

POLICY PAPER

Policy and Economic Change in the Agri-Food Sector in Ireland

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Abstract: In the agri-food sector, recent policy reforms such as the milk quota abolition and CAP reform as well as robust export growth have increased the sector's visibility in public debate. In this paper we assess the economic characteristics of the sector and consider prospects for expansion. We also assess challenges to expansion, including land access, elderly age profile, the uptake of technologies, the financial strength of this sector, increasing price volatility and environmental constraints. The paper also highlights income challenges in terms of low viability rates that affect particularly the drystock sectors and the severe impact that the economic downturn has had on off-farm income. Also as the sector is highly influenced by policy, both in terms of regulation and in terms of impact of agricultural subsidies on total income levels, we consider the impact of recent CAP reforms.

I INTRODUCTION

The agri-food sector, while historically synonymous with the national image of Ireland, had a relatively low visibility during the Celtic Tiger years. The resurgence of the role of agri-food in the economy in subsequent years has stimulated a renewed interest in the agri-food sector. In this paper we describe the main characteristics of the sector, analyse recent trends, discuss recent growth strategies and evaluate the impact of recent policy reform.

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The most recent statistics from the Central Statistics Office indicate that the agri-food sector contributed about 6 per cent of total value added in the economy and comprised about 7.5 per cent of employment. The sector generates an operating surplus of approximately €2 billion annually from a total goods output of almost €7 billion. The beef sector is the most important component of the agri-food sector accounting for almost one-third of output, while the dairy sector accounts for almost a quarter. The vast majority of this output is destined for the export market. The wider bio-economy sector, which includes the beverage, infant milk formula sectors and food ingredients sectors, is a major source of net export earnings accounting for about 19 per cent of exports in 2008, compared with 10 per cent for the agri-food sector (Riordan, 2012). In addition to its importance to exports, Riordan (2012) estimates that the bio-economy contributed almost 40 per cent of net foreign earnings amounted in 2008. In terms of Balance of International Payments flows, in 2008 every €100 of exports from the bio-economy generated €52 in net foreign earnings. In contrast, exports from the non-bio sector contributed only €19 in net foreign earnings for every €100 of exports. The main reasons for this disproportionately large contribution to net foreign earnings include: a relatively low import requirements per unit of output, a low share of international ownership and repatriation of profits, a high local multiplier and a significant inflow of funds from the EU in the form of subsidies and payments.

The CSO *Census of Agriculture* indicates that there were 139,829 farms in Ireland in June 2010, which is a slight decline of 1.2 per cent from the number in 2000, however, down substantially from the 171,000 in 1991. The vast majority of farms are involved in beef production with over 80,000 farms engaged in specialist cattle farming. Dairy farms, of which there are about 18,000, consistently earn the highest farm incomes. In describing the structure of the sector, three interacting and sometimes extreme issues are observed:

- A sector that has growth potential in some sub-sectors (Donnellan *et al.*, 2011).
- A sector with severe income challenges in some sub-sectors (Frawley *et al.*, 2000; Hennessy *et al.*, 2008).
- A sector that is heavily reliant on subsidies.

As befits a relatively large economic sector, with significant public policy involvement, there is a relatively large body of knowledge describing and understanding the sector (Matthews, 2001). Given the productivity challenges of a mature primary industry, a significant literature has focused on measuring and understanding productivity and efficiency (Boyle, 1987; Matthews, 2000; O'Neill and Matthews, 2001; Newman and Matthews, 2006, 2007; Carroll

et al., 2011). The impact of agricultural policy has been studied extensively (Sheehy, 1980; Matthews, 1996; Hennessy and Thorne, 2005; Shrestha *et al.*, 2007; Hennessy and Rehman, 2008; Hynes *et al.*, 2009b; Howley *et al.*, 2010, 2011a, 2012; O'Donoghue and Howley, 2012), while as an internationally traded sector it has been subject to competitiveness analyses (Dillon *et al.* 2008; Donnellan *et al.*, 2009; Donnellan *et al.*, 2011). The added value of this paper is to bring this disparate literature together with some additional data analysis to strategically address the issues identified above.

A combination of growing demand for food, the relatively competitive position of Irish food production and policy change via the abolition of milk quota restrictions from 2015 allow the potential for expansion for the first time in three decades. We, therefore, first consider the expansionary potential of the Irish dairy sector and then the challenges relating to this expansion. The farm-level economic situation is then reviewed and recent policy developments are discussed.

II EXPANSION POTENTIAL

Improved international demand for food products and policy changes in relation to milk quota have created an opportunity for expansion of the Irish agri-food sector. The national development strategy for the sector, Food Harvest 2020 (FH2020) has generated a focus on growth within the entire sector. Food Harvest 2020 set the ambitious target to grow the output volume of the Irish dairy sector by 50 per cent by 2020 and to increase beef output value by 20 per cent.¹

The reason for the specific growth focus for dairy production is the impending change in the policy environment. Milk production in Ireland has been constrained by the EU milk quota regime since 1984, and apart from some small increases over the years, growth in this sector has not been possible. The impending removal of the milk quota in 2015 presents Ireland with the first real opportunity to expand the dairy sector in over 25 years and, given the favourable competitive position of Irish dairy farmers, it seems that Ireland will be well placed to exploit this opportunity (Donnellan *et al.*, 2011).

While dairy production has stagnated in Europe since milk quota was introduced in 1984, New Zealand, which had a similar growth rate to Ireland prior to the introduction of quota, underwent a large expansion with an effective growth rate of around 5 per cent per annum over the last 30 years. If the FH2020 targets are to be achieved, production in Ireland will need to grow by

¹ At the time of writing this strategy was being updated to include the period to 2025.

