

# The Importance of the Cattle and Sheep Sectors to the Irish Economy

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# Summary of Key Findings

## Structure of the cattle and sheep sectors

- Specialist cattle and sheep holdings represent two-thirds of all holdings in Ireland.
- Of the 139,000 farms in Ireland, 110,000 have some cattle production and 32,000 have sheep. Many of the enterprises are mixed, combining sheep and cattle production.
- There are an estimated 4.75m sheep and 6.6m cattle in Ireland.
- The Common Agricultural Policy (CAP) has been the key driver for cattle and sheep numbers since Irish accession.
- There are 170,000 people working on specialist beef and sheep farms representing almost 100,000 full-time jobs.
- Cattle and sheep farms are based across all counties of Ireland, often operating in areas where other types of farming are not possible.

## Economics at Farm Level

- Cattle and sheep farming are low income enterprises, with Average Farm Incomes of between €8,000 (Cattle Rearing) and €12,000 (Sheep farming) over the last 5 years.
- Direct Payments are of major importance for farm output and income, representing over 50% of Gross Output and between 141% and 177% of Farm Income.
- Off-farm employment remains very important for these sectors, with as many as 42% of cattle rearing farmers having an off-farm job in 2011.

## Output of the cattle and sheep sectors

- On average, over the past five years, the output from the cattle and sheep sectors has been €1.9 bn, representing a third of all output from agriculture. With higher livestock prices in 2012 these figures reached €2.3 bn and 35%.
- Exports were equivalent to around 92% and 78% (in terms of volume) of domestic production for beef and sheep meat, respectively in 2012.
- With an export value of around €2.32 bn the sectors accounted for around 35% of the value of food and live animal exports and 25% of all agri-food exports in 2012.

## Wider value of the cattle and sheep sectors to the Irish Economy

- Recent estimates suggest that specialist cattle and sheep farms spend around €2bn on direct inputs and overhead costs.
- For each €1 of output produced on cattle farms, due to the multiplier effect, an additional €1.49 of output is generated in the Irish economy. For sheep farms, the additional direct and indirect output is €1.33.

- For each €1 of output produced on cattle farms, due to the multiplier effect, an additional €0.38 of GDP is generated in the Irish economy. For sheep farms, the additional GDP is €0.73.
- It is estimated therefore that the €2.3bn output in 2012 from beef and sheep production, contributed over €5.67bn to overall output and €3.23bn to GDP in the Irish economy.
- Each €1 of support for cattle (sheep) underpins €4.28 (€2.7) of aggregate output in the Irish economy; €2.37 (€1.99) of GDP and; €2.07 (€1.72) of household income.
- It is estimated that around 45,000 jobs in the wider economy (beyond the farm and processing sectors) are supported by the cattle and sheep sectors.
- At a micro-level, an analysis of cattle farming in Co. Clare illustrates the extent to which the sector is embedded in the local economy, with 80% of cattle output sold within the county and just under 90% of inputs sourced from within the county.

### **Potential Value of achievement of *Food Harvest 2020* targets**

- Achievement of the Food Harvest 2020 targets for the cattle and sheep sectors could lead to an increase of €1.6 bn in output in the Irish economy (based on estimates from FAPRI).
- In addition, estimates have been made that between 5,000 and 10,000 jobs would be created across the entire economy. This increase in employment represents up to 5% of the growth in unemployment since 2006.
- More substantial increases in cattle and sheep numbers of 25% and 20%, respectively, stimulated by an increase in final demand from the processing sector could lead to a €4.9 billion increase in total output in the economy.

### **Potential losses arising from reductions in support**

- A cut in direct payments would impact negatively on gross output and farm incomes.
- For each 10% cut in direct payments, in the absence of an increase in prices or fall in costs, family farm income would decline by between 14% and 18% on drystock farms.
- Gross output on farms would have to increase by between 8% and 10% in direct response to this cut in support to maintain incomes.
- Based on 2011 figures, a 30% cut in direct payments would require a price increase of €0.45/kg liveweight and €0.68/kg carcass weight for R3 steers to maintain the (low) levels of income on cattle farms.
- A decline in cattle numbers of 25% and sheep numbers of 20% could potentially lead to a decrease of €4.9bn of output.
- There would be a corresponding loss of between 16,000 and 34,000 jobs, which could add between 5% and 10% to the numbers unemployed in Ireland.

# Introduction

This report results from a short study of the cattle and sheep sectors in Ireland aimed at assessing their contribution to the Irish Economy. The report is derivative in nature in that it draws together and synthesises available information on the cattle and sheep sector from a number of published sources.<sup>1</sup>

The report begins by considering the current structure of the cattle and sheep sectors. It then proceeds to analyse the farm level economics, including the contribution that support makes to farm incomes. The aggregate value of production is then considered as is the wider impact of the sector on the economy. Finally, the possible economic implications of a range of future scenarios are briefly considered.

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<sup>1</sup> The author expresses his gratitude to the considerable help that he has had with this study. In particular he would like to thank Ana Corina Miller for all her help in understanding and interpreting her AgriFood SAM work. In addition the help of Trevor Donnellan in understanding the underlying FAPRI projections was appreciated. Jason Loughrey and Cathal O'Donoghue kindly provided information on the County Clare cattle case study. However, all errors in interpretation and omissions remain entirely the responsibility of the author.



# CHAPTER ONE

## The structure of the cattle and sheep sectors

### Key Points

- Specialist cattle and sheep holdings represent two-thirds of all holdings in Ireland
- Cattle and sheep production is widely dispersed across all counties of Ireland
- There are an estimated 4.75m sheep and 6.6m cattle in Ireland
- The CAP has been the key driver for cattle and sheep numbers since Irish accession
- Around 170,000 people are involved in specialist beef and sheep farms, representing just under 100,000 full time positions. For two-thirds of holders cattle or sheep production was their sole or main enterprise

This section briefly summarises some of the key structural characteristics of the cattle and sheep sectors in Ireland. In terms of numbers of holdings, number of animals and employment.

### Holdings

According to the last full census (June 2010) there are around 110,000 holdings that have cattle and 32,000 that have some sheep in Ireland (CSO, 2012). Of these around 78,000 are classified as specialist beef and just over 13,000 as specialist sheep producers. This means that around two-thirds of all holdings are classified as either specialist beef or sheep. This also means that cattle and sheep are widely dispersed across the country.

### Livestock Numbers

In total the 2010 census reported an estimated total of 4.75m sheep and 6.6m cattle in Ireland (CSO 2012).<sup>2</sup> Figure 1 (focusing on the breeding herd/flock) highlights the evolution of cattle and sheep numbers since around the time of Ireland's accession to the EU and places the current scale of the sector in a longer term context. The Common Agricultural Policy has clearly played a major part in this trajectory and to highlight this key policies have been superimposed on the diagram.

