission

The European Commission policies of past decades have been of major influence on dairy production both inside the EU and beyond its borders too.

As previously outlined the shift of focus within the Commission to a more market related dairy production system is expected to expose producers to increased price volatility.

I visited the European Parliament and heard Dacian Ciolos, the European Commissioner in charge of Agriculture and Rural Development, state that agriculture is still high on the European agenda and the budget is still there, albeit for a greener agriculture that supports young farmers. With this also comes a ring fenced €5 billion Research and Development budget.

The EU and its MEPs have clearly recognised that price volatility both in terms of frequency and level has increased dramatically compared to the 1990s, and that EU pricing is moving closer to that of the world market. This increase in price fluctuations has been put down to a combination of demand and the supply variation e.g. weather, disease, policy change etc. For example a modest amount of under supply due to drought will lead to higher prices as the end users of a commodity such as milk will, if required, pay more to maintain normal consumption; while changes in production that lead to surplus (in the absence of government intervention) lead to a price drop to clear the market.

The two biggest factors for a commodity such as dairy are changes in world demand (which is intrinsically linked to changes in world economic growth rate) and changes in output which, being a weather dependent product, means output can fluctuate.

The European Union Commission has said that some price change is desirable as a way of signaling changing market conditions and can lead to positive situations such as

reflecting the changing preferences of customers. For the producer a threat to profitability can lead to positive pressures/stimulus to increase efficiency and to focus on R and D. The EU recognizes and identifies that a greater problem arises if the intervention safety net is removed as a volatile market can lead to:

- Cash flow problems and possible bankruptcy
- Discourages new entrants and smaller innovative firms
- Loss of capacity in the sector - which is needed when recovery occurs
- Operational inefficiencies - e.g. deferred replacement of plant, skilled workers being laid off, lack of continuous training
- Lack of R&D
- Increased price competition during price slump - discounting to maintain market share
- During high price periods product substitution may occur e.g. vegetable oils used instead of butterfat (despite image of healthy innovative products)
- EU export refunds/intervention are costly to Europe

Price stability is therefore ranked highly within the corridors of the EU (especially for dairy, because of its long investment and production cycle). Price stability is preferred so that customer relationships can be built and engagement/investment in long term planning can take place, and dairies can begin to build for future milk intakes. The basic message is simple - dairy farming is a long term investment and a risky business - without raw milk there are no dairies or product development.

The European Commission has taken the position that political decisions need to be, and are, planned well in advance (3-5 years) to allow farmers and the whole sector to plan forward. The current work by the commission on contracts via the HLG (Higher Level Dairy



Group) is currently looking at the contractual situation of producers in the member states:

- Contract duration - some buyers were taking advantage of volatility by using long contracts when prices were low, and short when high - thus introducing further pressures.
- Price in contracts varied greatly country by country and so the European Commission had a role to play in gathering and publishing objective and independent price indices.

With milk quotas going via the 'soft landing approach' there is broad agreement that milk production will increase in some areas (especially in the areas I explored such as Holland and Ireland). It was felt that, with this increased risk of exposure to price volatility, having a mechanism to transfer this risk would be beneficial.

A report prepared for the EDA (European Dairy Association) on dairy market volatility highlighted a desirability to establish a transparent Futures market (for explanation of a Future see Appendix 1) for processors

and buyers, whilst contracts for farmers should incorporate a certain volume of milk delivery with a certain volume linked to commodity dairy price market.

Couple this thinking with reports from Eurolait that buyers (e.g. Nestle, Unilever etc) are increasingly asking for the dairy sector to use the Futures market for the benefit of their businesses and the sector as a whole going forward, and it's possible to see signs that risk management could be a useful tool. To

highlight the above in an example used by Eurolait, a 1% excess in production now equates to a 14% change in market price.

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The European Commission concedes that whilst the EU as a whole is more in tune with supply and demand any excess needs to be 'insured' to save on intervention. MEP Jim Nicholson (Rapporteur for the Higher Level Dairy Group) believes that looking at the insurance approach of USA commodities would be a sensible next step, such as a system that has been adopted and used by the cereals and an emerging proportion of the dairy sector there.



6. France and Germany

France could be classed as the granary of the EU, with the 2007 wheat crop yielding over 33 million tonnes. At the time of visiting the north east of France their harvest was in full swing, and combine size, numbers and field size could match that of some of the stereotypical prairie scenes from the USA.

The cereal sector in the EU saw stability in the markets which derived intervention and support. However, with reducing direct support and a product that was globally traded across markets that were demonstrating increasing liquidity and volatility, firms such as Offre et Demande Agricole (ODA) came into being.

ODA offers French (and now some UK) cereal growers packages that can help them manage volatility in their cereal businesses by giving advice on price risk management.

This is done via:

- Observation - following daily markets and relevant data
- Detailed analysis - influential external factors such as drought, food health scares, etc which all play a part in the market
- Modelling - using gathered knowledge and historical data to produce forecasting systems
- Training - sharing skills so the user can efficiently use the market, and doing so in a user friendly/understandable way
- Regular information - daily bulletins, weekly analysis and monthly letters allow growers to understand the market
- Consultancy and advice service
- Research and analysis

The benefit and strengths Offre et Demande Agricole proclaim are firstly their independence. They consider that having no role in the market themselves as either trader or broker is vital to giving unhindered/biased advice and gives confidence via the transparency of its published yearly results of

strategic recommendations. These are published so clients can judge the relevance of the advice they are offered. ODA also see that having local presence is not only massively beneficial when it comes to training, but also allows reliable regional information to be fed into the system via verifying reports on the ground.

One option currently being explored by ODA is advice on feeds for the livestock sector, predominantly the poultry sector where feed input costs represent such a massive percentage of production costs. Having seen in the late 90s that price volatility would eventually become more of a factor to French grain growers it seems strange that ODA does not see the same path for the dairy sector. When I questioned French attitudes as to why the dairy sector could and should adopt price risk management strategies I gathered they had difficulty in comprehending trading dairy products this way on account of logistics, product and lack of established market in Europe!

It seems strange then that France, being the European Union's second biggest producer of milk after Germany, delivering over 23 billion litres annually from its 87000 plus dairy suppliers, is not appealing to advisors and traders alike in a similar way that the combinable sector once did.

Whilst output has stayed relatively constant in terms of overall litres produced, actual producer numbers have fallen steadily from the 2004/05 figure of 114600 producers. Liquid milk consumption per capita of milk is not as high as here in the UK and Ireland due to food culture and consumption characteristics (at 57 litres a head/year). Yet cheese consumption is well above the EU average, with the French eating nearly 20kg of cheese per capita/year and again having a value added exportable product.

From the above figures it's hard to dispute that France has a reputable dairy sector, so



why the stand off? The reason may be the high number of local dairies and co-ops that operate within France, and that milk is simply not seen as a commodity product - unlike milling wheat. The value added sector is much larger in terms of numbers than here, for example, and dairy producers have in most instances not even had a written dairy agreement with their buyer.

Germany is in a similar situation to France and Holland - a predominantly co-op based production system. Meeting the DBV (Deutscher Bauernverband- German Farmers Union) the initial reaction given to the dairy reform package in Europe ('soft landing') was one of scepticism - such reform is not needed *per se*, and is actually seen as a threat to the position of the co-ops.

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Going forward would it be the dairy co-ops that are best placed to manage volatility in the market using risk management tools? At the March conference held by the DBV, Udo Folgart (Vice President of the DBV) told the forum that recent markets have seen a strong global demand for German dairy products, but that there is no guarantee this will continue and it's evident that markets are becoming more volatile. It was noted that commodity futures markets are gaining importance in the dairy sector as a whole as they provide a way for dairies and farm producers to hedge against adverse price fluctuations.



