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Title:
The Drivers of Productivity in the Organic Beef Sector in Ireland

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Submitted to the University of Limerick June 2013
Abstract:
Within the organic sector, the beef sector has shown significant growth and now accounts for 72 percent of total organic producers. However, there is a considerable lack of research into measuring productivity in the sector. This thesis aims to identify the key drivers of productivity in the organic beef sector, in order to contribute to the literature as to the influential factors that combine to achieve optimum and efficient production. A literature review is conducted that explores this deficit and the broader issues that affect organic beef productivity including the motivations to convert and the role of policy. The primary research focuses on both data from the National Farm Survey and from a survey issued to organic producers in Ireland to investigate the factors that may have a significant relationship with productivity performance. The results confirm the importance of farm management, policy support, market fluctuations, personal motivations, and research and development as drivers of productivity that should be incorporated into future initiatives to enhance and develop the organic beef sector in Ireland.
Declaration:

This thesis is solely the work of the author and is submitted to the Kemmy Business School, University of Limerick in fulfilment with the Masters of Business in Economics requirements.

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author           date
Acknowledgements

Firstly, I would like to offer my sincere gratitude to Dr. Rita Buckley for her invaluable input to this research. From the formulation, to the delivery, I can honestly say I would not have completed this process without her unrivalled advice, enthusiasm and guidance.

I would also like to thank Dr. Kevin Heanue for his input to this research. Kevin offered the specific focus required, and was influential in directing this work. Moreover, a special word of thanks to the rest of the Teagasc Staff that helped me, namely Dan Clavin, Anne Kinsella, Elaine Leavy, Brian Moran and all the research staff in the Athenry campus. Evelyn Gill of Organic Trust was also most helpful in identifying my research sample. Accordingly, I would also like to sincerely thank each participant, for giving up their time, and providing the most interesting of data.

Also I would like to offer a special word of thanks to Marie Beaumont for all her help through this process. Other honourable mentions go to my colleagues in UL, namely Denis Murphy, Michelle Cunningham, Helena Lenihan, Lisa Kiely, Patrick Mannix, Dominic Trepel, Sharon Lucey, Julie Kennedy, Lisa Hickey, Paul Egan, Gearld O’Nolan, Helen McGuirk and Valarie Shanahan, among others, who all played a significant part in the completion of this research.

To my family, there are no words to justify how grateful I am. My parents have shown their undivided support on every aspect of this research, and the fact that I can rely on them for everything provided the security to ensure, I achieved this goal. Also thanks to Caitriona Daly, Michael Rocke, Declan Coyle and the rest of my friends for their support.

Last but by no means least, a special word of thanks to Marcela, for being my inspiration to get over the finishing line. Her constant support, patience, and pragmatism ensured this research was a success.
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<tr>
<td>CAP</td>
<td>Common Agricultural Policy</td>
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<tr>
<td>DAFM</td>
<td>Department of Agriculture, Food and the Marine</td>
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<td>EU</td>
<td>European Union</td>
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<td>FFI</td>
<td>Family Farm Income</td>
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<td>Ha</td>
<td>Hectares</td>
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<td>IFOAM</td>
<td>International Federation of Organic Agricultural Movements</td>
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<td>IOFGA</td>
<td>Irish Organic Farmers and Growers Association</td>
</tr>
<tr>
<td>LU</td>
<td>Livestock Unit(s)</td>
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<td>NFS</td>
<td>National Farm Survey</td>
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<td>TFP</td>
<td>Total Factor Productivity</td>
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<td>UAA</td>
<td>Utilisable Agricultural Area</td>
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Chapter 1 – Research Objectives

1.1- Introduction

Organic agriculture has grown at a significant rate both in Europe, and indeed globally, partially driven by consumer demand and policy initiatives (Hansen et al 2001), and this growth has the potential to continue into the immediate future. This annual growth rate was estimated at an average of twenty six percent between 1985 and 1998, with continued expansion in the following decade, with recent estimates of 180,000 producers across Europe farming approximately four percent of total available utilisable agricultural land (Eurostat 2009). In Ireland recent statistics show that there are 1,459 registered organic producers farming 52,390 hectares, which represents approximately 1.2 percent of utilisable agricultural area nationwide (Clavin and Moran 2011).

The potential to develop the organic sector in Ireland is considerable at present with formal plans to develop the sector set out in the Food Harvest 2020 strategy for agriculture in Ireland (DAFM, 2010). This policy states that the organic sector has responded when appropriate incentives have previously been introduced by the government. It also acknowledges the significant potential to increase exports to the UK and German markets at present where there is excess demand for organic red meat, an opportunity also identified by Purcell (2010). However, there are also many associated challenges that will require an effective policy approach, to avail of these opportunities.

Accordingly, Food Harvest 2020 recommends that the government must continue to provide funding to develop the sector further setting a target of 5% of total utilised agricultural area by 2020 (DAFM, 2010). Areas such as promotion, marketing, innovation, research and product development are emphasised with Bord Bia intending to continue to build consumer awareness and improve understanding of the link between organic production and environmental and sustainable benefits. More generally, agriculture is set to enhance its image in Ireland as a ‘green’ branded production system which focuses on reducing harmful environmental effects and improving competitiveness (DAFM, 2010). Organic production is automatically beneficial with regard to ‘greening’ given its production philosophy, but could improve
on competitiveness. Moreover, speculation has emerged that Europe’s Common Agricultural Policy (CAP) will also pursue a ‘greening’ element in the upcoming reform so it is of critical importance that the organic sector is fully equipped to avail of upcoming market opportunities. Therefore this research aims to pursue the objective as set out in Food Harvest 2020 to secure productivity and efficiency gains whilst reducing input costs, by incorporating a more comprehensive approach that accommodates the wider aspects of productivity performance.

At present, the dominantly practiced agricultural system is that of conventional production, a system Smith (2005) noted as in need of large quantities of external inputs such as chemicals and pesticides, to achieve high levels of output in an intensive manner focused on technological innovation and labour efficiencies. Blake (1994) noted that organic agriculture is an alternative agricultural production system which focuses on a wholesome approach to integrate the farm with the natural environment and manage production with a keen emphasis on health and sustainability. Grant (1997) queried the emerging dilemma of which system is best suited to the future objectives of global agriculture, arguing that one side advocated a conventional approach focusing on high-technological intensive agriculture that would be highly productive, and the other side favoured a more natural, extensive, sustainable method, prioritising environmental protection, animal welfare and human health. The debate surrounding this dilemma is ongoing.

The literature on productivity in organic agriculture is severely limited, particularly in relation to the Irish organic sector. Despite the gradual expansion of organic production, research has been predominantly focused on the financial performance of the sector. However, a thorough study focused on the issues surrounding efficient optimum productivity is absent. This research aims to rectify this absence, by presenting a comprehensive study, aimed at reviewing the existing literature, both nationally and internationally, analysing data from the National Farm Survey (NFS) by Teagasc and by the conducting a survey to examine these issues.
This chapter outlines the objectives, research question, methodology and structure of the chapters of the thesis, by explaining the scope, rationale, objectives and structure of each.

1.2 –Research Purpose

The key objective of this research is to identify influential drivers of productivity in the organic beef sector, in order to make a contribution to the deficit in the existing literature as the sector approaches another wave of reform as part of the CAP reform of the European Union scheduled for 2013. More informed literature could lead to greater precision in developing strategies to further develop the sector as optimum, efficient productivity could be replicated systematically on a national basis, and this thesis aims to assist this logic. Moreover, the role of policy is examined, as to the responsiveness of organic producers to changes in regulations, concomitantly with broader issues such as motivations, management and technical issues. Furthermore, the motivations for conversion are analysed to identify the key decision making processes of organic beef farmers, to outline the issues that offer incentives or disincentives to adopt organic production. Thus, the research question investigates what factors are more important in achieving efficient productivity, how these drivers can be adopted into the policy process to enhance the development of the organic sector, what factors motivate producers, and furthermore, it also investigates the broader issues affecting organic beef producers in Ireland at present.

Primarily, 3 central research questions are investigated, namely:

i. What factors are influential in the achievement of optimum efficient productivity?

ii. Does agricultural policy influence productivity performance?

iii. What motivations affect the adoption of organic production?
The methodology adopted incorporates an extensive literature review, financial analysis of data from the NFS, and the results of a survey conducted in the primary research, in order to investigate these issues in the Irish organic beef. This approach expands on the data currently collected under the NFS, by developing broader measures that impact on farm performance, such as motivations, managerial influences and responsiveness to market trends. The specific purpose of each chapter in achieving this goal is outlined below.

1.2.3 – Chapter 2: Definition, Development and Profile of the Organic Sector in Ireland
A comprehensive literature was conducted as the first part of the research methodology. Initially, the definitions, benefits and criticisms of the organic sector are discussed to introduce the objectives of this research. The development of the sector is summarised, to explain the fluidity of the evolution of the sector, which indicates an optimistic future for the sector. Motivations for adoption of the organic system are also discussed. This area has been neglected in the relevant research in Ireland, until most recently with the work of Läpple (2010) and Howley and Dillon (2012). Motivations are a key aspect of farm performance, as they symbolise the factors that producers respond to, and thus, reflect their objectives, ambitions, and concerns for the sector. Concurrently, motivations are also addressed in the primary research of this thesis. A profile of the organic sector in Ireland is provided that outlines the more recent accelerated expansion of the number of producers in the sector.

1.2.4 – Chapter 3: Organic Agricultural Policy
National and international literature was examined on the development of policy for the organic sector. It can be generally accepted that policy can enhance or retard the development of an agricultural sector (O’Donnell, 2010), which is also applicable to the organic sector. The development of the sector represents accelerated expansion, upon the arrival of the supranational regulations emanating from the Common Agricultural Policy (CAP) in Europe. Thus, this chapter, analyses this development of policy for organic agriculture, describes the relevant phases of reform, and discusses the
opportunities and challenges for the sector in the future, in order to examine the evident trends.

1.2.5 – Chapter 4: Issues for Policy Makers
The previous chapter highlights various general policy issues that have affected the development of the organic sector. Accordingly, these issues are isolated and discussed in this chapter, in order to examine the complexities involved in developing a desirable policy framework to ensure the further development of the organic sector. Existing approaches are critiqued, as policies may omit key factors that are required to ensure that production efficiencies are improved, concomitantly with market developments, reflecting the sustainability and ethos of the organic pioneers.

1.2.6 – Chapter 5: Productivity, Definitions and Drivers
This chapter conducted a literature review of existing studies in relation to agricultural productivity. The literature relating to productivity measurement is often primarily focussed on the financial returns of each participating producer rather than the wider aspects of the farm management. In particular a paper by Lampkin (2001) investigating the factors affecting profitability on organic farms was adopted as the basis for exploring the fundamental factors that affect productivity on organic farms. Accordingly, this chapter identifies influential drivers of productivity throughout the existing literature that form the basis of the primary research.

1.2.7 – Chapter 6: Analysis of the National Farm Survey Data
The National Farm Survey (NFS) conducted by Teagasc was explored for recent trends in the organic sector. The NFS is an annual stratified farm survey conducted on the agriculture sector in Ireland, with the objective of representing the performance of the agricultural sector (Newman and Matthews 2004). As the survey incorporates all sectors of agricultural production, a number of organic farms inevitably fall within its scope. The statistics for the organic beef farms during the years 2009, 2010 and 2011, were summarised and analysed. Furthermore, data was available for 5 specific farms over the three years in question, and as such was analysed on a case study basis. This analysis
provided a foundation for the primary research, as it revealed the financial performances possible on individual organic farms on an annual basis. However, the limited number of observations of specific organic beef farms, and the omission of the broader aspects that affect productivity and profitability such as motivations, management and technical expertise, and further enhanced the justification to conduct a survey to complement this data.

1.2.8 – Chapter 7: Primary Research
A questionnaire was designed on the basis of analysing the key factors that affect productivity in the Irish organic beef sector. Concurrently, the survey was formulated to address the limitations of the National Farm Survey, relating to managerial factors, such as personal and business goals, duration as an organic producer and skills and management ability (Lampkin 2001). Additional information was collected on the socio economic background, motivations, sales, output channels, and support services. This survey was conducted to 36 respondents who matched the chosen eligibility criteria, that of size, location and duration as an organic producer. The data was then analysed and presented, outlining the key trends observed.

1.2.9 – Chapter 8: Discussion, Conclusions and Recommendations
Finally, the impact of the research is discussed in the concluding chapter. A combination of the literature review, analysis of the National Farm Survey Data, and the results of the survey, ensure valuable findings that contribute to the literature, by identifying farm management, market developments, research and development, motivations, and the influence of policy were identified as significant drivers of productivity in the Irish organic beef sector. Moreover, the important role of policy was confirmed, as were the need to improve management, and focus on the motivations of producers as the sector continues to expand. Accordingly, these specific areas could be the focus of future research, and thus assist policy formulation to ensure that the potential of the organic sector is realised.
Chapter 2 – Definitions, Development and Profile of the Organic Sector in Ireland

2.1 – Introduction

This chapter defines organic agriculture and discusses some of the benefits and criticisms of the system. This will provide the foundation necessary to examine the wider issues that affect the sector and to evaluate the potential for further development of the sector. Moreover, this chapter examines the development of the Irish organic sector from its origins to its current position. The importance of agriculture relative to the Irish economy, and indeed, in relation to the longer term goals of food security and sustainability may provide new opportunities for the sector to expand further. In order to manage any future expansion effectively, the correct policy must be formulated and implemented to ensure that these opportunities are availed of. The issues surrounding that process are analysed in subsequent chapters. However, firstly it is important to profile the current organic sector in Ireland and examine the relevance of historical trends, to enable greater understanding of the organic sector today, and why it may be influential in the immediate future.

Greer (2002) commented that the Irish organic sector was minimal in comparison with conventional agriculture at the turn of the twenty-first century, and evidence from Läpple (2010), Barry (2010) and Clavin and Moran (2011) suggests that this remains the case. Clavin and Moran (2011) noted that 1,459 producers operate an organic system, farming approximately 1.2 percent of the utilisable agricultural land in Ireland. However, McDonnell (2009) noted that this figure is considerably below the European Union average of approximately 5 percent, a figure initially targeted by the Irish national government for 2013 which has since been incorporated into the Food Harvest 2020 strategy.

Nonetheless, there has been an acceleration of growth since the mid 1980s in the Irish organic sector, albeit from a relatively low base (Greer, 2002). This acceleration increased in the mid nineties when financial assistance arrived under approved schemes such as the influential EC Regulation 2092/91 on organic production (Lampkin, 1999).
The development of the sector has continued, and there are opportunities for further expansion in the short and medium term. Therefore, it is of critical importance to profile the current Irish organic sector in order to contextualise its position of the market, and how the opportunities and challenges that lie ahead may be managed effectively.

This chapter is structured into eight subsections. Firstly, the definitions of organic agriculture are presented to outline the complexities associated with defining this concept. This is followed by a discussion on the key benefits and criticisms of the sector at present, to comprehensively justify the objectives of this research. Motivations for adopting organic production are also considered for the purpose of identifying the incentives and objectives for producers, concomitantly with the barriers to conversion, and thus addressing the third research question of this thesis. This aims to incorporate the wider issues that affect producers, which are also further explored in the primary research. Subsequently, the development of organic agriculture is examined, with specific focus on the Irish sector. This is followed by an overview of the sector providing an economic profile and recent data on the socio economic background of producers, a breakdown of the organic subsectors, international comparisons, the position of the existing market for organic food, and a performance review. As the organic beef sector will be the central focus of this research, it is analysed in greater detail. Finally in the conclusion the opportunities and challenges for the sector are outlined to highlight potential policy issues that are the subject of succeeding chapters.

2.2 – Organic Agriculture – Definitions
There are various narrow definitions for organic agriculture, albeit within broadly accepted parameters. A selection of these definitions are described below:

An effective comprehensive definition is provided by Lampkin (1994) who stated its fundamental objective:

To create integrated, humane, environmentally and economically sustainable agricultural production systems, which maximise reliance on farm-derived renewable resources and the management of ecological and biological processes and interactions, so as to provide acceptable levels of crop,
Lampkin continued that organic agriculture is a wholesome strategy that focuses on renewable sustainable practices that preserve and protect resources, without employing off-farm inputs that may prove harmful to the environment. Lampkin (1994) and Michelsen (2001), also offered the perception of organic production as an actual living organism that relies on its role as an independent entity, self-regulation, reproduction and development. The logic is to complement natural cycles as opposed to manipulating them, and to assist the sustainability of output to ensure a constant high quality supply.

Allen and Kovach (2000) also emphasised the harmonious relationship between organic production and existing agro-ecosystems. They identify the role of organic production to maintain and enhance biodiversity, soil fertility and biological cycles through minimising off-farm inputs. Concurrently, Tzouvelekas et al (2001) noted that organic farming is based on the management of an agro-ecosystem intended to produce a sustainable food supply. They argued that organic production can be viewed as an integrated farming system that balances production, labour and the environment, whilst maintaining a high quality food supply and prohibiting the use of chemicals and pesticides. Moreover, Pimentel et al (2005) outlined key objectives of organic production, in that it aims to augment ecological processes whilst preserving soil and water resources. They also commented that the organic system will reduce chemical use and promote environmental and economic sustainability.

Moreover, Hansen et al (2001) argued that environmental protection is a fundamental principle of organic farming whilst sustaining a viable level of production. They stressed that all agriculture should strive to minimise the negative environmental externalities associated with food production, increase animal welfare, avoid fertilisers and pesticides, and increase soil fertility.
An alternative perspective is that organic production is often perceived to draw its identity as a critique of conventional agriculture, the intensive, specialised, dominating method of production as noted by Smith (2005). Bengtsson et al (2005) commented that the conventional system permits the use of pesticides, herbicides and chemical fertilisers. More generally it is accepted that this system, sometimes referred to as industrialised agriculture, is accompanied by a series of negative environmental externalities (Woodhouse 2010). Simplistically, it can be broadly accepted that organic agriculture will oppose these characteristics. For example, Blake (1994) and Vasilikiotis (2000) argued that the modern conventional food industry supports its own interests regardless of consumer interests, in the sense that they prioritise short term profitability over consumer health and sustainability issues. The organic approach would be in stark contrast to this method, and as consumer demand is a perceived critical driver of organic production, the consumer must be central to the development of the sector. Michelsen (2001) also concurred stating that organic farming gains its identity in opposition to conventional production, as you can argue what organic prohibits in comparison. However it is not simply the rejection of fertilisers, or the promotion of environmental protection, rather it is a wholesome strategic application that incorporates all these aspects.