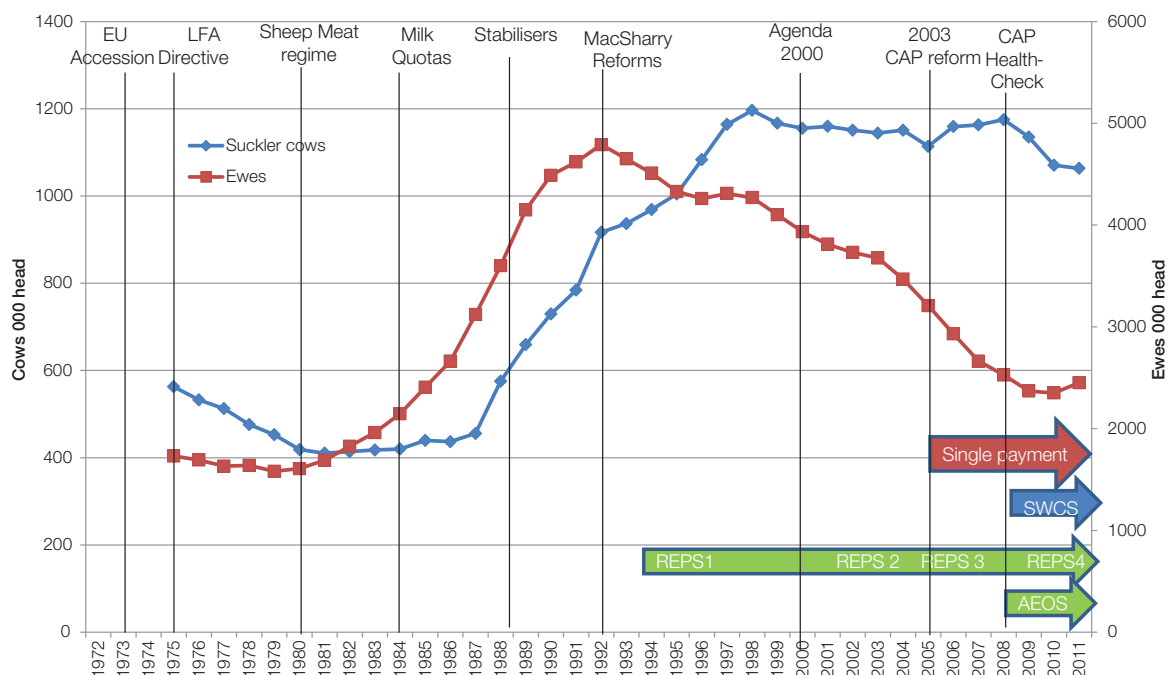
For both the cattle and sheep sectors, rapid expansion was witnessed in the 1980s. For the sheep sector this was driven by the introduction of the sheepmeat regime in 1980. For the sheep this rapid expansion has been followed by a steady decline since the peak of 1992 (at around the time of the introduction of the MacSharry reforms) with numbers falling to almost the pre-accession level. However, it should be noted that sheep numbers appear to have stabilised and that the sheep flock has even started to slightly increase again in the last two years, which is likely to be a response to improved returns from production.

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<sup>2</sup> The estimated numbers of sheep and cattle in Ireland does vary by source and date of recording. Here for consistency with the holding figures we report the figures for the 2010 June census. Bord Bia (2013) report that the June 2012 Livestock survey estimated that there were 6.8m cows and 5.14 million head of sheep in Ireland.

Cattle numbers continued to grow until around 1997, driven largely by improved returns under the reformed CAP, after which they plateaued. Although there has been no major decline as in the sheep sector, more recently numbers have fallen. The key conclusion that can be drawn from the figure is how changes in policy (that have in turn altered enterprise profitability) have been the key driver in the expansion and retraction of the sectors.

**Figure 1: Breeding Cattle and Sheep Numbers 1975 to 2011 and key policy**



## Employment

In terms of employment, the 2010 census estimated that there were around 170,000 people (predominantly family labour) working on specialist beef and sheep farms (Table 1), representing just under 100,000 annual work units (AWU).<sup>3</sup> The smaller figure for AWU indicates the existence of part-time working on specialist beef and sheep farms, although it is important to note that the farm was either the sole or major occupation of two thirds of livestock producers (CSO, 2012).

**Table 1: Labour on Specialist Beef and Sheep Farms (2010 Census)**

Farm Type	Family Number	Regular Number	Total Number	AWU	Number of Farms	Persons per farm	AWU per farm
Specialist Beef	139,473	6,877	146,350	85,987	77,738	1.88	1.1
Sheep	22,373	953	23,326	13,027	13,555	1.72	1.0

Source: CSO 2012

<sup>3</sup> The annual work unit (AWU) is the unit of measurement of the quantity of human work supplied on each farm. This unit is equivalent to the work of one person, full time, for one year.

# CHAPTER TWO

## Economics at the Farm Level

### Key points

- **Cattle and sheep farming are low income enterprises, with Average Farm Incomes of between €8,000 (Cattle Rearing) and €12,000 (Sheep farming) over the last 5 years**
- **Direct Payments are of major importance for farm output and income, representing over 50% of Gross Output and between 141 and 177% of Farm Income**
- **Off-farm employment remains very important for these sectors, with as many as 42% of cattle rearing farmers having an off-farm job in 2011.**

The economics of the cattle and sheep sectors at the farm level has been well documented with low levels of gross output, high dependence on support payments, and low levels of farm income. According to the National Farm Survey, average income for farms classified as cattle rearing, cattle other and sheep was €10,453, €14,573 and €16,805 in 2011, respectively (Table 2). Whilst incomes were higher than the five year average, it is still noticeable that the market income achieved (that is when support payments are not included) was negative across the key drystock sectors.

**Table 2: Average Output, Support and Income on Cattle and Sheep Farms**

	Cattle - Rearing		Cattle - Other		Sheep	
	2011	5 year average	2011	5 year average	2011	5 year average
Gross Output (€)	30,745	27,663	41,805	35,769	42,093	32,768
Direct Payments/Subs(€)	13,407	13,618	16,795	16,071	17,490	16,368
Family Farm Income (FFI) (€)	10,453	7,890	14,573	11,100	16,805	12,012
Market Income (€)	-2,954	-5,728	-2,222	-4,971	-685	-4,356
Cash Income (Approx) (€)	13,165	11,572	17,247	15,626	18,821	15,545

Source: Teagasc National Farm Survey (various years)

Table 3 examines the contribution of support payments in more detail. Even in 2011, which was a relatively good year in terms of returns, direct payments and other support payments comprised over 40% of gross output on beef and sheep farms. For sheep and cattle rearing farms the five year average is around 50%. When considered in terms of farm family income (FFI), the contribution of direct payments becomes even more significant, averaging from 141% for sheep up to 177% for cattle rearing farms over the last 5 years.

Of course, as with any business sector, average figures mask a range of performance and it can be seen that profitability does vary across farms. As Teagasc (2012) highlight for beef farms, the most profitable third of cattle finishing and suckling enterprises did achieve a positive net margin in 2011 (Figure 2).

**Table 3: Direct Payments as a proportion of Output, Gross Margin and Income on Drystock Farms**

Direct Payments as a proportion of:	Cattle - Rearing		Cattle - Other		Sheep	
	2011	5 year average	2011	5 year average	2011	5 year average
Gross Output	44%	49%	40%	45%	42%	51%
FFI	128%	177%	115%	148%	104%	141%
Cash Income	102%	119%	97%	103%	93%	107%

Source: Teagasc National Farm Survey (various years)

**Figure 2: Variation in performance of Cattle farms**



Source: Teagasc National Farm Survey

Whilst much has been made of this difference in performance, it is important to note two key things.

- First, physical factors (i.e. factors outside of the control of individual farmers) play an important part in the level of performance. For example, over 80% of the top third of finishing herds were on soils classified as very good and able to bear higher stocking rates (Teagasc, 2012).
- Second, even the best performing farms struggle to generate an economic return. Using the Teagasc system of defining the viability of farms,<sup>4</sup> the proportion of economically viable cattle farms remains low (at around 20% in 2011). Off-farm income is important in these sectors (with, for example, 42% of cattle rearing farms having off-farm income), but even accounting for this the number of farms classified as economically vulnerable is still high at around 40%.