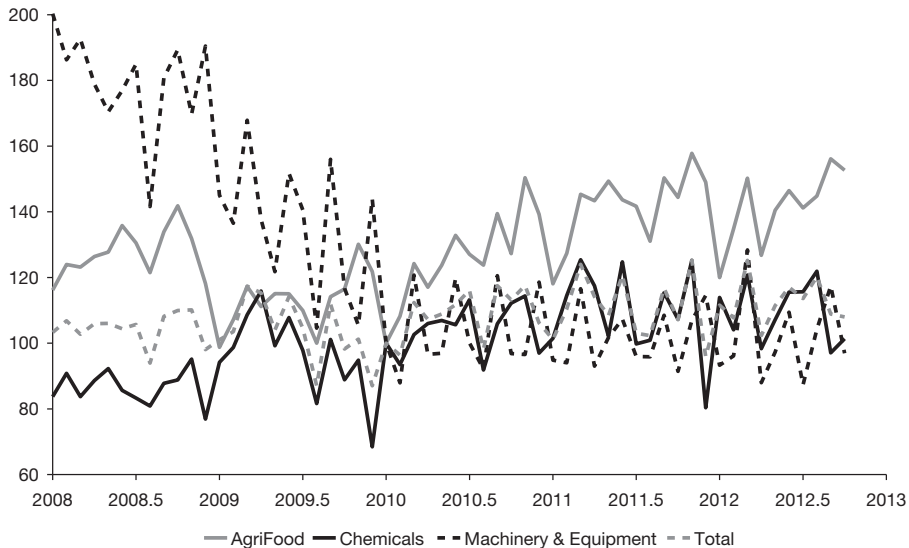
6 per cent per annum from 2015 to 2020. This may be optimistic given the relatively short time period in which this can happen.

Nevertheless there is some evidence of pent up capacity as witnessed by the demand for the availability of new milk quota under the Dairy New Entrant scheme which has been heavily over-subscribed.² Furthermore, a survey analysis of farmers' intentions has also revealed a willingness to expand, (O'Donnell *et al.*, 2008).

2.1 Export Trends

Within the agri-food sector, the meat sector has the largest share of exports, consisting of about a third of all exports, followed by dairy at about 22 per cent and food ingredients at 20 per cent, while crops based exports account for about 15 per cent of exports. Ireland is an important exporter, being the 10th biggest exporter of dairy products globally, 11th in meat products and 7th in food ingredients. There has been a gradual change in the composition of exports over time. Since 2000 the value of low value added products such as live cattle has fallen, while meat and dairy products have increased their export share the most.

Figure 1: *Merchandise Exports 2008-2012 (2010=100)*



Source: Central Statistics Office.

² According to Department of Agriculture, Food and the Marine statistics, in 2011 there were 263 applicants for milk quota, but quota was only allocated to 84, while in 2013 there were 175 applicants with quota allocated to 91.

The immediate impact of the FH2020 strategy can be seen in the recent trend of agri-food exports (Figure 1). While the exporting sector has been one of the few success stories since the economic crash in 2008-2009, the agri-food sector has seen exports grow at a faster rate than the other large exporting sectors and faster than the growth rate in total merchandise exports. Bord Bia highlight the fact that the value of Irish agri-food exports increased by 12 per cent in 2011, to reach an all-time high of nearly €9 billion and then grew successively, exceeding €9 billion in 2012 and 2013. This growth has been driven by relatively improved commodity prices since 2009, a weaker euro, some increase in volume and a diversification of export destinations, particularly to Asia, where exports are up 75 per cent since 2010.

There is an on-going strategy to increase value added, evident in Ireland becoming one of the world's largest exporters of infant formula, supplying about 13 per cent of the internationally traded market. In addition, Ireland's world market position has resulted in the development of global agri-food firms such as Kerry, Glanbia and Greencore. There are, however, challenges to creating enhanced value added. The Bord Bia Harvard Report (2010) highlighted the lack of coordination and cooperation across the supply chain. While the cooperative model on the dairy side provides for relatively integrated supply chain coordination, the beef supply chain is characterised by intra-supply chain competition and poor market price signals and coordination, which limits the capacity for value added creation.

2.2 Wider Economic Impact of FH2020

The gains from expanding milk production do not only benefit farmers. In fact most of the value generated by the production of milk rests with the processing sector, via returns to capital and labour. Miller *et al.* (2014) estimate that for every €1 increase in farm gate milk production, there is a corresponding increase of €2.45 in sector-wide output, assuming the current product mix.

- Employment Effects can be classified into a number of different stages.
- Direct Impacts in the Primary Sector.
- Direct Impacts in the wider Processing Sector.
- Indirect Impacts across the Supply Chain.
- Indirect Impacts on the rest of the Economy due to Income Growth.

Table 1 outlines the potential employment effect of Food Harvest 2020. Miller *et al.* (2014) consider two scenarios for modelling employment multipliers (i) based upon applying the average jobs per €m output (column D) and (ii) based upon econometrically estimated employment elasticities (column C). We report the latter jobs multiplier as a more conservative estimate.

