Nuffield Scholarship 2007 report

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Part I – An overview of the Global Focus Program

Introduction

Food shortages and security concerns after the Second World War drove many countries to encourage agricultural production through various forms of subsidisation and protectionist measures. These subsidies survived long after their intended usefulness ended, causing a huge over-supply of agricultural commodity products throughout much of the developed Western world. As the mountains of product grew many countries responded by reinforcing protectionist measures to support their primary industries and shield their own markets from foreign traders. Under the relentless pressure from over-supply, commodity prices consistently kept falling in real terms and agriculturalists typically responded by increasing production even further to become more efficient in order to maintain the standard of living they had become used to.

As we enter the twenty-first century new forces are emerging which will shape the path that agriculture takes in the near future and it will be to the advantage of those involved in the industry to have some understanding of those pressures and how they might affect the future direction of agriculture.

Agriculture is being used to shoulder some of the world's increasing energy needs, especially in the transport industry. Bio-fuels easily utilise existing infrastructure and therefore becomes a natural alternative to fossil fuels. Developed countries have increasing concerns surrounding national security for both food and fuel. The prospect of remaining dependent on the Middle East for ever-decreasing amounts of oil is not attractive to most Western countries and in particular America. Although bio-fuels are unlikely to replace fossil fuels they do play a strategic part in reducing dependency on a volatile source of supply.

Commodities flow around the world more readily than ever before with improved transportation, communication and financial services enabling this to happen. Trade barriers have come under intense pressure as countries have sought to trade their surplus agricultural products on the world market. It might be expected that under such pressure these barriers would have been lowered much more quickly than has been the case. One reason for the slow dismantling of trade barriers is best explained by the comment made by Darci Vetter, Director for Agricultural Affairs in Washington DC when she said

"America gives nothing away at the negotiating table without getting something in return".

The complicated process of finding suitable trade-offs when giving trade concessions is clearly a difficult task that is often responsible for the stalling of trade negotiations. While in many circumstances politicians have a willingness to lower these barriers, they will not do so without some perceived trade concessions being made in another area.

Ethanol and the cascading effect it has on commodities prices around the world

There are two new forces gaining some traction in changing the face of agriculture. The first of these is obviously energy and the second is the consumers' concern about the environmental footprint. Ethanol production is having an immediate and significant effect on global cereal-grain prices. The USA has reached its target of 7.5 billion gallons of ethanol production specified in the Energy Policy Act five years ahead of the 2012 target date (required in the act) with only 122 plants in production. There are another 73 plants either under construction, or approved for construction, that will further increase production. It is hard to believe that these proposed new plants found investors if the projected returns were insufficient to justify the investment in the first place. Having achieved the 2012 target of 7.5 billion gallons per year, the US$0.51 / gallon subsidy has now been removed from any additional ethanol production. (The duty on imported ethanol remains at US$0.54 per gallon). This is unlikely to reduce demand on corn supplies however, as ethanol plants have become progressively more sophisticated at extracting other high-value products like sweeteners, food additives and fibre, making it less critical for ethanol production to make a profit. As one plant manager said.

"More modern dry plants are able to meet the market price regardless of what that price is to some extent, as these plants have the ability to pass price increases on to their customers."

Maximising throughput, balancing the type of products being produced and ensuring the plant has a constant flow of input material become the most important issues for these plants and not price. Ethanol plants will keep meeting the market price for corn just to make sure they keep running efficiently. To build an ethanol plant currently costs around US$400 million, so taking one out of production has serious consequences for the investors. It is possible that older plants using outdated technology, or plants that have to compete with other plants for corn supply will fall by the way but it is unlikely that these potential closures will have any serious impact on total ethanol production in the USA. Furthermore, it is quite possible that the target of 35 billion gallons by 2017 could be brought forward along with the subsidies. Even with this massive expansion in ethanol production, America's requirements for fossil fuels is forecast to continue rising for the foreseeable future. There has been some evidence that the blenders themselves may have some resistance to using too much ethanol either because they do not have the infrastructure in place to blend the quantity of ethanol coming forward or because they have been unable to acquire the necessary approvals to establish the infrastructure. Either way this is unlikely to be a long term impediment to the growth we are seeing in the industry. It is therefore highly unlikely that the pressure on corn supplies will decline in the foreseeable future and as a consequence corn prices seem likely to remain at their current levels or even increase further over time.

Corn is still the world's cheapest grain at the time of writing, despite the rises, making it an attractive option for livestock producers around the world as a feed source, provided they have the protocols in place to purchase it.

It might be possible that Canada's huge oil-sand deposits could reduce America's dependence on Middle Eastern oil but there are enormous limitations on the ability of the Canadians to extract that oil at the rate needed to have a dramatic impact on world supply. The cost of extracting this oil has plummeted because new and more efficient methods have been developed so that oil-sand production remains viable at anything over US$40 - $50 a barrel.

Since the rapid growth in biofuel production began, there has been much speculation on how increasing corn prices will affect the livestock industry as feedloters, and hog and poultry producers are heavily dependent on corn as a major input. Certainly for the hog and poultry producer, rising corn prices will have a direct impact on production costs but the picture is less clear for many of the feedlot-cattle producers. If these feedlots are positioned close enough to an ethanol plant then access to vast quantities of Wet Distillers Grain (WDG) is a huge advantage as most ethanol plants have difficulty extracting much value from the market for this product. It usually trades for US$0 - $50 per tonne. Indeed, for some plants, disposing of the by-product poses a significant challenge if there are no feedlots within close proximity. Because both hogs and chickens are mono-gastric animals they are less able to benefit from WDG being included in their diets. Inclusion rates in diets are normally only about 5% for these species meaning the amount consumed is nowhere near enough to absorb the WDG from even a small ethanol plant.

Within the US, the attitude of cattle producers is divided on the value of ethanol to their industry. Texas cattle feedloters have deep concerns about being disadvantaged by being so far removed from cheap sources of WDG and rightly so, for there is little doubt that the cost of production will be substantially less for those feedlots able to obtain and transport WDG to their operations cheaply. It may stand to reason that pastoral graziers have something to gain with rising corn prices but this has yet to be shown. It is difficult to know what the long-term effect of ethanol production will be on the cost of beef production in the US but it is almost certain that there will be some movement of feedlots nearer to production plants in the future.