<sup>4</sup> According to the Teagasc classification system a farm is defined as economically viable if it has the capacity to (a) pay family labour at the average agricultural wage, and (b) provide a 5% return on non-land assets. Farms that are not economically viable are sustainable if the farmer and/or the spouse are employed off the farm. Farms that are neither viable nor sustainable are classified as economically vulnerable.

# CHAPTER THREE

## Output from the Cattle and Sheep Sectors

### Key points

- On average, over the past five years, the output from the cattle and sheep sectors has been €1.9 bn, representing a third of all output from agriculture. With higher livestock prices in 2012 these figures reached €2.3 bn and 35%.
- Exports were equivalent to around 92 and 78% (in terms of volume) of domestic production for beef and sheepmeat, respectively in 2012.
- With an export value of around €2.32 bn the sectors accounted for around 35% of the value of food and live animal exports and 25% of all agri-food exports in 2012.

On average over the past 5 years the value of output of the cattle and sheep sector at the farm gate has been just under €1.9 billion and represented a third of all output from agriculture (at producer prices). With stronger prices during 2012 it is estimated that output reached €2.3 bn representing just under 35% of all output (CSO OIIA, 2012).

Latest estimates for beef and sheep exports (including live exports) in 2012 of around €2.32 bn (Table 4) mean they accounted for around 35% of the value of food and live animal exports and 25% of all agri-food exports in that year (CSO and Bord Bia 2013).

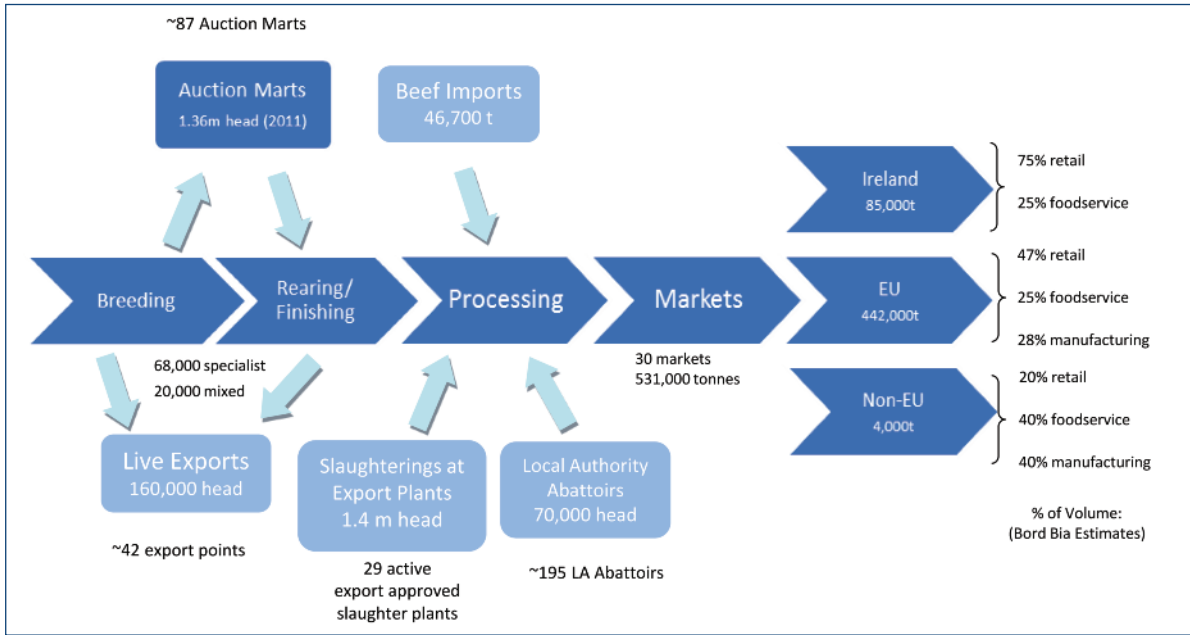
**Table 4: Exports from the Cattle and Sheep Sectors (2010 – 2012)**

Sector	2010 €m	2011 €m	2012e €m	2012/2010 %
Beef	1,573	1,860	1,900	21
Sheepmeat	163	191	205	26
Live Animals	245	205	217	-11
Total	1,981	2,256	2,322	17

Note: 2012 figures are estimated. Source: Bord Bia (various years)

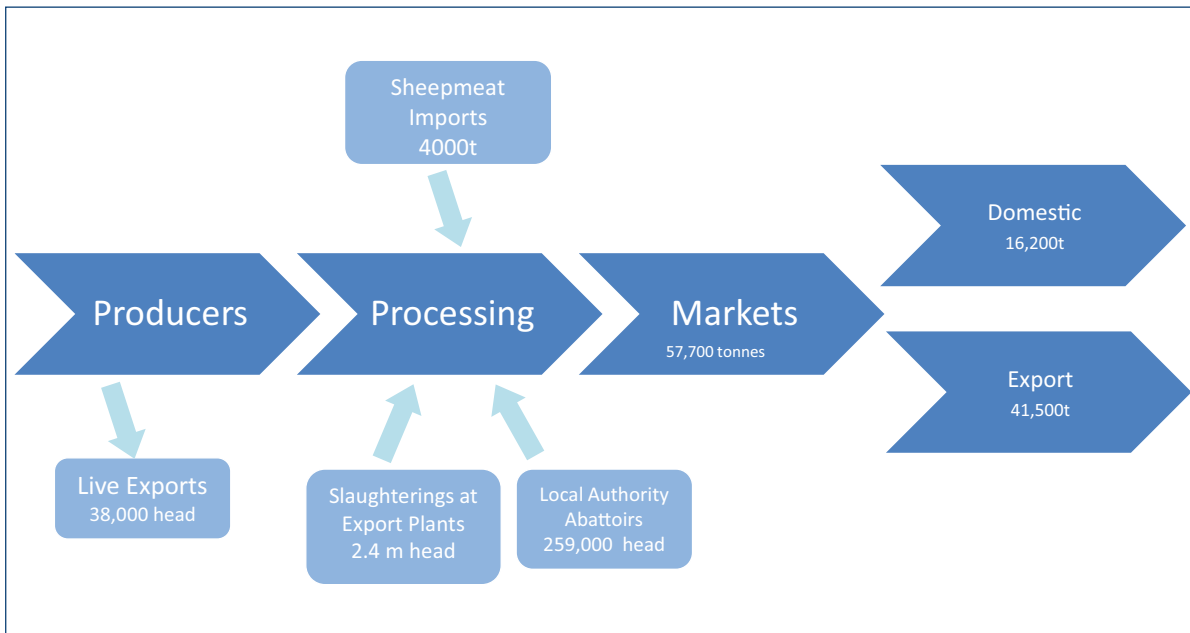
Figures 3 and 4 highlight how the output value is generated through the physical flow of production through the beef and sheep supply chains to reach the final consumer.