Table 1: *Output and Jobs Impact of Food Harvest 2020*

	<i>Output (A)</i>	<i>Jobs (B)</i>	<i>Jobs per €m (C)</i>	<i>Average Jobs per €m Output (D)</i>
Primary Sector (Direct)	1,678.09	11,883	7.1	11.6
Processing Sector (Direct)	2,240.16	3,896	1.7	2.4
Wider Supply Chain (Indirect)	2,507.42	266	0.1	5.5
Rest of Economy (Indirect)	374	313	0.8	8.5
Total	6,799.67	16,358	2.4	6.1

Source: Miller *et al.* (2014).

The results show (Table 1) that 16,358 jobs could potentially be created as a result of Food Harvest 2020, with about one-third outside the farm gate. Of those within the farm gate, it should be recognised that these job changes are against a generally decreasing amount of agricultural labour due to productivity gains. It therefore should be viewed against this baseline trend and thus the effect involves reducing the trend in job loss rather than necessarily generating net new jobs. It should be noted that the agri-business sector and related supply chain is largely located in rural areas, particularly in small and medium sized market towns. These typically have been the locations of the highest increase in unemployment in the economic downturn. Thus improvements in the sector not only have important national multipliers, but also have potentially large local multipliers.

Outside the farm gate strategies are in place to develop the processing capacity required for the planned milk expansion in Lakelands, Glanbia and Dairygold (Donnellan *et al.*, 2013). There are also some organisational restructuring activities occurring within co-operatives to spread the risk of expansion between processors and farmers.

III CHALLENGES TO EXPANSION

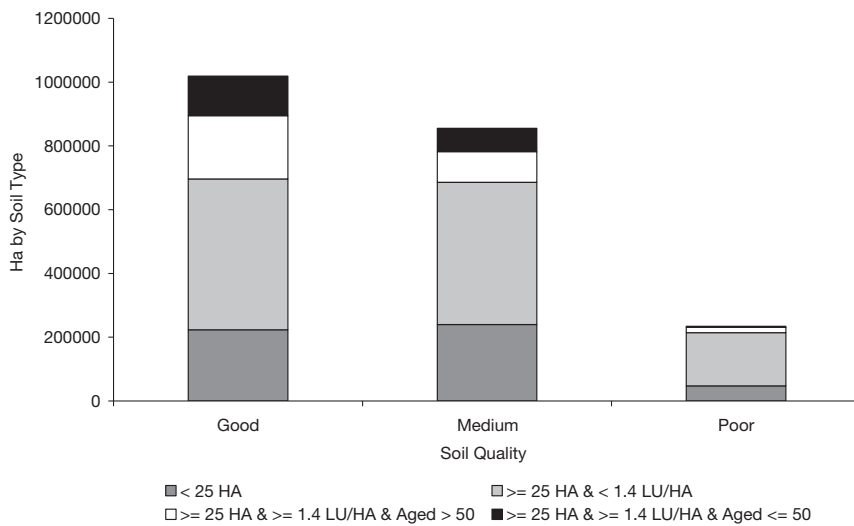
Given the existing under-utilisation of resources, capacity exists to achieve the FH2020 targets. However, there are still a number of challenges to be overcome as discussed in this section.

3.1 *Land Access*

Farm productivity depends in part upon the availability of land of appropriate soil quality and of sufficient size to generate a viable income. Geoghegan and O'Donoghue (2013) find that sufficient land exists for dairy expansion as 12.5 per cent of all land within dairy farms currently is being used

for other purposes. Furthermore, there is a significant portion of land currently used for beef production that might also be suitable for dairy farming. About half of the land on farms with the top two soil types is used for beef production, i.e. cattle farming, see Figure 2. However, significant restructuring and consolidation would be required to make this land suitable for dairy farming. Much of the land is held in parcels too small for dairy farming, i.e., 25 hectares or less, farmed extensively, with a stocking rate of 1.4 livestock units per hectare or less and/or by farmers that farm on a part-time basis.

Figure 2: *Land Structure on Cattle Farms*



Source: Teagasc National Farm Survey, Geoghegan and O’Donoghue (2014).

3.2 Demographic Change

Age is another factor inhibiting the necessary structural change in Irish agriculture. Within the Teagasc National Farm Survey, the average age of farmers increased from 51 years in 1997 to over 57 in 2011. Furthermore, the proportion of farmers aged 60 or over increased from 30 per cent in 2000 to 40 per cent in 2011. With over a quarter of all dairy farmers over 60 years, the demographic structure will create challenges to the expansion of milk production. Hennessy (2007) suggests that exits will initially accelerate following quota removal as high cost farmers feel the price cost squeeze that accompanies the milk quota expansion and exit the sector.

The sector may, however, be entering a demographic transition as evidenced by dramatically higher numbers attending Teagasc agricultural colleges and studying Agricultural Science in University as evidenced by higher points

requirements for University entry. The transition will to a large extent be driven by the capacity of new entrants to make an economic return from farming relative to other occupations.

3.3 *Cost Price Squeeze and Price Volatility*

A particular challenge faced by agriculture and other mature sectors is that input prices tend to grow at a faster rate than output prices. Innovation in global food supply chains, even with growing global demand for food has pushed output prices downwards in the long term. Thus, in general input prices grow at a faster rate than output prices, a process known as the cost price squeeze (Hynes and Hennessy, 2012). Figure 3 describes the recent trend in the CSO *Agricultural Input and Output Price Indices*. Over time, we see that the gap gradually widened until 2010, with input prices peaking at 40 per cent higher growth than output prices. However, since the sector started to recover from 2010, this process has reversed, with in general higher output price growth than input price growth, resulting in higher farm incomes.