Michelsen (2001) continued that organic agriculture is both a social movement and a way of life. Concurring with Inglehart (1977) he identified the shift in societal attention to post-material values and political styles, as new social issues emerged on to the policy agenda. Social capital, sustainability and general welfare became prioritised. There was an apparent shift from hard-line material values such as placing the emphasis on levels of output, to more soft-line values such as the quality of the production process and increased environmental awareness. These more recent values are constantly evolving and require adequate adaptation for production systems. The International Federation of Organic Agriculture Movements (IFOAM), a global umbrella organisation for the organic movement, also focus on the social aspect of organic production claiming it promotes equitable relationships amongst those involved by combining traditions with innovations (IFOAM 2010).
One of the fundamental characteristics of organic agriculture is that it is not a fixed or static approach to agricultural production, rather it is a fluid, dynamic, rapidly evolving concept, which may be still considered a relatively new innovation, and thus constantly adapting to emergent issues (Lampkin 1990). In fact Lampkin asserted that organic farmers had become self reliant in many ways and developed the system on a ‘trial and error’ basis. As this system continues to develop, this said fluidity will prove advantageous when adopting future strategies, and to adjust to emerging challenges more easily.

Another important concept that must be acknowledged in tandem with organic agriculture is the issue of sustainability and its relationship to organic production. Pretty (2005) argued that if a particular technology maintains productivity without harming the environment, then it is likely to be beneficial on sustainability grounds. Padel (2001) noted the term sustainability is used in a broader sense in relation to organic production, reflecting environmental, economic and social sustainability. Lampkin (1994) argued that the objective and ethos of sustainability lies at the heart of organic farming. The ambition to produce efficient quantities in the present without negatively affecting future production is a key ideal of organic innovators, and thus there is an important interrelationship between the two concepts. Rigby and Cáceres (2001), and Hansen et al (2001) also agreed, stating that the two terms are synonymous and as the organic system strives to assist natural cycles rather than dominate or exploit them, it is clearly advantageous on sustainability grounds. Padel (2001) elaborated insisting that sustainability is the main objective of organic production. Pugliese (2001) also insisted that sustainability should be pursued concomitantly with economic agricultural policy, as the intention is to grow industries that will maintain the capacity to provide for future generations. Nonetheless sustainability is still an evolving concept to combat the negative environmental spillovers that were associated with intensive agricultural production. However it is also worth noting that there are other sustainable commodities that are not necessarily organic, and therefore it must be acknowledged that despite organic agriculture incorporating sustainable aspects, it is not an identical concept, but they are connected by these interrelationships.
In summary, it appears that the various definitions of organic agriculture fall within a broad inclusive concept, but each at different levels within it, and consequently providing a comprehensive definition is problematic. The term incorporates many aspects, and is still evolving and redefining its definition. To what extent the definition should be interpreted is a contentious issue, with only the Amish community approaching truly organic status in the developed world. In fact Lampkin (1994) suggested that there is a spectrum of ‘organicness’, outlining how close producers can become to truly organic. Rigby and Cáceres (2001) argued that if your vehicle uses fossil fuels, then you cannot be considered wholly organic, and accordingly food miles must be kept to a minimum to maximise use of renewable resources under the organic ethos. The problem then arises as to how the organic market can develop without a comprehensive macro strategy, as maintaining the locality of production and the retail chain may prove problematic when particular crops can only grow in certain areas, and hence the availability of resources differ across the world.

2.3 – Benefits of Organic Farming
There are some undoubted benefits to organic food production as opposed to conventional methods. The recent growth in the organic sector has been accelerated partially due to increased consumer awareness (Henchion and McIntyre 2008). The shift in focus to quality, sustainability and preserving the environment are perceived as positive aspects of organic production. Tisdell (2007) also noted that organic demand has increased as it is believed to be healthier, more environmentally friendly and more sustainable than other systems. Moreover, Bateman (1994) commented that as output levels are expected to be lower on organic systems, as a result of the prohibition of fertilisers, the potential for vast production surpluses previously experienced in Europe will inevitably be reduced. It may also be argued that it is advantageous on ethical grounds given the additional regulations for animal welfare, and that it may pose a potential boost for rural development on the grounds of multi-functionality leading to increased rural employment. These points are now discussed in greater detail.
2.3.1- Soil and Biodiversity

Stolze et al (2000) noted that organic farming tended to be more effective at maintaining soil fertility than conventional methods. They credited higher biological activity and organic matter for this increased fertility. Indeed Reganold et al (1990) stated that agricultural practices should operate on a biology and ecology basis, rather than a chemistry and technology basis. Hansen et al (2001), Pimentel et al (2005) and Tisdell (2007) echoed this view as they stressed the importance of soil activity as central to organic objectives. For example, the prohibition on pesticides encourages greater diversity of species in the soil that complement biological processes, such as increased earthworms. Badgley et al (2007) elaborated insisting that soil fertility levels can be enhanced whilst also increasing the sustainability of the production. Scialabba (2000) expanded by noting that it also strengthens the resilience of the soil as opposed to conventional methods that may damage soil quality. These claims are substantiated by scientific evidence in their research, and therefore this may be considered a clear advantage for organic production.

Moreover, Sipilanian et al (2008) defined biodiversity as the variety of all forms of life that can be further subdivided into genetic, species and ecological diversity. Biodiversity is a key advantage of organic production with associated benefits for sustainability as it enriches natural resources such as soil, rather than deplete them. Consequently, biodiversity has increased in relevance in recent years as conservationists and environmentalists enjoy greater influence on the policy agenda.

2.3.2 –Sustainability

As previously argued there is a link between the concept of sustainability and organic farming, despite the organic system been only one contributory factor in achieving a degree of sustainability. Stevens (2010) commented that the term sustainability has become the new buzzword of agriculture, yet it has also been argued that the concept is not so recent, but perhaps had previously been neglected from academic research.
Interestingly, only three nations globally employ sustainable agriculture as central to their agricultural production policy, namely Cuba, Bhutan and Switzerland (Pretty 2005). One possible argument for this is that sustainability may be seen by some as a long term policy objective, rather than an immediate priority. Accordingly, policymakers appear to favour conventional methods in most countries, which is focused on short term profitability, quite contrary to sustainable outlooks. Furthermore, Pugliese (2001) claimed that some forms of conventional agriculture are patently opposed to sustainability, and with the general acceptance of the need to guarantee food supplies for present and future generations, it is difficult to surmise the neglect of sustainable production at the policy level. Concurrently, Badgley et al (2007) argued that present conventional policies appear to pursue a short-term solution that actively jeopardises long-term environmental sustainability. Stolze et al (2000) concurred, referring to organic production as a ‘state of the art’ environmentally sensitive production system, which would prove beneficial on the basis of sustainability.

2.3.3 - Health and Ethics

Health awareness and ethical concerns have been primarily driven by consumers on the basis that quality may be more important than quantity. Blake (1994) and Tisdell (2007) argued that consumers think of organic produce as healthier and argue the role of health should be central to food production. However, intensive production focused on increasing output levels may not prioritise the health of the consumer as a critical component of the production process. Tovey (1997) also insisted that the production of healthy food is important for all actors involved. Furthermore, Pimentel et al (2005) asserted that organic methods can improve general public health and ecological integrity, a view that may be contested by conventional supporters.

Ethical agricultural production has also grown in prevalence in recent times, as animal rights groups and other campaigners have sought that standards of production are conducted in a more ethically friendly and humane method. Any form of cruelty in the production process is no longer acceptable or tolerated. In fact, Sundrum (2001) commented that previously animal welfare and ethics were of little importance in comparison with intensive production methods operating under strict time constraints.
Conversely, organic agriculture is more complementary on ethical grounds as the intensiveness of production is reduced due to lower stocking levels, reduced animal stress, and the prohibition of chemicals and pesticides. This ensures animals are given adequate time to develop by more ‘natural’ means. Browne et al (2000) studied the links between organic production and ethical trading and found scope for the two terms to become synonymous. The Western Development Commission (2010) in Ireland noted that producers responded to ethical issues identifying them as a central component of their motivations to convert. Matthews (2008) also endorsed these motivations insisting that ethics and morality must be increasingly prominent in all agricultural production.

2.3.4 - Rural Development
Scialabba (2000) argued that there was a number of organic agricultural practices that could be applied to enhance rural development. Matthews (2008) concurred arguing that organic ideals encourage multi-functionality and pluri-activity, and therefore may be advantageous in ensuring that rural areas remain a vibrant contributor to national economies. Hau and Joaris (1999) suggested that organic farms were more labour intensive and as such would bolster rural employment levels. Furthermore, Morison et al (2005) predicted a six percent rise in rural employment if twenty percent of total agriculture converted to organic when analysing the British and Irish examples. This positive relationship could be a useful policy tool in promoting rural development into the future. However, it is important to note that an increase in labour will inevitably lead to an increased cost at the input stage, and thus reduce the disparities between production costs, as opposed to conventional production. Badgley et al (2007) agreed, and stated that organic production would be more effective on smaller farms as the increased labour required would be more manageable. Moreover, Padel (2001) noted that rural development was a significant motivation among participants in her research. Accordingly, Bateman (1994) added that with more employment opportunities in rural areas, the recent trends of increased urbanisation could potentially decelerate.

Similarly Woodhouse (2010) quoted Lipton’s advocacy as to the influential role of smaller farms to rural development. In this study, producers utilised increased labour at the expense of capital and scale, which would encourage the viability of smaller farms
and boost rural employment. This would be particularly relevant for many producers in Ireland, especially in the west of the country, where organic farms are predominantly small scale. Moreover, the central function of rural areas is been redefined with regard to rural development with activities such as rural tourism, the preservation of rural landscapes and traditions, environmental education and healthy food production to meet new rural demands (Pugliese 2001). Pugliese continued that farming is now competing with other activities to use rural areas to meet emerging urban demands. Furthermore, Firbank (2005) argued that the ‘foot and mouth crisis’ of 2001 illuminated the multi functionality of rural land as it affected production, tourism and wildlife. Accordingly, the need for a balanced approach between production intensification and other rural functions such as biodiversity, were reinforced.

In Ireland the roles of rural development and organic farming have been closely aligned from a policy perspective. The National Steering Group for the Development of the Organic Sector (2008) reported that the Organic Farming Scheme was introduced under the Rural Development umbrella. This is encouraging for the organic sector as producers may link the two concepts to their production ideology and ensure they maximise their incomes, whilst also bolstering the rural economy.

2.3.5 - Climate Change
Olesen and Bindi (2002) claimed that agriculture is situated at the interface between ecosystems and society. They calculated agricultural emissions as responsible for producing approximately twenty percent of harmful greenhouse gases to the earth’s atmosphere. This is unsustainable in the longer term as the need to reduce harmful emissions accelerates. Conversely, Casey et al (2006) and Woodhouse (2010) highlighted the positive impact organic production may have in relation to climate change. He referenced a study that estimated that organic agriculture would reduce harmful carbon emissions by approximately a third as opposed to intensive conventional methods. IFOAM (2010) calculated this reduction at an average level of 1 tonne of CO2 per hectare in tropical regions and levels of 560 kg per hectare in temperate regions. This, if proven, would be a significant advantage for organic production. Olesen and Bindi (2002) asserted that policies and agri-environment schemes must be coordinated
to address climate change issues appropriately and effectively. Hazell and Wood (2007) also warned that in the longer term, health concerns may be aggravated by climate change as familiar meteorological conditions may be altered.

Ruttan (2002) argued that despite the fact that the impact of climate change may prove positive or negative for productivity levels on farms, the research capacity and political will of nations will decide to what level they may adapt to the new conditions. Accordingly, greater research into the productivity of organic production must investigate whether similar output levels to conventional levels are achievable, with substantially reduced carbon emission levels to conclusively prove the assertion, that it can assist the achievement of climate change targets.

2.3.6 – Summary
In summary, organic production has many positive effects as opposed to the common criticisms of conventional production systems (Lampkin 1990). Legitimate criticisms of conventional production such as damaging the environment, reduced soil fertility, sustainability, food quality, creating health hazards in food, involving unethical intensive production, proving costly to rural societies, and negative impacts in relation to climate change, all may be improved considerably under organic production. Accordingly, these factors could prove significant and influential in future policy initiatives. However, there are also justifiable criticisms of the organic system which are discussed in the next subsection.

2.4 – Criticisms of Organic Farming
Similar too many new innovations there are perceived advantages for organic production as noted above. However, there are also valid criticisms that may prove a legitimate barrier to conversion, deterring prospective producers. Some of these criticisms are discussed in greater detail below.
2.4.1 - Over-reliance on consumer demand

The whole area of affordability is a key criticism of organic produce. Sundrum (2001) questioned whether consumers would continue to pay premium prices indefinitely, that have so far helped to improve farmer incomes. The higher prices may alienate lower income consumers, and therefore the market would become more specialised solely targeting higher income earners. This would lead to a market led downsizing (Rigby et al 2001). Moreover, assuming incomes fall in real terms, what provisions are in place to ensure affordability remains plausible? This may prove a key challenge as the global recession continues in recent times. However, Henchion and McIntyre (2008) argued that discounter shops and supermarkets offer cheaper organic food which could hurt farmer markets but will provide more affordable organic produce for consumers, despite reducing the number of options within organic food available (Lampkin and Padel 2011).

Similarly Browne et al (2000) did not consider the social or ethical benefits of organic production to have a significant influence on consumer demand. Matthews (2008) also noted that consumer preferences can change rapidly, so their lifestyle choices may have positive or negative effects for a consumer driven organic market. Rigby et al (2001) also acknowledged the uncertainty of relying on consumer demand and loyalty, as an unsound foundation to expand the organic sector further.

2.4.2 - Disease

Sundrum (2001) argued that the build up of parasites in natural manure may exacerbate the spreading of disease as the animals may not be inoculated against common diseases such as mastitis or metabolic disorders. The need for farmers to implement effective management techniques is critical in this regard, as a breach in competency may lead to negative consequences for the well being of the animal which is in stark contrast to organic ideals. Moreover, organic production is often labelled as a production method designed for a specific premium market that relies on consumer confidence as noted previously (Sundrum 2001). Accordingly, this confidence must be maintained and therefore the avoidance of a health scare is a key prerequisite for the continued validity
of the sector. Concurrently, Pimentel et al (2005) also stressed the importance of a solid management structure with appropriate means to provide safety information to consumers would help to alleviate these issues.

2.4.3 - Land use and Output levels
A contentious issue for organic production as debated by Badgley et al (2007) and Connor (2008) is the assumed corollary that organic agriculture requires increased quantities of land to compete with conventional output levels. If proven, this would dilute the environmental and natural habitat protection benefits associated with organic systems, as more agricultural land would be required to compensate. On this basis, it may be argued that organic production is actually more detrimental to the environment. Woodhouse (2010) argued that the imperative to increase agricultural productivity has been strongly associated with industrialisation, driven partly by growth of new markets constituted by an emergent urban and industrial workforce. Moreover, Tisdell (2007) and Matthews (2008) argued that increasing populations coupled with increased demand for meat and dairy products in emerging markets such as China and India, and thus, could accelerate the urgency for intensive production, which would strengthen the argument to expand conventional production may grow stronger. Commentators such as Connor (2008), Lansink et al (2002) and Tzouvelekas (2001) insist that organic output cannot match conventional levels. However, Pimentel et al (2005) was critical, asserting that this is a misconception and that depending on the particular crop in question, output levels will vary.

Badgley et al (2007) asserted that as increasing conventional production may be unsustainable going forward, it could ultimately cost future generations. Olesen and Bindi (2002) argued that increased intensification could lead to negative environmental side effects. In terms of output levels specifically, Pimentel et al (2005) argued that organic production can match and even increase productivity when compared to conventional in some instances. Badgley et al (2007) concurred, expanding that their results may actually underestimate organic output, because pluri-activity on farms reduces individual output levels for a more collective output. Indeed, is important to note that organic systems may often involve multiple products as advocated by Badgley
et al (2007) and Matthews (2008), which may be contrary to conventional specialised output levels, so conducting an accurate comparison is problematic. Under the multi-output system low levels of output for a specific product may be compensated for by higher levels of output on alternative products produced on the farm. Therefore, the collective output from the various production systems needs to be examined to gauge the total productivity. However, for this research, the focus is solely on organic beef, and as such alternative products are not incorporated into the analysis.

Nonetheless, it is simplistic and perilous to dismiss organic output levels, and assume categorically that more land is required without further analysis. The studies by Tzouvelekas et al (2001) in Greece and Lansink et al. (2002) in Finland found that productivity levels were indeed greater for conventional systems but that organic systems could compensate for this by higher technical efficiency levels. In other words, they produced closer to their potential capacity given the available resources. This will result in reducing unnecessary production inefficiencies and income losses. However, there is also a high degree of variability in the results.

2.4.4 – Other Criticisms
Trewavas (2001) also identified some valid criticisms of organic production such as the lack of scientific clarity, the dangers of mishandling manure, increased fossil fuel use, and farm management issues. However, these points are generalising individual problems, and as such may be difficult to substantiate on a larger population sample. The latter point however is important as Pimentel et al (2005) also stressed, that the management practice must be effective to protect against these issues arising, and hence adequate training and support must be available. This issue, among others, is discussed in greater detail in subsequent chapters.