7. Holland

With a relatively modest fall in the number of farms with dairy cows - from 23600 in 04/05 to 20000 in 09/10 - the Netherlands is the EU-27 member that has seen the least number of farmers exit the dairy industry. It has also seen an expansion in production of over a million tonnes/per annum in the past decade.

It could be argued that the Netherlands is a perfect example of Europe's response to increased global demand and is setting the pace that others should follow. Average herd size is in the region of 80 cows, with yields averaging 8100 litres per cow.

Yet Holland has one of the highest land prices in Europe with values at 5 times that of equivalent land in the UK and the LTO-Nederland (the Dutch Farmers Union) is keen to highlight that Dutch farmers have to deliver green and blue services. By this they mean that not only must members have to respond to the challenges of looking after the land but also water pollution. Obviously, because of its value, there is pressure is on every inch of land in Holland to maximise production yet the environment is at the same time that much more fragile to manage.

Dairy units are now looking to prepare themselves for regulations on air pollution that come into effect in the next couple of years.

Pressure on producers here is not just from price volatility, but also from increased regulatory implementation. For example, on the units visited management of manures is truly first rate by any UK standard and yet the industry is striving to increase standards even further. To meet such requirements cow urine and dung are to be kept separate where possible thus minimising the volatilised ammonia released when the two combine. This will be done via slatted floor systems that separate the two (rubber flaps in the slot gaps

will keep in any gasses). This kind of legislation comes at massive financial cost to the individual farmer; even with savings offset against rising fertiliser costs this level of investment is difficult to justify. At the time of visiting milk price stood at 41Euro cents/litres (approx 33pp/l), which, although favourable when compared to the UK milk price, still makes investment in dairying in Holland difficult to justify.

For the Dutch dairy sector low cost production via extensive farming and cost savings by economies of scale is not an option. So, going forward, how does Holland adjust and prepare for the future, especially one that is gearing to less market intervention? Farmers are well aware that global demand is outstripping supply and, post quotas, farmers are putting in place plans to expand. **But they are expanding high cost production systems;** some farmers argue

Dairy units are now looking to prepare themselves for regulations on air pollution that come into effect in the next couple of years.

that this is not an option as costs will only be increased accordingly, thus further reducing viability and increasing exposure to risk. Secondly any investment needs to be done now in the lead up to quota reform so that the increased production

is actually there in 2015. Once the dairies/processors have taken what they can deal with they will be reluctant to encourage further uncoordinated expansion on farm. Basically, post quota, farmers who are 'first out of the blocks' will benefit from the allocation of any additional litres required. Anything beyond this will introduce volatility as the supply/demand balance is exceeded.

So dairy farmers in Holland are currently faced with a stark choice to maintain/increase margins. They are reviewing current production methods and increasing litres produced per cow/ha and reducing costs where possible, but borrowing money from the bank further exposes the business to risk.



The LTO-Nederland refute any suggestion that the European dairy package can help their members and think it more likely to hinder due to the Dutch having largely co-op based buyers. Any change would weaken their position. The LTO believes milk production in the EU requires an open internal European market and a level playing field; European aid should be stimulating, but must not disturb the market. The LTO would prefer changing EU agricultural policy in favour of a basic salary per hectare, with an additional reward on the basis of specific services a farmer delivers such as nature/environment etc. In addition, the EU agricultural policy must have the capability of enhancing the competitiveness of farmers and the overall sector participation without creating market distortions between Member States.

The dairy farmers themselves are looking at ways to reduce cost to improve profitability and I witnessed some of the most advanced thinking in cow management I've seen to date. If the farm cannot access any more land to graze, then house the cows; but then this leads to increased slurry management costs (especially in a country that is trying to increase pollution regulation), an increased labour cost/work load, an increase in pressure on cow welfare, plus fertility could suffer from the change. However the solution seemed simple once the farms visited showed me their plans - use technology to overcome all these problems.

Use greenhouse technology (it's already widely available) and apply it to milk rather than horticultural crops.

The housing shown (*see picture on next page*) was deep compost that was 'cultivated' daily, resulting in clean cows with zero lameness or mastitis. In fact on one unit vet bills had been reduced to zero as the vet was not required on the farm, yet conception to first service was running in excess of 70%. On this unit cows felt more confident to express heat naturally as they were not on concrete **and stress in such systems is reduced so**

Use technology to overcome all these problems

much that cows do not need a dry period.

- Slurry/manure management was minimal so saving cost
- Farms were being paid to accept the industrial compost that formed the initial bedding
- Being paid again to export it once full of nutrients from the cow dung!
- The bedding was easy to transport due to its high dry matter content.
- Average yield was just over 7000 litres/cow/year with cows fed on big bale silage and in-parlour concentrates.
- It was felt one labour unit could manage 250 milk cows on 4 hours of work a day average.
- In summer cows had the full option to go out to graze, but 99% preferred to stay inside.

This was indeed higher welfare with no issues of cow trips, slips or falls.

Now couple lowering of production costs with value added.

One farm visited had also invested in processing and selling ice cream on farm. This used the hours saved on running the herd to manage another business, plus, as suggested, further increasing the margin from the milk. A new skill set was needed for processing and production this additional enterprise, alongside marketing and sales, but the strategy was plain to see- maximising the farm and its produce to increase margins.

So, in times of poor market returns, will price volatility not have a greater effect on a country/cost structure such as Holland's? The answer is simply yes.



Dutch high welfare cowhouse

Some producers are aware that the cost of production is too high, and are addressing this. They can see that returns can be greater if value is added.

But for the majority not selling direct the picture remains the same; if introduced to a global market the effects of price volatility will play a massive part on how the business operates, and in a high production cost scenario such as Holland's times of poor returns can hit the industry hard.

Their Farmers Union is certainly focused on

the short term and, as long as the country as a whole is mainly focused on processing milk into value added/branded cheese and dairy products for export, the situation will be sustainable as long as demand is high.

But the fact still remains that exposure to price volatility is massive. With large volumes of product to export, any development outwith the Euro zone adds further pressure because it also exposes producers to currency fluctuations.



8. Ireland

Ireland is known for its low production cost base and is proud to have the lowest national dairy costs in Europe (in direct contrast to the Dutch dairy cost structure). This is achieved by a predominantly grass-based production system and low use of purchased feed per cow, coupled with a low labour/management input per cow. Feed is restricted by their low national production of grains and, with a climate that suits grass growth, a system that could be described as 'New Zealand style cow management in the northern hemisphere' has been adopted.

During one of my visits it soon became apparent one of the biggest barriers to achieving further cost savings via economies of scale is the high land values (the well-publicised Celtic tiger brought outside investment/land interests into the agricultural sector). This has had a twofold effect – it has increased collateral for farmers to invest, but at the same time restricts the availability of relatively cheap land which is key to enable such a production system to expand with efficient units.

The Celtic tiger at its peak drew labour from the land into other sectors and acted as a second barrier to expansion, further fuelling the need to keep production systems labour efficient.

It's fair to say agriculture as a whole in Ireland has experienced volatility first hand with supply and demand of inputs such as labour and land leading to production restrictions.

Whilst culture and diet is similar to that of the UK rather than Europe, i.e. high liquid milk consumption per capita (the highest in Europe in 2010 at 136 l/per person), and low cheese/processed dairy consumption (third lowest in Europe at 6.5kg/capita/annum

2010), there is a strong home market for fresh liquid milk. However because 5.5 billion litres are produced annually and the population is low, milk must be processed for export.