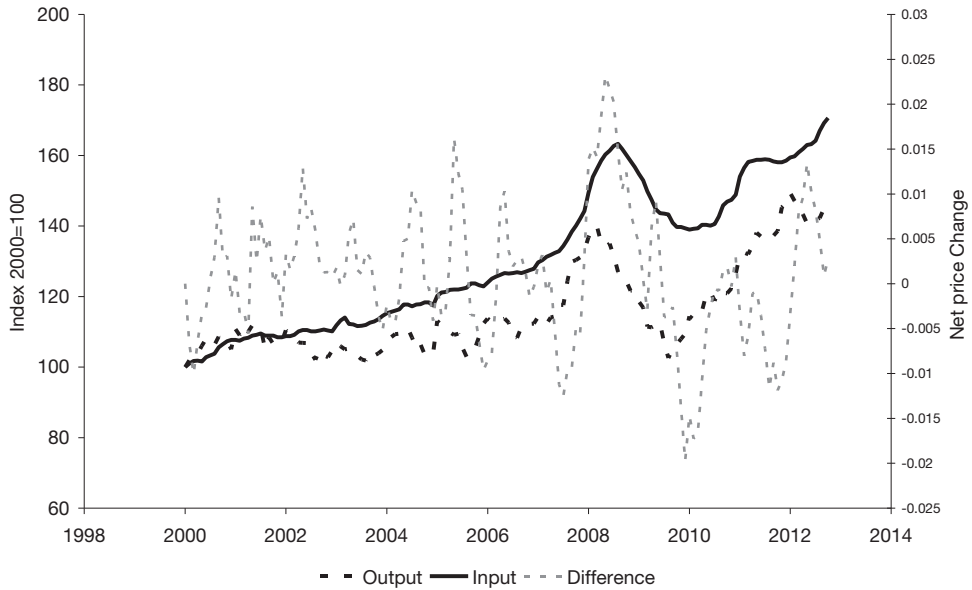
A noticeable feature since 2006 has been a visible increase in both input and output price volatility (O'Connor and Keane, 2011). This is particularly visible in Figure 4, with increasing amplitudes in price changes and an upward trend in the standard deviation of price change over time. Volatility increases uncertainty and makes decisions more difficult. Due to risk aversion, increased volatility reduces incomes and reduces incentives to invest (Kelly *et al.*, 2013), an issue magnified in the current economic and financial crisis (O'Toole *et al.*, 2013) as well as generating relatively more conservative attitudes to the use of credit (Howley and Dillon, 2012).

3.4 *Productivity Differentials*

In relation to potential dairy expansion, of particular relevance will be the capacity of farms to withstand the continued cost-price squeeze observed above. As such, the difference in productivity across farmers is another source of concern. There is a substantial difference between the lowest cost and the highest cost farms (Figure 5). This will continue to put pressure on the highest cost producers.

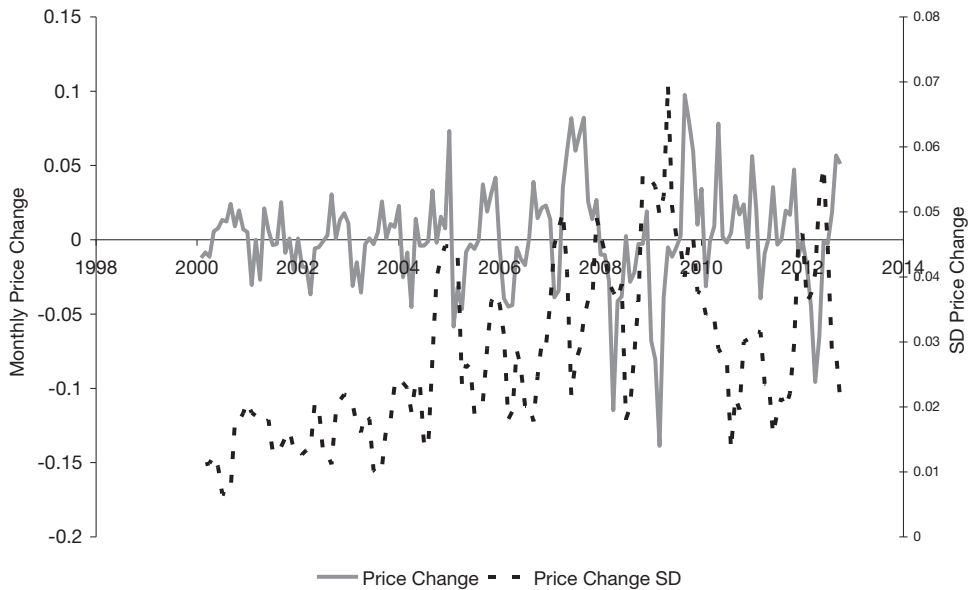
Reviewing productivity levels over the last 20 years, there continues to be a substantial spread across the quintiles, reflecting different productivity levels (Figure 5). In particular we note the income volatility of the bottom quintile relative to other groups and since 2003, the fall in net margin per litre relative to all other groups (albeit some recovery occurred in 2010-2011). Thus challenges remain to close the productivity gap, but also opportunities for increased income with an existing land base if productivity can be improved.