Increasing wheat prices in Canada are really starting to bite as feedlot-livestock producers continue to lose money. Hog producers are in the same boat. "Mapleleaf", Canada's largest hog producer, has announced its intention to go out of exporting pork and has rationalised several of its killing facilities into one larger unit thereby reducing capacity. For the first time in thirteen years hog producers are losing money and are seeing a contraction in their industry. Ever-increasing volumes of weaner pigs are being shipped into America for rearing, where the net cost of feed, is still comparatively lower. Although the price of corn has risen in the US by as much as 90% compared with two years ago, hog producers appear to be profitable at today's prices but only just. It may well be the case, that the increasing price of corn has not fully impacted on producers yet, as most farmers buy their feed requirements months in advance and that, as new feed contracts take effect, hog producers will begin to squeal as they feel the squeeze. The fact that hog producers have come off the back of five record-breaking years of profitability means their bank balance is more able to withstand a little pressure than would ordinarily be the case.

The roll-on effect of lifting commodity prices seems to be very slow to reach the consumer but there is evidence that food prices are rising and that further increases are inevitable. The time-lag between rising farm-gate prices and the supermarket shelf can be very protracted. The rise in ethanol production has increased the cost of food to the consumer by an estimated US$47 per person / annum or 1.3% in the USA. The effect on poorer countries is much more dramatic and some estimates put the rise in food costs as high as 40% in countries like Mexico where corn is a staple part of the diet. One thing is certain, the full impact of rising grain commodities is still to be seen in the shopping basket and it is unclear just how big that impact will be.

The debate on food verses fuel

While richer nations can afford to turn a food resource into fuel, poorer nations become less able to afford the food needed to satisfy their populations' hunger when prices for basic food commodities rise to meet demand. The possible destabilising effect this could have on some nations should not be underestimated. Citizens of wealthy nations can be spending on average as little as 10 - 15% of their disposable incomes on food but for poorer nations this percentage is much higher. As the proportion of disposable-income spent on food increases, the impact of rising food prices clearly has a much greater affect. It appears that often a nation's desire to become more self-sufficient in fuel overshadows consideration of the wider social implications for other countries. There is a desire within some circles in America to become less reliant on other countries not only for fuel but for a whole range of commodities from food to footwear. The resulting fallout from 9/11 is that many Americans in particular continue to feel under threat and as a result have developed a "siege mentality" in order to insulate themselves as much as possible from being dependent on the rest of the world for essential commodities.

Ironically, if America continues to disregard the social implications for other countries when deciding on domestic agricultural policy then one consequence could be to further radicalise some of the poorer nations giving rise to further anti-American sentiment among these countries. When one looks at the Farm Bill currently before congress there is little consideration given in the Bill to the impact its content could have on foreign policy. It is disturbing to see just how many Americans have a very limited view of the world around them and how often they express frustration and consternation at the antagonism directed at their nation. Such myopia gives rise to a strong nationalistic sentiment with almost total disregard for the impact America's internal politics can have on the rest of the world. Of course, one could argue, why should America have any regard for the rest of the world anyway? Should they not be free to use their resources entirely for their own consumption and in whatever way they choose?

The answer may seem an obvious, yes, to these questions, but there is a point at which it is in America's best interest to share their resources and markets thereby avoiding further marginalising of nations that already resent the wealth, power and dominance America enjoys.

If it is true that the Middle Eastern oil reserves are on the verge of exhaustion, then it is a frightening prospect to think of these countries without the wealth and advantages that this oil brings at present. Some pundits speculate that these reserves could start to dwindle in as little as twenty years. Regardless of when these reserves finally expire, one thing seems certain and that is that they are finite and that the dominant economies in the world have an insatiable thirst for the black liquid. Unless substantial reserves are discovered that can be extracted in sufficient quantity at a viable cost then it seems certain that bio-fuels will become an entrenched part of the transport/energy mix for the foreseeable future.

The part subsidies play

The bulk of the US$19.8 billion ear-marked for subsidies under the Farm Bill currently before Congress in the US ends up in the pockets of the larger corporate landholders and producers. When the current Farm Act was first drafted in 2002 the intention was to support the small family farm and keep these entities profitable. In fact, current support has been largely siphoned off by larger farming entities and in many cases the small landholder has missed out entirely on receiving any substantial benefit. On closer examination this Act has been responsible for creating huge distortions in the farming sector. For example vegetable and fruit growers along with livestock producers received virtually none of the US$16.3 billion dollars in subsidy support while corn, wheat, rice, soybeans and upland cotton-producers harvested 93% of the direct payments, counter-cyclical payments, loan deficiency payments, marketing-loan gains and certificate-exchange gains in the 2005 year despite returning less than 21% of agriculture's total cash-receipts.[1] It can be argued however that livestock producers using subsidised corn as a feed source benefit indirectly.

The problem is that these distortions mean farmers in some sectors find it more profitable to farm for the subsidies than for the returns the market would pay them. In turn this distorts the market price by creating a relative over-supply of a particular commodity thereby potentially driving the price of that commodity down. Subsidies, in whatever shape or form they come, distort the true picture of what is happening in the marketplace.

While developed nations have almost universally accepted that some form of subsidy or trade barrier is essential to protecting agriculture as a core element in their economies, this has come at great cost to poor and undeveloped countries that rely heavily on the primary sector for a large part of their foreign earnings but are unable to receive "fair" market value for their products either because they are locked out through trade restrictions or because their competitor's price is driven artificially low through subsidies.

New Zealand's commitment to a staunch free-trade policy has been described as naïve in the extreme by both European and the American representatives. As a comparatively small player on the world scene New Zealand is unlikely to influence other countries toward embracing a free-market approach by taking such an approach itself. To date therefore New Zealand has found itself in the precarious position of having an economy based around primary production while selling its wares to a world that closely guards and protects its own primary producers. Furthermore, New Zealand can no longer consider itself a low-cost producer as the costs of agricultural production are generally lower in some of the old Eastern Bloc and South American

[1] USDA,2007 Farm Bill Theme Paper – Risk Management, page 9

countries. Despite the role of the WTO and the Doha round, protectionist attitudes are not about to change anytime soon on the part of either the Americans or the EU regardless of the rhetoric broadcast by the politicians.