Glanbia (which in Irish means pure food) is a dairy co-op that is keen to build and develop its export and processing business. It floated on the Dublin and London stock exchanges in 1988 (as Avonmore & Waterford). Glanbia is considered to be one of the larger co-ops and its farmer suppliers to be some of the most business-focused in Ireland. Glanbia's portfolio of products includes cheese and dairy ingredients (eg wheys, lactose etc), and within Ireland it also acts as a farm inputs supplier. The company has also spread its wings overseas and now operates in 14 different countries (e.g. USA, UK, Germany, Uruguay, Nigeria and China) where its operations are variable but include a range of distribution to manufacture and processing activities.

This strategy fits well in a country whose political system is encouraging exports as a tool to economic recovery post the 'Celtic Tiger' boom. This encouragement is not limited to the dairy sector with all manufacturing (eg Hi Spec, Tanco, Keenan, Conor etc – which are all agri-businesses) and engineering sectors also being encouraged to increase exports in new and existing markets via trade 'missions'. (This is despite government agencies like Enterprise-Ireland, who are there to promote trade, seeing cutbacks in staffing and budget) .

The increased exposure to global markets by firms such as Glanbia has put increased demand on Ireland's dairy farmers to produce more milk to capitalise on this increased

Dairying in Ireland is set for good times ahead – apart from the problem posed by EU quotas



global demand. Statements from the Irish Government and the Irish Dairy Board that they want to increase dairy production by 50% by 2020 have given support to farmers to invest and expand. As mentioned before, if costs can be further diluted by economies of scale then dairying is set for good times ahead - apart from the problem posed by EU quotas.

Ireland, like Holland, is pushing at the boundaries of quota limits. The 'soft landing' approach adopted by Europe is not working fast enough for countries with structures and products geared to export. Super Levy - a cost imposed if quota is exceeded - looks set to be triggered by Germany, Holland and possibly Ireland before quotas are finally removed.

At farm level producers are responding to the messages coming from their dairy buyers and government and it's apparent that dairying is in a state of expansion:

- land devoted to arable cropping is being turned over to dairy
- existing units are seeking to expand via land acquisition (if possible)
- better management (such as computer software to help monitor and improve the use of grazing)
- investment to improve efficiency and environmental compliance (such as manure stores)
- plus herd numbers are also being built up ready for the removal of quotas

while all the time continuing to focus on low cost production systems.

To put things in balance: Glanbia think that having a higher proportion of suppliers who are more business focused will result in their being one of the main buyers to see the 50% expansion of milk fuelled. Glanbia feels that the rest of Ireland's dairy suppliers may either exit the industry due to lack of herd size and the efficiencies that go with it (thus making way for other dairy units to expand), or expand at a slower pace than expected/increase their production cost per unit.

Some producers have tried to sidestep the rush to supply the global commodity dairy market by using differentiation/niche dairy products to retain margin. However this avenue of thought is illustrated by the organic dairy sector in Ireland - the niche has no real footing in the market place. The message and ethos of organic sits well when compared to **intensive** farming systems, but in a country largely focused on **extensive** production the benefits are eroded considerably. Added to that the production systems for organic and conventional are broadly similar and the difference gap is further compounded on issues such as welfare. On a national scale the organic niche is too small to attract economically realistic supplies of protein feed and, coupled with a country that is largely focused on economic recovery rather than value added luxury, the viability of such systems is in serious doubt in the short to medium term.

The issues raised by those farmers seeking to add value/differentiate have not been lost on the main stream dairy supply sector. Commodity does not need to be standardized *per se*, and the feeling is that Ireland as a brand has something to offer a product that's for sale. Ireland is proud of its grass based production system and methods, and feel that the story should be generically added to each and every product produced by Ireland as a way of securing a place in the global market.

So an increased presence for Ireland on the global dairy scene going forward brings with it:

- the volatility that international markets bring
- a low production base cost which is a sound start for survival of a business (and the whole sector)
- strategic physical positioning to markets which can go some way to cushioning the effects of fluctuations (e.g. reduced transport costs etc)

but the main issue seen by Glanbia is that of currency changes. E.g. if the product is good



enough and produced cheaply enough the only risk left is cross border/currency trading and the unknowns that brings.

So it stands to reason that Glanbia should be more interested in FOREX (foreign currency exchange) management than anything else.

IDB (Irish Dairy Board) looked at how the EU was positioning itself post 2015 quotas and initially investigated the use of dairy futures. However with the financial crisis the European Union has had to deal with, this

strategy use is not now on the short term agenda. With the influence of the EU still strong in Ireland - in terms of past interventions such as quota, current instruments such as the soft landing, and future influence from the dairy reform package - focus is currently on low cost output plus exports to help recovery from the economic crisis.

The risk to Irish dairy farming lies with the need to export in the face of global volatility.



9. USA

As highlighted by the European Commission, the USA has a great deal to offer in terms of understanding the dairy futures market as it already has an existing trading system in place.

A brief history of dairy futures as explained by Mark Stephenson of Wisconsin University and Dallas Sipes of Blimling and Associates is:

- The market i.e. buyers (end users) of dairy, was asking if it could hedge dairy products - Hershey chocolate bar company for example could hedge all other products (sugar, cocoa, wheat flour, packaging), but not dairy ingredients (milk fats)
- Other dairy users started to make similar requests- the cheese sector/restaurant chains wanted to 'protect menu price'
- Intervention in US dairy markets was decreasing
- Volatility in the US dairy markets was increasing
- Price risk management of volatility = hedging was introduced

The Coffee, Cocoa and Sugar Exchange (CSCE, now part of the New York Board of Trade) offered the first modern dairy future in 1993. The Chicago Mercantile Exchange (CME) followed suit in 1996, with the CSCE withdrawing from the market in 2000. Having these exchanges involved from the start gave the added bonus of experienced institutions used to dealing with agricultural commodity produce, plus the trading houses etc and infrastructure (trading pit), in place to deal with an extra market such as dairy. This has helped give confidence to those on the peripheries.

The CME initially put \$700k into the setting up of the dairy futures market. The money invested by the CME went into promotion,

advertising and to inject some liquidity into the market so traders were able to take the opposite position and kickstart the use. Since its outset the market has grown 'organically' to the point where it is today ; and although use is still relatively small (110000 contracts known as *open interest* are traded annually), it has a 4-5% share of a dairy market worth approximately \$48 Billion in total. The market appears to be sustained and growing - see *graph on next page* (Source; *Rice Dairies*)

The growth in the US also represents an increase in the liquidity of trades, which in turn has a secondary effect of making the market more competitive and reduces trading risk.

Initially the market was 'thin' i.e. many buyers and few sellers (The New Zealand market is considered to be at that stage currently. It's worth noting that prices are quoted in US\$ in the NZ market) Over time the important factor that has increased use has been the peaks and troughs in the generic dairy market place - at the peaks buyers feel price pain of excessive/unplanned product price and so look to hedge, and in the troughs the farmer/producer feels the price pain and so looks to hedge.

Over time the CME designed the following contracts:

- Class III
- Class IV
- International Skim Milk Powder
- Non Fat dry milk (also avail. spot call extra and Grade A)
- Dry Whey
- Cash Settled Butter
- Butter Spot Call
- Cheese
- Cheese spot call (Barrel and Block)

For the definitions of contract see appendix 2

The point of the list above was highlighted by Prof. Brian Gould (University of Wisconsin)



who highlighted that although the CME did a good job of setting the market out, it was not a perfect system. For example Class III milk contract did not suit all - the basis for a future has to be that it is a uniform product/consistent spec (traded at a set time) and so someone selling milk with a cheese specification of milk this couldn't and wouldn't suit.