Figure 3: *Input and Output Price Indices*

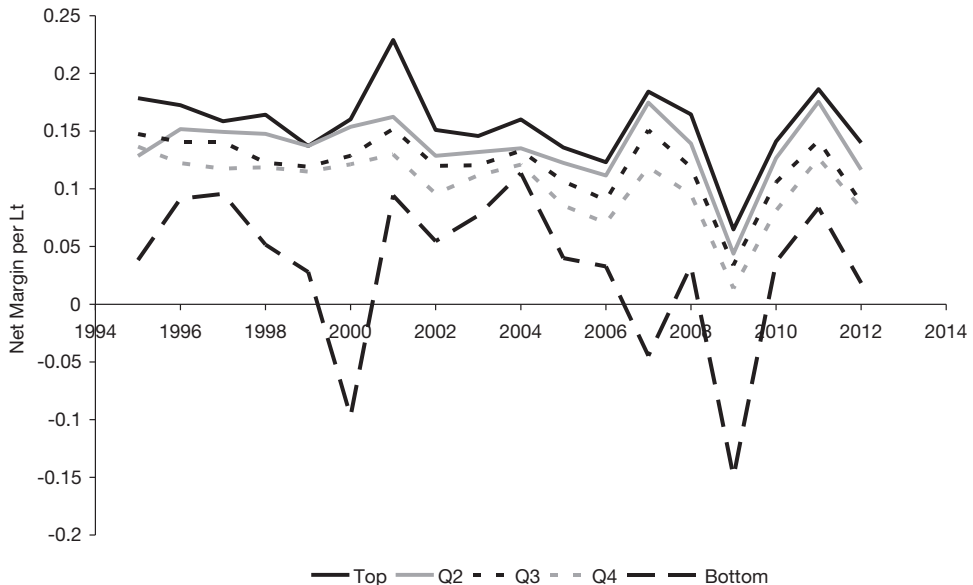


Source: Central Statistics Office.

Figure 4: *Milk Price Volatility*



Source: Central Statistics Office.

Figure 5: *Distribution of Net Margin per Litre by Cost per Lt Quintile*

Source: Teagasc National Farm Survey.

3.5 Innovation and the Return on Research Investment

Critical to improving competitiveness and productivity are the use of appropriate technologies and an effective transfer of these technologies to farmers. Agricultural research and knowledge transfer can yield significant returns. Boyle and Conry (2002) for example, found that the internal rate of return for a number of research and knowledge transfer initiatives in Ireland to be in the range of 40-70 per cent, consistent with international studies of agricultural research and knowledge transfer. Heanue and O'Donoghue (2014) found that returns to Agricultural Education were higher than general education. However, key to achieving a return to investment in research, and improving farm incomes, is the adoption of the technologies developed and an understanding of this process (Läpple *et al.*, 2012a; Howley *et al.*, 2012). Challenges, however, remain in maximising the uptake of technologies. Table 2 presents data on the adoption of a number of key grassland, genetics and financial technologies developed by Teagasc. Adoption rates are higher amongst the more commercial dairy farming sector. However, it varies from 15 per cent of dairy farmers using grass budgeting relative to 93 per cent undertaking controlled grazing (Hennessy and Heanue, 2012).

Table 2: *Use of Key Technologies*

<i>Key Technology</i>	<i>Dairy Farmers %</i>	<i>All Farmers %</i>
<i>Grassland Management</i>		
Grass Covers	22	4.9
Grass Budget	15	2.9
Controlled Grazing	93	21
Reseeding	64	35
<i>Genetics</i>		
Genomic Bulls	27	n/a
<i>Financial Management</i>		
Teagasc eProfit Monitor	30	7
Cash Flow Budget	16	16

Source: Teagasc National Farm Survey (2009).

The use of improved technologies and management practices such as the use of Teagasc eProfit Monitor have been incentivised by public policy programmes such as the Dairy Efficiency Programme (DEP) and the Beef Technology Adoption Programme. Laple *et al.*, (2012b) highlighted the effectiveness of dairy discussion groups utilised in the DEP. Table 3 reports the economic performance of established (pre-DEP) group members, new (DEP) members and non-members using the 2011 Teagasc National Farm Survey data. It shows that established members performed better financially than DEP groups and non-group members on a net margin per litre (2 to 3 cent per litre) and per hectare basis. An analysis of the 2008 Teagasc National Farm Survey (Laple *et al.*, 2012a) data revealed that established (pre-DEP) group members perform better financially than non-group members. Controlling for farm characteristics, and for potential selection bias, this analysis found that the average established (pre-DEP) group member benefited in the order of €247 per hectare in gross margin terms in 2008.

Table 3: *Economic Performance: Established, New and Non-Members*

<i>Economic Indicator</i>	<i>Established Members</i>	<i>New (DEP) Members</i>	<i>Non-Members</i>
Net Margin (cent per litre)	14.5	12.1	11.6
Costs per hectare (€)	2,260	2,327	2,150
Net Margin per hectare (€)	1,516	1,234	1,050

Source: Teagasc National Farm Survey.

3.6 Environmental Considerations

Increased environmental awareness has led to higher societal expectations in relation to the achievement of positive environmental outcomes, via policy mechanisms such as the EU *Nitrates and Water Quality Directive*, cross-compliance measures, the National Landscape and Climate Change Strategies, the Farm Waste Management Scheme and Agri-Environmental Schemes (Howley *et al.*, 2011b). In addition there is an increasing recognition of the impact of positive externalities through the Origin Green marketing strategy, farm-based recreation (Hynes *et al.*, 2008a; Buckley *et al.*, 2009) and other non-market benefits (Hynes and Hanley, 2009; Hynes *et al.*, 2008b, 2010). Delivery of improved environmental sustainability and public goods, therefore, depends significantly upon farmer behaviour and management (Dillon *et al.*, 2009).