**Figure 3: The Physical Characteristics of the Beef Supply Chain**



Source: Derived from Bord Bia estimates for 2012 and AIM for 2011

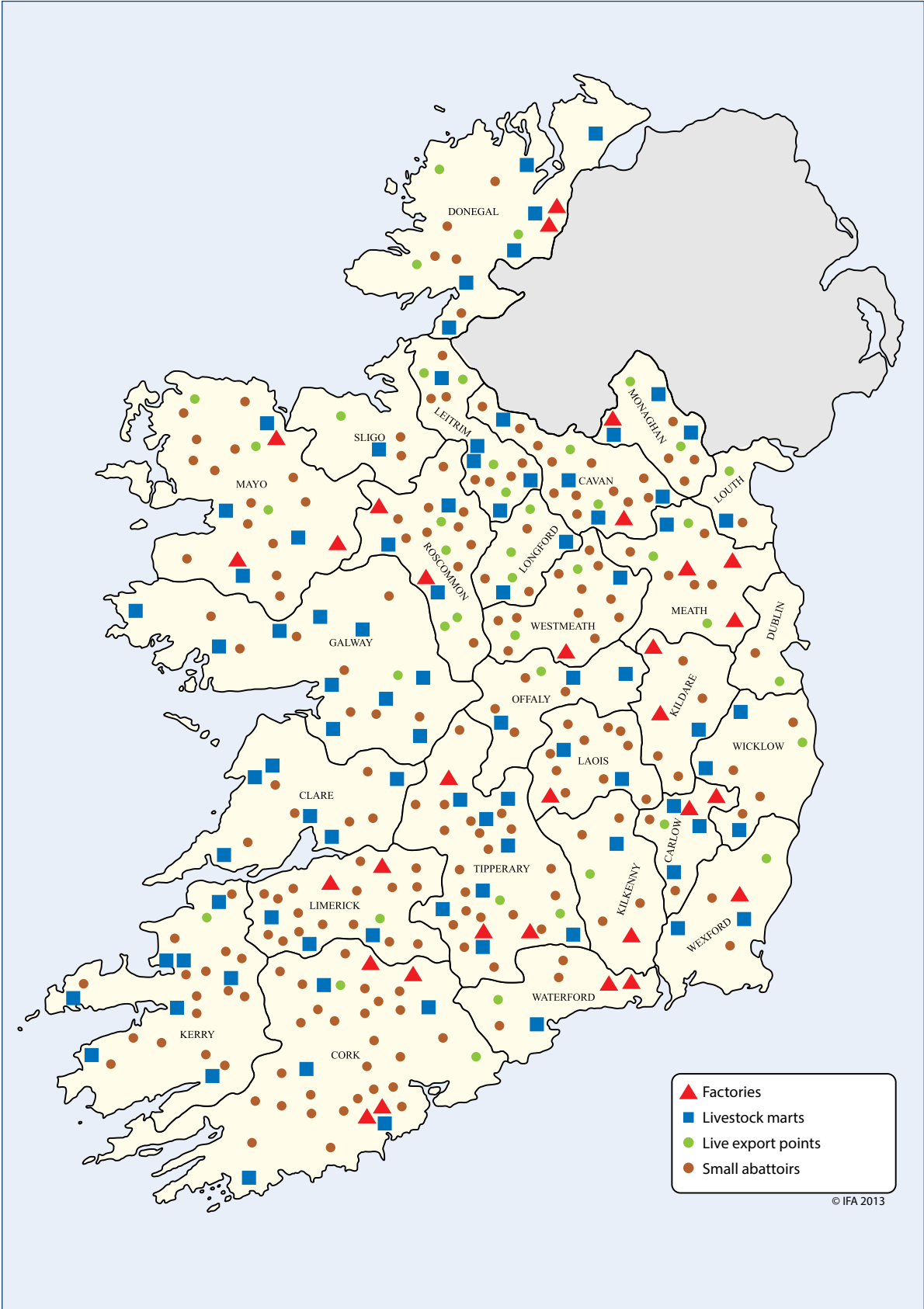
**Figure 4: Physical Characteristics of the Sheep Supply chain**



Source: Derived from Bord Bia estimates for 2012

Map 1 highlights the distribution of markets, live export points, export plants and local authority abattoirs and shows how this economic activity reaches every corner of Ireland. The employment associated with these activities is discussed in the next section of the report.

Map 1: Distribution of Selected Livestock Related Enterprises

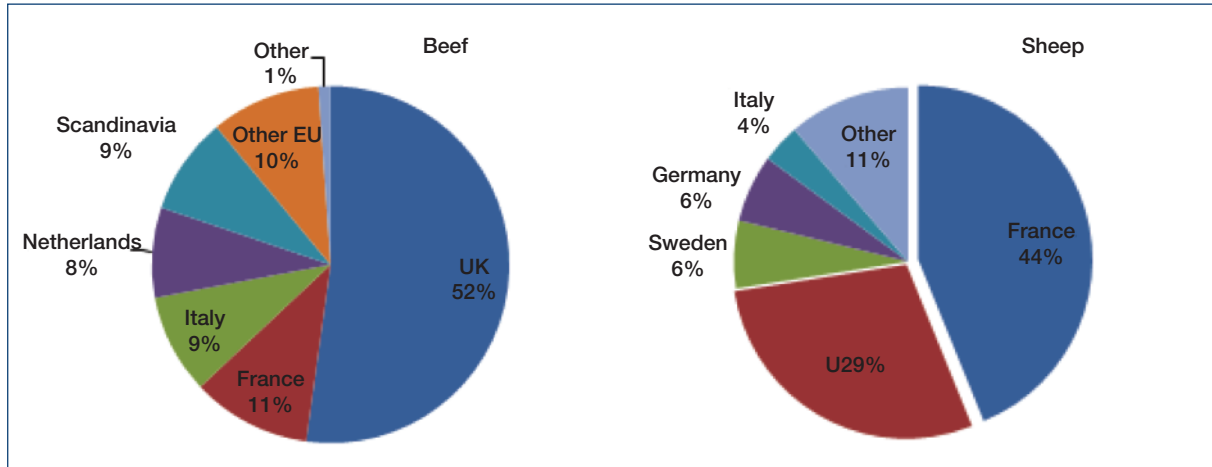


Source: Derived from AIMS data

## Exports

As Figures 3 and 4 highlighted, exports are a dominant feature of the cattle and sheep sectors and were equivalent to around 92 and 78% (in terms of volume) of domestic beef and sheepmeat production, respectively in 2012. The key markets are currently in Europe, particularly the UK and France (Figure 5).

**Figure 5 Major destinations for Beef and Sheepmeat exports (by volume 2012)**



Source: Bord Bia estimates

The destination of beef exports, shown in Figure 5, provides a clear illustration of the extent of transformation in the beef processing sector since the 1990s, from producing largely into intervention, with reliance on export refunds for third country exports to a sector producing chilled products for consumers across Europe. This export focus is an important feature of the economic contribution of the drystock sector.



# CHAPTER FOUR

## Wider Value of the Cattle and Sheep Sectors to the Irish Economy

### Key points

- Recent estimates derived from the National Farm Survey for 2011 suggest that specialist cattle and sheep farms spend around €2bn on direct inputs and overhead costs
- For each €1 of output produced on cattle farms, due to the multiplier effect, an additional €1.49 of output is generated in the Irish economy. For sheep farms, the additional direct and indirect output is €1.33.
- For each €1 of output produced on cattle farms, due to the multiplier effect, an additional €0.38 of GDP is generated in the Irish economy. For sheep farms, the additional GDP is €0.73.
- It is estimated therefore that the €2.3b output in 2012 from beef and sheep production, contributed over €5.67b to overall output and €3.23b to GDP in the Irish economy.
- Each €1 of support for cattle (sheep) underpins €4.28 (€2.7) of aggregate output in the Irish economy; €2.37 (€1.99) of GDP and; €2.07 (€1.72) of household income
- It is estimated that around 45,000 jobs in the wider economy (beyond the farm and processing sectors) are supported by the cattle and sheep sectors
- At a micro-level, an analysis of cattle farming in Co. Clare illustrates the extent to which the sector is embedded in the local economy, with 80% of cattle output sold within the county and over 90% of inputs sourced from within the county.