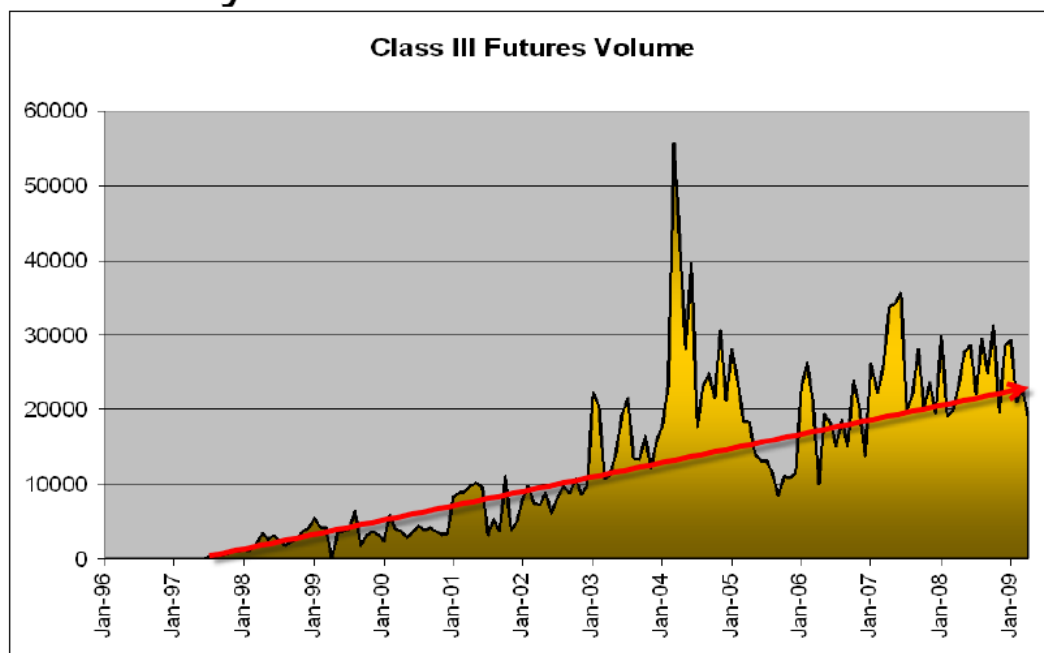
Brian Gould also thought that the contracts were offputting as the contract size was too large i.e. approx. a 500 cow minimum (and that would only involve a single trade. This would put off entrants to the market, and the co-ops had a role to play in co-ordinating potential users. It has to be noted that initial use of the market by farmers was largely

unsuccessful for several reasons:

- the farmers did not fully understand the tool available to them
- they perceived it as a money making situation rather than one of price insurance
- the banks had little understanding of the market and how their support was needed (in terms of cash flow for trades/margin calls)

It's generally felt that this early bad experience of the market slowed use as 'bad news is considered to spread fast' in the agricultural sector.

Dairy Market Growth - Volume



9a. USA current situation

The markets for dairy futures saw renewed interest following the price problems of 2009, when low prices coupled with high feed costs (the USA is traditionally a grain fed milk production system) caused a price slump. The last time farmers showed as much interest in dairy hedging was 2001-2003 when there was a 21 month-long slump. In 2009 farmers

thought the slump would last only a few months and most decided to use farm capital to 'ride out the storm'. The storm lasted longer than anticipated costing farmers an estimated \$14 billion in lost equity. It also caused a situation where businesses (both farm and processor) were weakened and could not reinvest to make the best of the

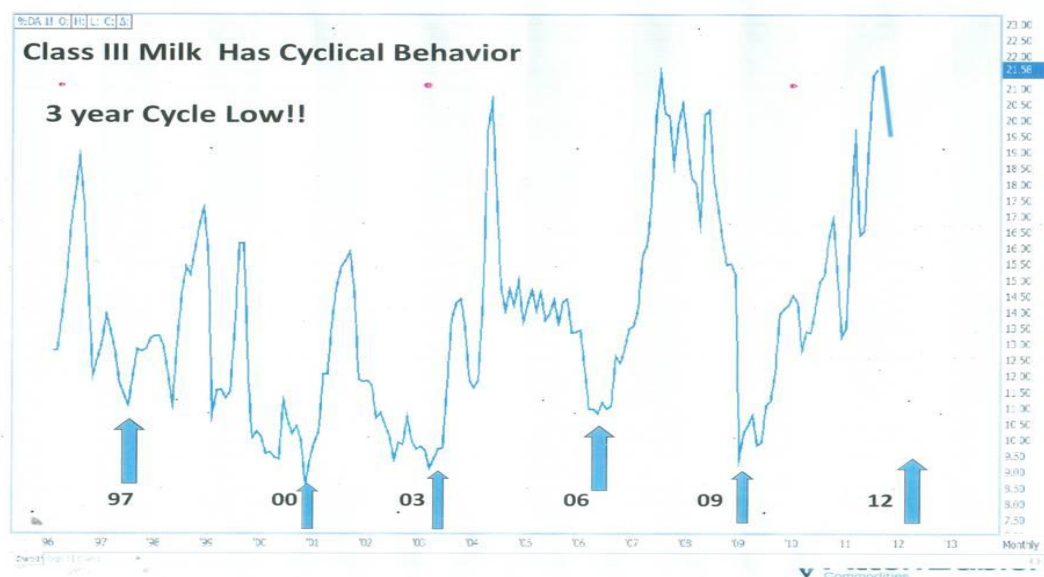


opportunities when the market came back - a situation the EU has already highlighted as a potential future problem.

An added issue was the farm producers that had borrowed heavily (predominantly those in

Western USA) for rapid expansion were also those farms most at risk from the volatility (similar to Dutch farmers investing now), despite trying to achieve economies of scale. These farms also supplied a large percentage of US milk.

9b. Cyclical behaviour of US milk market



Graph courtesy of Atten Babler Commodities

This time round (circa 2009) the dairies/co-ops sought to stabilise the situation by offering risk management tools. The DFA (Dairy Farmers of America) reported at its annual conference that the use of its DRMS (Dairy Risk Management Service) which saw a record year in 2010-11 in terms of volumes of milk traded (and is being aggressively promoted to members) has increased as more and more producers have become aware of the possible commodity price drops of mid 2012 and onward.

DFA are one of the biggest co-ops in America (9000 producer members, marketing nearly 29 billion litres of milk), and at the annual conference of 2011/12 they reported sales of \$13 billion, a net income of \$40.2 million with a strong balance sheet, and good liquidity. Payments to members in 2011 rose \$1.7 billion to \$ 8 billion. Despite these impressive figures DFA still sees a need to provide a Risk Management Service, not only to reduce volatility to producer and end user, but also:

- To ensure that the 'milk actually kept coming to the business as without raw milk the company failed'.
- The co-op could bundle packages of producers/class type to match - this offered accessibility to medium/smaller sized producers (e.g. below 500 cows)
- The dairy could charge a small but profitable fee to handle the business
- The system was more real time/monitored rather than having to go through banks etc.



On a side note DFA has also now started offering support packages for producers including grazing management programs, insurance, farm supplies, financing, energy

and a cell phone and office supply plan that alone saved members \$1.2million (2010). It sees the lowering of cost structure on farm as an integral part of the whole supply package.