2.4.5 – Summary
In summary, prospective producers must be aware that there are advantages and disadvantages to adopting the organic production system. However accepting the criticisms as barriers to entry without sufficient consideration to the benefits of organic
production may irrationally imbalance this debate. Accordingly, future research must be targeted at conclusively proving the benefits and criticisms of organic production, so producers, and indeed consumers, can make rational informed decisions.

The next section analyses the motivations and barriers of producers to convert in order to gain an understanding of the key issues affecting producer’s decision making in relation to the adoption or non adoption of organic agriculture.

2.5 – Motivations for conversion

The motivations and decision making process for farmers is a complex element of the adoption or indeed non adoption of agricultural innovations. There has been considerable research in this area, with the generally agreed consensus that the heterogeneity of individual farmers ensure that there is no appropriate systematic formula for the prediction of farm behaviour. Indeed, Pannell et al (2006) argued that a combination of this heterogeneity and the imperfect information associated with decision making implies that researchers are continuously discussing trends and tendencies rather than deterministic relationships. It is a combination of intricate components that drive a farmer into adopting a particular innovation.

Willock et al (1999) and Läpple (2010) argued that it was incorrect to follow the normative theory that farmers are solely driven by profit maximisation ambitions, which fail to appropriately accommodate their alternative motivations and attitudes that determine their behaviour. Gorton et al (2008) agreed noting that responses to policy changes partially depend on farmer attitudes and mindsets. Pannell et al (2006) concurred, concluding that achieving high profits may not be the core objective of farmers, but it is an important tool to achieve alternative prioritised goals such as a secure family lifestyle, and improving the farm for future adoption by heirs. Howley and Dillon (2012) also noted that although profit maximisation was an important aspect of farmer motivation, the desire to follow productivist tendencies and lifestyle improving strategies were equally as important. However, Pannell et al (2006) asserted
that conservation practices are less likely to conform to the generalisation that farmers will ultimately adopt an innovation if it is perceived to advance their core goals and objectives, as opposed to productivity related innovations.

Furthermore, Makeham and Malcolm (1993) listed a number of inclusive goals and objectives that combine to determine farmers decision making, including to survive and grow, to improve the physical state and appearance of the farm, to acquire external land or to control a larger business for the future and for heirs, to have a reasonable standard of living, to be a respected member of the community and to have enough money to pursue non farm interests. Similarly Vanclay (2004) added that doing what is perceived as ‘the right thing’ has a huge bearing on final decisions, as well as the particular stage of their lifecycle can influence their ambition. Moreover, the decision making process involves a series of stages including awareness of the opportunity, evaluation, trial, adoption, review and possibly reversion. A number of other important actors are also involved in these stages including family members, extension agents, peers and perceived experts. Pannell et al (2006) elaborated that as an innovation matures, the uncertainty associated with it diminishes and this encourages wider adoption.

Another important issue in the analysis of agricultural production is the heterogeneity of results. Heterogeneity is a key feature of agricultural research as this sector is diverse by definition, as characteristics vary considerably nationwide. Hazel and Wood (2007) noted that accounting for heterogeneity is a necessity for agricultural development on a global basis. Tovey (1997) agreed insisting that the Irish organic movement is defined as heterogeneous. Therefore, this same logic must be applied when analysing motivations for conversions to organic systems, and thus any attempt to group producers collectively must be interpreted with caution. Fairweather (1999) and Darnhofer et al (2005) studied the motivations for conversion to organic production in their respective countries, and found that grouping farmers together provided classification problems. They found that participants reacted diversely to different incentives whether financial, idealistic, personal or otherwise. The Western Development Commission (2010) echoed these findings in their research into the motivations of Irish organic producers in Ireland. Furthermore, Padel (2008) concurred
on the heterogeneity of motivations among organic producers, but she also found significant evidence to surmise that organic production may be seen as a professional challenge, and thus may appeal more to younger, newer farmers. She argued that older more established conventional farmers would resist the challenge, perhaps under the intimidation of acquiring the new knowledge required as noted by Morgan and Murdoch (2000). Läpple (2010) found that beliefs and attitudes were most prominent in the decision to adopt organic or not, with financial implications secondary, although she did note that accounting for heterogeneity could underestimate the influence of these motivations. Thus, the importance of accommodating heterogeneity in the sample data is a prerequisite in conducting accurate research into organic agriculture in Ireland to avoid homogenous misrepresentations. This issue is also incorporated into the analysis in subsequent chapters.

In relation to organic beef production, it appears that many farmers in Ireland are more willing to accept the perceived barriers to organic production, rather than to adopt this alternative system, given that the number of producers remains low in comparison. It can be argued that this has decelerated the pace of development as noted in the previous section. On the evidence of the advantages of organic production, it seems quite puzzling as to the cause of the lethargic adoption of organic agriculture in Ireland. Indeed Teagasc (2008) and Läpple (2010) found that farmers were only moderately motivated to convert to organic systems, and found social and technical barriers, such as producing for perceived higher income consumers, or the challenge of acquiring new knowledge, more palatable to accept.

Läpple (2010) argued that the relatively extensive nature of Irish agriculture implied that a conversion to organic production would not be so problematic. She also argued that more recently there has been relatively low profitability in conventional beef production, so the opportunity to achieve premium rewards in organic production should have incentivised greater numbers of farmers to convert. Nonetheless, farmers still seem somewhat reluctant to adopt organic production as the comparably low uptake figures suggest, so there must be prominent underlying reasons that are discouraging farmers towards adopting the organic system. Thus, it is important to research these
factors more meticulously. However, Padel (2008) noted that as a consequence of continuous demographic and policy change, future adoption patterns are difficult to predict, and thus historical trends may therefore be of less importance. Accordingly, this uncertainty must be accommodated into an evaluation when interpreting the possible motivations for future conversion.

Accordingly, Michelsen (2001) argued that the attitudes of policy makers and organic farmers should align as both shared common goals. Indeed, Vanclay (2004) asserted that farmer attitudes are not antagonistic to the environment. Fairweather (1999) insisted that policies intended to influence attitudes need to provide comprehensive information to prospective adopters to help to alleviate the concerns in the decision making process. He continued that digestible information that proves the economic, technical, and sustainable viability of organic production would accelerate further adoption. Thus, it could be argued that organic beef production incentives should appeal to an increased number of potential producers, and this may encourage the further development of the sector.

Läpple (2010) conducted research into these motivations using the theory of planned behaviour. She found that initially Irish farmers responded to social and technical barriers reinforced by attitudes and cognitive beliefs, rather than to financial incentives offered by government policies. Läpple (2010) expanded that education, advisory services and market development are considered important motivations, and hence, should not be dismissed as of secondary importance to subsidy payments and income support measures. These support services can also have an influential role in encouraging system conversions. Moreover, it is difficult to argue against the desire for increased awareness and the widespread availability of comprehensible information to improve the rate of adoption, and indeed the quality of organic production.

Padel (2001) noted that more broadly, motivations could be divided into two categories, the first based on personal preferences such as health or social concerns, and the second based on farm related motives such as husbandry or financial motives. The latter point
was also cited by Tress (2001) as influential when analysing the impact of subsidy schemes in Scandinavian countries. However the original pioneers of organic production would not have been highly motivated by financial incentives, as husbandry, quality, and reduced chemical usage were at the apex of their priorities (Leavy 2009). As noted previously, the hastened development of organic agriculture occurred in opposition to conventional methods, and hence organic producers would have rejected intensive, chemically enhanced production techniques in favour of an extensive environmentally friendly method. Furthermore, Michelsen (2001) argued that there was an important lifestyle choice with regard to motives for adopting organic production, and Tovey (1997) agreed labelling it as a social movement of sorts. Indeed previous research by Willer and Gillmor (1992) found that 82 percent of producers in their survey were motivated by ideological reasons. This is consistent with the Irish situation as Läpple (2010) discovered, and therefore the financial aspect whilst important is not defining.

Paradoxically Henchion and McIntyre (2008) analysed the market drivers and found that more recently among consumers, there is a high level of awareness of organic produce, approaching 100 percent. However, they state that this does not necessarily translate into high rates of sales for a number of reasons such as the alleged uncertainties of the benefits of organic food, and the belief among some that it is merely a temporary phase and as such will pass. Premium prices may also be a problem for lower income consumers’ affordability, especially with less expensive non-organic substitutes available. This is an area that requires further research as consumer focus is an important aspect of organic production, and as such is addressed in the primary research of this thesis.

In conclusion, it can be argued that motivation levels are below their potential in Ireland for conversion to organic production. Moreover, it appears that the conversion process should be relatively simplistic for Irish producers who operate extensively at present, yet there seems to be a general reluctance to adopt organic practices in larger numbers. Social, technical and financial barriers are preventing Irish producers from adopting this system due to a perceived uncertainty about the suitability and advantages of such a
system. This implies that there is scope for an improvement in the availability of digestible information to prospective producers and with the addition of appropriate incentives there could be a further acceleration in the expansion of the organic sector. There are numerous factors that influence the farmers’ motivations and decision making process and the incorporation of these would overcome many of the perceived barriers to conversion. Nonetheless, the primary focus of this thesis is focussed on cross sectional analysis and as such the current organic sector must be profiled. Therefore, the next section provides an overview of the current organic sector in Ireland, and outlines some of the opportunities and challenges involved.

2.6 – Development of organic agriculture
This section examines the development of the organic agricultural sector from its origins to its current economic position. Particular trends are evident globally that share common characteristics with organic production in Ireland, and thus are discussed at the outset. This section explains where the modern form of organic production originated, the key elements of its development to its current position and the challenges that have been overcome in the process. Subsequently, the Irish experience can be analysed comparatively within this contextual framework which highlights some of the opportunities for further development and expansion of the market in Ireland.

Organic production has existed for centuries, albeit without formal recognition. Even at present, many developing nations use organic methods essentially by default, as they lack the necessary resources to produce on an intensive conventional basis. They operate a more traditional form of agricultural production that utilises natural resources and agro ecosystems rather than artificial fertilisers and pesticides. Lampkin (1994) noted that more recently the organic movement achieved an increasingly influential political voice as the number of producers increased. This recognition occurred in the late 1980s as previously pursued intensive farming policies were producing negative spillover effects in terms of excess supply and environmental degradation. Michelsen (2001) concurred citing the growth in public awareness for the arrival of political
recognition and certified standards, although he also acknowledged the success of the self regulation that had previously operated effectively.

At the beginning of the twenty-first century Rigby et al (2001) noted that demand for organic produce was growing faster than supply in the UK, in a sector that was continuously increasing in market share. Teagasc (2008) and Purcell (2010) note that there remains excess demand for certain organic products such as beef in the European market, hence providing an opportunity for further expansion of production in Ireland. However, historically, the organic movement has been largely marginalised and excluded from the core of agricultural policies. In fact, Michelsen (2001) implied that from its origins in the 1920s, the organic movement has had to create its legitimacy into formal recognition at policy level, as it has developed as a reaction against mainstream conventional agriculture. Ultimately however, the foundations and core principles were sound, and the organic movement today is not wholly different to the early visions of over eight decades ago.

The origins of organic agriculture, as noted by Tate (1994) can be traced back to the early works of Dr. Rudolf Steiner, Dr. Hans Müller and Dr. Hans-Peter Rusch in continental Europe, and Sir Albert Howard and Sir George Stapledon in the UK. These pioneers developed an alternative vision of agriculture in the 1920s and 1930s. Padel (2001) noted that they focused on bio-dynamic agriculture, preservation and soil fertility as the core of their production approach. They recorded their methodology and ideas, which would evolve into the modern form of organic production. These ideas fed one another and Tate (1994) stated that in 1943, Lady Eve Balfour founded the organic movement on this basis, and these concepts have since been researched and analysed by two generations of Rodale’s in the US, research that Badgley et al (2007) confirm is still conducted today.

More generally Tate (1994) stated that there were three main phases of development in the international organic movement. The first was from 1924-1970 where financial uncertainty and greater opposition than support were the norm. The second stage was
between 1970 and 1980, when key recognisable organisations such as the International Federation of Organic AgriculturalMovements (IFOAM) and various policy schemes were introduced, as well as specialised retail outlets. The most recent phase is from 1980 onwards where it has gained wider acceptance with national and international standards established, a phase arguably innovated by the Scandinavian, German and Austrian regions. Greer (2002) noted that rapid expansion took place in the mid eighties in the European Union and that has steadily continued to grow into the new millennium, for a variety of reasons. However this development has constantly been hindered by the continuously present all powerful chemical lobbies (Tate 1994), whose key agricultural policy position prioritised maximising output.

During World War II (1939-1945), there was a need to maximise food production for a society based on army needs rather than environmental concerns. Agriculture was viewed as a sector from which resources could be extracted to fund development in the industrial sector (Ruttan 2002). Initially, under these unique circumstances the legitimacy was based on army personnel requiring supplies of certain products in haste. However, in the latter quarter of the century when this specialised overproduction continued long after the war had ended, the associated surpluses, inefficiencies and the lack of sustainability became evident. At this point the mechanism for addressing all agricultural issues within the European Community was under the remit of the Common Agricultural Policy (CAP).

The CAP was established in 1957, as a part of the foundation of the EuropeanCommunity, which would evolve into the European Union. It promoted the conventional production method of agriculture, at a time when the need for close cooperation amongst nations and the rebuilding of agricultural industries were paramount. A protectionist policy approach was adopted that provided subsidies to producers in order to compensate them for lower prices for output, thus maintaining lower prices for consumers. These price support schemes encouraged intensive productivity as payments were coupled to levels of output (Euromed 2008). In other words, producers received a subsidy payment for each unit of output produced. However, as noted by Grant (1997), this intensive specialised production system led to
three problematic results, namely exacerbated budgetary pressures, vast levels of oversupply and environmental degradation. In relation to the former, Grant (1997) calculated that budgetary commitments doubled in real terms between the mid seventies to mid eighties. This occurred as a result of the enforced policy coupling, where subsidies were linked to output levels, and consequently producers were incentivised to maximise production. However the result was detrimental in macroeconomic terms and lead to the creation of excessive produce surpluses. The infamous metaphorical ‘wine lakes’ and ‘butter mountains’ that became symbols of the inefficiency of the CAP (Grant 1997) referred to these produce surpluses and they were subsequently ‘dumped’ on world markets. This, in turn, was damaging to developing countries production capacities, as they could not compete with developed countries. It was an example of gross inefficiency that should have been prevented. The degradation of the environment was also a result of this pursued policy, with intensive production and the use of artificial fertilisers, pesticides and chemicals proving detrimental to natural habitats, through pollution and the erosion of biodiversity.

Consequently, this led to a shift towards a new policy perspective with the objective of reducing supply levels, increasing environmental awareness and achieving more efficient production. These new policy objectives became central to the initial MacSharry Reforms of the CAP in 1992, followed by Agenda 2000 with the Mid-term review in 2003 that initiated the decoupling of production and most recently the move for further CAP reform in 2013. From this basis organic production became a viable alternative option within agriculture, as these shifts in perspective began to favour a more environmentally friendly, extensive production system. Accordingly, the organic sector has gradually developed and expanded to its current position in the global market place under these favourable shifts in policy positions.

The nineties was an important decade for the expansion of organic production with the arrival of supranational political recognition establishing concrete frameworks to develop the industry from the earlier approaches of the pioneers and innovators. In Europe the breakthrough arrived when organic standards were formally set in the CAP from the first of January 1993 under EC regulation 2092/91, which was subsequently
replaced by EC regulation 1804/99. As Lansink et al. (2002) noted this was a positive development as it set standards and guidelines that would create product differentiation and provide greater information to consumers. Lampkin (1994) noted that this legislation introduced a set conversion period with strict guidelines to ensure appropriate certification was achieved. Under these circumstances the organic movement within Europe continued to expand with produce becoming more accessible to consumers. Michelsen (2001) and Hansen et al (2001) emphasised the effectiveness of this legislation as it stimulated and accelerated the growth of the organic sector in real terms. Morgan and Murdoch (2000) also predicted that the organic market would continue to grow at a robust rate and the relevant data indicates that their prediction has proved relatively accurate as growth has indeed continued. IFOAM (2010) noted that globally the market has continued to grow through 2009 with no indications of a slowdown in this growth. Moreover, recently the EU has developed a logo to symbolise organic produce which will be increasingly recognisable across the continent for consumers. So there are many indications that the development of the organic sector will continue to expand in the immediate future, and therefore it is important to understand the influential factors of production in greater detail, which is the central objective of this thesis.

Research conducted as to the reasons for this expansion of the organic market suggests that one of the key drivers of the market for organic food as indicated by Lampkin (1990) and Tate (1994), appears to be the surge in consumer demand. This has occurred for a variety of reasons including concerns over health, ethics, sustainability, the environment, certification, legislation, and the development of marketing channels such as specialist retail outlets and supermarkets. Halloran and Archer (2007) identified the impact of market changes, government intervention, and technology as key drivers in the US, and similar effects can also be identified in Europe.

The early preservationist ideas as outlined by Tovey (1997), to protect the available natural resources, such as maintaining soil fertility, were accompanied by a wider variety of ideals from the 1960s onwards. Tate (1994) noted that social, environmental and health concerns increased the relevance and urgency to find an alternative
sustainable method of agricultural production. Osbourn (2005) implied that conventional agriculture prioritised maximising productivity rates over environmental protection and as a consequence, bio diversity and water quality were adversely affected. Alternative production methods were becoming increasingly necessary, although supporters for these alternatives were in the minority. The low-input sustainable agriculture (LISA) in the US in 1985 as examined by Reganold et al (1990) and various integrated farming systems in Europe noted by Tate (1994) were two such alternative systems. Their objective was simply to reduce the chemicals and pesticides in use rather than eliminate them completely. Moreover the advantages of the organic system, such as greater emphasis on quality, sustainability, preserving soil fertility and biological diversity, were also widely accepted and the development began to hasten.