Whilst published output figures are disaggregated to the level of cattle and sheep production, it is harder to obtain precise figures for other economic indicators such as the scale of intermediate demand<sup>5</sup> and value added for the cattle and sheep sectors as these figures are generally presented for the agricultural sector as a whole. Work by Miller *et al* using the 2005 input-output figures (the latest available) as a base estimated intermediate demand generated by cattle producers to be in the region of €1.9 bn and value added from the sector to be around €1.7 bn. For Sheep the figures were €72 million and €252 million, respectively.

Whilst recognising that it does not cover all production, more recent figures from specialist cattle and sheep farms<sup>6</sup> within the NFS, highlight the nature and extent of the demand for

<sup>5</sup> Intermediate demand is the demand for goods and services by the drystock sector in production and therefore includes the demand for such inputs as animal feed, transport, vets and also such services as accountancy, banking etc.

<sup>6</sup> Cattle – Rearing, Cattle – Other and Sheep

inputs. It is estimated that these farm types in 2011 spent around €2 billion on inputs used directly or indirectly in the cattle and sheep production process. Of this just under €900 million was on direct input costs (Table 5) with €1.1bn of overhead costs.<sup>7</sup>

**Table 5: Expenditure on Direct Inputs by Specialist Cattle and Sheep Farms 2011**

Direct Input	€m
Purchased Concentrates	287.27
Purchased Bulky Feed	31.93
Fertiliser	178.93
Crop Protection	12.15
Purchased Seed	10.12
Hire of Machinery	172.67
Transport	8.92
Livestock (A.I. Vet etc.)	122.5
Casual Labour	5.19
Other	69.46
Total	899.13

Source: Derived from the 2011 Teagasc National Farm Survey

This spending of cattle and sheep businesses on inputs forms part of the wider impact of drystock production on the Irish Economy. As O’Connell and Phelan note in their 2011 study of the economic impact of agriculture as a whole, a measure of the effect of activities or output of a sector on the economy is the Output Multiplier. According to the CSO (2009) this measures how much direct and indirect output is required, across all domestic products per €1 of final demand of a given product or service. In their study therefore the Output Multiplier measured how much additional output was produced in other sectors in order to produce €1 of agricultural output. Using the input-output work of the CSO, the direct and indirect output multiplier for agriculture, forestry and fishing was estimated at 1.734. That is they found that for every €1 of output from agriculture, forestry and fishing, €1.734 worth of output (including that from agriculture forestry and fishing) in total is created (O’Connell and Phelan, 2011).

Whilst the figures used by O’Connell and Phelan were appropriate for the agricultural sector as a whole it is not certain that they will necessarily hold for the cattle and sheep sectors. Fortunately, Miller *et al* (2011) have done some very useful work calculating the multiplier effects of the agri-food sector through a process of disaggregating the agricultural sector in the 2005 input-output tables for the Irish economy to create an Agriculture-Food Social Accounting Matrix (AgriFood SAM).<sup>8</sup> Their findings indicate higher multipliers for the cattle and sheep sector than those found for the agricultural sector as a whole.

<sup>7</sup> These estimates are achieved simply by multiplying the per farm figures for each of the farm types considered by the estimated number of farms they represent.

<sup>8</sup> Details of this process can be found in Miller *et al* (2011) A 2005 Agriculture-Food SAM for Ireland

They note that:

‘The sectors with the higher output multipliers among the agri-food sectors are the beef processing sector, . . . cattle and sheep... Usually sectors which have fewer leakages will have a higher multiplier. These are more embedded in the national economy. For example the output multiplier for the cattle sector is 2.494; for each of output produced by the cattle sector, 1.494 of indirect and induced output is generated in other sectors in the economy.’ Miller et al (2011)

When income from the direct and indirect production effects of cattle and sheep production is spent it generates further economic activity and income in the economy and contributes to the maintenance of resources in many other sectors of the economy. The approach of Miller also enables calculation of this overall effect on national income (the GDP multiplier). They also calculate a household income multiplier which highlights the extent to which household income would change in response to an increase in final demand. The calculated multipliers for the cattle and sheep sector are shown in Table 6.

**Table 6 Output, GDP and Income multipliers for the Cattle and Sheep Sectors**

Sector	Output Multiplier	GDP Multiplier	Household Income Multiplier
Cattle	2.494	1.380	1.204
Sheep	2.333	1.727	1.495

Source: Miller et al (2011)

These figures can be interpreted as follows:

- For each €1 of output produced on cattle farms, due to the multiplier effect, an additional €1.49 of output is generated in the Irish economy. For sheep farms, the additional direct and indirect output is €1.33. When combined it is estimated that €2.3bn output created by the cattle and sheep sectors at the farm gate level led to the creation of €5.7 bn output in the Irish economy (Table 7)
- For each €1 of output produced on cattle farms, due to the multiplier effect, an additional €0.38 of GDP is generated in the Irish economy. For sheep farms, the additional GDP is €0.73. When combined it is estimated that the €2.3bn output created by the cattle and sheep sectors at the farm gate level led to €3.23 billion being added to GDP (National Income).

Applying these multipliers to the 2012 levels of output from beef and sheep production we estimate that the drystock sector contributes over €5.67 bn to the aggregate output and €3.23 bn to GDP in the Irish economy (Table 7).<sup>9</sup>

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<sup>9</sup> Though strictly these multipliers were calculated using 2005 input-output data and relationships may have changed since this time, it is felt reasonable to apply them to the 2012 data

**Table 7: Impact of Cattle and Sheep on the wider economy**

	Sector Output (2012) €m	Aggregate Output €m	GDP €m	Household Income €m
Cattle	2,077	5,180	2,866	2,501
Sheep	209	488	361	312
Total	2,286	5,668	3,227	2,813

As noted at the farm level, support payments form a major part of the economics of drystock production. At an aggregate level it is estimated that about €1 bn of Ireland’s current CAP envelope of €1.34 bn is directly attributable to historic payments to beef and sheep producers prior to the introduction of the Single Farm Payment (SFP). In addition a significant proportion of other payments such as REPS and Disadvantaged Area payments are received by cattle and sheep producers.

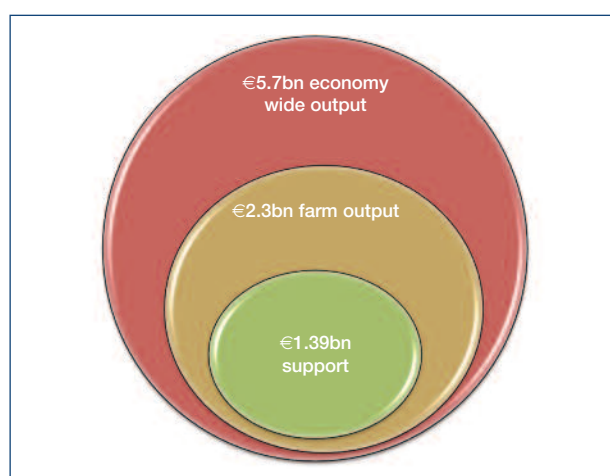
Considering the wider economic impact of the cattle and sheep sectors, as highlighted in Table 7, helps place the level of support received by the sector in context. It may be argued that each €1 of support for cattle (sheep) underpins €4.28 (€2.7) of aggregate output in the Irish economy; €2.37 (€1.99) of GDP and; €2.07 (€1.72) of household income (Table 8 and Figure 6).