Risk management billboard

9c. Dairy Futures on the farm

At one end of the spectrum 8th generation **Chris Heins** of Heins dairies, Missouri, has established a new 600 cow, 24/7 housed, dairy unit on a green field site post 2009.

The intention was to opt into dairy expansion in the bad times e.g. to be counter cyclical. Heins Dairies are typical for the area in that they use no risk management tools as they currently feel the system is not for them/have not the knowledge or time to manage the system, and would rather concentrate on herd expansion, cost and management on farm. Lowering costs in-house is seen as the best route to profitability at the current state of dairying with a refocus on grass usage. See *picture on next page*

At the other end of the scale **Eric and Julie Neill**, Freeman, Missouri who have enrolled on the DFA Risk management program were a good indicator of the practical everyday challenges faced when using the dairy futures.

The Neills are first generation farmers milking 120 cows (aiming for 180 cows) on a 126 acre grass-based low input spring calving system using Jersey cows. The system has had minimal investment - milking barn, cow tracks, water troughs and calf housing, but the farm aims to lower borrowings per cow to approx. \$3500/cow. See *picture on next page*.

Eric and Julie know production costs going forward but are also realistic about herd expansion and profitability. They looked at the US cyclical price patterns (see Atten Babler Graph, page 17) and, after discussing the farm's position with a more 'seasoned' producer and DFA field officer, decided to use the DFA Risk Management Program. They felt they could not withstand a massive degree of volatility in their business. Having only been in dairy for 5 years they felt they were taking out insurance against the bad times, which would protect their business plans going forward.



The interesting take home message of this visit was that they knew very little of how the market worked (and openly admitted it). They did know their costs and they knew their objective which was to remain profitable, and they appreciated that this tool was not a 'get

rich quick' mechanism, but an insurance.

The management time the couple planned to invest was a phone call a month and felt secure under the umbrella of the DFA who they could help manage and give advice until their own confidence with the tool grew.



Heins dairy barn



Low cost milking parlour, Neill dairy barn

Discussing this situation/scenario with **Blimling and Associates** researching and

consulting director Dallas Sipes it would seem this situation is not unique. Blimlings are a



brokerage firm based in Madison, Wisconsin, and are purely dairy focused. They also offer an independent information service (see Appendix 3 for example of typical Blimling data made available) on a daily and weekly basis that keeps subscribers in touch with the global dairy market. They identified that many users - such as the Neills - are not comfortable managing dairy futures even though they have gone about the decision process of using the products in the correct way and have:

- established a cost base within their own business (Blimlings say that as an opener this is the single most important factor)
- decided the level of risk they are happy to be exposed to e.g. how much they can afford to lose in a bad market
- treated the packages offered as 'insurance' to a profitable business.

CME and Wisconsin University offer educational tools to help farmers understand the risk management tools and options. These are in the form of webinars, online tools, speaking to producer/interested groups in person. Brokerage firms such as Brian Rice and Blimling and Associates have telephone support and field officers out on the ground (this is of mutual benefit as they bring in trade, liquidity and can give data back too).

It's widely conceded that a true understanding of the futures process only actually takes place when a farmer makes his first trade (similar situation to learning to ride a bike), and then confidence and a full understanding of the process takes place.

Rice Dairies of Chicago suggest three options for the differing level of understanding and confidence:

- **Farmer makes all decision and is the price risk manager** (Difficult for "average" farmer to judge profitability levels being offered, and time commitment is

required. Have to understand world and jargon of exchanges, brokers, etc.)

- **Employ a professional risk manager** (i.e. have a broker on staff). This is not an option for a small/mid sized herd (less than 5000 cows)
- **Outsource to professional** - broker, accountant, consultant. Someone who understands the farm business and understands the markets

Dairy businesses are now using this concept of risk management strategy as a part of sustainable growth. Rice Associates have clients that have put business models in place that include futures use as part of a whole business approach; this has seen clients successfully take herds from 300cow units to 9000 cow units. Rice Associates have seen that banks are now looking to lend on business models that are using such methods, but more importantly banks have taken as much educating as the farmers themselves. The partnership also sees banks as an important part of the farmer's team in using futures as they provide liquidity and confidence - and so must understand the market themselves to be happy to support investment.

**It's widely conceded
that a true
understanding of the
Futures process only
actually takes place
when a farmer makes
his first trade**

Joe Spader of DairyVisor adds that being able to talk to farmers and understand their business is one the most

important factors, so has a team of 5 staff that know and have experienced agriculture first hand and can get out on farm. He believes that a pure brokerage firm sometimes doesn't offer the best solution for farmers as they are traders (i.e. make money from dealing in trades), whereas farmers sometimes need 'marketing solutions' i.e. a trade via the exchange may not always be necessary and inputs can also be traded and brokered on the client's behalf too (the firm does ask to have the power to make calls on options, but has currently only ever done so on 3 occasions in 5 years). It's believed that to achieve this unbiased support base a farmer must pay a flat fee and at the



beginning Joe says his firm will usually receive daily or weekly calls from dairy producers to gain a feel of what DairyVisor is doing for the business. Usually after a few years' involvement the level of contact is down to a call a month as the client becomes comfortable. DairyVisor encourages its clients to keep the firm updated with farm costing information as major changes happen. Client size ranges from 350 to 3800 cow herds,

although the only way working for the 'smaller' herds can be justified is by having a dense client base in that particular area.

It's also interesting to note that all the brokerage/advisory firms are actively recruiting more staff, suggesting an increasing demand, but finding brokers that have an agricultural background/understand dairy is hard to come by, and this is the admission of all I spoke to.

9d. Other US support mechanisms

Prof Gould also discussed the US cyclical price patterns associated with dairy (cobweb theorem) in which under certain circumstances price volatility can display a recurring cyclical pattern. Often there is a lag in production response to price change, e.g. a high price in period 1 will result in lagged production response (an increase) in period 2 which will cause prices to drop, which causes a lagged production drop in period 3 resulting in a high price and so the process goes on (supply : demand). The US government has been keen to address this:

- FMMO's (Federal Milk Marketing Orders) set the minimum milk price paid to dairy farmers with the aim of equalising competition between milk buyers and producers, and of bringing stability to the market. The milk price would be pooled to give a 'blend price' and so volatility with an individual commodity is mitigated by less volatile commodity prices. Jerry Kozak, who spoke at the DFA conference, is chief executive officer and president of the NMPF (National Milk Producers Federation) and is responsible for the strategic management of the FMMO. He is currently working on a review of the FMMO, called the Dairy Producer Margin Protection Program, which seeks to address the problem of a price shortfall if milk price is insufficient by replacing it with a milk margin. I.e. protect the downside margin. The aim is to address this Bill before the November US elections; otherwise it is felt it will slip down the agenda.
- Forward contracts here are offered by dairies; but this option allows for lower prices to the farmer than that which the FMMO offers (due to legislative changes).
- DEIP (Dairy Export Incentive Program) - cash bonuses have been paid to allow exporters to buy up surplus US product and sell abroad when their markets are weak. This works in hand with import tariffs.
- Herd retirement scheme - this has run 6 times between 2003-08 and is an industry-funded program to remove herds; although each time the national herd was reduced overall output eventually rose, largely due to higher yields and more selective breeding.
- LGM-dairy (Livestock Gross Margin-dairy) has been largely developed by the University of Wisconsin (Prof Gould). The program provides protection against loss of gross margin (market value of milk minus feed cost). Local prices are not used to formulate pricing models, but rather CME basis for corn, soybean meal and milk. The limitation to this system is the suitability to different production systems (mainly low input dairy), and this has been reflected by relatively low uptake of the model thus far; although this formula allows farmers to 'insure' against volatility in the market place



9e. So which strategy has worked in the US?