Another factor that has aided the development of organic agriculture was the growth of international trade in organic produce. From the early nineties Tate (1994) noted that Europe was among the world’s leading market for organic commodities. Cereals, soya, fruits, vegetables, nuts, meat, tea and coffee were among the goods imported, to complement internal supplies of which some products are also exported. These are then sold in an increasing number of specialist outlets, and more recently in specific sections of supermarkets (Baourakis 2004). The recent trends show indications that this international trade will continue to expand in the short and medium term, although the global economic crisis from 2008 may decelerate this process.

In conclusion agriculture in Europe is approaching a crossroads with the upcoming CAP reforms in 2013 and a variety of options need to be assessed. However, this could create further opportunities for organic production with environmental concerns and sustainable food production expected to feature in the new policy based on past reform trends. Furthermore, Murphy and McCullough (2011) reported that the upcoming reform in 2013 will involve a ‘greening’ of the CAP, a development that will certainly advance the appeal of organic farming. This greening element is speculated to circumscribe 30 percent of the total CAP budget for environmentally friendly production. Therefore organic production is strategically positioned to benefit from reform and hence is likely to continue to expand in Europe. In Ireland this development
pattern may provide opportunities also, and these issues will be addressed in more detail in the next section. Firstly, however, it is necessary to identify the development of the Irish organic sector within this global development, to determine its current market position.

2.7 – Development of organic agriculture in Ireland

The development of the Irish organic sector has occurred at a lethargic pace with a slight acceleration from the late 1980s onwards for a variety of reasons. Its development has followed a similar path to the wider development of the global organic sector and more specifically to the development of the sector in Europe. This section describes the evolution of the Irish organic sector from its origins to the current position, whilst outlining some opportunities for further expansion of the sector in the short and medium term.

The early pioneers or organic production in Ireland were very much in the minority as they developed their production system. Tovey (1997) commented that these early innovators were mainly immigrants from industrial cities in Germany and Britain who viewed Ireland as an ideal tranquil place to experiment with this alternative agricultural system. Fibl (2010) estimated that prior to the establishment of the voluntary organisation ‘the Irish Organic Farmers and Growers Organisation (IOFGA) in 1981, only a handful of producers operated organically under a system of self-regulation as discussed previously by Michelsen (2001), and networked cooperatively to improve their production standards. As their system began to achieve success, other Irish producers converted in an attempt to replicate and indeed improve upon these existing methodologies. Nonetheless Willer and Gilmor (1992) and Leavy (2009) asserted that the establishment of IOFGA was a critical step for the accelerated development of the sector as it was the first attempt to become systematically organised under a national umbrella certification body. Accordingly, Morison et al (2005) commented that the Irish organic sector is still in relative infancy in comparison with its international counterparts with origins dating back to the 1920s.
Thus, it can be argued that the adoption and development of organic production in Ireland lags behind its international peers. This type of adoption is consistent with the theory of the diffusion model of adoption of new agricultural technologies as set out by Padel (2001). This model explained the various patterns of adoption for new innovative technologies with converters separated into categories based on stages of adoption. Hence, the Irish organic sector has developed progressively, despite still trailing other nations, but there is significant existing potential to expand the sector further.

There is also evidence that the development of organic agriculture in Ireland has occurred in clusters due to the networking and cooperation undertaken by the innovators. Barry (2010) and Murphy (2011) implied that this remains the case with current organic farms often concentrated in specific locations. This may not be so surprising, as success breeds further success and therefore profitable neighbours can be effective promoters of this new innovation. Furthermore, considering Ireland’s comparatively smaller size in terms of land area and numbers of producers, these clusters have ample opportunities to network cooperatively under the umbrella of the national organic certification bodies. This provides advantages in terms of communication, standardised quality and effective marketing techniques. On the other hand, producer’s who are peripheral to these clusters may not be aware of the advantages of the organic system, or of the certification bodies, and as such may accept the social and technical barriers to conversion as outlined by Läpple (2010), without further investigation. The importance of an appropriate policy direction is crucial to overcoming these perceived barriers, and this needs to emanate from the policy level.

Similar to agriculture practiced in developing countries today, the Irish system historically adhered to organic standards essentially by default, as the use of fertilisers and chemicals and indeed the intensification of production were not widespread. Subsequent to EU membership in 1973 the benefits of intensifying agriculture through the coupling of subsidies to levels of output, and the use of fertiliser and pesticides became an integral part of Irish agricultural production. Grant (1997) noted that for countries such as Ireland, joining the CAP initiated a transformation in the direction of a more commercially-orientated form of agriculture with increased mechanisation and
chemical use central to boosting productivity levels. It was not until the latter decades of the twentieth century that the negative externalities of this intensive production such as environmental degradation were acknowledged in the CAP, at which point Ireland also reacted in turn.

Accordingly, much of the adoption of organic agriculture in Ireland can indeed be attributed to the policy direction of the CAP. Grant (1997) noted that the original pursued CAP policy focused on maximising production regardless of the associated costs, and the growth in organic sectors can be associated with the shift in ethos that occurred in the late 80s in response. The Macsharry reforms of 1992 outlined the benefits of environmentally friendly production coupled with the need to produce more efficiently initiated a shift in the policy perspective that effectively embellished organic production. Furthermore, Tovey (1997) argued that the very identity of organic production developed in contrast to conventional production methods as a result of the emerging issues at that time. The Rural Environmental Protection Scheme (REPS) was pivotal in this regard, as it set out conditions to produce on a sustainable, preservationist, environmentally aware basis and provided financial support to compensate producers for the associated losses of output. However, Tovey (1997) criticised the impact of REPS on organic production labelling it the ‘tidy countryside scheme’. She claimed that Irish producers used the available funding as a form of income support rather than for improving organic production standards and consequently this created an organic sector that was more subsidy led rather than adhering to fundamental organic ideals. Lampkin (1999) also noted that funding available under the Extensification scheme could also be used as a support to producer incomes. This was a compensation scheme for producing lower levels of output. However, further examination of the motivations in the next section, reveals that financial support was not the sole dominant incentive for many converters.

Another boost to the development of the sector arrived in the form of the decoupling of payments to conventional farmers for output in the mid-term review of the CAP in 2003. Matthews (2008) predicted that this would assist the development of the organic sector as farmers received a single payment based on entitlements calculated over a
reference period regardless of output levels, enabling the production of specific commodities based on market demand. Thus, there was additional support available, to assist the transfer of the production system. The success of this scheme can be debated, and indeed is under scrutiny for the approaching wave of CAP reform in 2013, but there is little doubt that the additional opportunity for farm diversification significantly contributed to the expansion of the organic sector during this period.

Finally, given the recent increased emphasis on climate change and environmental preservation at the policy level, the relevance of organic production has amplified, due to the negative association of greenhouse gas emissions and environmental degradation with conventional production. Indeed, Matthews (2008) noted that the agriculture sector in Ireland is the largest contributor to greenhouse gas emissions, even larger than the transport sector. However, on the other hand it is also vital to the economic and social viability of rural areas, thus providing a policy dilemma. Organic production has the potential to help alleviate this dilemma as it would automatically reduce the negative environmental effects, through lower stocking levels and prohibition of chemical fertilisers and pesticides. Furthermore, Hazel and Wood (2007) noted that health concerns driven by climate change concerns may be considered a driver of change in agriculture. These issues are dealt with more thoroughly in the subsequent chapters.

A combination of these factors has developed the Irish organic agriculture system to its current level. The pace of development has been accelerated more recently and there is evidence to suggest further expansion is possible. However, the key point is that any expansion must be managed effectively to ensure that the potential and long term sustainability of the sector is realised.

2.8 –Profile of the organic sector in Ireland

The importance of agriculture in Ireland is emphasised by recent statistics from Teagasc. In macroeconomic terms, agriculture is a significant contributor to the Irish economy with Teagasc (2011) estimating the value of the agri food sector (including
agriculture, food, drink and tobacco) in 2010 as 8% of total Gross Domestic Product (GDP). They continued that primary agriculture alone accounts for 3% of total GDP, and they highlighted that the agri-food sector is an important indigenous manufacturing sector employing 150,000 people in Ireland in various roles. Organic production, as a subsector of agriculture, has increasingly expanded its ratio of these statistics in recent times and has been described as a growth sector (Halloran and Archer 2008).

Accordingly, organic agriculture in Ireland should not be underestimated. Teagasc (2010) revealed that the Irish organic sector has followed a similar pattern of development witnessed across Europe as discussed previously. However, it can be broadly accepted that it is yet to achieve its full potential with further existing opportunities available. In order to evaluate these opportunities and possible strategies to avail of them effectively, firstly it is necessary to assess the current position of the organic sector in Ireland. This is the key purpose of this section to provide a profile of the Irish organic sector, describing the current statistics and trends. It is structured into subsections on specific themes including the socio-economic backgrounds of producers, a breakdown of the specific organic sectors in Ireland, an international comparison of the sector, financial performance, employment and labour levels, and productivity rates. The conclusion will outline some of the key challenges and opportunities for future development within the sector.

2.8.1 – Socio economic background of producers
The characteristics of Irish organic producers vary considerably across the country with Barry (2010) noting the clustered development as noted previously. However it is important to refrain from grouping producers under generalised categories as the heterogeneity must be emphasised, a point also argued thoroughly in the previous section. Producers are known to be urban and rural, male and female, young and old, committed and pragmatic. As Tovey (1997) noted, the early pioneers were immigrants mainly from an urban background, and these have since been joined by a wide assortment of socio-economic backgrounds in Ireland. Connolly et al (2008) found that more recently organic farmers were younger, with higher rates of marriage, and also availed of greater off-farm employment. However, the lower numbers of organic
producers compared with conventional farmers reduces that validity of generalising this claim.

Connolly et al (2008) stated that organic production in Ireland is located mainly in the south and west, with counties Clare and Cork in Munster accounting for 30 percent of producers. The Western Development Commission (2010) echoed this view estimating that 37 percent of the total Irish organic producers are based in the western region. Murphy (2011) noted that the clustered development of organic producers has continued with many applications and training places completed by producers along the west of the country in early 2011.

2.8.2 – Number of holdings and farm size
Figures from September 2010 stated that Ireland had 1,459 organic producers farming 52,390 hectares, and uses 1.2 percent of total utilised agricultural land as organic (Clavin and Moran 2011). Murphy (2011) noted that in the first quarter of 2011, 250 new applications had also been submitted to the Department of Agriculture for the organic farming scheme, with a further 650 having completed the mandatory training with Teagasc, a prerequisite of conversion, and thus intend to convert in the short term.

Willer and Klicher (2011) found that organic farms accounted for 0.99 percent of utilised agricultural land in 2007, 1.08 percent in 2008 and 1.16 percent of total land in 2009, with recent figures of 1.2 percent, so evidently more recently there has been a gradual increase on an ongoing basis. The intended goal, as set out by the programme for government in Ireland, was to achieve five percent of this utilised agricultural land for organic production by 2013. However, Teagasc Director Gerry Boyle labelled this target as overly ambitious and would require further adequate promotion and support in key areas such as innovation, product development and research (Teagasc 2010). Furthermore, recent recessional economic conditions in Ireland have reduced this possibility further as evidenced in the most recent estimation of 1.2 percent of land converted. Nonetheless, effective policy measures undertaken at the policy level could
ensure these targets are reached in the medium term, which is a revised target under the Food Harvest 2020 initiative.

Connolly et al (2008) also noted that the size of organic holdings is increasing from previous averages, albeit at various levels nationwide. Teagasc (2008) noted that organic farms were on average 24 percent larger in size, but as noted previously, the relatively small number of organic farms in comparison to conventional farms may provide misleading distortions to these results. Moreover, it is more likely that the organic farms under observation in the National Farm Survey are in the upper quartile of efficient successful producers, given the low levels of observations where as the conventional farms would be a much more random sample, and thus a more legitimate representation.

The recent growth of the organic sector has been relatively gradual and consistent, but it may be argued that this expansion can be accelerated to avail of existing market opportunities. Table 1 presents the number of farms and their respective size from the mid nineties. It is important to recall that in 1993, financial assistance was introduced to organic producers in Ireland through the MacSharry reforms of the CAP, and thus from 1995 onwards, these figures increased significantly as the financial risk of conversion was reduced (Läpple 2010). The table reveals rapid growth initially that remained somewhat more protracted from 2000 onwards.
Table 2.1: Irish organic farm numbers and area farmed 1995-2010

<table>
<thead>
<tr>
<th>Year</th>
<th>Farms*</th>
<th>Organic Area (ha)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>300</td>
<td>6,400</td>
</tr>
<tr>
<td>2000</td>
<td>852</td>
<td>27,230</td>
</tr>
<tr>
<td>2001</td>
<td>918</td>
<td>30,020</td>
</tr>
<tr>
<td>2002</td>
<td>923</td>
<td>29,850</td>
</tr>
<tr>
<td>2003</td>
<td>889</td>
<td>28,510</td>
</tr>
<tr>
<td>2004</td>
<td>897</td>
<td>30,670</td>
</tr>
<tr>
<td>2005</td>
<td>978</td>
<td>35,260</td>
</tr>
<tr>
<td>2006</td>
<td>1,104</td>
<td>39,940</td>
</tr>
<tr>
<td>2007</td>
<td>1,102</td>
<td>39,240</td>
</tr>
<tr>
<td>2008</td>
<td>1,220</td>
<td>44,751</td>
</tr>
<tr>
<td>2010</td>
<td>1,392</td>
<td>52,390</td>
</tr>
</tbody>
</table>

*Organic plus in conversion;

Source: Adapted from Connolly et al 2008 and Department of Agriculture, Food and the Marine 2010

Here the definition of in conversion farms is the set period of transfer from conventional production until certified as fully organic. In Ireland this period is two years at present (IOFGA 2011). Table 2.1 shows that growth has indeed been relatively consistent with some periods of more rapid growth. Nonetheless, the area farmed organically has increased 819 percent in fifteen years. In terms of average scales, the average farm size was 21.33 hectares in 1995 and increased to 37.63 hectares in 2010. These figures must be interpreted with caution however, as the average may be skewed by the larger farms in the data. However, it provides useful parameters to refine the eligibility criteria of participants chosen for the primary research of this thesis.

2.8.3 – Organic subsectors

The following table provides a stratified breakdown of the different sectors of organic agriculture in Ireland, and the area farmed:
Table 2.2: Irish Organic Industry by number of farms and type

<table>
<thead>
<tr>
<th>Year</th>
<th>2008</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of farms:</td>
<td>1,220</td>
<td>1,392</td>
</tr>
<tr>
<td>Hectares:</td>
<td>44,751 ha</td>
<td>52,390 ha</td>
</tr>
<tr>
<td>Cattle herds:</td>
<td>844</td>
<td>1,004</td>
</tr>
<tr>
<td>Sheep:</td>
<td>400</td>
<td>396</td>
</tr>
<tr>
<td>Pigs:</td>
<td>42</td>
<td>44</td>
</tr>
<tr>
<td>Poultry:</td>
<td>132</td>
<td>147</td>
</tr>
<tr>
<td>Cereal:</td>
<td>94</td>
<td>122</td>
</tr>
<tr>
<td></td>
<td>1,298 ha</td>
<td>1,357 ha</td>
</tr>
<tr>
<td>Horticulture:</td>
<td>263</td>
<td>152</td>
</tr>
<tr>
<td></td>
<td>439 ha</td>
<td>460 ha</td>
</tr>
</tbody>
</table>

Source: Adapted from Barry (2010) and the Department of Agriculture, Food and the Marine Organic Unit

Table 2 shows that despite the economic downturn experienced in Ireland in the years noted above, the majority of sectors have continued to grow at modest rates. Interestingly, the horticulture sector has declined in farm numbers, but has marginally expanded its area farmed, indicating larger farms may be more successful. Specifically, the organic beef sector experienced considerable growth of approximately 19 percent in the number of producers over this two year period. As the organic beef sector is the dominant method used in Irish organic agriculture with 72 percent of the total organic farmers producing beef, it is the central focus of this research and thus, is examined now in greater detail in the following section.

2.8.4 – Organic beef sector
There are many natural advantages for organic beef production in Ireland. McDonnell (2009) argued that the Irish temperate climate and its ability to grow large quantities of grass could facilitate much greater production of organic beef in the country than is currently the case. Leavy (2009) noted that the geographical location of Ireland allowed for a longer growing season, varying nationwide from March to November annually.
Therefore, assuming a favourable weather pattern, this could lead to relatively low levels of winter feed been required. Condon (2010), a successful Irish organic beef producer, insisted that his own personal methodology was to allow the land to perform the majority of the work unaided. The Irish climate may not necessarily require artificial assistance from chemical fertilisers which can have detrimental effects on the environment. Thus, a significant quantity of grass would grow naturally, simultaneously reducing the cost of production.

Läpple (2010) noted that the majority of Irish farmers, whether conventional or organic, already produce beef or lamb from grassland in a generally extensive manner. Therefore the transition and conversion from conventional to organic production should not be so problematic or costly. In fact, Teagasc (2008) predicted that efficient organic beef production could achieve financial returns comparable with conventional beef production, and agreed that conversion could be a simplistic transition process. Therefore it may not require a rigorous acquisition of new knowledge to convert with the exception of specific organic regulations, such as lower stocking densities and the use of organic feed. Teagasc (2008) also found that certain breeds of cattle may be more effective than others in terms of performance in the organic system, which is examined further in the primary research.

There are also other advantages for organic beef production in Ireland. O’Hora (2011) commented that lower stocking rates would reduce the carbon footprint of agricultural activity which is an integral EU objective for 2020. Condon (2010) also claimed that this more natural production approach could lead to increased levels of omega in beef, which is an acid widely believed as beneficial in human diets. For these reasons, there are many incentives to produce organic beef such as reduced production costs, reduced environmental degradation and increased health benefits. On this latter point Läpple (2010) also noted that the relatively poor profitability of conventional beef production should encourage conversion to organic systems with the receipt of higher premium prices. However, as noted previously, the lower stocking densities permitted under organic regulations would reduce these margins somewhat.
Although current market evidence suggests that the domestic market is relatively saturated (Purcell 2010), there remains significant opportunities to increase exportable beef to the European market where excess levels of demand exist. Teagasc (2008) estimated that Ireland would need to triple the amount of organic beef it produced to satisfy both the home market and the British market. Purcell (2010) estimated that recent sales rates are at 2,500 organic cattle per annum, and there are indications of further market opportunities in mainland Europe to expand by a further 10,000 cattle (2,115 tonnes) per annum. Leavy (2009) concurred noting that approximately 90 percent of Irish organic beef is exported at present, and yet there is an opportunity to export much greater quantities of beef to satisfy the existing demand in Europe. Moreover, government policy is also keen to continue increasing levels of production and augment exports across all organic sectors under the Food Harvest 2020 strategy, as stated by the then minister of state for planning Ciaran Cuffe at the 2010 Teagasc national organic conference. Therefore, there are positive indications that the future of organic beef production is set to undergo further expansion in the short and medium terms.