Although the EU is committed to unwinding subsidies by the year 2020 they are finding it excruciatingly difficult to achieve. Professor Alan Buckwell, Chief Economist, Country Land and Business Association said “Britain is unwilling to relax its position on agricultural subsidies without receiving some form of commensurate trade concession from the other EU members”. As with the Americans nothing is given away without a quid quo pro.

Among a group of forty relatively progressive UK farmers the attitude on the subsidy system was deeply divided with most being eager to see all subsidies removed entirely and others seeing it as impossible to farm without tax-payer assistance. If one looks at the net profit of the entire agricultural sector in Britain and compares this figure with the amount received in subsidies from the EU, the two figures are not too dissimilar. It is understandable, therefore, that some believe maintaining subsidies is imperative to their profitability. Indeed, for some farming enterprises, the subsidies total more than the net farm-profit. In other words, take away the subsidy and the farm would make a loss.

Do subsidies help or hinder and does government have a role to play?

For those British farmers who did not want subsidies they saw these payments as stifling growth, initiative and opportunity. There was general recognition that should subsidies be removed there would be severe short-term pain but the long-term benefit would be to give the progressive farmers better access to land and resources currently soaked up by inefficient farmers who survived on the back of the subsidies they received.

A similar conclusion was reached in a study carried out in America by “informa economics.”
“Current programs reduce efficiency by blocking market signals and constraining resource shifts to faster-growing and more profitable markets. Payments inflate farm costs, particularly for land, reducing competitiveness. They create dependency rather than support for investment, innovation, and growth. USDA data shows that, since 1980, cash receipts from supported crops have grown by less than 15% while those from unsupported crops have grown by over 185%.”[2]

Few New Zealand farmers would want to return to the days of having their production subsidised by the tax-payer. Nevertheless, government plays a key role in two important ways for the agricultural industry. Firstly, they set the scene for international trade by negotiation; secondly the government and its agencies set the rules that protect New Zealand’s disease-free status.

It is on this second score that one very disturbing spectre is forming in NZ. Under constant pressure from other trading nations New Zealand’s commitment to keeping diseases out of the country appears to be waning. MAF Biosecurity NZ is solely responsible for this role and is answerable only to the Director General and not to parliament, let alone to industry. Two recent examples that should be of concern to farmers in this country is the bee industry that has continued to argue its case with Biosecurity NZ for keeping out unwanted organisms and the pork industry which is currently locking horns with Bio NZ on the same issue. The bee case is

[2] Informa economics, Looking Forward: A More Market-Oriented 2007 Farm Act, page 2

currently before the courts[3] awaiting a verdict and the Pork Industry Board will go to court if Biosecurity NZ persists with its current direction of allowing raw, unprocessed pig meat to enter New Zealand, knowing that over 100,000kgs of this meat is infected with the PRRS virus (Porcine Respiratory and Reproduction Syndrome). These two cases represent a fundamental change in stance on the issue of biosecurity. In the past NZ has always argued for keeping diseases that could affect agriculture out of the country, but it now seems that control is being shifted to on-shore control mechanisms. Under WTO rules, countries are entitled to exclude products (or impose safe-guards to protect against introducing new and harmful organisms) provided there is credible scientific evidence to show that such measures are necessary to minimise the risk of a breakdown. In the absence of such evidence any imposed restrictions are deemed a non-tariff barrier intended to restrict free trade and would therefore become contestable. If these cases are lost and Biosecurity NZ succeeds in drawing the battle line inside New Zealand's borders, then the precedent is set for allowing greater access into NZ of at-risk products on a wide range of agricultural products. Given enough time, incursions of new organisms and the "clean green image" NZ enjoys will slowly be eroded away. In the meantime the industry incurs the cost of dealing with the breakdown through lost production and increased inputs. This rather insidious attack on rural industries has gone relatively unnoticed because the two industries involved are comparatively minor players in the NZ economy, but the potential for a major biological breakdown that could affect the wider agricultural industry is very significant without the appropriate scientific investigation and in the absence of an adequate risk-analysis.

Climate change and the environmental footprint of farming.

The implications of climate change remain uncertain. Speculation on the impact of climate change varies widely but what remains consistent is the universal concern being given to the subject by most governments and this has a direct impact on policy-making that in turn affects farmers throughout the world. What attracts interest from policy-makers now are subjects ranging from 'land and water use' to 'carbon emissions' and 'bio-diversity' when two decades ago these issues were barely considered. The policies arising out of these issues are shaping the way farming is carried out and will, to some degree, determine what products are produced and where. So in addition to any direct effect climate change may have on agriculture, there is the more immediate impact of policy created to satisfy public sentiment. These policies will not necessarily be rooted in sound science but will be determined by political expediency. President Bush and Tony Blair both held ambivalent views on climate change early on in their term of office but eventually showed a turn of heart as the tide of public opinion overwhelmingly supported the view that climate change was a fact and that something must be done to stem its progress.

If there is any consensus on what physical changes will occur in the future then it is that:

1. Weather patterns will tend to be more unpredictable and violent.
2. Countries close to either side of the equator will become hotter and drier.
3. Sea levels will rise but to what extent is highly debated.

[3] The verdict has been released since writing and has found in favour of the bee industry forcing MAF Biosecurity NZ to defer any action at present. It appears government may consider changing the law.

4. Temperatures will rise, but this will not mean that land that is currently unproductive because of the cold will necessarily become more productive as the earth's temperature rises. Fluctuations in temperature may simply become more extreme in these regions.
5. Fresh water will become an increasingly sought after resource everywhere in the world – even in countries where fresh water might be considered abundant.
6. That the trends we see in the changing climate are irreversible for at least the next 100 years, even if we were able to substantially reduce carbon emissions immediately.