The easy answer would be to talk in 'free market' terms which is the most popular solution in terms of number of users. In reality the easiest solutions are usually the ones taken up first, such as the herd retirement scheme, which by its current 9th round has little or no effect on the market - but has proved a popular fix.

Carl Babler of Atten Babler Commodities put the situation as follow: Low prices (*brought about by the dairy cycle*) are the dairyman's choice. Carl says that such thoughts are unprintable in his column in the Hoards Dairyman magazine in the US, but suggests a lot of time and effort has been put into trying to control volatility and implement anti cyclical ideas as volatility in the dairy sector was/is seen as a bad thing. Nearly all have simply resulted in more milk and lower prices, such as the Dairy Securities Act (*under the Dairy Producer Margin Protection Program*) and the FMMO. California State has practically

introduced quotas and producers are literally burying milk. Carl Babler views volatility going forward as a good thing for the sector - promoting increased use of hedging (thus increasing liquidity), which he has seen firsthand in recent months as the 3 year cycle of price pain will culminate in 2012.

As discussed before - in this lag stage of the cycle cow numbers are at nearly 9.3million (too many) but it will take time for farm cull strategies to change, plus dairy heifers are already in the system. This is all 'baited' by a high milk price over the last few years. This combination has boosted production. Managing their own market, Carl believes, will give farmers a chance to 'market' their own milk i.e. set their own level of exposure and comfort in the market place, but encourages producers always to have a 6 month minimum Futures cover as a basic plan. This is more responsive than the options outlined above and gives business stability.



10. Discussion and implications for UK

From my travels around Europe and speaking with the European Commission it is quite evident that at some stage the dairy sector as a whole is to be increasingly exposed to global market forces and volatility.

If the American situation can be taken as a forebear of what a more exposed market can bring, then what does this message hold for the UK and European dairy market and what can be drawn from the US Dairy Futures Market to help?

America can be compared to Europe as a whole:

- Each has numerous milk buyers and processors, with regional variations in consumption type and trend, plus a wide regional variation in production method and unit sizes (farm level) also exists (unlike the NZ market which is currently viewed as too thin)
- Each has a history of insular/inward looking market outlook and product development

- Each government wants to have a dairy sector less reliant on government support/intervention, and for there to be a move to a more market focused supply chain
- Price volatility was the true trigger for interest in price hedging/risk management by suppliers and buyers in the US
- Early entries into the dairy Futures market in the US were unsuccessful as it was viewed as a money making scheme rather than a price insurance scheme. This negative perception delayed initial uptake
- America has tried other mechanisms to stabilise the dairy sector, and these have largely proved to have not worked/be unsustainable over the long term

If we follow the precedent set by the American market what implications can be drawn for the UK dairy sector?

**US dairy market was exposed to less direct intervention,
which in turn triggered production increases and over supply.**

**The market responds with falling prices.
Production falls**

**The agricultural agencies try to introduce measures to support the producers
(herd culling schemes, guaranteed price contracts)**

Markets rise

Producers respond by increasing production

And the cycle is repeated!



Taking the example in the box on the previous page as a given; it is interesting to compare the scenario to the current UK dairy industry. Prices have been sustainable, so production and investment has increased. Prices have fallen; cost-plus contracts have been introduced, (recent protests outside milk buyers' depots and even talk of introducing a herd cull scheme) - does all this sound familiar? The Americans were here some 20 years ago!

And the current difference between the two scenarios?

Producers in the US have seen the peaks and troughs of the markets increasing (more violent volatility). The business focused producer is now addressing this by introducing cost management strategies on farm and futures use off farm, suggesting that to have a sustainable and long term future in dairy a price insurance mechanism needs to be in place, accepting that 'the market is the market'. Industry traders and commentators in the US call the cull schemes and price trackers short term answers with limited overall impact. (But nevertheless these are usually cited as an answer as they are easy to implement, and in relative terms cost existing producers very little directly).

Whereas UK producers must accept the market price and so base production and cost structure around that. Healthy and cost focused dairy businesses will survive in the short term. If and when increased global pressure/price volatility comes into the market long term investment and management (even on low cost systems) in the whole supply chain will become increasingly difficult to justify.

The UK is in some respects in a strong position compared to its European partners, as London based Steven Blogg of the NYSE Liffe explained. The basis for futures trading is already in place in Paris and the UK (see Appendix 4) and has the best chance of success due to its strong track record and

large 'customer base'. Current trading of the SMP contract is currently zero, and the NYSE Liffe and traders in Chicago both think that until 2015 there is little point investing time and effort in the sector. By then 'pains will have been felt' in a situation similar to the European grain markets, when producer uptake was only really ignited post the 2003 slump.

In a repeat of history it is also largely felt that, like in the US, it will be customer demand that will be key to kick starting any market (Hershey etc). It is murmured around Europe that buyers are interested, but traders feel these buyers themselves will need to feel the exposure to a volatile market to bring them into play.

What can be learnt from the US experience is the need to emphasize that futures contracts are a way of providing price insulation rather than money maximisation opportunities. I.e. to avoid negative PR that can set back uptake; producers need to recognise what the contract market is actually there for - price security. Various companies offer seminars throughout the UK to educate on how markets can offer significant returns, but in reality this strategy is nothing more than gambling. This drives home the point that any education on the subject needs to come from within the industry sector, whether it be from dairies, recommended and trusted NGOs or established agri-risk managers, with a track record of trading.

There is of course a human element to this – US producers of corn, soya etc have long been used to the stock exchange, its culture, terminology, working methods and infrastructure. It could be argued that it is really only in the last decade that the more conservative European agricultural producers have started to show a more concerted interest in the stock exchange, and even so it is still widely viewed as a place that is quite separate to agriculture.

In a couple of cases it was felt by companies



that were looking to export most of their product that hedging currency exchange rates was a better way of risk management, but traders on the floor seemed to think such policy was flawed due to currency exchange contracts being far larger than what a dairy could use or afford; the sentiment and principle were correct but the execution impractical.

If producers in the UK are to make the most use of risk management then they need to understand the level of risk exposure they are comfortable with. Obviously, like their counter parts in the US, those with lower cost structured businesses are more comfortable with a greater level of exposure to price peaks and troughs.

As DairyVision's Joe Spader, and NYSE Liffe's Peter Blogg both add, there has to be an element of involvement from any user of hedge funds, and the simplest and most practical solution for UK farmers seems to be one of hiring a broker, establishing the risk level a farm is comfortable being exposed too, followed by monthly calls or updates to check that targets are being met. This seems to be the best way of managing such a strategy, with any changes in the farm business that would/could affect the farm's position being fed back to the brokers as soon as possible.

Technology plays a part in this as farmers are now better connected than ever before, with Twitter feeds by firms such as 1-888-757-milk or the Fintec Group offering regular updates on the agricultural dairy markets. It is easy for a farmer to follow market trends, whilst firms such as Blimlings and Associates add value to their services by offering a weekly update of dairy markets for a fee. However, as the traders of the CME explained, in such markets it is the overall trend in the market (the 3 year view) that traders are looking to help farmers with, not the micro changes seen by weather, production reports and input price changes, as individually these have minimal effect. It was felt that herds with 5000+ cows could justify their own broker, but realistically this is going to be a dairy co-op coordinated

exercise.