2.8.5 – International comparison
Internationally, the Irish organic sector is relatively small, particularly to many of its EU member states counterparts. Willer and Klicher (2009) found that Europe is the second largest producer of organic food globally with over 180,000 farms. However, the recent Irish statistic of 1,459 farms is quite minimal by comparison. Nonetheless, Läpple (2010) noted that of the €20 billion set aside for agri-environmental schemes from 2007-2013 at EU level, Ireland commanded €2.09 billion of this which demonstrates that it is in the upper echelon of agri-environment expenditure countries. However, as Tovey (1997) and Lampkin (1999) criticised, this funding may be used as income support rather than to develop and enhance the organic sector, and thus may not have been utilised effectively.
Overall, McDonnell (2009) estimated that approximately 5 percent of utilised agricultural area is under organic production in the EU member states. Furthermore, there are indications that this share will increase in the short to medium term with Häring et al (2004) describing the organic industry as a growth sector. The 1.2 percent of utilised agricultural area under organic production in Ireland in 2010 is comparatively smaller than the 2009 figures in Austria with 18.5 percent, Sweden with 12.5 percent and Estonia with 10.49 percent. Furthermore the latter is a geographically smaller country that devotes 95,167 hectares to organic production compared to Ireland’s 52,390 hectares in 2010 (Willer and Klicher, 2011). However, the incremental growth of the Irish sector is also accredited, with Teagasc (2010) noting that area under organic production has doubled in the last decade. LLorens-Abando and Rohner-Thielen (2007) drew similar conclusions when analysing European data from 2005. They found that in that year 144 new operators converted to organic production in Ireland, with 24 withdrawing from the scheme, which symbolises this gradual net expansion of the organic sector nationally. However, it can also be surmised that there is much greater capacity for conversion in Ireland if appropriate measures were undertaken.

2.8.6 – Organic market
The current position of the organic market as presented by Purcell (2010) is that after a brief economic contraction in 2009, the market has stabilised and recently returned to growth. As noted previously Teagasc (2008) and Purcell (2010) predicted further expansion of the organic beef market in terms of exports. Crowley (2006) also predicted growth in the short and medium term for the Irish organic sector and praised the high quality standards it has achieved thus far. In 2005, the Irish organic market was valued at €66 million with 70 percent of produce sold on the domestic market imported. However, more recently the value of the organic food market was estimated at €120 million, but this was expected to rise to €239 million for 2013 notwithstanding a slowdown in absolute growth rates due to the recent economic downturn and the latest reform of the CAP (Bourke 2010). This is an expansion of 108 percent of the market value on its 2010 level if achieved. However, it is highly unlikely that this expansion will be realised, given the recent economic climate in Europe.
Furthermore as noted previously, Henchion and McIntyre (2008) conducted research into marketing tools for the Irish organic sector, and found that while consumers are aware of organic produce, this does not necessarily translate into consumer sales. They concluded that boosting the appeal of organic food, with quality and price as key components in the further expansion of the sector, will be the strategic dilemma for policy makers. Certainly, consumer focus will be a key element of the ongoing expansion of the Irish organic beef market.

2.8.7 – Financial performance
A key area influencing the adoption of organic production is the economic performance of the system in comparison with conventional systems. Financial data suggests that organic farms can achieve higher family incomes than conventional due to the significantly lower input costs due to various factors such as the prohibition of fertiliser use (Clavin and Moran 2011). Indeed McCullough (2011) argued that fertiliser costs were among the main culprits of higher input costs for conventional farmers, and these are not permitted on organic land. Organic farmers benefit from higher direct payments through the relevant support schemes, but are constrained to adhere to lower stocking rates and superior winter housing than conventional, and consequently they may produce less output in comparison. However, comparisons among both production systems are problematic, due to the considerable differences in specific aspects of production.
Nonetheless, the following table summarises the comparable incomes from the 2010 National Farm Survey published by Teagasc.

### Table 2.3: Income Comparisons

<table>
<thead>
<tr>
<th></th>
<th>Organic</th>
<th></th>
<th>Conventional</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>€/farm</td>
<td>€/ha</td>
<td>€/farm</td>
<td>€/ha</td>
</tr>
<tr>
<td><strong>Gross Output</strong></td>
<td>49,313</td>
<td>893</td>
<td>31,953</td>
<td>1,008</td>
</tr>
<tr>
<td><em>of which Direct Payments</em></td>
<td>27,255</td>
<td>494</td>
<td>14,939</td>
<td>471</td>
</tr>
<tr>
<td><strong>Market Output</strong></td>
<td>22,058</td>
<td>400</td>
<td>17,014</td>
<td>536</td>
</tr>
<tr>
<td><strong>Direct Costs</strong></td>
<td>8,996</td>
<td>163</td>
<td>11,057</td>
<td>349</td>
</tr>
<tr>
<td><strong>Gross Margin</strong></td>
<td>40,344</td>
<td>731</td>
<td>20,896</td>
<td>659</td>
</tr>
<tr>
<td><strong>Overhead Costs</strong></td>
<td>21,062</td>
<td>382</td>
<td>12,398</td>
<td>391</td>
</tr>
<tr>
<td><strong>Family Farm Income (FFI)</strong></td>
<td>19,282</td>
<td>349</td>
<td>8,499</td>
<td>268</td>
</tr>
<tr>
<td><strong>Total Costs % Gross Output</strong></td>
<td>35%</td>
<td></td>
<td>70%</td>
<td></td>
</tr>
</tbody>
</table>

*Source: Adapted from Clavin and Moran (2011) and the National Farm Survey 2010*

Connolly et al (2008) and Clavin and Moran (2011) found that the combination of lower input costs and higher direct payments led to higher family farm incomes on organic systems as opposed to conventional systems. Moreover, the lower levels of output on organic systems can be partially offset by these lower production costs which can combine to provide a competitive and possibly superior income in comparison to conventional systems. However, Connolly et al (2008) warned that the dependence on subsidies and direct payments in both systems was concerning, accounting for over 100 percent of farm incomes for each system in their study. Accordingly, market based output is not sufficient to cover production costs at present. The data unreservedly
indicates the reliance on direct payments for income security. Clearly the withdrawal of support at this point would have a devastating impact on organic producers’ viability. Connolly et al (2008) also found that conventional producers faced an even bleaker prospect been 47 percent more dependent on subsidies and direct payments than organic producers at that time. Thus, it could be argued that any reduction in support must be compensated through significantly higher prices, a prospect unlikely to be welcomed by consumers. However, this comparison is an example of the income levels recorded under the National Farm Survey, and thus, is not intended to represent the true agricultural population, rather it does indicate the possibilities available.

2.8.8 – Employment and labour
It has been argued that organic production requires greater quantities of labour to maintain efficient production than conventional production. Evidence from the literature review indicates that this assumption is somewhat justified (Hau and Joaris 1999, Morison et al 2005). Accordingly, on this basis, it can be argued that the expansion of organic agriculture could act as a catalyst for increased rural employment. Morison et al (2005) agreed finding that organic production was effective at generating rural employment, estimating an increase of 6 percent in agricultural employment if 20 percent of all farms were organic. Their estimation is based on more labour intensive production techniques such as crop rotations, weed control and mixed farming. However, Morison et al (2005) warned that these labour levels were highly variable in their research. Reganold et al (1990) concurred, as they argued that conventional agriculture shifted towards labour saving techniques due to mechanisation and the use of fertilisers and pesticides. Conversely, organic production would require greater levels of manual labour, particularly with regard to pest control, although this would not be so significant for beef production.

Connolly et al (2008) calculated that organic farms utilised 1.14 labour units compared with 0.95 on conventional farms. Drawing on the 2007 National Farm Survey, they calculated that a labour unit is measured on a combination of number of hours as estimated by participating farmers, and a standard man day requirement, with a further estimation of 0.75 labour units as the cut off point between full-time and part-time
farming (Connolly et al 2008). It must also be noted however, that measuring labour can be problematic in terms of accuracy due to factors such as casual labour, family unpaid labour as opposed to hired labour, and the particular organic commodity in question.

Moreover, Browne et al (2000) indicated a positive link between organic farming and labour conditions, with the social aspect of organic production based on a code of ethics, as capable of providing a positive sustainable rural environment. Hazel and Wood (2007) echoed this view in their study on developing countries noting that labour intensive sustainable agriculture would have positive impacts on areas with surplus labour availability and also for smaller farms. Scialabba (2000) noted that increasing labour expertise would have a positive effect on productivity levels in a sustainable manner. Furthermore, Lohr and Park (2007) noted that increasing full time labour on organic farms would have a positive impact on the economic value of organic production.

Therefore, there is a strong argument that organic agriculture can have a positive impact on rural employment with a wider variety of tasks involved. However, it is important to note that additional labour will inevitably accrue an additional cost that must be absorbed into production, and thus, will reduce the profitability of the farm. Nonetheless, the efficient use of labour is a key element of productivity efficiencies, and thus, this is a central theme of this research and is the focus of succeeding chapters.

2.8.9 – Output levels
One aspect of organic agriculture that is frequently criticised by advocates of conventional production is that organic farming produces lower yields. The prohibition of fertiliser use, regulations limiting stocking levels and the extensive manner of organic farming are common explanations for these perceived lower yields. Consequently, commentators have insisted that more land would be required to maintain productivity levels and therefore offsets the environmental benefits of organic farming (Tovey 1997, Olesen and Bindi 2002, Connor 2008).
Connolly et al (2008) concurred with this view as they found that Irish organic farmers produced 42 percent less livestock than conventional farms, despite comparatively larger farm sizes in their research sample. They combined the number of utilisable agricultural hectares farmed with the number of livestock units and found conventional farms operated a stocking density of 0.95 livestock units per hectare, whereas organic produced 0.5 livestock units per hectare. In this case, conventional production is favourable to increase output levels.

However in relation to technical efficiency levels, Tzouvelekas et al (2001) noted that organic producers operate closer to their production frontier than conventional farmers. In other words they are optimising their production capacity and therefore prove more effective at utilising their resources efficiently, despite the limitations as outlined previously. Tzouvelekas et al (2001) concluded that organic production is more efficient in terms of output per input, but their study was focused on olive production and hence cannot be applied to all sectors of organic agriculture. A similar investigation into the Irish organic beef sector is a key objective of this research to evaluate productivity measurements and thus is examined thoroughly in subsequent chapters.

Badgley et al (2007) conducted research into organic productivity and sustainability, and found that organic production could actually surpass conventional production in a sustainable manner by replacing chemical usage with increased biological activity. Moreover, they noted that the current research methods applied often underestimated organic productivity because of the neglect to accurately measure the pluri activity of multiple commodities on organic farms. Similarly, Sipilainen et al (2008) found that organic farms achieved competitive output levels with conventional farms, if a multi-functional productivity measure is applied. Morsion et al (2005) also argued that a multi-functional approach is more appropriate when comparing output levels as the collective productivity of all commodities will offset any individual losses in comparison with specialised farms. In other words, the combinations of livestock, vegetables, and commercial feed produce are recorded, rather than a specific individual product.
However, O’Connor (2008) criticised the findings of Badgley et al (2007), on the basis of a global deficit of available organic nutrients for the increased biological activity required. He also argued that larger quantities of land would be required to enable greater biodiversity, and also lamented the complexity of crop rotations on a large scale. Therefore, while it may be argued that organic agriculture can perform effectively in comparison with conventional agriculture in specific cases, advocating a whole system changeover to organic production is naive and impractical.

Another emerging issue for agricultural productivity is the predicament of the demand for rural land. Tovey (1997) commented that the modern use of rural land was shifting from a predominantly food producing principle, to a services perspective centred on leisure and amenities for a growing urban population. Indeed, Pugliese (2001) argued that alternative activities such as tourism, catering and environmental enhancement activities were also competing with rural land for agricultural purposes. Under this scenario food production is expected to maintain high productivity from lower levels of land through the intensification of production. However, as Tovey (1997) noted, organic ideals would be in stark contrast to this perspective.

Further issues surrounding productivity on organic farms are analysed in much greater detail in subsequent chapters.

2.9 – Conclusion

This chapter defined the concept of organic agriculture and introduced the issues affecting organic production in recent times. The literature indicates that organic agriculture is becoming increasingly relevant on the policy agenda for agriculture globally, and a definitive clarification as to whether it will be advantageous compared to the continuation of conventional production remains unclear. There is evidence that both the benefits and criticisms of organic production should not be easily dismissed
and as agricultural policy reaches a crossroads with upcoming CAP reforms and ongoing global trade talks, a balanced debate must be undertaken.

Organic agriculture is a wide varying concept with different degrees of interpretation similar to other terms such as sustainability or democracy. The definitions may be narrow in scope, but are generally accepted as within broader parameters. Since its origins in the 1920s the organic sector is continuously evolving and may still be referred to as an innovation at present as it continues to adapt and progress in the current epoch. In Ireland, organic production is also incessantly expanding, yet still remains disproportionately smaller in comparison with conventional production, methods that have been traditionally encouraged by policy makers and pressure groups. However, as agriculture approaches a new phase of reform in Europe, and given the increasing emphasis on sustainability and reducing negative environmental impacts at the policy level, there may be further opportunities for organic production, and as such it may further increase its share of the Irish agricultural market in the coming years. These issues are addressed in more thorough detail in the ensuing chapters.

Unsurprisingly, similar to many innovations, there are advantages and disadvantages of organic production. From a beneficial perspective, it indicates greater sustainability, reduced negative environmental spillovers, increased ethical and health practices and may positively affect rural development and climate change. However, on the other hand, there are concerns over levels of productivity, farm management practices without familiar safeguards such as chemicals and medicines, and concerns over the sustainability of the premium market.

The organic sector in Ireland has developed from a relatively low base, and is still comparatively smaller in comparison with the domestic conventional sector, and also with organic sectors internationally. Within the context of the global development of the sector the Irish case followed a similar path albeit at a lethargic pace. The sector was initiated by the early pioneers who were immigrants arriving with organic ideals central to their production ethos. They operated on a self regulating voluntary basis before
umbrella organisations such as IOFGA were established, which provided formal standardised quality information to producers. Moreover, the supranational authority of the CAP has been influential in the development of the Irish organic sector. As the CAP approached reform in 1992, a more environmentally friendly market orientated system was desired, and this strategically positioned the organic sector favourably to attract potential converters. Consequently, in Ireland an acceleration of adoptions took place in the mid 90s as financial assistance became available, thus reducing the risk involved. Yet as the discussion indicates, financial incentives were not the sole determinant of conversion.

The development of the organic sector has continued at a consistent gradual pace, yet there remains further potential for increasing the pace of this expansion. The government’s target of 5 percent of utilised agricultural area to be farmed organically by 2013 will be beyond possibility with just 1.2 percent converted in 2010. However, in the medium term this could become a reality if the market opportunities in Europe are to be realised, but it is still intended for 2020 under the Food Harvest Strategy. If the future is to be market led, as previous EU policy reforms have indicated, then the relevant research suggests that there are substantial opportunities to increase supply levels to satisfy the existing excess demand in Europe, especially for organic beef. However, it is imperative that the appropriate policy measures are adopted and implemented to ensure appropriate incentives are provided.

Moreover the lower number of producers involved in Ireland can be viewed as an advantage, as greater premiums can be achieved with excess demand particularly in the export market (Howlett et al, 2002). However the expansion of the sector may erode the scale of these premiums as supply levels increase. Therefore, any further development of the sector must be accompanied by effective management to ensure prosperity and sustainability. Furthermore, increased marketing, improved information, maintaining high standards of quality and maximising efficiency are key pillars of optimising future opportunities within the Irish organic sector.
The following chapters analyses the development of policy and the wider issues surrounding organic production as we approach another round of CAP reforms in 2013, and investigates possible strategies to continue developing the organic market, in conjunction with existing objectives of the Food Harvest 2020 vision for Irish agriculture.
Chapter 3-Organic Agricultural Policy

3.1 Introduction

There are a number of areas that must be addressed in the policy process to ensure that further growth and development of organic production continues successfully. The existing opportunities and challenges will require a precise, well formulated, effective strategy to ensure any further expansion of the sector is managed effectively and that optimum, efficient production is pursued and achieved (Henchion and McIntyre 2008, Sipilanian et al 2008). This chapter discusses the developments of organic agricultural policy in Ireland, the current policy, and the policy speculation as we approach a new phase of agricultural reform in 2013.

There appears to be a correlation between progressive policy decisions and the development of the organic sector (Greer 2002, Sauer and Park 2009), both internationally and domestically in Ireland. This process is presently increasing in relevance for a variety of reasons, such as the upcoming Common Agricultural Policy (CAP) reform in Europe in 2013, the ongoing global trade liberalisation talks hosted by the World Trade Organisation (WTO), the emergence of an increasingly environmentally conscious policy position by various interest groups, and demographic and dietary changes amid consumers. Agriculture and rural development are set to continue their respective pivotal roles in the dual objective of profitable food production, and ensuring economic, social and environmental sustainability for future generations (Pugliese 2001).