One of the biggest environmental issues in relation to agriculture is the relationship with Water Quality. O'Donoghue *et al.* (2010) and Curtis and Morgenroth (2013) highlighted a significant correlation between water quality and Agriculture. There is however some evidence of improvement. Table 4 reports the percentage of dairy farms in the National Farm Survey that are farming in the range that requires a derogation; producing organic nitrogen per hectare of greater than 170 kg. A decline of 27 per cent of those in the top quintile in the derogation range is observed between 1997 and 2008. The next quintile has half the proportion of the top and has remained relatively constant, while the lower quintiles have very low proportions, but increased slightly, (Table 4).

Table 4: *Percentage of Dairy Farms Requiring Derogation in Relation to Organic Nitrogen per Hectare (orgN/ha > 170 kg)*

	Gross Margin per Hectare Quintile				
	1	2	3	4	5
<i>% with Derogation</i>					
1997	0.005	0.113	0.155	0.251	0.721
2008	0.067	0.149	0.085	0.246	0.527

Source: Teagasc National Farm Survey.

O'Donoghue *et al.* (2013) using later data now available from the 2010 *Census of Agriculture*, showed that the contribution of Agriculture to adverse Water Quality has declined over time both in terms of intensity and in terms of efficiency, while the contribution in terms of intensity by septic tanks has increased, indicating that Public Policies and resulting farmer behaviour has seen a relative improvement in Water Quality outcomes; albeit it takes a long time for the direct impact of these changes to be visible.

Given the relatively high contribution of the agri-food sector to Greenhouse Gas Emissions in Ireland (about 28 per cent), policies to achieve EU emission reductions are likely to be challenging for the sector (Hynes *et al.*, 2009a). Nevertheless emissions per unit of output are amongst the lowest internationally (Leip *et al.*, 2010), so that with rising global demand for food and with limited opportunities for substitution, reductions in production in more efficient countries like Ireland may result in global increases in emissions. Recent Department of the Environment and Local Government (DECLG) proposals in 2013 for Irish Agriculture to be “Carbon Neutral” as outlined in Schulte *et al.* (2013) would inevitably mean an enhanced role for forestry in Ireland. However, despite relatively better economic returns from forestry relative to lower margin agricultural enterprises such as cattle production (Ryan *et al.*, 2010; Upton *et al.*, 2013) there are still challenges in relation to achieving national forestry planting targets (Upton *et al.*, 2014).

Significant policy measures have been introduced in recent years to promote environmental sustainability both in terms of regulation and subsidy, measured using indicators developed by Teagasc (Hennessy *et al.*, 2013). For example, over €3 billion has been spent on the Rural Environmental Protection Scheme (REPS) and the Agri-Environmental Options Scheme (AEOS) since 1994. In 2009 alone, 60,000 or 45 per cent of all farmers participated in agri-environmental schemes. However, participants tended to be concentrated in the drystock sectors farming less profitable farms than the average (Hynes and Garvey, 2009; Murphy *et al.*, 2011).

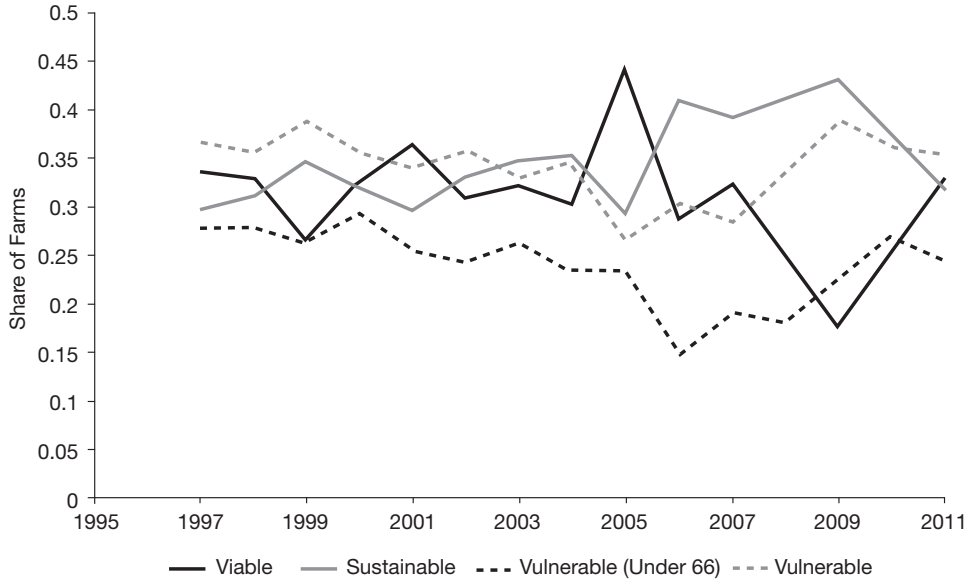
IV FARM VIABILITY

Despite the opportunities that exist within the agri-food sector, there are on-going economic challenges at the farm level. Problems of low incomes and reliance on subsidies continue especially in the Cattle and Sheep sectors. Teagasc use a viability measure to assess the income return to farming (Frawley and Commins, 1996), where a farm is deemed to be viable if it generates a farm income sufficient to pay family labour at the Minimum Agricultural Wage and to provide a 5 per cent return on non-land investments.

Figure 6 reports the trend in farm viability over time. A gradual downward trend in farm viability is observed until 2009, resulting from the cost-price squeeze. Innovation was not happening fast enough and subsidy payments were insufficient to offset the impact of market input and output prices changes. The recent recovery in agricultural markets since 2009 has been accompanied by a substantial increase in the viability rate from 18 per cent to 37 per cent. However, this still remains a low percentage. This rate rises to 41 per cent

amongst farmers under 66 years of age, but is less than 24 per cent for farmers aged 66 or over in 2012. These viability patterns also have a significant regional (Hennessy, *et al.*, 2008) and spatial dimension (O'Donoghue *et al.*, 2013).