UK farmers need to understand that even within the structure of supply contracts with their dairies the role of the farmer is changing from that of not just a producer, but to that of a marketer - a risk manager. As discussed by Joost M.E. Pennings of the University of Illinois at Urbana-Champaign it will be farmers' capabilities in this direction that decide the success of a farming business. Joost also states that with the burden passing to farmers they must get support from:

- Dairy co-operatives - in giving support and pooling producers to match contract sizes. They benefit from collecting premium and supporting their suppliers.
- Banks - reduces the risk a bank is exposed to when lending into a capital intensive sector.
- Farming Unions - information and coordination.
- Agriculture Ministries - must be supportive of organisations that can pool producers.
- University research that actively engages with farmers.

Why not use a Forward Contract?

The answer to this can be put down simply to the flexibility that Futures offers in the standardisation of a contract. Anyone can publicly trade the Future as they know what they are getting. This means that the end buyer contract does not have to be individualised/tailored (as suggested by the University of Wisconsin team, a large number of different futures contracts in a mature market allows a buyer/seller to build in some preferred product specification) so a greater number of buyers is available. This increases liquidity and accessibility whilst having the protection of formal legislation - you don't need to know or find your specific buyer to do a trade.



11. Conclusions

1. Volatility is key to uptake - every year volatility affects producers and processors - uptake increases.
2. Use of contracts, legislation and minimum price guarantees have only partial effect and cannot control the overall market, leaving producers and dairies alike exposed.
3. The use of the Futures has to be market led - end buyers (ingredients manufacturers) have to want the market and be suffering the effects of volatility themselves to kick start their interest.
4. Hedge fund use for the dairy sector has to be viewed as a way of price insurance rather than a 'get rich quick' tool. Hence risk management knowledge of own production system and cost structure 'on farm' is critical before considering the use of hedge funds. Such information is needed to establish price exposure risk/level.
5. A bigger risk is not having a sustainable dairy in the first instance. Risk management tools are not a bail out method for producers.
6. Sizes of contracts were off putting and dairies had to be involved to pool producers wanting to hedge so that they were contactable.
7. Dairy trading markets are only interested in macro market information - information on which strategy is based is paid for and comes from market intelligence. Traders are happy to trade - they just want to see a margin!
8. The European dairy sector (along with markets traders and banks) is currently sceptical about using hedge funds for dairy. Other sector partners that use hedging are poorly informed about the dairy sector and contract types (see Appendix 2) - e.g. what it can offer, and knowledge of product (how is it traded when it's liquid? SMP etc and use in ingredients.) Education of traders, producers, processors and banks is a cornerstone in the development of a credible European and UK dairy futures market.
9. Bank information and involvement is important and needed for supporting farmers.

Most dairy farms already use hedge funds by default if buying in feeds/inputs. Over time dairies using risk management tools for milk sales have started to link to inputs; X input and Y output equals desired margin. This takes time, 5 years is common for a producer to gain sufficient confidence and understanding, but those that have used the strategy successfully over that period have built sustainable and replicable business models.



12. Recommendations

There needs to be a broad acceptance that post-quota price volatility will increase for European dairy suppliers and that a long term approach needs to be taken by producers to work with the market rather than to try and introduce mechanism to counteract market trends.

In order to facilitate a culture of working and understanding the future changing shape of the dairy industry the following needs to happen

- Milk buyers/producer co-ops need to understand that futures/hedging offers their suppliers a way of managing risk, and that they are key to providing a way of marrying suitable contracts with groups of suppliers. Milk buyers need to understand they can charge and see a return for managing such a system.
- Farmers need to be educated in what futures contracts can offer, and understand that in-depth knowledge of the markets is not needed to enter.
- UK Government and European policy makers should help establish effective producer organisations (e.g. co-ops) that can manage and coordinate farmer suppliers.
- Dairy buyers need to be exposed to significant levels of price volatility to encourage use of futures contracts and thus provide interest and liquidity within the trading markets.
- Markets and information chains need to be in place to offer futures as a solution when extreme volatility kicks in – they are broadly in place already in the UK.
- Brokers of agri-products need to be educated about the potential that can be offered by broadening their work portfolio to include dairy. The principles are the same, it's just the product that is different.
- Banks need to be educated as to dairy futures potential, and ensure a farmer friendly structure is in place both internally and externally to help producers integrate a strategy into their business plan.
- In the short term Farmers' Unions need to co-ordinate all in the dairy sector, so farmers, banks, co-ops and brokerage firms are there to supply dairy product to buyers/food manufacturers when the latter decide to use the markets. (It is worth noting that at the start of this study the German, French and Irish showed only minimal interest in the contracts, but traders are now reporting a significant interest arising since mid 2012).
- Education is key to the uptake of futures contracts and, whilst Farmers' Unions should not have to deliver the education, they need to instigate the conversation here in the UK so that brokers, traders and dairy co-ops/farmers are able to see the benefits of working with the market to reduce risk.



13. After my study tour

Comments and emails during my study from people here in the UK lead me to believe that I'm not alone in thinking risk management tools will play a part in the dairy sector going forward. Having taken a big step back from farming politics for the purpose of the study it has actually afforded me a great seat to see the dairy industry crisis of 2012 unravel, and in some respects the events of the last 18 months in the actual industry have mirrored the findings during my study, giving me the belief that risk management should play a large part in the UK industry.

The discussion of time scales is possibly less subjective, with a personal feeling that 10 or even 20 years could pass before a credible hedging market is here for dairying, whilst those who work in the markets see the UK as being 'at the table' easily in less than ten years. Either way the results will not be immediate, but for me as a dairy farmer, the implications probably will - a need to refocus on cost and structure within the dairy farm at home will (and is) taking place, and whilst in the short term dairying will remain part of the business I cannot see any dairy farm in the UK remaining unaffected by the negative aspects of increased volatility, and so can only

position the business to try and minimise its effects.

I do feel that discussing the overall implications of what risk management can offer to the UK is vitally important, and hopefully this study will play some small role in kick starting the conversation and will get stakeholders discussing what they can do, whether that be discussion with NFU policy advisors or with similar agencies .

Having travelled very little before undertaking the study, I can wholeheartedly say I'm glad I took the latter. I learnt not only about this subject, but that throughout the world similar issues affect all of us. In a broader context the 'Joe average' UK farmer has little to fear about his/her place in the world.

I have also learnt that local areas and communities only function if those living and working in them make the effort to be involved. Each time I have returned home my appreciation of how fantastic the place I live and work in has grown, although that is not to say that I won't be travelling again in the future.



14. Acknowledgements and Thanks

I would like to thank Harold Cowburn for sponsoring me, and unfortunately with great sadness he passed away before we could actually meet in person. Listening to those who did know him his own Nuffield experience had a profound effect upon him, and in some respects I hope to emulate that myself.

I would secondly like to thank my long suffering family who have chipped in whilst away, carrying out the day to day running of the businesses.

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15. Appendix 1 : Simple explanation of futures

Aristotle described the story of Thales, a poor philosopher from Miletus who developed a "financial device, which involves a principle of universal application". Thales used his skill in forecasting and predicted that the olive harvest would be exceptionally good the next autumn. Confident in his prediction, he made agreements with local olive press owners to deposit his money with them to guarantee him exclusive use of their olive presses when the harvest was ready. Thales successfully

negotiated low prices for using these presses because the harvest was in the future and no one knew whether the harvest would be plentiful or poor and because the olive press owners were willing to hedge against the possibility of a poor yield. When the harvest time came, and many presses were wanted concurrently and suddenly, he let them out at any rate he pleased, and made a large quantity of money.

What is a futures contract?