This chapter provides an overview of the development of organic agricultural policy, investigating its evolution on the national and international policy agenda. The influence of the European Union is explored and their role in the current policy environment discussed. Subsequently, the development of the Irish national administration is outlined, and an overview of the objectives for the Irish policy makers, their methods of implementation, and the role of the certification bodies is provided. Finally the speculation and proposals under the upcoming reform is presented.
3.2 International influence

As noted in the previous chapter, the origins of organic production can be traced back to the 1920s, as pioneers and idealists employed self regulation and informal networking to develop their production system. It was not until the mid 1980s that formal organic policy developed, albeit from a low base (Greer 2002). Greer continued that pioneered programmes were implemented in the late 1980s in the Scandinavian regions, and these were eventually subsumed and incorporated into EU-level legislation under the MacSharry Reforms of the CAP in 1992. The inaugural EC regulation on organic farming created a framework for organic production to operate within (Sundrum 2001), with the most recent policy implemented that of EC regulation 834/2007. At national level, there were also support schemes available for organic producers that were co-funded from the European Union and the national Exchequer under various agri-environmental incentives.

Accordingly, it may be strongly argued that the most significant policy influence for organic agriculture in European countries stems from the CAP. Grant (1997) noted that agricultural policy formulated in the EU is a complex decision making process. He stated that the focal point of decision making lies with the council of agricultural ministers with a minister for each individual member state. These decisions are then consulted with the European Agriculture Commissioner, the specified directorate general for agricultural within the European Commission, the agricultural lobbies, the member states, the Parliament and the European Court of Justice. McGuinness (2011) noted that the most recently ratified Lisbon Treaty of the European Union has increased the power of the Parliament to achieve equity with the Council, and the establishment of specific agricultural committees to consult on agricultural policies. Once an agreement among all members is reached, the policy is formally applied, and national member states have the responsibility of implementation, with varying degrees of flexibility depending on the specific conditions. Organic agricultural policy follows a similar pattern of formulation with a specific directorate general responsible for organic initiatives with Jean-François Hulot as the current adviser (Europa 2011).
Another significant international influence on organic agricultural policy stems from the International Federation of Organic Agriculture Movements (IFOAM), which is a global association that acts as a platform for exchanging information and expertise. IFOAM facilitates formal networking for members on how to maintain the core principles of organic production and its effects on health, ecology, fairness and care (IFOAM 2010). Essentially, IFOAM acts as the global interest group for organic agriculture. Policy issues are constantly emerging on the agenda of IFOAM, and accordingly appropriate measures are recommended for implementation based on the most effective solutions. For example, more recently, Shreck et al (2006) noted that the issues of social sustainability and the rights of farm workers have arisen on their policy agenda. Once a policy position is formally adopted by IFOAM as a principle, it will be the prerogative of all participating national certification bodies to adopt these additional measures to fulfil the ultimate organic objective of achieving economic, social and environmental sustainability.

3.3– Current EU policy environment

Organic production and labelling is controlled supranationally by European regulations and nationally through government policies. The current Regulation governing the system is the European Council Regulation 834/2007 as amended which repeals the original Council Regulation 2092/91. This Regulation sets out the definitions, objectives, principles, conditions and labelling requirements of organic production under the CAP (Council Regulation 834/2007/EC). This Regulation is reinforced by Statutory Instruments Nos. 112 of 2004 and 698 of 2007 (DAFM 2010) and is accompanied by Commission Regulation 889/2008. These additional measures aimed to simplify the implementation process and strengthen the controls of the Regulation (National Steering Group, 2008). This framework is set to be amended further in the upcoming CAP reform scheduled for 2013 as noted previously, but the shape of this amendment remains unclear.
Since the initial Council Regulation 2092/91 on organic agriculture in Europe, organic production finally became within the ambit of EU agricultural policy (FIBL 2010). The terms and conditions were set out in a number of articles within this Regulation that targeted specific areas. Greer (2002) commented that it provided rules and regulations covering labelling, advertising, certification, inspections, feeding practices, stocking rates and the products that can be used for pest and disease control. This policy aimed to enhance the sector by promoting fair competition among organic producers, and bolstering consumer confidence in the quality of organic goods.

It is the prerogative of each country’s agricultural department to oversee the implementation of this policy at national level, and ensure high standards are maintained. This obligation falls to the Department of Agriculture, Food and Marine in Ireland (DAFM 2010). The conditions of the current EU regulation are applicable at present, some with amendments, but they provided a general framework that each member state could work within, or indeed elaborate on to produce organically (Greer 2002). Indeed, the European Commission (2011) noted that although this policy was limited in its scope, it created common minimum standards to improve consumer confidence in organic products, and member states could choose to enact more stringent conditions if they so wished. Accordingly, national governments decided the scale of their adherence to the core organic principles.

The MacSharry reforms of the CAP initiated a shift in policy emphasis from intensive production to a more extensive, environmentally friendly policy position in 1992. The creation of a number of agri-environment policies complemented the requirements of organic production, and thus conversion became more appealing. Lampkin (1999) noted that the Agenda 2000 reform of the CAP consolidated these various agri-environment policies under the rural development pillar of the policy, and the Luxembourg Mid-term review agreement furthered this process, as it introduced the decoupling of production. Organic production holds a prominent position within this second pillar of the CAP, as it strives for market oriented, environmentally friendly, sustainable food production, with an adjoining social objective of rural development.
In particular, Lampkin et al (1999) cited the importance of the Rural Environmental Protection Scheme (REPS) in influencing the development of the organic sector in Ireland. Under this scheme participants were eligible for compensatory payments as long as they adhered to the relevant terms and conditions under the scheme, which included a plethora of environmentally friendly practices. Moreover, under the rules and regulations of the organic scheme, producers adhered to the REPS conditions automatically, and therefore were eligible for additional payments. Crowley (2006) concurred noting that the original REPS scheme was integral to the organic sector growth in Ireland in the nineties providing significant funding for conversion and thereafter, but this decelerated with the subsequent amended REPS schemes. She noted that the conversion rate of funding assistance under REPS I (1994-1999) was €349/ha during conversion and €254/ha after organic certification was achieved. However, under the REPS II (2000-2004) the conversion rate was reduced to €180/ha and €91/ha thereafter with REPS III (2004-2008) remaining the same despite levels of inflation. This may partially explain why the growth of the organic sector decelerated from 1999. The current REPS IV (2008-2012) payments are €212/ha during conversion and €106/ha thereafter. Both payments are reduced to €30/ha and €15/ha respectively for farms over 55 hectares in size (DAFM 2010), therefore seemingly favouring smaller scale production. These additional payments offered a degree of security for organic producers, particularly during conversion when productivity losses were inevitable, who in turn could familiarise with their new system without the burden of overriding financial concerns (Michelsen 2001).

Furthermore there has been widespread indications that the rural development pillar of the CAP will continue to increase as a priority post 2013 (O’Brien 2011), a point confirmed by the Regulation proposal released in October 2011 (European Commission, 2011). However, at present there are no formal plans to introduce a REPS V scheme, which will be of concern organic producers. These proposals will be discussed in greater detail in the subsequent sections.
3.4 Organic agricultural policy in Ireland

Similarly, the development of organic agricultural policy in Ireland accelerated in the latter period of the twentieth century. The establishment of the national certification bodies, the first of which emerged in 1981, was a pivotal development, replacing the original voluntary basis of participation and self regulation, as practiced by the pioneers and innovators of the organic sector. However, evidently a central national policy to develop the sector further was required in order to manage and bolster the continued growth of the sector effectively, and this requirement arrived in the form of the EU Council Regulation in 1992.

The Department of Agriculture, Food and the Marine is responsible for the implementation of the national public administration with regard to organic production in Ireland. They established the national organic unit in Johnstown, County Wexford in 1990 in close co-operation with Teagasc, the national agricultural advisory body (Greer, 2002). The various national certification bodies have also been influential in expanding the sector and attracting new converters. More recently, Bord Glas, Bord Bia and the Western Development Commission have also been involved in developing the organic sector in Ireland. Lampkin et al (1999) also acknowledged the important role of the LEADER programmes in this recent development. These are rural development programmes part financed by the EU, and administered by local action groups to assist the development of underprivileged areas such as marginal rural areas.

Lampkin et al (1999) continued that the Irish policy makers introduced a modified version of the extensification payment scheme, a scheme aimed at providing compensation to producers for reducing productivity levels, which could also be used to support organic funding. However, Lesjak (2008) commented that schemes such as the extensification scheme or the REPS were directed at regulating production levels rather than protecting the environment, boosting rural development or encouraging organic production. There is also an agri-environment option scheme available which aims to promote biodiversity and combat climate change (DAFM, 2011) that permits additional funding in Ireland. These additional measures have supplemented national initiatives that have contributed to the continuing expansion of the organic sector in Ireland.
However, Tovey (1997), Lampkin (1999), O’Neill et al (2001) and Matthews et al (2011) were critical of the misuse of funding in this respect as funding was absorbed as a form of income support rather than for progressive sector development.

In terms of national development, significant intent to develop the organic sector was announced in Ireland in 2000 when the then green party minister Trevor Sargent introduced the ‘organic food and farming targets bill’. This bill set ambitious targets for 2010, and was reflective of a bill of the same name introduced in the UK a year earlier (Greer 2002). However, more tangible progress occurred when the then serving Minister for Agriculture Joe Walsh established an ‘Agri-Food Committee’ that provided a national ten year strategy for the agricultural sector, including specific provisions and targets for the Irish organic sector. Their initial objectives included creating a viable competitive organic farming industry, consumer focused production, increased integration of the rural economy, and improved protection of the natural environment (Agri-Food 2000). Greer (2002) added that the Agri-Food 2010 Report recommended the introduction of a credible regulatory system. This would alleviate any confusion emanating from the multiple national certification bodies, a point highlighted by Crowley (2006) as capable of hindering further development. However, despite these intentions, it can be argued that these objectives were not fully achieved, and the organic farming sector remains in an uncertain economic climate at present. Indeed, the Irish Agri-food committee (2010) bemoaned the fact that organic food is frequently seen as hostile to the interests of conventional agriculture rather than as an emerging opportunity to complement a multi-functional agricultural sector. The policy review was designed to produce measures as to ensure that organic farming could become firmly established as part of the mainstream of Irish agriculture. However, Greer (2002) argued that this concept of ‘mainstreaming’ provided further evidence that the attitude of the Irish state towards organic farming has been to disregard, ignore, or repress the ideological content of the movement. On the other hand, there is also evidence of significant developments in the organic sector, such as the gradual expansion of the organic market, the increased number of producers and the increased utilisable agricultural land use dedicated to organic production. However, the key strategic development from the Agri-Food committee was the establishment of an ‘Organic
Development Committee’ which would subsequently evolve into the ‘National Steering Group’.

The Organic Development Committee had a list of specific objectives they targeted from the offset. These included the involvement of processors, increased research and education, improved market intelligence, adequate promotion, regulation, guaranteed levels of supply, and food safety issues for the organic sector (Agri-Food 2000). To what degree these specifications were actually delivered on is subject to debate. However, certain achievements were undoubtedly realised, such as the increased involvement of Teagasc to provide a national advisory service, improved inspection practices and improved promotion techniques (Agri-Food 2000). Moreover, the establishment of the National Organic Conference, and excellence awards represent positive developments (DAFM 2008). Furthermore, this development can be evaluated through the series of reports published by the National Steering Group.

The National Steering Group was established in 2002 on the basis of the recommendations made in the Agri-Food 2010 committee noted above. It was accompanied by two additional sub groups, firstly, the ‘Partnership Expert Working Group’ chaired by Teagasc, and secondly, the ‘Organic Market Development Group’ chaired by Bord Bia (National Steering Group 2008). They prepared a series of reports on progress and development in the organic sector in the subsequent years and under ‘green party’ political stewardship the sector received increased public attention. Their most recent report, their fifth in 2008, focused on the current Organic Action Plan (2008-2012), and outlined marketing ideas for further progress, particularly citing the British market as a significant opportunity, similar to Crowley (2006), Teagasc (2008) and Purcell (2010).

Concurrently with these policy initiatives the role of the respective certification bodies has been crucial to this ongoing development of the sector. The certification bodies and their respective roles are outlined in the following sub section.
3.4.1 – Irish Organic Certification Bodies

Greer (2002) noted that alongside the Department of Agriculture, Food and Marine, and its organic unit run in conjunction with Teagasc, there are a number of organic certification bodies in Ireland that have emerged since the early 1980s. Fibl (2010) lists them as the Irish Organic Farmers and Growers Association, the Organic Trust, the Organic Growers of Ireland, and Demeter Standards also known as the Biodynamic Agriculture Association of Ireland. These bodies are now described briefly.

The Irish Organic Farmers and Growers Association of Ireland (IOFGA) – IOFGA is Ireland’s leading organic certification body. It was established in 1981. The organisation prides itself on accompanying the development of the organic sector over the last three decades in Ireland. It inspects, certifies and networks with organic producers nationwide. It had 1,100 registered members in 2010 representing the vast majority of producers, and conducts its operations with regard to the adherence of the EC Regulation 834/2007 (IOFGA 2011).

Organic Trust Ltd. – Founded in 1991 by a group of organic pioneers, this Trust was established as a certification body that prioritised consumer interests regarding organic production. The Organic Trust logo was produced to ensure the products carrying this logo adhered to strict organic standards. They insist on detailed inspections to ensure full compliance to these standards and provide detailed information on best practices to participants to ensure efficient production. They operate in conjunction with European Regulations, and also work closely with their respective branch in the United Kingdom, and therefore can access further expertise and operate on a 32 county basis in Ireland (Organic Trust Ltd. 2010).

The Organic Growers of Ireland (OGI) – This is the most recently established organisation launched in 2009, which aims to enhance the interests of the organic horticulture sector across the entire island of Ireland. Its objectives include the promotion and marketing of organic horticultural produce, education and training, networking and encouraging new entrants into the organic horticultural sector (FiBL 2010).
Demeter Standards/Biodynamic Agricultural Association of Ireland (BDAAI) – The origins of this certification body lie in the voluntary self regulation widespread before the creation of IOFGA. However, subsequent to the establishment of IOFGA, some producers felt the need to emphasise their biodynamic approach as distinguishable in its own right. The literature of Dr. Rudolf Steiner is central to their core principles with the betterment of farming and treating the farm as a living organism in its entirety central to their methods (BDAAI 2011). The BDAAI was officially inaugurated in 1991, adhering to Demeter standards in the UK, with the two organisations merging in 1993, but Demeter ceased operations in Ireland in 2008 (Fibl 2010).

These organisations provide the most updated relevant information to members, and encourage standardised quality from their participants in order to achieve their certification. Galindo (2007) claimed this as the ultimate purpose of acquiring certification in accrediting farmers with a symbol of differentiation from conventional production, and thus legitimising a premium price on produce. Indeed, Lampkin (1994) lauded the impact of the certification bodies in Ireland as invaluable for attracting potential converters. Their eligibility criterion ensures they can monitor member’s progress accurately in order to maintain their specific standards. Galindo (2007) concurred claiming the demanding nature of organic certification feeds the motivation for knowledge and learning in the production community, which acts as a positive externality of this relationship. Galindo (2007) continued that the networking amongst producers under these umbrella organisations is invaluable, particularly in relation to improving efficiency and technical expertise, as producers can network and share their experiences.

Greer (2002) noted that collectively these Irish organic certification bodies often co-operate with each other on strategies, and also liaise with major agricultural interest groups such as IFOAM, Teagasc, the Irish Farmers Association (IFA) and environmental bodies such as Genetic Concern. However, Crowley (2006) warned that there has also been an indication of contention and disagreements over certain issues among the certification organisations. For example there was widespread disagreement on the form of a national logo. Contentions such as these could prove detrimental for
the future of the organic sector in Ireland, particularly in attracting new converters. Crowley (2006) continued that certification bodies must apply consistent common standards to improve their credibility among producers and consumers alike, and thus, cooperation as opposed to contention is preferred. Moreover, Greer (2002) noted that there was evidence of disagreements among the certification bodies and the Department of Agriculture over particular issues such as amalgamations, which despite being deemed anti-competitive, would be more cost effective. Therefore, a common universal strategy among the certification bodies, and a general cooperative approach among all actors will be a prerequisite to strengthening and expanding the sector further.

From within this policy framework, the Irish authorities have adapted their current national organic farming scheme. However, this process is subject to the change under the upcoming agricultural reforms, and thus are discussed in the following section.

3.5 - Reform

As noted previously, the significance of organic agricultural policy is increasing in Europe at present. The need to formulate a comprehensive progressive policy is paramount with the CAP due to undergo reform in 2013 and the WTO trade negotiations continuously increasing pressure on the liberalisation of trade. The WTO trade negotiations are ongoing since 2001, but director-general Pascal Lamy has indicated December 2011 as the period for refining the parameters under the negotiations (WTO 2011), although this outcome remains unclear as yet. The current CAP is approaching its expiration and therefore is set to form a new policy direction in 2013 with negotiations on the shape, scope and focus of this policy under scrutiny.

Traditionally any CAP reform is accompanied by a great deal of uncertainty which can be a frustrating and anxious process for producers. Blake (1994) noted that in the aftermath of the MacSharry CAP reforms in 1992, farmers became increasingly apprehensive as their previous familiar policies were been reversed, despite dwindling profit margins. There are suggestions in the media that this may reoccur, especially for
particular agricultural subsectors such as the tillage sector. However, historically, the fluid adaptability of the organic sector should embrace this advantage and incorporate policy shifts more easily (Pugliese 2001). Nonetheless, the associated shift in the policy position is often difficult to predict as different interests clash as to the most effective method to progress and maintain the viability of the agricultural sector. Moreover, it can be argued that this difficulty is inevitable in any negotiations among 27 diverse member states with significant differences in economies, climate and culture.