Farmers have limited opportunity to hedge themselves against the effects of climate change and the time frame surrounding these changes is so long that it is debateable whether any short-term measures will bring any immediate benefits. However, farming is coming under increasing public and political scrutiny as a major contributor to carbon emissions and there is little chance of being able to divert attention away from the industry forever. The battle over the "fart tax"[4] was won by the farmer in the short term but the war is far from over. The Kyoto agreement will force politicians to focus their attention on addressing carbon emissions wherever they occur. The industry must make sure that the calculation for estimating carbon emissions is carried out correctly. It is often possible to see the calculation include all the emissions from some farming practice without looking at any of the offsets achieved, for example, in crop growing. Even more disturbing is to see Tesco's boldly announcing their intention to publish the carbon footprint on product packaging without any detail on how the size of that footprint is to be calculated. The battle for the mind of the British public is already won by those that promote the notion that any product that is freighted a long distance must have a larger carbon footprint than the equivalent local product. The carbon contribution made by a long sea journey is usually very small when amortised over the tonnage being carried on that ship yet this fact is lost on the individual shopper who selects local product thinking they are saving the planet. *They do not realise that the local product they have just purchased has inflicted more carbon units on the atmosphere than the one produced thousands of miles away. Provided the calculation is carried out correctly, therefore, the publishing of the carbon footprint on product packaging may be highly helpful in correcting public perception.

Further research is also needed to explore the options of reducing carbon emissions. Everything from altering the enzymes in the gut to developing different grasses and crops could yield benefits in reducing carbon emissions. The reality is, however, that unless there is some financial benefit to investing in this kind of research it probably will not receive the level of funding it deserves. Can industry be more pro-active in increasing the funding for research or investing in areas that produce carbon credits? Fonterra could choose to invest in forestry in much the same way that Qantas has begun to, in order to claim a carbon neutral position some time in the future. In this way it may be possible for a large company, or even a whole industry, to make claims that will enhance their public image, reduce the footprint and protect the environment in one movement.

In terms of dealing with the practical effects of climate change the obvious things that farmers can do is to ensure that they are using water efficiently, to plant drought-resistant crops, to consider the possibility of changing their land use (where this is feasible), to farm more conservatively in terms of stocking rates, feed reserves, and debt levels. They may choose to

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[4] The "fart tax" was a tax proposed by Government to be imposed on methane emissions from ruminant animals.

look at offset crops that could help balance the carbon equation or even tip it in their favour. Finally, farmers must avoid the temptation of buying marginal land with high input costs that only produce mediocre returns. These properties become very exposed in the event of worsening climatic conditions while also being very demanding on the environment in terms of water consumption and nutrient management.

Some of the best equipped farmers to deal with climate change are perhaps the Australian farmers who have had to live with dramatic weather conditions for years. Of all the countries visited, Australia seemed the most conscious of the value of water and the most advanced in water-conservation methods and measurement. Perhaps this is not surprising, given the erratic and often harsh nature of Australian weather conditions. The lessons learned in Australia have not come without an enormous cost to the environment. Large-scale land clearing has left a legacy of much unproductive land that is now virtually useless. The mistakes of the past have made the public understandably sceptical about the wisdom of many of our farm practices and about whether profit comes before prudence in the care of the environment.

Changes in the climate will be slow in the overall scheme of things. Public perception and the concern consumers may have about the management of the environment could have a much more immediate affect on the shape of agriculture in the short-term. In England farmers were sometimes described as caretakers of the landscape. This is quite a different description of a farmer than the one that is normally ascribed to them. The traditional view of farmers was to see them primarily as producers of food and produce. With this change in description comes a change in responsibility as the farmer is now seen as the person who maintains the landscape in a manner that is acceptable to the public. The urban voice is now the sound that is heard by the politicians rather than the voice of farmers.

It seems the consumer is interested in food that is safe, convenient and produced in an environmentally-friendly manner that leaves the landscape largely unchanged. Intensive farming that destroys bio-diversity and blots the view from the kitchen window with plastic houses or chicken sheds is not tolerated by many urban dwellers. Any activity that may disturb the urbanites' slumber hours or offend their sense of smell is not acceptable either. On top of these issues is the competition for water. Cities consume huge volumes of water and in areas where there are large populations this competition is fierce, with the farmer often losing out to the demands of the cities' requirements.

New Zealand is blessed with a small population and compared to other countries, lots of fresh water, but, even so, the battle lines are drawn in many parts of New Zealand over water allocation. The growth in irrigation has overcommitted a limited resource in some areas and local authorities have to face the conundrum of deciding how to measure and maintain this resource in a sustainable manner. Water is seen as a public asset and it can no longer be assumed that free access will always be available. On balance New Zealand farmers would do well to learn from their Australian counter-parts.

Globalisation and changing demand patterns

On a much broader level, globalisation means the consumer can be on the other side of the world. Indeed, for much of New Zealand's product that is exactly the case. While England and Europe have traditionally been some of our most profitable markets the battle to retain access to these markets is fierce and our privileged position is clearly a thorn in the side of farmers not only in Europe but also for Australian farmers who would love to have the same access New Zealand has.

In the view of American Austrade officials, New Zealand's focus on the European market has come at the expense of developing the American market for lamb and beef. No doubt the free-trade agreement between America and Australia helped gain Australia access into America and it is unlikely that New Zealand is going to achieve the same agreement any time soon unless our anti-nuclear policy changes. Notwithstanding this hurdle, one has to consider whether there is any validity to these observations and whether more could have been done to secure more product into the American market.

The Americans' stance on the nuclear issue remains completely uncompromising. The USA does not need New Zealand product while it is able to source all it needs from Australia and South America, so to expect the Americans to eat humble pie over the nuclear issue and back down is quite simply unrealistic. Nor is it likely that New Zealand is going to change its position on the nuclear issue unless there is some new incentive to change public perception. That new incentive could conceivably come from the need to address the future demand for electric-power generation.

It is intriguing to see that nuclear energy poses a threat to New Zealand's nuclear-free position. If nuclear energy is seen as an environmentally-friendly form of energy production then the government is caught in a cleft stick. At the moment New Zealanders do not generally regard nuclear energy as environmentally friendly but this is in stark contrast to the French, for example, who have reaped the benefits of nuclear energy for many years without a single cataclysmic accident. Accordingly there is widespread public acceptance in France of nuclear energy as an environmentally-friendly form of safe energy-production. While wanting to appear "clean and green" New Zealand's government must rail against what may become an obvious form of large-scale, environmentally-friendly, sustainable energy-production. Clearly if nuclear-power came to NZ, our nuclear-free policy would have to change and it would no longer make sense to ban American nuclear ships from our ports. In turn, this could have a major impact on trade policy and access into the States for our farm and manufactured products. The current Prime Minister has already made it very clear that nuclear power is an unlikely option for New Zealand but whether this opinion is science-based or philosophically-based is not certain. It will be interesting to see if successive governments find the nuclear option always so repugnant.