A legally binding agreement to make or accept a standardised quantity and quality of a commodity at a standardised time and place for a price agreed upon today in an organised futures exchange

(Managing Market Risk: The Role of Futures Markets, Joost M.E. Pennings, Wageningen University, Maastricht University, University of Illinois at Urbana-Champaign)

See Appendix 2 on next page



16. Appendix 2: Dairy Futures Contract Definitions – courtesy of CME Group (CMEGroup.com)

Butter

Butter futures reflect cash market supply, demand and cold storage stocks fundamental information, and offer spread trade opportunities as butter is placed in storage for the holiday (seasonal) demand period. Butter futures contracts offer both hedgers and traders a storable product to trade. Storable contracts create spreading opportunities between deliverable contract months. As the supply and demand for the cash product changes, the need arises for the butter industry to store product or take product out of storage. This movement creates pricing relationship differences between the nearest contract month and the most distant ones.

Cash-settled Butter

Another butter contract – Cash-settled Butter futures – is an electronically traded contract based on 20,000 pounds of Grade AA butter, one-half the contract size of the pit-traded Butter futures, which has a delivery trade unit of 40,000 pounds. This contract was designed to meet the needs of industry participants who prefer the features of cash settlement over the current physical delivery contract. Settlement is based on the first-released USDA monthly weighted average price of butter in the United States. This contract provides producers a liquid, cash-settled hedging mechanism, while also enabling buyers in this industry to hedge their exposure to price fluctuations in butterfat.

Dry Whey

Dry Whey futures are cash-settled futures that are traded exclusively on the CME Globex electronic trading platform. Whey is the liquid that separates from milk during the cheesemaking process. Dried whey, which is high in protein and low in fat, is used in foods such as crackers, breads and cereal, as well as energy bars and protein drinks. It is also used in animal feed. Contract settlement is pegged to the USDA monthly weighted average price in the United States for dry whey as first released. The contract provides price volatility, price transparency and growing liquidity, as well as innumerable choices for spreading. CME Group offers seven different dairy product futures and options: two on different types of milk, two different butter contracts, two different nonfat dry milk contracts and a dry whey contract.

Milk Class III

Milk Class III is also known by the industry as cheese milk. The Milk Class III contract represents milk used mainly in the manufacturing of cheddar cheese. All factors affecting milk production and cheese cash prices influence the price direction of this contract. The Milk Class III contract is quite user-friendly to trade and lists contracts out 24 months. Hedgers and speculators watch factors affecting milk production and the cheese cash market for pricing indicators.

Milk Class IV

Milk Class IV is used to produce butter and nonfat dry milk. All factors affecting milk production along with butter and nonfat dry milk cash prices influence the price direction of the Milk Class IV contract. Milk Class IV contracts were introduced in 2000 in response to industry needs to hedge milk classified for usage in butter production and dried milk products. The contract is a mirror image of the Milk contract trading specifications. But instead of focusing on cash cheese for market price indicators, hedgers and traders are attuned to factors affecting milk production and the cash butter market.

Nonfat Dry Milk



Nonfat dry milk is a product of the manufacturing of butter; it can be stored, used in various feed and food sources and/or reconstituted into milk. Nonfat Dry Milk futures contracts broaden the scope for dairy industry trading as the product readily trades worldwide.

Deliverable Nonfat Dry Milk

Deliverable Nonfat Dry Milk futures and options are electronically traded contracts based on 44,000 pounds of Grade A and Extra Grade dry milk. These contracts offer the same price certainty as the cash-settled contracts, with the added convenience of physical delivery.

Appendix 3 on next page



17. Appendix 3 : Blimling and Associates emailed market update for users:



December 20, 2011

DAIRY MARKET MONITOR

Click here to download full report.

- Anhydrous milkfat prices at the GlobalDairyTrade continued to rebound today, gaining more than 4% to settle at an average of \$4,183 per metric ton (\$1.53 per pound in 80% butter-equivalency terms), after averaging \$3,309 (\$1.21) in early November. Both skim and whole milk powder prices declined – WMP to an average of \$3,589 per metric ton (\$1.63 per pound) and SMP to \$3,312 (\$1.50). Cheddar cheese prices gained 1% to an average of \$3,601 per metric ton (\$1.63 per pound), nearly identical to US implied cheese prices for the first quarter.
- Presently, spot cheese prices at the CME remain in the \$1.50s, with futures implying a seven cent hike come January. Block prices held steady at \$1.5625 per pound while barrel prices gained a penny to \$1.5450. Each commodity traded once at their respective closing prices. Nearby cash-settled cheese futures increased, but deferred contracts slipped, creating virtual parity in the process. The first quarter average closed at \$1.6313 per pound (+\$0.0037), while the second quarter average fell to \$1.6330 (-\$0.0050). With continued dry whey strength and marginal gains in the Class III milk futures market, futures are pricing cheese at approximately \$1.63 per pound in both the first and second quarters of 2012. Futures volume was robust, estimated at 140 contracts.
- Class III milk futures declined by six cents in January to \$17.24 per hundredweight, but posted gains of no more than a nickel throughout the rest of 2012 and into 2013. The 2012 average added two cents to close at \$17.12 per hundredweight. Volume was estimated at 1,198 contracts.
- Spot butter prices dipped below \$1.6000 per pound to \$1.5950 (-\$0.0075). Buyers initiated the action, but after two lots traded at unchanged, sellers stepped offers down in quarter-cent increments to the closing price, where the third and final lot changed hands. The cash-settled butter futures response was light in volatility, but heavy in trade. Most contracts remained unchanged, but gains in January and April were offset by a \$0.0147 decrease in June to \$1.7053 per pound. Volume was estimated at 71 contracts, with double-digit trade from January through April 2012.
- Grain futures extended yesterday's gains, increasing by between three and nine cents per bushel. March 2012 corn futures added six cents to close at \$6.0700 per bushel, while January soybean prices settled at \$11.4450 (+\$0.0750).
- For the latest international dairy headlines, visit GlobalDairyMarkets.com

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18. Appendix 4

Typical specification contract for Skim Milk Powder (NYSE Paris)

Skimmed Milk Powder Futures

Unit of trading Twenty four tonnes

Delivery months January, March, May, July, September, November such that six delivery months are listed

Minimum price movement (tick size and value) 50 euro cents per tonne (€12)

Last trading day Business day prior to the tender day

Last update Tue, 04/24/2012

Trading Hours 10:45 to 18:30 (Paris time)

Trading platform LIFFE CONNECT®

Full contract specification and related documents

Skimmed Milk Powder Futures and Options

Algorithm Central Order Book applies a price-time trading algorithm, with priority given to the first order at the best price

Wholesale service

Against Actuals, Exchange For Swaps

Notice day/Tender day The sixth business day preceding the first business day of the delivery period for that delivery month

Origins tenderable Skimmed Milk Powder from any EU origin

Price basis Euros per metric tonne. Delivered free onto Buyer's transport in accordance with Incoterm FCA at a delivery point that is within a 150 km radius of Antwerp, Hamburg or Rotterdam

Quality

Physical and Chemical Analysis:

Fat 1.25% maximum

Protein 34.0% (non-fat dry matter) minimum

Ash 8.2% maximum

Moisture 4.0%, maximum

Scorched Particles Disc B maximum

Titrateable Acidity 0.15%, maximum

Solubility Index 1.0 ml maximum

WPN index 1.51– 5.99 mg/g - medium heat

Microbiological Analysis:

Standard Plate Count 10.000/g, maximum

E-Coli Negative in 1g

Salmonella Negative in 25g

Yeast and Mould 100/g, maximum

Inhibitors Negative