**Table 8: Ratio of Economic Indicators to Direct Payments**

	Estimated total support*	Aggregate Output	GDP	Household Income
Cattle Value €m	1,210	5,180	2,866	2,501
Ratio	1	4.28	2.37	2.07
Sheep Value €m	181	488	361	312
Ratio	1	2.70	1.99	1.72
Total €m	1,391	5,668	3,227	2,813
Ratio	1	4.07	2.32	2.02

Notes: \* Estimate is based upon assumption of total SPS payments of 1bn plus share of other payments estimated from NFS data on cattle and sheep farms

**Figure 6: Relationship between support, sector output and aggregate output for the cattle and sheep sectors**



Source: Author’s own calculations based on the multipliers in Miller et al (2011)

Of course, this is an oversimplification of the issue as cattle and sheep production would not disappear completely without this support, but it is indicative of the importance of the support and the wider value generated by the cattle and sheep sectors.

When considering whether such investment in the cattle and sheep sectors is justified, it is important to consider not only the scale of the return, but also the opportunity cost of investing in these sectors as opposed to elsewhere in the economy. Whilst such analysis is outside the scope of this study, recent evidence suggests that the return to the wider economy may be quite high when compared with other sectors.

- As noted earlier the embedded nature of agriculture in the Irish economy means that the multipliers are generally higher than for other less embedded sectors (Miller et al 2011).
- In addition, the export focus of the sector means that it makes a significant contribution to the net inflow of funds to the Irish economy. This is, in part, due to the fact that the import composition of these exports is low (Riordan, 2008) Riordan notes that, for the bio-sector as a whole every 100 of exports accounts for significantly higher net foreign earnings than the non-bio sector (48 compared to 19 in 2005). Although his work considered the biosector as a whole, this will certainly hold for the cattle and sheep sectors.
- On a more pragmatic note, given that the majority of support arises from the EU budget, it is not clear that the investment would be made in Ireland in the absence of the CAP.

In addition, the dispersed nature of cattle and sheep production and associated industries highlights that this money is contributing significantly to wider rural development, which is particularly important given the collapse of alternative industries in rural areas (such as construction). For example, Box 1, using County Clare as a case study highlights how embedded the cattle sector is within its local economy.

## The Cattle Sector in County Clare

This study, which looked at the impact of cattle farming upon the economy of County Clare, illustrates the extent that the sector is embedded in the local economy. As part of the wider study on the economic impact of cattle production, a survey of farmers was undertaken to assess the destination of their outputs and source of their farm inputs.

The analysis highlights that the vast majority (around 80%) of cattle output is sold (initially at least) within the county. They find that around one quarter of the cattle output is sold in Ennis for all cattle types. It is concluded that 'a decline in the size and value of the cattle herd in Clare will be associated with a decline in the local economy of Ennis and further outside of the county'. On the input side they found that just under 90% of inputs are sourced from within the county.

On the basis of these very high proportions of output and inputs being sold and sourced within the county, it is concluded that the multiplier effects at the county level of the cattle sector are likely to be more important than in the case of most other industries.

The regional variation within Clare is also highlighted. For example, it is estimated that 40% of the downstream impact of changes in the cattle sector will be felt in the area West of Ennis, because although only around 30% of livestock are sold in that area almost half of all overheads and inputs are sourced from there. They also note that only around 15% of the downstream impact from the cattle sector will be experienced outside of the county

Source Loughrey et al (2012)

Although outside of the scope of this study, it is important to note that there are a range of other potential wider benefits (and some costs) that may be associated with livestock farming. For example the aesthetic nature of the Irish country (particularly in the more remote areas) is heavily influenced by cattle and sheep grazing. Therefore, as in other countries, it can be argued that a share of the income derived through rural tourism in Ireland arises from the activities of the cattle and sheep sectors. Cattle and sheep grazing are also important for the maintenance of agro-biodiversity and particular species may be threatened if grazing were to cease in certain areas. Again the placing of value on these species increases the contribution of the sector to Ireland.

## Wider Employment

In addition to the on-farm employment, the cattle and sheep sectors supports ,thousands of jobs in the wider agri-industry, including meat processing, input suppliers, agricultural contractors, jobs in auctioneering, transport and engineering and in accountancy, legal, veterinary and other agri-advisory services.

For example, the 2010 census reported that just under 10,000 people were employed in meat processing (CSO, 2010) in Ireland, though as this includes the poultry and pig sectors as well this figure will over-estimate those involved directly in the drystock sector.

Published figures of the extent of other jobs that relate to cattle and sheep production are hard to find, however it is possible to derive estimates from specific studies, again using multiplier type analysis.

MacFeeley (2012) estimated the employment coefficients (both for direct and also indirect employment) for agriculture as a whole.<sup>10</sup> According to his analysis every €1 m of domestic output in the agricultural sector leads to 15 direct jobs and a further 6.2 indirect jobs in the economy. Miller et al in their 2012 study present direct employment coefficients for the cattle and sheep sectors which are higher at just under 21 and 23, respectively. Unlike MacFeeley, Miller *et al* did not specifically report the coefficients for the indirect impacts. However, it is possible to derive estimates of the relationship between direct and indirect jobs from their 2012 study. Extrapolating from their analysis it appears that each job in the cattle and sheep sector leads to a further 1.2 jobs in the wider economy. This is a higher multiplier than that calculated for agriculture as a whole by MacFeeley, but given that the output multiplier for cattle and sheep is also estimated to be higher than it would seem plausible.

This approach provides an estimate that just over 45,000 jobs in the wider economy (i.e. beyond cattle and sheep farming and meat processing) are supported by cattle and sheep production.<sup>11</sup>

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<sup>10</sup> These are calculated as the ratio of employment to output

<sup>11</sup> They calculated the wider employment impacts of a 9 and 7% change in cattle and sheep numbers, respectively, using average employment factors. If these same factors are multiplied up we arrive at the figure quoted here.

# CHAPTER FIVE

## Economic Scenarios: Potential value from Achieving *Food Harvest 2020* targets and other growth outcomes

### Key points

- Achievement of the *Food Harvest 2020* targets for the cattle and sheep sectors could lead to an increase of €1.6 bn in output in the Irish economy
- Estimates have been made that additional employment of between 5,000 and 10,000 jobs would be created across the entire economy. This increase in employment represents up to 5% of the growth in unemployment since 2006
- More substantial increases in cattle and sheep numbers of 25 and 20%, respectively stimulated by an increase in final demand from the processing sector could lead to a just under €5 bn increase in total output in the economy

### Food Harvest 2020 and the Cattle and Sheep sectors

The *Food Harvest 2020 (FH2020)* paints a positive picture of the growth potential for Irish Agriculture. Whilst, the *volume* growth target of 50% for dairy is the most widely reported, *value* growth targets of 20% for the beef and sheep sectors have been set as well. Subsequently, the Beef Activation Group revised the beef growth target to 40%.

There are challenges in terms of estimating the economic impact of these changes. In part, the difficulty arises because the targets can be achieved by growth in numbers (volume) or by higher prices (value) or some combination of both. If the target is reached through increases in volume then this is likely to directly lead to increased employment (as more animals will lead to greater demand for transport, vets, labour in processing plants, etc). If, however, the target is reached purely through higher prices then the direct effect is likely to be muted and the main impact on the economy will be through how farm households (and others) spend their higher incomes.