Unlike other countries, New Zealand does not have too many options for generating alternative forms of energy. Wind power is at present the only new energy source receiving qualified support but the total output from wind is still minute compared to the size of the future demand predicted. Large scale wind farms also raise the ire of environmentalists who view them as harmful to wildlife, intrusive on the landscape and often noisy for those living nearby. Though new hydro-systems are possible these always meet with massive RMA hurdles that no recent schemes have been successful in overcoming. Coal is abundant but is perceived as a dirty form of energy production and other forms of electrical production are deemed experimental, expensive and incapable of being commercially viable at present. For these reasons it is not entirely beyond the realms of possibility that nuclear power could be considered at some stage in the future.

Agriculture in China and its impact on the New Zealand agricultural markets

From the comparatively small portion of China that could be seen in the available time, agriculture appeared to have a long way to go in order to achieve the efficiencies of scale seen in the West. Most of the farms visited by the Nuffield scholars were only one mu in size (approximately 1200 square metres). This area of land was allocated to each family living in a village and rented from the government for a period of 50 years. Virtually all the work was done by hand and farmed intensively with produce being taken to market on an almost daily basis. The average income of these peasant farmers is only NZ$5-6,000 per annum - barely reaching subsistence level. Farmers often seek additional work to supplement their incomes. The average age of the estimated 95 million farmers in China is very old as young people avoid land-based occupations in favour of higher-paid urban jobs. Although there is no verifiable data available on the average age of peasant farmers, anecdotal evidence suggests that unless the age-issue is resolved through modernisation and amalgamation the peasant farmer will continue to slide further into abject poverty as production slips further behind more efficient methods of farming. The need to modernise the industry is clearly understood by central government and a good deal of effort goes into trying to attract Western agriculturalists into the country to assist this process by modernising farm practices and utilising more advanced and less labour-intensive farm practices. Unfortunately the group did not have the opportunity to visit the North-Western provinces where some of the larger-scale farming enterprises can be found.

Huge agricultural and industrial parks exist that are specifically designed to attract foreign investment. Tax-free holidays for new companies and tax-exemptions for export companies are all mechanisms used to lure new investment into the country. To date the main people investing in China are of Asian extraction – Thais, Koreans, Malays and Hong Kong Chinese but there is also a growing amount of American investment. America remains China's biggest export market which may account for the amount of American investment taking place there.

The inability to own land is an enormous disadvantage to those seeking to invest in land- based enterprises as there is little to secure the investment against. The ageing peasant population, their lack of education and the language barrier are all serious disincentives for the potential investor. Against these disadvantages, the fact remains that China represents a colossal market with a growing number of people who can afford Western-style "luxuries" including higher-protein diets. The kinds of products produced by the West do not necessarily match the preferences of the Chinese though. For example milk, yoghurt and ice cream are typically sweetened to a level that would repulse most Western palates but is necessary to "mask the natural milk flavour" for the Chinese consumer. One cannot therefore assume that products from the West can simply be exported or transferred into the Chinese market and gain ready acceptance. Nor can one assume that the methods of marketing products will automatically be the same as in the West. Corruption and bribery are wide spread and the business ethic that exists is quite different from the West. There is a level of unscrupulousness that in the Western mind is dishonest but for the Oriental seems to carry a sense of honour. As one major manufacturer said "When I deal with the Chinese I only deal in cash-on-delivery".

Quality assurance and consistency in achieving high standards still remains a challenge for some enterprises. Manufacturers are so conscious of the quality shortcomings that many buildings proudly display their level of ISO accreditation on their buildings. Whether that accreditation is valid is another issue. Despite the horror stories that can be heard about quality and consistency the Chinese should not be underestimated in their capacity to produce some very high-quality products. One cannot help remembering the reputation the Japanese once had of producing poor-quality products but have in a comparatively short time turned that reputation around to become one of the world's best manufacturers of high-quality goods in a wide variety of fields.

China appears to be driving hard towards transforming its economy from a dependency on cheap labour and low-cost production to a more technology-based and service-oriented economy. From the year 2020 the population in China is predicted to head into steep decline as the "one child per family policy" really starts to take effect. The unofficial population now stands at 1.5 billion though no-one really knows the true figure, including the Chinese government, but this number will decline rapidly as one-child-per-family is well below the required 2.1 necessary to maintain a country's population at a static level. The imbalance of males to females will also increase the rate of decline by negatively skewing the number of available (breeding) females in the population base. The implications are serious as there will soon be only one income, or possibly two incomes per extended family and this will impose a heavy burden on income-earners in the future.

The wider implications are that China will have a smaller pool of cheap labour to draw upon to support its manufacturing industries in the future. Already labour rates are escalating and worker conditions are being improved in an attempt to attract and retain labour in some areas. Education is a high priority for most families and labouring occupations with low rates of pay are generally avoided in favour of better paying jobs and conditions in urban centres. The urban drift is just as prevalent in the East as it is in the West. China may cease to be the manufacturing power-house it has been for these reasons and it is possible that this role could be taken up by countries like India and other SE Asian countries that have large populations with commensurately low labour-rates.

As China develops its economy and average income levels grow then consumer-demand patterns will change. There is a strong correlation between rising income-levels and increasing demand for protein in diets. There is some possibility that this increase in demand for protein could have a positive spin-off for New Zealand farmers if they develop the means of modifying the product mix to suit the Asian market and develop the marketing resources to reach the target market. Gaining access to the Chinese consumer is a colossal task that requires overcoming not only the language barrier but developing supply channels that tend to be much more complex and convoluted than those found in the more familiar Western markets we traditionally sell into. Large companies like the "Fonterra"s of this world may have the expertise and infrastructure to access China but smaller companies will struggle to overcome the hurdles posed by entering such a complex market. Austrade has been of significant help to Australian businesses seeking markets in Asia. Their help has lowered the entry barrier substantially for some businesses who acknowledge that without their assistance they would never have made it.