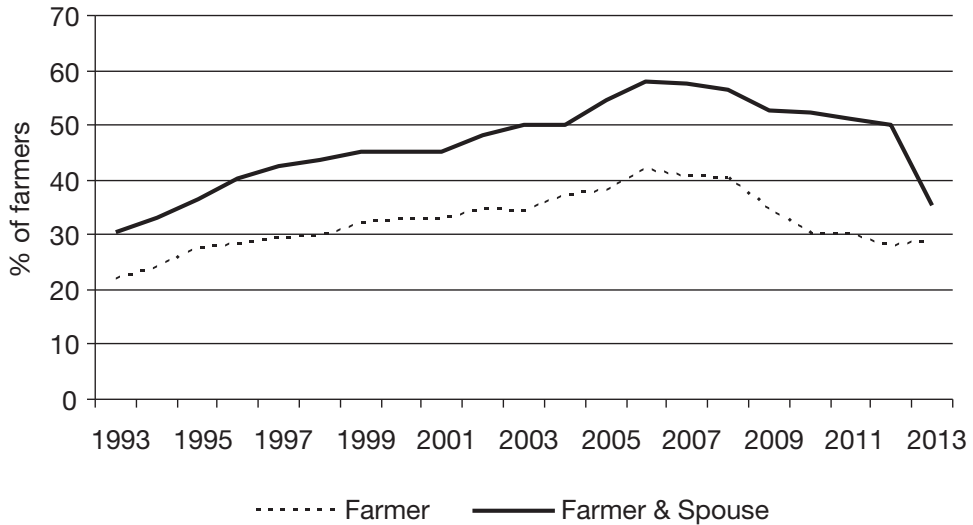
Figure 6: *Farm Viability, Sustainability and Vulnerability 1996-2011*



Source: Teagasc National Farm Survey.

Sources of non-farming income are therefore very important for the sustainability of farm households. Improved economic conditions have led to an increase in the employment rate for both farmers and their spouses over time (Figure 7). However, the economic crisis has resulted in a collapse in the employment rate of farmers, eroding all of the gains of the Celtic Tiger years in just over two years. This is as a result of farmers working off-farm in riskier sectors such as construction. Given the white collar and public sector nature of the jobs of farm spouses, they have not been as adversely affected as their farmer spouses. This creates significant requirements for a public policy response to both re-skill farmers who require off-farm income sources and to undertake rural economic development programmes to increase the labour demand in rural areas.

Figure 7: *Off-farm Employment Participation of Farmers and Spouses 1993-2013*



Source: Teagasc National Farm Survey.

V THE IMPACT OF POLICY

A common narrative across this paper is the prevalence of policy as a driver of outcomes within the sector; largely determined at the European level via the Common Agriculture Policy (CAP). The CAP had its origins in the food shortages that occurred in Europe during and after the Second World War and whose original objectives were:

- to increase agricultural productivity,
- to ensure a fair standard of living,
- to stabilise markets,
- to assure the availability of supplies; and
- to ensure that supplies reach consumers at reasonable prices.

To these might be added further objectives that have become implicit in subsequent reforms of the CAP, the objective of delivering global food security:

- the production of output from the land in a way that is sustainable in maintaining the productive capacity of the land for future generations and to deliver environmental public goods and services,

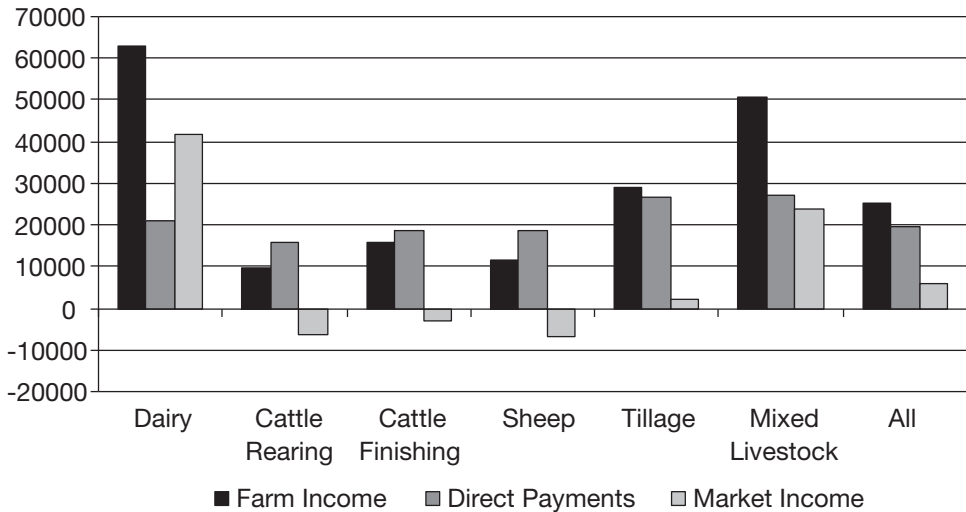
- to facilitate restructuring within the agricultural sector to enhance the delivery of the core objectives; and
- to improve quality and hygiene aspects of food production via food safety legislation.

5.1 *The Contribution of Subsidies*

The primary agricultural sector remains highly reliant on subsidy income. Typically according to CSO agricultural output statistics, about 65 per cent of factor income comes in the form of subsidies, largely coming from the CAP. These payments are thus very important in maintaining the viability of the primary agricultural sector on which much of the wider sectoral returns are based.