A complex interaction of factors affecting future supply and demand will determine how and whether the targets will be met and estimating these is beyond the scope of this short study. Fortunately, work has been undertaken using the FAPRI model (Donnellan and Hanrahan, 2012) and this forms the basis for the analysis here. Interestingly, within this model the forecast changes are that for beef the target will be met by an increase in volume (9%) and price (22%), whilst for sheep the volume is actually predicted to contract (by 7%) and therefore the growth is in terms of price (42% increase).

Taking these figures Miller *et al* have investigated the wider economic impacts on the Irish economy (Table 9 and Figure 7).<sup>12</sup> The approach they adopted was to simulate a change in final demand at the processing level that would equate with the required change at the farm level. They reasonably assume that any growth would be felt through the processing sector. Therefore, as Table 9 shows for beef, the initial impact is a €442m change in processing that leads to a €250 (9%) change in cattle output. This approach means that the overall output effects are greater than if we just considered a 9% change in cattle output, as it includes the larger change in processing as well.

**Table 9: Impact of volume changes assumed in achieving FH2020**

	Initial change in processing	Change in cattle/sheep output	Overall change in output	GDP*	Household Income*
			€ million		
Beef	442	250	1,681	930	811
Sheep	-39	-16	-110	-81	-70
Overall	403	234	1,571	849	741

Source: Miller et al (2012).

Note \*GDP and Household Income effects are not calculated in the Miller paper and are estimated assuming similar relationships between multipliers as found in Miller et al (2011).

The figure highlights that, simply due to changes in the volume (numbers), output would increase by €1.6 bn, with a €850 million increase in GDP and just over €741 million in household income.

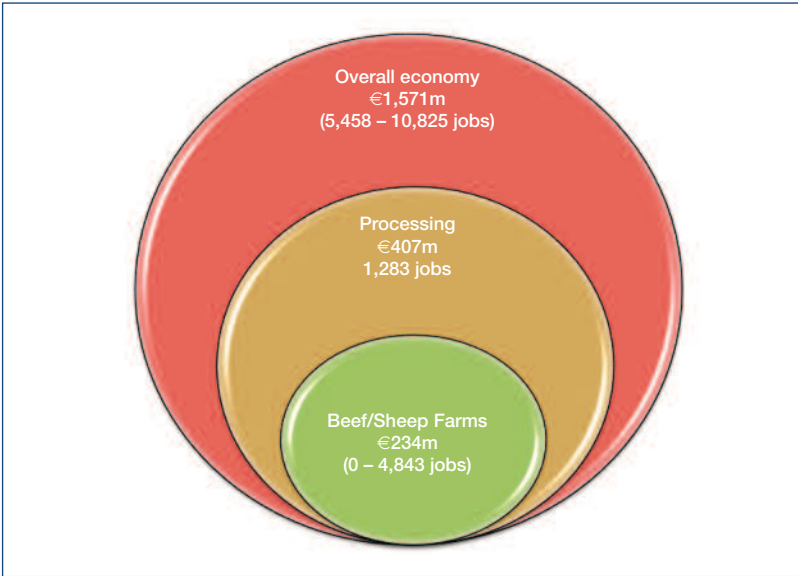
In terms of the employment impacts, Miller et al (2012) estimate that the overall employment impacts could range from just under five and half thousand to just over eleven and a half thousand depending upon assumptions as to how employment on farms will change. The lower estimate assumes that there is spare capacity in the agricultural sector and that any increases in numbers can be absorbed within this capacity.<sup>13</sup>

<sup>12</sup> It is important to note that these estimates are based on a fixed-price model, that is they can capture the volume changes but not the value changes. Precise details of how the estimates are calculated can be found in Miller et al (2012) The Employment Effect of Food Harvest 2020 in Ireland.

<sup>13</sup> More detailed analysis of the marginal employment figures has been undertaken by Miller. It does point to slightly lower estimates of the employment effects than those found in their 2012 study. However, as the work is provisional and ongoing and may be subject to change these new estimates are not reported here.



**Figure 7: Impact of achieving FH2020 targets on other Sectors**



Source: Derived from Miller et al (2012)

Beyond cattle and sheep farms and meat processing, Table 10 highlights the estimated knock on impacts of growth on output and employment on selected sectors within the Irish economy. This again highlights how linked the sector is and the extent that the wider economy benefits from growth in agriculture.

**Table 10: Estimated changes in output and employment in other sectors arising from the achievement of FH2020 Targets\***

Sectors	Change in Output €m	Change in Employment No.
Dairy	30.27	476
Cereals	17.67	317
Fodder Crop	43.18	48
Animal Feed	54.34	98
Other Processing	40.89	51
Petroleum and other manufactured products	56.57	184
Wholesale trade	13.22	103
Chemicals	52.83	42
Electricity	23.92	50
Transport	16.85	127
Post and Telecommunications	24.01	101
Financial	51.94	102
Insurance and Pension	32.59	83
Other business sectors	78.52	599
Real Estate	41.5	54
Education Services	10.32	160
Health and Social Work	20.22	239
Hotel and Restaurant	40.23	549

Source: Taken from Miller et al (2012)

\*Sectors shown here are those where estimated increase is greater than €20 m or 100 jobs

A further advantage of achieving the FH2020 goals is that as the sector grows, given that support is fixed (and likely to decline) then the reliance of the sector on support will decline (in terms of per unit of output) which may be seen as economically beneficial.

The second part of the growth highlighted by the FAPRI model and considered by Miller *et al* is higher prices. These higher prices (42% for sheep and 22% for beef) are predicted to lead to increased farm household income and subsequently increased expenditure levels and this will have an effect on the wider economy. In terms of employment, Miller *et al* (2012) estimates that this would lead to an increase ranging from 2141 to 2161 if all the FH2020 targets were reached. Unfortunately these figures are not disaggregated by the individual sectors and therefore also include the impact of changes in the dairy and pig sectors. However, around 64% of the export value shock used to reflect these price changes appears to come to the beef and sheep sectors and if we assume that the employment impact is similar across sectors that it may be reasonable to assume that between 1,377 to 1,390 jobs are due to increased expenditure from beef and sheep farm households.

As noted, the estimates produced by FAPRI show a relatively small increase in cow numbers and a decline in sheep numbers. It is possible that the targets could be achieved through stronger growth in animal numbers between now and 2020 (as already noted we have witnessed what appears to be a small recovery in sheep numbers in the last two years) and it is useful to consider the economic implications of such growth in cattle and sheep numbers.

Adopting the approach used by Miller *et al* to analyse the changes arising from the FH2020 targets, the impact of a 25% growth in cattle numbers and a 20% growth in sheep numbers is considered. Whilst illustrative, these are seen as plausible given the variation in numbers that have been witnessed over the recent past. Using this approach it is estimated that overall output in the economy could increase by nearly €5bn and that employment could increase between 16 and 34,000 (again depending on assumptions made to employment changes).<sup>14</sup> Again it should be noted that the relatively high figure for output results from the inclusion of the initial change in final demand from the processing sector.

It is important to note a number of caveats that are placed by Miller *et al* on their work. First, the nature of the model is such that it is assumed that prices are static and resources are freely available. Therefore if a sector grows the additional demand for labour and inputs does not generate inflation in wages or the price of inputs. In addition, the technical coefficients are assumed fixed, this means it does not allow for technological progress to be captured. Therefore a 10% growth in output is assumed to lead to a 10% increase in inputs, whereas in reality over time it is likely that input efficiency is likely to improve and less than a 10% growth would be needed. These caveats aside the multiplier approach is very helpful in considering the role of the cattle and sheep sectors.

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<sup>14</sup> It should be noted that the 2012 Miller paper is based on a greater degree of disaggregation of sectors than the Miller 2011 work. Consequently the multiplier effects are slightly different.