There has been much speculation as to the shape and direction of the reformed CAP post 2013, with conclusive patterns beginning to emerge from 2011 and 2012. However, certain themes have been consistently remarked on such as the need to strike a balance between productivity, sustainability and environmental protection. For example, the environmental targets of a 20 percent reduction in greenhouse gas emission set out for 2020 under the Kyoto protocol (EEA 2010), have fuelled speculation that subvention may be linked more closely to the ecological performances of each farmer, as Sundrum (2001) had previously predicted. Certainly, the trends of the last two decades of reform have been to shift the policy focus to rural development and ecological performance rather than subsidy payments coupled to intensive output production. Indeed, early indications of the new reform signify an increase in emphasis on environmentally friendly production and promoting diversity in agriculture (EurActiv 2010). Initially IFOAM have welcomed this proposal for organic production as they view the organic system as a long term sustainable system, that will enhance soil quality, biodiversity, reduce environmental pollution, and boost rural economies (EurActiv 2010).

Furthermore, Europa (2011) confirmed that ‘greening’ will be included in the upcoming reform as set out in their proposals focusing on crop diversification, pasture maintenance and maintaining an ecological focus area. Europa (2011) confirmed that 30 percent of direct payments will be ring fenced for environmental performance under this greening aspect of the policy. Young (2011) reported that the greening of the CAP was a significant change to previous policies and would provide compliance complications with different farming systems. However, Europa (2011) asserted that organic producers
will not face any further requirements in this regard as their existing regulations have a beneficial ecological impact, particularly with regard to the organic beef sector.

Concomitantly, the European Commission has recognised the need to increase output levels to feed the growing global population, but that this increase must be achieved sustainably (EurActive, 2011). Accordingly, the notion of sustainable intensification has been recognised at the institutional level. The European Commission (2012) launched its strategy on agricultural productivity and sustainability through its ‘European Innovation Partnership’. This policy aims to pursue productivity and efficiency gains, without the negative externalities for future production and the environment, by improving soil functionality. This approach may offer opportunities for the organic beef sector, as it may be argued that this system offers benefits in this regard as it is a sustainable production system by definition. Therefore, this policy implies that conventional production could begin to imitate various organic principles by incorporating the greening policies set for the upcoming CAP reform.

Furthermore Zahrnt (2009) argued that if the promotion of environmental protection is a future priority of the CAP, it may benefit the larger organic areas disproportionately to smaller areas. This argument is based on a speculated flat rate system which will compensate the producer per hectare of their farm, a prospect confirmed by McCullough (2011) for 2019, rather than the single payment scheme that was based on historical output levels during a fixed reference period. This, it has been suggested, would lead to a more equitable distribution of payments to European farmers. However, this could lead to countries such as Romania and Spain becoming net beneficiaries, with Ireland lagging behind due to its smaller average sized farm holdings. Moreover, many member states are likely to object to a flat rate system, as a result of the different costs of production, and the productive capacity of each hectare of land, and thus the structure of such a system will need further consultation before it can be enacted.

O’Brien (2011) reported that the overall CAP budget has been frozen at the 2013 level of €371.7 billion for the seven year period until 2020 which has been met with
widespread relief in the agricultural sector. However, this budget is not indexed linked, meaning that a period of high inflation would essentially reduce the value of this frozen budget in real terms. Nonetheless, precisely where funding will be prioritised in the new CAP remains unclear, whilst a precise breakdown of the agreed policy is formulated.

In recent times there has been a deliberate shift to an increasingly market orientated agricultural economy as a result of the decoupling of direct payments from production under the Mid-Term Review of the CAP in 2003. This process is set to continue under the new reform but the European Commission have confirmed that a new safeguarded market mechanism for the CAP will be applied to intervene for exceptional market disturbances, and rural development focusing on innovation and improving competitiveness (Europa 2011). This reassurance will contribute to the further development of the organic sector as the uncertainty associated with market volatility will be diminished.

Agricultural interest groups have also outlined their vision for the shape of the upcoming CAP reform. The Irish Farmers Association (IFA), a national agricultural pressure group, has taken the view that there may be detrimental effects of not protecting producers’ interests in the upcoming CAP reform. They insist that the CAP budget must include support for markets and management to maintain the current high quality, sustainable food supply. In essence the modified market outlined in the proposals noted above is in general agreement on this issue (Europa 2011). Interestingly, the IFA themselves do not prioritise organic beef production in any significant manner, as it is omitted from their paper on their future agricultural strategy, other than a sub-section on organic horticulture production.

Furthermore, the ongoing WTO discussions are assessing the potential for agricultural commodities to become traded equitably in a global context without protectionism in the policy process. In other words, agricultural trade would be subject to the same terms and conditions as alternative economic sectors. These negotiations intend to establish a fair and market orientated trading system through a programme of fundamental reform
(WTO 2001) which would significantly diminish the protectionist policies, such as the CAP, that have been accused of creating inequitable trade barriers to third countries. At present the stringent conditions and regulations agriculture operates within Europe are not enforced externally, which creates inequitable production costs as a consequence. Producers outside of Europe do not adhere to comparable regulations and therefore can produce at lower costs, which inevitably results in lower prices for their consumers. European producers cannot produce at this low cost under the current policy requirements, and therefore, consumers have to pay a higher price for produce in Europe (Brassley 1997). The protectionist payments provided by the CAP, compensate producers for these additional production efforts and also ensure the lower price to consumers, which offer the CAP’s legitimacy to continue these protectionist payments. The withdrawal of this support could significantly reduce the number of viable farmers in Europe due to the volatility of agricultural markets, and this is also applicable to the organic sector.

On the other hand, the gross inefficiencies associated with these policies must also be considered when discussing the merits and limitations of protectionism. Farmers who overproduced to pursue coupled subsidy payments without regard for the market demand levels previously led to inefficiencies and gross production surpluses. Tzouvelekas et al (2001) argued that the CAP, and specifically overreliance on the CAP reduced the responsiveness of farmers to production signals, such as market trends or the efficient use of inputs. However, the introduction of decoupled payments under the Mid-Term Review of the CAP in 2003 aimed to alleviate this issue, with payments decoupled from production levels. Moreover, Hazel and Wood (2007) criticised the impact of protectionist policies on the well being of developing countries who desire increased exports of agricultural products to enhance their development. The barrier to entry into large markets, such as the European market can significantly restrict this potential development. These debates will continue as the next phase of CAP reform is due, and the ongoing global pressures to increase the liberalisation of the European agricultural market in the WTO negotiations continues.
In summary, the specific implications for organic production remain unclear at present in the upcoming CAP reform. However, Dacian Cioloş, the European Commissioner responsible for agriculture, spoke optimistically of the prospects of organic farming at a European Congress hosted by IFOAM. Cioloş (2011) insisted the upcoming reform enhancing organic production, and that organic farmers will benefit from the greening element of direct payments, as well as strengthening the current measures in place. Clavin and Moran (2011) agreed adding that these comments provide a reassurance on the future of organic production as the European Commission seeks to augment economic viability concurrently with improving ecological competitiveness.

### 3.6 – Policy in the Organic Beef Sector

As the majority of organic producers in Ireland operate a beef system, it is inevitable that the development of agricultural policy relating to organic production has important implications for the organic beef sector. As McDonnell (2009) and Leavy (2009) argued, the location and temperate climate of Ireland offers ample opportunities to produce large quantities of grassland without the need for artificial assistance. Thus, the prohibition of chemical fertilisers and pesticides should not discourage organic beef production, as the land should be capable of facilitating this system without significant difficulties (Condon 2010).

Moreover, the shift in focus of the CAP may further boost the organic beef sector. The speculated ‘greening’ element will complement the extensive, environmentally friendlier practice common to organic beef production. The dominant conventional beef system is likely to contradict elements of the ‘greening’ proposal on the basis of intensive stocking densities, and the application of artificial fertilisers among other practices. However, the organic beef sector is likely to retain eligibility automatically given the nature of this production system, a point also alluded to by the current European Commissioner for agriculture, Dacian Ciolaş.
The technical requirements for organic beef include provisions on all aspects of the management of livestock, and land to ensure viable, high quality production. These rules expand on the rules applied under conventional production at present, and focus on animal welfare and quality of produce as core objectives. Perhaps, it is more likely that the upcoming CAP reform will affect conventional production regulations through the ‘greening’, as opposed to the introduction of wide scale changes to these organic beef provisions, but this remains unclear at present.

### 3.7 Conclusion
Organic agricultural policy is increasing in relevance across Europe as more producers adopt the organic system, and more utilised agricultural area is devoted to organic production. This process indicates continued growth in the immediate future as organic agriculture is widely perceived as a growth industry (Halloran and Archer 2008). Since its acceptance on to the formal policy agenda of the Europeans CAP in 1992, organic sector development has accelerated. National administrations have applied the requirements of the scheme to various levels, and there remains potential for the sector to expand further.

The current organic farming scheme in Ireland is due to expire in 2013 in time for the upcoming CAP reform, and is under the direction of a new national government in Ireland since February 2011. As a consequence the political ‘green party’ are no longer in government, and thus, the prioritisation of organic agriculture could falter. However, there are legitimate opportunities for the organic sector to expand further in Ireland, particularly in the export sector, but an appropriate policy is imperative to achieve this expansion effectively. Therefore, it may be argued that Irish policymakers are in need of an innovative approach, to develop a growth industry such as organic production rather than attempting to maintain agricultural sectors in decline. The national certification bodies, interest groups, processing plants and advisory boards will be critical to the successful adoption of a new strategy, and therefore a cooperative approach is required to enhance the sector effectively. Moreover, Matthews (2008) noted that the multi functionality of agriculture has received prominence in the rural development pillar of
the CAP, a pillar that is set to strengthen in the upcoming reform set for 2013. Furthermore, a multi-functional agricultural sector producing food, fibre, oils and other products, as well as contributing to both environmental sustainability and rural economies will make many contributions to a wide range of economic sectors. Finally, Lio and Liu (2008) defined governance as the traditions and institutions by which authority in a country is exercised. The impact of institutions and effective policy decisions can be highly influential as discussed in the previous chapters. Therefore an appropriate governance structure can ensure that specific policies are administered and implemented successfully.

From the above analysis it is clear that there are a number of broad policy issues that surround organic production. Therefore, it is useful to discuss these issues in isolation, and hence is the subject of the next chapter in order to gain a more thorough understanding of the complexities that affect the policy process.
Chapter 4- Issues for Policy Makers

4.1 Introduction
Lampkin (1990) argued that agriculture is crucial to the interests of all in society, as everyone is dependent on the food produced. Many commentators would agree that a sustainable, healthy, safe food supply is essential for present and future generations. Matthews (2008) goes further claiming that agriculture is the single most important aspect of rural, economic and social viability. It is wide ranging and has diversified in recent decades with agri-environmental initiatives accompanying existing productivist policies. However, an effective policy is required to achieve these objectives, and this policy process is complex. Similarly, there are a number of complexities in the organic agriculture policy process, and these issues are discussed in this chapter.

Accordingly, the broader issues surrounding the policy process for organic production are examined, as these issues must be comprehensively addressed to achieve a successful policy to continue developing the sector. These issues are sub divided into specific themes before a conclusion is provided outlining the particular issues that provide political dilemmas for the policymakers.

4.2 Organic policy origins
Specific trends and recurring issues have been evident in relation to organic production policy since its origin. Prior to the latter decades of the 20th century Lampkin et al (1999) noted that there had not been a formal policy applied despite the emerging interest and demand for information relating to organic production. Rigby and Cáceres (2001) argued that organic production had operated under a history of regulation, albeit without a central authority for the most part, which Michelsen (2001) described as self-regulation. Accordingly, it was the 1990s before policy makers accepted organic production on to the agricultural political agenda, which posed a new and evolving challenge for the sector. This has also proven the case in Ireland with centralised policy initiatives emerging in the late 1990s and early 2000s. The establishment of the
National Steering Group aimed to publish reports and strategies on the ongoing development of organic agriculture in Ireland was considered a significant symbol of intent by the government at the time for the future development of the organic sector. The recommendations of their series of reports have contributed to the ongoing formulation of organic production policy in Ireland. Indeed this body arguably represents the evolution of policy relating to organic agriculture in Ireland.

4.3 Policy position and identity

It has been argued that organic agriculture has traditionally been isolated at the policy level as a result of the domination of conventional production policy (Rigby et al 2001). This may be reflected as to the minority share of the total utilisable agricultural area commanded by organic production at present. Moreover, it has been argued that organic production also commands a minor role in agricultural policy formulation (Greer 2002). Consequently, many commentators have asserted that the organic movement should be included in the nucleus of agricultural policy. Best (1995) argued that ‘green issues’, such as organic farming are fundamentally important to agricultural policy, and thus should not be treated peripherally. Greer (2002) also explained that the smaller position of organic policy relative to its conventional counterpart was a critical factor in shaping the identity of organic producers. Essentially, been removed from core agricultural policy negotiations united those producers to cooperate in opposition. Michelsen (2001) expanded, crediting the expansion of organic agriculture as part of a wider social and political change focusing on post material values such as sustainability, health and ethics. This paradigm shift has aided and accelerated the development of organic agriculture. Indeed, more recently, Legun (2011) noted that the organic movement has received increased attention, based on changing values, but still lags behind the dominance of conventional agricultural policy.

Tovey (1997) argued that the organic movement should not be viewed as a sub-movement within the broader movement of environmentalism, or on its contrast to conventional system but on its own unique development as an innovation in agriculture. Similarly, Sandhu et al (2010) argued that increasing criticisms of intensive agricultural
practices may have accelerated the development of sustainable extensive methods such as organic farming, but these must be considered as separate agricultural system types. However, Crowley (2006) warned that as organic agriculture becomes increasingly institutionalised due to its increasing prominence within agricultural policy, it may become removed from its organic ideals and thus may represent an alternative method of the marketing of food, as opposed to the principles envisioned by the pioneers. Accordingly, it may be argued that there is increased legitimacy in analysing organic agriculture separately as a new innovation in agriculture, rather than comparatively with conventional agriculture. Tovey (1997) elaborated that despite the perception of its identity as derived in opposition to conventional production, organic agriculture should be recognised as a separate unique production system.

Interestingly, Padel (2001) conducted research into the adoption of organic agriculture as a typical diffusion of an innovation. Andreosso-O’Callaghan (2003) noted that this theoretical model of diffusion focused on assumptions of the decision making process of producers and the stages of adoption of an innovation including awareness, information, evaluation, trial and adoption. Padel (2001) found that there was minimal variance between early and late adopters, which is abnormal for an agricultural innovation. She elaborated that agricultural innovations typically experience greater social integration, financial motives and increasing farm sizes amongst the more recent adopters, but this usually happens later than is currently occurring with organic production (Padel 2001). Rigby et al (2001) echoed these findings adding that as many organic producers are new to farming, they may have been motivated by a lifestyle choice, thus reflecting a type of social movement as noted earlier by Michelsen (2001). Therefore, there is validity in the recognition of organic production as an alternative form of agriculture, in that it has developed unique characteristics over time.

4.4 Communication development
The unity of organic producers as a result of their peripheral political influence as noted by Greer (2002) has had a profound effect on the methods of communication utilised in organic agriculture. Rigby et al (2001) found that informal networking was the prime
method of communications until the 1990s in Britain, when formal policy recognition ensured a more standardised system of communication was introduced. The Irish organic sector has followed a similar pattern of communication development, with certification bodies such as IOFGA and the Organic Trust providing a forum for pioneers to share experiences and expertise. However, it is the implementation of the relevant centralised policy or supranational regulation that has had the strongest impact at developing communications. The terms and conditions of the policy ensure standardised production, and thus, effective communication is a prerequisite to achieve compliance under these policies and regulations and must be delivered by an appropriate agent such as the respective Departments of Agriculture.

Nonetheless, it is also important to note that organic production contains innovative tendencies (Padel 2001, Andreosso-O’Callaghan 2003) and thus, is also continuously evolving (Pugliese 2001). It has utilised this fluid, flexible approach to adapt to emerging challenges at the policy level. However, an effective method of communication will be crucial in attracting new converters and improving existing practices in the organic sector through appropriate promotion techniques. Indeed, Galindo (2007) argued that as strategies constantly diversify in the organic sector, effective communication must be constant also. Therefore the advancement of communication development will be a critical factor in the further evolution of the organic sector and consequently must be adequately incorporated into the policy process.

4.5 Economic issues
In economic terms, agriculture by definition provides a dilemma for markets, as there is no market mechanism to set a price that accounts for the negative externalities associated with providing high quality safe sustainable food. An externality in this instance refers to the unintended cost or benefit arising from an economic activity that affects people other than those who decide the scale of the activity (Parkin et al 1997). Dickie and Shiel (2005) noted that agricultural markets will provide less than the optimum level of environmental public goods, as the margins will not accept losses that
can be financially avoidable. In other words there is no automatic market incentive to protect the environment. Concurrently, the long term sustainability and environmental protection would not feature on the agenda of the market drive capitalists, whose primary focus is on a short term profit maximisation.

Moreover, Boyle (2002) stated that the economic feasibility of producing 100 percent safe food is as unlikely as producing zero percent pollution. However, organic production would improve these percentages considerably as opposed to conventional methods, which have proven associated negative environmental impacts such as water contamination and pollution. The environmental benefits of organic production are non excludable, but require a form of compensation to reward the producer for limiting environmental degradation at the expense of maximising output. This compensation in the form of premium pricing offers some justification for organic producers, as consumers are willing to pay a percentage extra to remunerate the additional effort at the production phase. This also somewhat legitimises the need for government intervention to assist the implementation of environmentally friendly regulations and offers compensation to producers for restricting production levels.

Moreover, Bateman (1994) implied that the market system could be dually utilised for political and economic advantage with the pure democracy of consumer choice involved. In other words, consumers select certain products over others and can opt to pay a premium price for the perceived higher quality if they so desire. However, relying on market forces alone would allow producers to fail and land to become derelict, which is in stark contrast to the protectionist policy approach imperative and central to the CAP. Indeed, Brassley (1997) remarked that a core objective of the original CAP was to ensure farmers remain on the land.

Therefore an innovative policy vision is necessary to continue progressing the organic sector whether it is a form of a protectionist approach or a modified market with built in safeguards to account for externalities, as suggested by Bateman (1994. Indeed, the European Commission reported that the new CAP reform proposals would have a
modified market mechanism included to assist with unforeseen circumstances, but the structure of this mechanism remains unclear (Europa 2011). Nonetheless, the new policy will have important ramifications for the organic beef sector in Ireland, with the ‘greening’ element offering additional opportunities.