The Chinese fundamentally want to be self-sufficient and have shown a determined reluctance to become dependent on imports. The resistance to floating their currency, despite intense pressure from America especially has helped keep imports under control with an artificially low Yuan while at the same time keeping their exporters charging ahead.

It is also worth noting that business in China does not have to contend with the same regulatory and compliance costs often demanded in a Western context. Environmental and social issues take second place to economic development. Neither is infrastructure hampered by these constraints because without the burden of private ownership the government is free to drive through any changes it wants without having to deal with the rights of owners. For example, a new motorway will take the most direct route through land that might be covered with small farms. The farmers will be "forcibly" removed and compensated to some minor degree before construction proceeds. Although this kind of action is resented by some members of the population it is generally accepted by the majority as civil disruption is dealt with swiftly and, sometimes, brutally. The media is actively controlled making it difficult and often impossible for social issues even to be aired in public and there is little evidence of a social conscience for the rights of the individual. As a consequence projects that may have enormous social or environmental costs can be pushed through with no effective opposition. At least in some part, this freedom has helped China pursue the development of its economy at the break-neck speed it has.

Part II – Adding value to pork in NZ

Introduction

The NZ consumers have been rapidly changing their purchasing patterns for meal solutions over the last few decades. The market has fragmented into segments and each has its own demand patterns according to disposable income, age, authenticity, social standing, ability to cook and number of children. There is even a recognisable sector in the market known as “foodies” who simply enjoy making a special effort to prepare high-class meals for guests or for their own pleasure especially on weekends. The days of having meat and three vegetables most nights of the week are long gone for many modern-day purchasers. Culinary tastes have expanded to include a much wider variety of foods from other cultures and tastes.

Meat is at a disadvantage compared to most other food products because it requires time and some level of skill to be able to prepare it in a way that produces a good eating experience. The supplier can no longer assume that the buyer is able to prepare meat properly or even have the willingness to spend time doing so. Basic cooking skills are no longer present in a large proportion of the current population and as a result suppliers have had to adapt by supplying food that is easier to prepare. Simple cooking instructions are now commonly found on the outside of packaging to assist the unskilled cook to make a meal. There has been an ongoing trend to present food to the consumer in a meal-ready state brought about by an attempt to reduce preparation times and add value to the product.

Meat processors have varied in their ability to adapt to these changes in demand-patterns and those that have been more successful in doing so have increased their share of the market at the expense of alternative protein sources.

The consumer

Not only has the market become segmented over recent decades it has also become more simplistic and complicated at the same time. Simplistic because cooking skills have declined among younger people either because they have never learned these skills or because their life style has become so busy that they do not have the time to put much effort into meal preparation. In the UK meal preparation times have dwindled to as little as 14 minutes on average, according to Professor David Hughes of Wye College[5]. Though the figures are not available for NZ it is highly likely the picture is similar here. Estimates in the UK show that the buying decision

[5] Lecture given in January 2007 in an advanced farm management course at Wye College.

about what food to have for the evening meal is often not made until 5pm the same day.[6] The shopper in this instance has not decided what to have for dinner until they walk into the supermarket after work and start to look for a "meal solution". Last- minute shopping and the inability to cook have brought about a fantastic rise in ready-to-eat meals, partially-prepared meals and food items with shortened cooking-times. The higher prevalence of single or aged people who live alone and of broken families has also produced a need for smaller portions.

In response to these new demands some food manufacturers and supermarkets now make the preparation time the point of difference for their products. It is possible to pick up packets of food with 5, 10 or 15 minutes cooking-time displayed on the packets themselves and some supermarkets have gone so far as to group food products by the length of time it takes to prepare them.

Sadly most meat products have not been able to keep up with these rapidly changing consumer demands with the one exception of poultry. Poultry has changed its offer from the whole frozen or fresh chicken of yesteryear to a whole range of new product-lines that have cleverly matched the demands of the modern consumer. Today chicken can be bought in small portions, fresh, frozen or marinated. It has mimicked other products like chicken rashers to capture a share of those markets that it has never had a part of before. It can be more readily found in prepared dinners than any other single meat. When compared to other meats, chicken has developed more product lines and become more versatile than any of the red meats with quick, simple meal-solutions and at an affordable price. Perhaps the most important thing of all is that chicken has managed to achieve a consistency in quality so that the eating experience is the same every time. As a result chicken has increased its markets' share against all other meats and now enjoys the highest level of consumption per head of capita in New Zealand. Beef and lamb have steadily slipped backwards in their levels of consumption while pork has moved up but, one could argue that this is only because imported pork has flooded into New Zealand providing a cheap alternative to locally-produced product. The amount of locally-produced pork has remained largely static for the last twenty years but imports now account for over 40% of all pork consumed in New Zealand. In other words, imports have found a market niche that cannot be easily satisfied by local product. While this niche may have been price-driven in the past it is no longer the case. Imported product allows small-goods manufacturers to buy only the cuts they want thereby avoiding the need to balance the rest of the carcase. The size, quality, price and flexibility this affords the manufacturer has become such an advantage that some no longer even consider the local product as an option.

The time when the family gathered around the evening roast dinner are mostly over and yet the type of products available from red meats has changed little over the years to adapt to these new demands. The same cuts are presented to the consumer as twenty years ago. There have been some attempts to increase the product lines but nowhere near the same degree as with chicken. Most red meats still require long cooking times and some skill to prepare. They often come with no cooking instructions and require the shopper to understand what each joint or cut can be used for. The quality can be highly variable and portion sizes have largely stayed the same because they come from particular parts of the animal.

[6] Ibid

Fortunately, most people love their meat and so the product continues to sell itself despite its inadequate marketing. The high demand for meat has lulled the red meat industry into a sense of complacency that has cost it market-share against chicken and cheap pork imports. Farmers have virtually no control over how their products are marketed or on-sold, unlike the poultry industry where two or three dominant producers control the whole supply chain, apart from the retailer. The poultry industry has been able to control everything from the breeding to the marketing program and even some point-of-sale promotions. As a result the marketing, research development and product-design have all been closely controlled by the major supplier-companies. Compare this to the red meat industry which is highly fragmented at the supplier end and relies on meat companies to wholesale the product to yet other manufacturers and retailers to prepare the carcase for final resale. There is simply not the same level of control and concerted direction given to the marketing of red meats that chicken enjoys.