# CHAPTER SIX

## Impact of Support Cuts

### Key points

- For each 10% cut in direct payments, in the absence of an increase in prices or fall in costs, family farm income would decline by between 14 and 18% on cattle and sheep farms
- Gross output on farms would have to increase by between 8 and 10% in direct response to this cut in support
- Based on 2011 figures, a 30% cut in direct payments would require a price increase of €0.45/kg liveweight and €0.68/kg carcass weight for R3 steers to maintain the (low) levels of income on cattle farms
- Substantial decreases in cattle and sheep numbers of 25 and 20%, respectively stimulated by an increase in final demand from the processing sector could lead to a just under €5 bn fall in total output in the economy and a reduction of between 16 and 34,000 jobs

Of course the *FH2020* targets are just targets. There are many things largely outside of the control of Ireland that are ultimately going to determine whether these targets are achieved. For example, it is possible that the recent reductions in support received by the sector through changes in policy and possible further reductions under the 2014 CAP reform may push beef production in the other direction and magnify the decline in sheep numbers unless market prices can compensate. Whilst prices have been firmer in the last couple of years it is not certain that they will be sustained.

Whilst the *potential* growth in the industry up to 2020 is seen as positive, the shorter term realities of the sector have to be considered. Since 2008 when Ireland entered economic downturn and public funding came under severe pressure, Government funding for farm schemes has been significantly cut.

In the past five years, a number of farm schemes that underpin income and output, particularly in the cattle and sheep sector, have been either closed or the funding allocations reduced.

The main cuts directly affecting incomes on drystock farms are:

- Closure of the Suckler Cow Welfare Scheme at the end of 2012, which was a payment per suckler cow to farmers for undertaking measures to improve animal welfare, the collection of breeding data and improved competitiveness. The payment rate for this scheme was €40 per cow and the overall scheme was worth between €25 and €35m per year to Suckler farmers.
- Reduction in funding for the Disadvantaged Areas Scheme, through a reduction in the number of qualifying hectares and increased stocking rates requirements. The Disadvantaged Areas Scheme is a co-funded EU Rural Development Scheme which provides support for farming in marginal and disadvantaged areas. Since 2008, annual funding for the DAS scheme has been cut from €255m to €195m.

Closure of the REPS 4 scheme to new entrants in 2009, and replacement with the AEOS scheme. The average payment level for REPS 4 was €6,200, compared with average payment rates for AEOS of €3,500.

These changes are particularly important to the cattle and sheep sectors, because according to the NFS data around 34% of the total support received by cattle rearing and sheep farms is made up of payments other than the single farm payment.

Along with these known cuts there is the uncertainty over the impact of the current CAP reform proposals. A smaller CAP budget coupled with the proposals by the Commissioner for Agriculture for the redistribution of CAP Payments on an area-based payment structure, resulting in a flat-rate per hectare payment, has the potential to reduce significantly the Single Farm Payment and therefore incomes of farmers whose payments are above the average. This would include cattle and sheep farmers and probably those that have greater numbers of livestock. Of course, other cattle and sheep farms will see an increase in payments, but there is concern that the net impact of these changes will be a decline in production.

Whilst the exact impacts of these cuts will vary according to the circumstances of individual farms it is possible to consider the impacts of a general fall in support payments on the incomes of cattle and sheep farms. Table 11 highlights the impact on FFI and cash income of cuts of 10, 20 and 30% in direct payments to farms.

**Table 11: Relationship between cut in support payments and Farm Incomes**

	Cattle Rearing		Cattle Other		Sheep	
	2011	5 year average	2011	5 year average	2011	5 year average
Impact of Cut on FFI						
10% cut	-13%	-18%	-12%	-15%	-10%	-14%
20% cut	-26%	-35%	-23%	-30%	-21%	-28%
30% cut	-38%	-53%	-35%	-44%	-31%	-42%
Impact of Cut on cash income						
10% cut	-10%	-12%	-10%	-10%	-9%	-11%
20% cut	-20%	-24%	-19%	-21%	-19%	-21%
30% cut	-31%	-36%	-29%	-31%	-28%	-32%

An alternative way of viewing this is by considering the returns that would need to be generated from the market or the reduction in costs required in order to offset the cuts in support (Table 12). For example a 10% cut in support would be offset by an 8% increase in cattle rearing output. A 30% cut would require a 23% increase in output.

Assuming that cattle rearing output is generated from store sales (and that other factors remain constant) then, in terms of 2011 prices, this would equate to a rise of €0.45/kg liveweight for store cattle. For cattle finishing it would equate to a €0.68/kg carcass weight for R3 steers.

**Table 12: Relationship between cut in support payments and Farm Incomes**

	Cattle Rearing		Cattle Other		Sheep	
	2011	5 year Average	2011	5 year Average	2011	5 year Average
Increase in market output to offset cut						
10% cut	8%	10%	7%	8%	7%	10%
20% cut	15%	20%	13%	17%	14%	21%
30% cut	23%	30%	20%	25%	21%	31%
Decrease in costs						
10% cut	7%	7%	6%	7%	7%	8%
20% cut	13%	14%	12%	13%	14%	16%
30% cut	20%	21%	19%	20%	21%	24%

Of course, such increases in market output would just maintain income at their currently low levels (where as mentioned before at least 40% of farms are defined as economically vulnerable). More marked price increases would be required to improve this situation, there are then questions as to the extent the consumer market could bear such price rises. That is, will consumers turn away from red meat to potentially cheaper alternatives and what would be the wider impact of this on the sector.

### Implications of reductions in cattle and sheep numbers

Our earlier analysis highlighted the key role that policy has played in determining the scale of the cattle and sheep sectors within Ireland. Whilst the direct link between support and numbers that existed in such periods as the 1980s has been broken, the low profitability of production means that support is still a very important component of the economics of the sector. Therefore, unless the market is able to adequately compensate for cuts in support, it may be reasonable to assume that lower support will mean lower profitability and a subsequent reduction in production. Whilst the strength of this relationship is unknown, the implications of possible reductions in stock numbers for cattle and sheep are worthy of consideration.

The scenario considered is simply the inverse of the possible growth scenario that was considered earlier (i.e a fall in cattle numbers of 25% and 20% for sheep). The key issue is that the high multipliers identified with the cattle and sheep sector work the same in both directions. This means that such falls in livestock numbers will have a significant impact at both a national and regional level, with an overall decline in output of just under €5 billion and a reduction in jobs of between 16 and 34 ,000 (again depending on the assumptions made). This would add significantly to the unemployment rate in the country. In the same way as an increase in output from the drystock sector under *FH2020* was shown to benefit a wide range of sectors, so a fall in output is likely to be felt across the same sectors of the Irish economy.

Due to the linear nature of the relationships implicit in multiplier analysis it may fail to capture some possibly crucial aspects of a decline in livestock numbers. For example, it is reasonable to assume the existence of potential ‘tipping points’, where due to an overall decline in numbers it no longer becomes feasible to continue in production even for those that want to. This is particularly important on a regional basis. For example, if there become insufficient animals in a particular region it may become infeasible for a livestock mart to function or haulier costs may become prohibitive or there may not be sufficient business to support a veterinary practice. Therefore in these scenarios, numbers may decline steadily but then potentially could collapse

completely very quickly. In addition, there may become too few animals to graze common lands which may have significant environmental as well as economic impacts. Whilst it has been outside the scope of this study to estimate whether such points exist within Ireland it is a possibility that needs to be considered.

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