At the farm level, there are considerable differences in the reliance on subsidies across the various sectors. Of all the farming systems contained in the Teagasc National Farm Survey (NFS), the dairy farm system is the only farm system that consistently returns a market based profit, see Figure 8.

Figure 8: *Family Farm Income and Direct Payments by Sub-sector (2013)*



Source: Teagasc National Farm Survey.

5.2 *Policy Change Over Time*

While there are many reasons to be optimistic about agriculture's role in Ireland's economic recovery, it is important to be realistic and to identify some potential bumps in the road ahead. First, it is important to note that agriculture continues to be a sector characterised by significant reliance on government

subsidies. At an aggregate level subsidies, mostly coming from the EU, amounted to approximately €1.7 billion in 2010 or almost 70 per cent of sector income. Some sectors of agriculture are more reliant on subsidies than others; the cattle and sheep sectors, which are mostly comprised of a large number of small farms, are particularly reliant on the “cheque in the post” (Figure 8).

Until the MacSharry reforms in 1992, the main instruments of the CAP were market related instruments aimed to control quantities of supply and price through the use of Common Market Organisations (CMOs) for individual commodity areas aiming to maintain a particular price. Resulting from budgetary pressures and pressures from GATT/WTO, the MacSharry reforms introduced a set of direct payments to compensate farmers for the reduction in direct market supports. In the intervening period successive reforms of the CAP have reduced the importance of market intervention instruments while directing more support directly to the farmer using the direct payment mechanism. One of the most significant reforms to the direct payment system occurred in 2004 when payments were decoupled from production. Up to 2004 payments were linked to the production of a crop or animal product. Since 2004 farmers continue to receive these payments, which are determined by production levels in the 2002 to 2004 period, regardless of their current production levels. The motivation of decoupling was that in theory decoupled payments have no distortionary impacts as the amount of payment is independent of actual production.

However, Silvis and Lapperre (2010) and Breen *et al.* (2005) outline a number of reasons why decoupled payments may still influence behaviour:

- Although there is no substitution effect, the payment may induce an income or wealth effect.
- As many farms operate at a loss, the payments slow down restructuring by allowing farms continue to operate at a loss.
- The payments increase the share of reliable income and reduce the proportion of volatile income subject to market prices and weather risk, etc.
- As entitlement to a large extent depends upon land, the availability of these payments may end up being capitalised in the value of land and thus affect property prices.
- It may also enhance liquidity allowing for more investment.

5.3 Impact of CAP Reform Post-2013

As part of the EU budgetary reforms in 2013-14, further changes have been proposed to the CAP to reduce the cost of the programme, to target a number of behavioural changes such as improving the environment, incentivising young farmers, supporting small farms and those with poor agronomic conditions and

reducing anomalies where payments were based upon production from more than 10 years earlier.

In 2014 Irish farmers continued to receive direct payments on the basis of production decisions taken in the 2002 to 2004 period. This model resulted in substantially different payments per hectare across farms in Ireland and the EU. The overall aim of the 2013 reform of the CAP was to converge to a national flat rate payment per hectare in each Member State. Complete convergence to a common flat rate payment per hectare across Ireland would lead to a substantial redistribution of funds from larger, historically more intensive farms to smaller, more extensive farms, see Shrestha *et al.* (2007) for an analysis of the extent of redistribution. In the final agreement of the 2013 CAP reform individual Member States of the EU had the freedom to select one of a number of convergence models. Hanrahan and Hennessy (2013) conducted an ex-ante analysis of the impact of a number of convergence models. The analysis showed that a greater number of farmers would see an income increase if the maximum level of convergence was selected. However, such reallocation could impact negatively on production as the farmers that lose out under this process account for the bulk of production and in many cases are using the Single Farm Payment to subsidise this production.

Following, widespread consultation, debate and sometimes controversy in Ireland, the Irish government finally selected one of the most minimal convergence models which will lead to only marginal rates of redistribution. Farmers with a Single Farm Payment per hectare that is initially worth only 90 per cent of the national average payment or less, will have their payment increased over a five year period of 2015 to 2020 by one-third of the difference between their starting payment and the average payment. Farmers with an initial starting payment that is greater than the national average, will have their payment reduced. The rate of reduction will be determined by the funds required to facilitate the top-up to the below average farmers.

VI SUMMARY AND CONCLUSIONS

Recent policy reforms such as milk quota abolition and CAP reform and export growth within the agri-food sector has seen a growing visibility for the sector in public debate, albeit in an era of enhanced price and income volatility. In this paper the economic characteristics of the sector are assessed and the prospects for expansion are considered. The removal of the milk quota regime presents the dairy sector with the first expansion opportunity in over 30 years. While the market prospects are positive, issues such as land access, elderly age profile of farmers, the uptake of technologies, the financial strength of this

sector, increasing price volatility and environmental consideration are all likely to impact on the growth potential.

In summary, recent policy changes and rising global market demand have set the conditions for expansion in the dairy sector, while the competitive nature of Ireland's grass based systems allow for the sector to take advantage of these opportunities. While the pent up capacity and existing build-up of livestock is likely to see an immediate expansion, medium term expansion may not be fully realised unless inherent disincentives to restructuring are reduced. Without restructuring, the continuation of a large number of farms in receipt of non-viable incomes is likely to continue in parallel with the expanding dairy sector. Given the importance of policy to decision making and income generation in the sector, policy innovation is necessary to facilitate change.

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