There are some examples of individuals who have become so frustrated with the short-comings of the marketing process that they have attempted to go down the value chain in an effort to take control of the product. Although there is the odd success, history is littered with many who have tried and failed. The fact is that the resources and skills required to succeed at this task are most often well beyond the reach of the average farmer.

The tastes of the New Zealand consumer have for many years been dominated by our European heritage. Although Maori and Pacific Islanders make up a growing proportion of our population they do not have significantly different tastes from the European New Zealanders. Asians, however, are the fastest growing group in the population and their preference is heavily oriented toward pork and chicken. Asians eat pork four times more often than other ethnic groups in New Zealand.[7] Asians tend to eat a much wider range of products including most of the offals from a pig.

The role of the meat companies

At present most of these offals are discarded by our meat companies because it is either too difficult or too expensive to go through the processes required to capture these products. MAF regulations prohibit the sale of most offal and the inspection process destroys the value of the offal anyway.

The real barrier for meat is the cost of reconfiguring the killing floor to capture offals when pork makes up such a small proportion of the turnover of every major meat-works in the country. There are numerous plants in America and Europe that kill only pigs. These plants have the capacity to slaughter in one day the same number of pigs that are killed in the whole of New Zealand over a week. This level of scale makes it feasible to capture the offals and develop markets for them. The value of this offal is easily underestimated. A kilogram of offal can exceed the value of a kilo of muscle tissue when presented fresh into an Asian market. In fact the offal is so valuable that it more than covers the cost of processing an animal through the meat works. This puts the New Zealand pig farmer at an immediate disadvantage of about $25 - $30 per carcase.

[7] PIB market research presented to the Pork Industry AGM 2007.

While Asians utilise everything from the pig except the squeal in ways that are never seen in our recipe books, Continental Europeans have evolved in a different direction. They have, over centuries, developed more than 1200 different product-lines all derived from the pig. While many of these products appear similar when hanging on the supermarket shelf or in a delicatessen, they all have subtle differences. Often sausages or other small goods will have a distinctly regional flavour that has been developed over many years. These recipes may have been handed down from generation to generation through families and are usually closely guarded secrets. Because of the massive fragmentation these different product lines produce in the market-place, supermarkets find it impossible to turn these products into commodities and mass-market them. This has enabled the small manufacturer to survive in the cut-throat world of the consumer market through highly developed and specialised products that meet very narrow taste preferences. This fragmentation of the market has lessoned the grip that the supermarket chains have and although they still obviously drive down prices on commodity lines there is a section of the market that is simply unassailable by the large supermarket chains.

In most overseas models the pack house or abattoir breaks the carcase down into primal cuts and in many instances has a cutting floor that packs the finished cuts into shelf-ready packs that are then distributed directly to the supermarket. In comparison New Zealand companies sell substantially more unprocessed meat and have shown limited interest in adding value by further processing. As one commentator put it, “we can’t add value just cost. Every time we put a knife into a carcase we lose money”. While some smaller companies have managed to add cutting floors to their slaughter lines these floors have struggled to make money. There are several examples of meat companies who have had to merge, rationalise, or exit the industry because they were unable to remain profitable carrying out this type of work. Meat companies in New Zealand sell only carcases or ‘partially broken down’ carcases in the main. There are only small volumes that are prepacked and sold in a shelf-ready state. The inability of meat companies to make a financial success of further processing has left the industry vulnerable to imports. Imports provide some manufacturers and retailers with a very tidy solution by giving them exactly what they want. There are still obstacles though for the importer. There is drip-loss when the product is thawed out. The minimum amount one can bring into the country is usually one container. Shipping is becoming increasingly expensive and more difficult to secure. The response time is slow because of the distance from the source and most importantly the shelf-life of the product is shortened because of the time taken in freight.

Further rationalisation is likely to take place in the slaughter and wholesale industry but, even with these changes, it is unlikely any significant improvement will take place in the service offered. The level of investment required for the size of the market is too great to be financially viable. If the entire New Zealand market was rationalised and processed through one facility the scale might justify the investment in a highly efficient packing facility but this is almost impossible to achieve. The two major supermarket chains would be most unlikely to cooperate and given the Australian ownership these chains have it makes more sense to look at sourcing shelf-ready product from existing facilities in Australia than it does to establish new facilities here.

The dominance of the supermarkets

Although the figures fluctuate slightly from year to year, around 60% of all pork produced in New Zealand is sold into the fresh-meat market. The remaining 40% goes into manufactured small-goods and cured product. Current regulations require imported pork meat to undergo a transitional process that involves either partial cooking or altering the pH levels in an attempt to destroy any potentially harmful viruses from entering the country. This process means that virtually all imported pork meat coming into New Zealand enters via meat processors who turn the product into bacon, ham, salamis and other processed small-goods. Biosecurity NZ is presently considering relaxing this requirement so that fresh pork-product will be able to enter New Zealand without undergoing any treatment at all. If this should happen it will make imported product more versatile and will almost certainly result in increased quantities of pork entering New Zealand. Increasing the amount of low-cost imported pork meat will negatively impact on other meat products especially lamb, beef and locally-produced pork. Although the impact will most likely be gradual there will be an ongoing erosion of the market-share of locally-produced meat products over time as pork continues to chip away at the market-share of other red meats.

Importation is not limited to primal cuts and semi-processed container loads of pork meat. Where there is no transitional phase required pre-packaged, shelf-ready products can be easily imported from almost anywhere in the world that is free of foot and mouth disease. Over time it may be possible that New Zealand will see a much wider range of pork products become available for the local consumer to choose from. In the past it has been difficult to introduce new products into the New Zealand market because the market is so small and geographically fragmented that manufacture and distribution has been both expensive to establish and impractical to manage except on a small scale with limited distribution into a small area. The difficulty of manufacturing small quantities of a highly varied product-range will disappear as case-ready products could be combined within a single container and shipped to New Zealand. Denmark is one of the most aggressive pork-exporting countries in the world with a highly developed product-range and is well positioned to take advantage of such an opportunity.

The greatest impediment to this happening will be the willingness of supermarkets to extend their product-range in pork products. Most supermarket chains have a policy of keeping the product-offering very tight with high-volume items and if a new product is to be introduced another one must be removed. An exception to this rule is in the delicatessen area where there can be a much larger range of high-margin goods on offer. It is much easier to test market products if they are designed for the delicatessen area as the product can be introduced and withdrawn if unsuccessful without the supermarket having to invest heavily in establishing a brand or having to devote a lot of precious shelf-space to a new product-line that may never gain market acceptance. It is possible to avoid the supermarkets and deal with independent resellers; however this severely restricts the available market as the supermarket chains handle 60% of the retail market. A further 20% is sold through independent butchers and the remainder is sold through the hotel and hospitality industry. Even the independent butchers are dominated by two or three major players who act in a very similar manner to the supermarkets in terms of the way they trade.

The supermarket trade in this country is universally driven by price. There are no supermarket chains in New Zealand that seriously try to differentiate themselves with any other marketing strategy other than being the most price-competitive. Therefore there is always going to be pressure from these retailers to buy at the best price in order to remain competitive in the market place. It is unlikely that this trend will ever greatly differ in New Zealand as the market here is simply too small to be segmented to any great degree. In large cities overseas it is possible to see differentiation take place in a variety of ways. Waitrose in the UK has positioned itself in the top end of the market and now accounts for 4% of the UK market and is growing. It positions itself as a supplier of high-quality goods with no compromise on service. Most UK supermarkets have been able to develop a successful organic section which also attracts a healthy price premium. However the market within many UK cities can be several times the size of the entire population of New Zealand and is concentrated in a comparatively small geographic area.

Market segmentation and differentiation becomes increasingly more difficult as the size of a market diminishes in numbers. The only companies that successfully differentiate in a small market are in themselves often small, family-owned or tightly-held private companies. In some ways this is not that different from what can be seen in Europe where meat products and especially pork-based small goods are often centred on regional tastes where family businesses have produced their wares according to family recipes that have been handed down for centuries from one generation to the next. In many cases the "same" sausage is only slightly different in composition but each region will take great pride in their distinctive sausage.

Conclusion

If indeed import restrictions are relaxed and new products are introduced into the New Zealand market there will be short term pain for the local producer, however in the long term it does create more opportunities for producers here to mimic successful products without necessarily incurring the full cost of establishing the market in the first place. It is unlikely that large-scale production of new product-lines would be a successful strategy for new product development. Small-scale manufacturing of highly specialised products that serve only local or easily accessible markets have a much higher chance of succeeding. When one looks at the pattern established overseas and in particular Europe, it would appear that the best type of business structure to drive this change is small family-owned or closely-held companies that specialise in a comparatively large range of boutique products designed to meet the discerning customer who is more concerned with quality than price.

It is unlikely that these kinds of products will ever become high-volume and it is probably not desirable that they do so, because as volumes increase they then become just another commodity and will most likely lose any price-premium they may have otherwise had. The supermarkets and large independent retail-outlets tend not to chase these specialised products so these products remain secure in their market. Large retailers have little interest in carrying a wide range of specialised products except perhaps in their delicatessen area. Small manufacturers can therefore expect to retain some measure of control over the distribution and marketing of their products even with the power of the large retailers. The mechanism for distribution may include the delicatessen section in supermarkets and independent delicatessens but is not restricted to these outlets. Small independent butchers may also be eager to carry limited additions to their product range where this differentiates them from the large retailer. Butcheries that operate in high socio-economic areas or that have some ethnic customer-bias often have a particular interest in promoting products that match the preferences of their clientele.

The importation of specialised products can be used as a mechanism for test-marketing new products without incurring the high risk of developing the manufacturing capacity to produce the same products here. Imports could be used by an aggressive entrepreneur to forge new markets into the retail market with little risk. Restrictive MAF regulations and a lethargic meat industry that lacks the scale to capture added-value items from the pork carcase limit the amount of innovative products that can be produced from a pig. The ability to import shelf-ready products will remove this impediment and allow the market to expand and develop into new areas.

If this should occur, it will most likely impact further on the red-meat industry but more especially on the local pork industry. The red-meat industry may not be seriously affected by increasing pork imports because red meat is dominated by exports; however the reverse is true of the pork producer who will suffer considerably. It remains ironic, however, that the easing of pork imports into New Zealand has been facilitated by Bio Security NZ under pressure from countries into which we export our beef and lamb. As a result the red-meat market in New Zealand will come under unprecedented pressure from those same pork imports. Meat and Wool NZ gave little support to the pig industry in their battle with Bio Security NZ over maintaining the existing "transitional safety requirements" and this decision will in the writer's opinion come back to haunt the red-meat industry in the long term. Not only will there be increased competition for the domestic meat-market but there will also be a real and viable pathway for other exotic diseases to potentially enter this country that has not previously existed. Although Bio Security NZ have attempted to assure the meat industry that this is not the case there is highly credible scientific evidence that has been disregarded or rejected to maintain our "no trade-barriers" image for our markets. The short term gain for the red-meat industry in its export markets will come at the long-term detriment of its domestic market.

If imported pork meat facilitates a much wider range of highly developed and cheap products to be brought into New Zealand, it is very likely that pork will become a dominant meat-product on the menus of future New Zealanders. Regrettably this will occur at the expense of locally-produced meat products including not only pork but red meats as well. Chicken is unlikely to be greatly affected by the increase in pork sales as it has already shown it can withstand significant price increases at the consumer level and brush off ever-growing amounts of pork imports without losing market-share. Poultry is totally protected from imports under current trade-restrictions. Although this status has to be constantly defended by the poultry industry it has been very successful at maintaining this protection to date. The tight ownership of the poultry business will continue to mean it can act in a concerted manner with a coordinated marketing strategy that is highly effective at fighting off competition.

Adding value to the pork industry in New Zealand is achievable but not necessarily in a way that will benefit the local pork-producer. The main winners in the path ahead will be the importer, distributor and consumer. There is likely to be increasing amounts of cheap pork meat available in a wide variety of products not previously seen in New Zealand. This will have the effect of increasing the market share for pork but not in a way that will benefit any primary producer in this country.