In summary, it is increasingly debateable whether agricultural protectionist policies should ensue given the declining GDP value of agricultural sectors in many countries in comparison with other industrial sectors. Rigby et al (2001) and Matthews (2008) echoed this concern and highlighted the significance of both the upcoming CAP reform, and of the World Trade Organisation (WTO) trade negotiations where a more liberalised unprotected market place is under negotiation. This dilemma of protectionism versus liberalisation will increase in the immediate future, and organic policy will undoubtedly be affected by these wider economic events.

4.6 Funding
Accordingly, issues surrounding funding for organic production may have a significant bearing on the future performance of the organic sector in Ireland. Sauer and Park (2009) found that there was a significant relationship between monetary support and the development of the organic sector in Denmark. They found that the reduction of support increased the market exit rate. Irish policy makers will need to lobby on this basis to ensure the continued financial support of the organic sector in Ireland. The availability of funding is not guaranteed but the effective and efficient use of available funding must be a key objective of policy makers. Tovey (1997) was particularly critical with regard to the effective use of funding, particularly citing the effect of the REPS scheme for organic producers. She suspected that the priorities of some farmers were to maximise incomes as opposed to investing the funding to improve productivity, as argued previously. Greer (2002), echoed this view, claiming that funding had been misused, and thus, may not have developed the organic sector as envisaged. Consequently there became a reliance on schemes such as the REPS as a form of income support. Moreover, O’Neill et al (2001) and Matthews et al (2011) criticised the management practices of explicit producers who may sacrifice efficient productivity in order to retain eligibility.
for additional funding under schemes such as REPS and the Extensification scheme. Therefore the security of additional funding must be pursued concomitantly with a targeted approach to ensure its efficient use and the primary intention of developing the organic sector further.

Nonetheless, it can be argued that the security of funding is essential to support the organic sector. Assistance is required to maintain the sector, insure against unforeseen circumstances and to secure the long term viability of the sector. However, Rigby et al (2001) warned, that protectionist funding is in stark contrast with trade liberalisation ambitions, as advocated by the WTO. However, the European Commission has indicated that there is a proposal to introduce a mechanism that will assist in exceptional instances, such as severe weather patterns in the upcoming scheduled reforms (Europa 2011), which will be welcomed by the majority of Irish organic producers.

Interestingly, Rigby et al (2001) predicted that governments may be more likely to provide sufficient support for organic production to achieve a critical mass, at a level where the sector can function independently. Indeed, it can be argued that this must be an essential objective of organic policy makers, as protective payments may be expected to assist if needs be rather than to create a dependence on these payments as seen under previous implemented agricultural policies. Therefore a key goal to further organic sector development is an effective management structure as advocated by Michelsen (2001) and Pimentel et al (2005) both at the policy level and at the farm level.

### 4.7 Market Security

Similarly, the security of the organic market is a policy concern. Lampkin (1994) warned that the premium markets may not be sustainable in the longer term, and thus improving competitiveness must be an overriding objective. Should organic production continue to grow at its recent pace, a controlled adoption changeover must be implemented to avoid flooding the market with excess levels of supply. Tate (1994) recalled the experience in Sweden where the market was oversupplied and consequently
the premium prices were eroded as a prime example. Tzouvelekas et al (2001) commented that the accession of ‘subsidy hunters’ could also steer the sector towards overproduction. This term referred to converting producers who were attracted to the availability of financial assistance rather than core organic ideals, Similarly, Padel (2008) argued that the core organic principles may be diluted with a rapid expansion of entrants to the sector, particularly profit seeking businesses, labelling these entrants as ‘eco sly’ as opposed to subsidy hunters. This potential influx of profit seeking productivist farmers could lead to a historical replication, and the ‘butter mountains’ and ‘wine lakes’ as identified by Grant (1997) would return, this time as organic. Allen and Kovach (2000) and Legun (2011) also concurred accusing many converters of adapting familiar conventional farming practices of agribusiness under the organic system, and thus, applying minimum genuine commitment to the organic ethos. Thus, it may be argued that greater emphasis must be placed on the importance of organic ideals and principles in the policy adoption process. Michelsen (2001) concurred stating that organic values and ideals must be maintained and emphasised, to avoid reflecting an alternative form of conventional agriculture. This is a greater possibility under a free market system and would be in stark contrast to the organic philosophy as set out by the organic pioneers.

Tate (1994) suggested that lower consumer prices may be the key to expanding the organic market further. Tate argued that lower prices may encourage greater demand, and hence extra quantities of output would be required, thus offering tangible development of the sector. Similarly, Legun (2011) argued that increased awareness of the production process for consumers would increase the appeal of undistorted prices, as the economic vulnerability of producers would be exposed, as would the other beneficiaries in the production process who profit most from the production process at present. In other words, increased transparency in the production process from farm to fork would expose the inequity in organic production, and thus could boost consumer demand in the markets. Furthermore, improved transparency would also illuminate the costs and standards of production associated with organic production, which may also bolster the appeal for consumers, on the basis of value for money.
However more generally, as pressure groups such as the IFA (2010) have warned, the factories, processors and supermarkets will be influential in the further development of the organic market, and without their full support and acceptance of organic ideals and objectives the system will remain small scale and significant market potential may be lost. Accordingly, these organisations must proactively contribute to achieving the long term objectives of viable production and sustainability, rather than exploit existing market opportunities for short term profit, through maintaining the alleged bottlenecks that are currently evident in the production process. This is a key prerequisite in ensuring the longevity of the organic market.

4.8 Resource Use

Another policy issue relates to the effective use of resources, particularly rural land for organic production. Tisdall (2007) criticised the utilisation of land under organic production, arguing that it would require greater quantities of land and thus endanger wildlife who reside in these areas. Firbank (2005) agreed predicting that there will be large numbers of species extinctions by 2050 if current agricultural policies continue, citing the importance of maintaining biodiversity. There is also the corollary as previously discussed by Connor (2008) that the increased land required for organic production would offset any associated environmental benefits. Firbank (2005) insisted that a balance must be found between food production and other areas such as biodiversity and climate change. Morison et al (2005) agreed arguing that food production should be pursued concomitantly with environmental goals and rural services to satisfy many sectors of society, and thus a policy initiative must reflect this point. Similarly, Olesen and Bindi (2002) argued that rural land must be used more flexibly, but environmentally friendly schemes such as organic should be encouraged. These points are particularly relevant to the organic beef sector, where extensive production would complement biodiversity by reducing harmful effects that can deplete natural species of wildlife.

Moreover, as the numbers of organic producers have increased, there has been lobbying for wider concerns of rural areas to reach the political agenda, such as equality,
producer-consumer relationships and developing rural economies (Tovey 1997). Michelsen (2001) claimed this was part of a general social and political change focusing on post material values, such as quality, preservation, health, ethics and sustainability, which have increasingly become part of the political, and indeed, the rural agenda. Furthermore, Tovey (1997) argued that the modern use of rural land was shifting towards a services perspective for the growing urban populations. The OECD (2006) also noted that rural policy making has recently been characterised by a paradigm shift, with factors such as increased focus on amenities and the need to reform agricultural practices paramount. As this pressure continues, organic production will have to compete successfully for the use of rural land at the policy level to ensure the ongoing expansion of the sector.

4.9 Farm Management
A recurring observation is that the acceptance of organic principles is commendable, but they must be pursued concurrently with effective farm management practices. Farm management is crucial to ensuring the highest standards are achieved. Michelsen (2001) noted that progressive agricultural practices of high standards significantly contributed to the development of the organic sector as social values shifted. Moreover, Pimentel et al (2005) noted that sound management practices can improve farm economics, a point emphasised by Lampkin (2001). In effect, farm management may not be as critical in conventional systems with lower levels of manual labour required, as the use of chemicals and pesticides are permitted to enhance productivity levels and control weeds, as opposed to the stringent regulations governing organic systems. Therefore, it would be advantageous if best practice farm management practices were replicated systematically on a national basis to ensure efficiency is achieved. An appropriate policy position reflecting this compliance criterion would ensure that farm management is performed effectively.

4.10 Reversion
Finally, the issue of reversion is neglected by the literature at present. Rigby et al (2001) noted that many producers revert as economic results do not reach their expected levels,
or that organic ideals are lost as the system begins to reflect a modified version of conventional agriculture. Indeed, with the considerable literature in relation to the motivations for conversion to the organic system, there must be further research into the causes of sector exit. Sauer and Park (2009) found that organic farming in Denmark began to stagnate and weaken as consumption declined and monetary support was reduced. This indicates the dilemma between pursuing a more market oriented approach enabling the success or failure of producers, or a protectionist approach offering financial assistance. Nonetheless, as the organic ideals aim for a long-term sustainable system as opposed to a temporary change, perhaps converters need to accept lengthier levels of commitment. The survey of this thesis enquired as to the enthusiasm for reversion from the organic sector, and the results are presented in the subsequent analysis.

4.11 – Ramifications for the Organic Beef Sector

A number of these policy issues may also specifically affect the organic beef sector in Ireland. Specifically the conditions for organic beef production include that husbandry practices and stocking densities respect the developmental, physiological and ethological needs of the animal (IOFGA, 2012). This establishes stringent terms and conditions relating to farm management, housing conditions, stocking density, transport, slaughter, documentation, diets and veterinary standards. However, the technical requirements of organic beef production should not discourage conversion from conventional production, given the favourable conditions as outlined by Leavy (2009). For example, the prohibition of fertilisers would reduce costs, whilst the lower permitted stocking rates ensures less pasture was necessary, and thus, adequate levels would be produced to feed an organic herd. On this basis, it could be argued that the additional regulations for organic beef production would not automatically diminish profit margins. Yet, the wider issues outlined in this chapter also apply to the organic beef sector.

As the majority of organic producers in Ireland operate a beef system, they do not suffer neglect within the organic policy arena itself, but do occupy a minor role in comparison
with conventional beef producers. However, the economics of organic beef production indicate this system could be a viable alternative to conventional production, particularly as a result of the lower input costs, due to the prohibition of fertilisers and pesticides. However, the communication between organic beef producers and consumers is underdeveloped, and needs to be improved if additional domestic demand is to be stimulated. Bord Bia is conducting research in this area at present, and emphasise the need to stress the benefits of organic beef as an incentive to consumers, to complement the increased awareness at present. Measures such as this will strengthen the longer term security of the organic beef market.

Fundamentally, however, the importance of funding and the need to maintain and increase the area under organic production are key challenges for the organic beef sector. As agricultural policy approaches reforms, other interest groups will lobby for attention. Organic beef producers must ensure that their position is solidified on the basis of the existing market opportunities and the ‘greening’ requirements as speculated in the new CAP direction. If the target of 5 percent of utilisable agricultural area, as set out under the Food Harvest 2020 strategy, is to be realised, then appropriate incentives need to be offered to existing and potential producers. Moreover the issue of reversion is significant for organic beef producers given the proven importance of motivations and ambitions. Inevitably, if beef producers adopt the organic system for financial gain, lifestyle choice or the organic ethos, they will revert if their expectations are not met.

4.12 Conclusion

There are many broad issues and complexities surrounding organic agricultural policy. There have been initiatives implemented to stimulate growth in the sector and there are economic benefits available, yet the organic system remains minimal in comparison with conventional production, particularly in terms of utilisable agricultural area under production. The upcoming reform in agricultural policy and the outcome of the global trade talks will have a significant impact on the future of organic production, but if it retains its smaller position of policy influence, organic production may fall short of its potential. However, there are signs that the recent increased support for organic
production could continue, and this may reveal further opportunities, particularly with regard to the greening element of the upcoming CAP reform. Therefore, future policies must achieve a strategy that is beneficial to all members of the organic production process, whilst adhering to environmental, sustainable and consumer objectives. These decisions on the future organic policy will become clearer in 2013 as the new policy is formulated and introduced.

Grouping these broad policy issues together, Halloran and Archer (2008) suggest that the drivers of technology, government intervention and market changes appear to underpin the previous trends of intensification and specialisation in agriculture. They outlined real economic incentives for integrated systems, with better protection against diseases, and potentially increased profitability, concurrently reducing the risk of financial catastrophe. Therefore, a wholesome policy approach is required to accommodate the heterogeneity of organic farms as outlined by Tovey (1997) and Sundrum (2001). This approach will ensure that all converting farmers have adequate training and skills to address a variety of tasks in a multi-functional arena, as opposed to specialised management for single output farms more common in conventional systems. Similarly, Lampkin (1990) insisted that each organic farm will differ on multiple intrinsic characteristics and thus, would require a flexible policy in order to adapt to their specific conditions and constraints.

Accordingly there are many normative suggestions as to the most effective policy direction to ensure the enhancement and continued expansion of the organic sector, yet any consensus on a new direction of policy remains unclear at present. Rigby et al (2001) insisted that sufficient funding must be provided to assist with the conversion process where losses of productivity are inevitable, and subsequently organic farms will be expected to viably operate in a sustainable manner to meet market demands. In these instances, if the premium price is retained then the subsidy system may not be necessary as producers would be remunerated adequately for their produce. However, assistance would be required on a contingency basis, and there are indications that this will prove the case in the modified market mechanism of the upcoming CAP reform (Europa 2011).
It is also worth recalling that Irish organic producers and potential converters are favourably positioned to take advantage of further growth in the organic sector. The IFA (2010) highlighted the youth and exceptional standards of education of newer farmers that may acquire the skills necessary to adopt a new production system more easily, without their previous experience and knowledge acting as a deterrent. As Morgan and Murdoch (2000) noted the need to disregard previous knowledge and relearn new skills and expertise may prove problematic for older farmers, but these emerging young educated farmers may accept this new ‘tacit’ knowledge more successfully. Moreover, Europa (2011) confirmed that the prioritisation of young farmers will be central to the upcoming reformed agricultural policy.

Thus, there are many broad policy issues affecting the organic sector. This research aims to focus on productivity, but also incorporates some wider policy aspects in the primary research. With the formulation of an effective policy initiative the future could be very encouraging for organic farming. The principles of applying best practice farm management and improving competitiveness will be the prerogative of each individual producer to ensure that they are strategically positioned to avail of opportunities arising from the policy process.
Chapter 5 – Productivity: Definitions and Drivers

5.1 – Introduction
Productivity remains a key element of agricultural debate as farmers strive for efficient production given their available resources. Indeed, O’Donnell (2010) argued that improving agricultural productivity is a fundamental precondition to sustainable economic development. Accordingly, issues surrounding productivity performance are paramount in organic agriculture in order to maximise profitability from production. Ensuring that optimum output is achieved from a fixed quantity of inputs must be a core objective of organic beef producers.

Similarly, Matthews et al (2007) lauded conventional dairy farmers as intent on increasing productivity in order to produce their quota entitlement at minimum cost. The same principle is transferrable to the organic beef sector, where limitations such as stocking rate restrictions, winter housing, and land capacity amongst others ensure that input quantities may be restricted. Regardless, producing the maximum output at minimum cost is a key strategy to ensuring optimum efficiency and hence, profit maximisation. However, the appropriate strategy of achieving efficient productivity is more complex. In fact, identifying a suitable measure of agricultural productivity in itself has proved challenging with many previous authors contending the most suitable methodology. These issues are examined in this chapter.

Productivity rates in organic agriculture have been a key criticism of the system, as there remain doubts over the ability of organic produce to feed increasing populations. Connor (2008) argued that much greater quantities of land would be required to achieve organic output levels consistent with current output levels by conventional producers, thus offsetting the environmental and sustainability benefits as set out by organic protagonists. Conversely, Tzouvelekas et al (2001), Badgley et al (2007) and Sandhu et al (2010) argued that organic productivity can maintain or even improve upon conventional productivity rates in certain commodities, particularly in the longer term due to increased biodiversity and soil functionality. Nonetheless, Lohr and Park (2007) insisted that fundamentally, policy makers require accurate efficiency measures to
assess organic productivity trends effectively, and this has proven problematic. Therefore, these issues are addressed in this chapter prior to conducting the primary research, to understand the possible drivers of productivity for organic beef production.

The chapter is structured by firstly providing a brief overview of the key terms and concepts in relation to agricultural productivity. Subsequently, a literature review of the issues and arguments surrounding this productivity measurement is discussed. This is followed by a discussion of the perceived drivers of productivity. This assists the identification of the limitations in the existing knowledge in relation to organic beef productivity measurement, and this will establish specific areas for investigation in the latter chapters.

**5.2 – Definitions of key concepts of organic agricultural productivity**

Prior to discussing the issues surrounding productivity measurement on organic farms, firstly it is important to clarify the recurring terms used in the discussion. Therefore some key terms and concepts are now explained briefly.

Essentially productivity in agriculture refers to the quantity of output produced from a fixed set of inputs. The goods that are produced for sale on the farm are the outputs, and the raw materials, maintenance and labour are all examples of inputs. Matthews (2000) defined total productivity as the ratio of output to the totality of inputs used in production. Similarly, O’Donnell (2010) defined total factor productivity (TFP) as the ratio of aggregate outputs to aggregate inputs. This measure of TFP is generally accepted as a superior measure of productivity as it compares output levels with the combined use of all input resources (Boyle 1987). Headey et al (2010) noted that partial productivity measures are typically used to measure land or labour productivity, but obviously suffer from the limitations of not incorporating the accumulated effect of all inputs utilised.
Loureiro (2009) defined the technical efficiency of each individual farm as the ratio of output achieved from the maximum possible output. In other words, achieving full technical efficiency signifies a production unit operating at full capacity. Tzouvelekas et al (2001) also provided two useful definitions for measuring technical efficiency in agriculture. Firstly an output oriented measure, defined as the ratio of maximum feasible output given the observed production technology and the observed input use. Secondly, they define the input oriented measure, defined as the ratio of minimum feasible inputs given the observed production technology and the level of output demanded. More generally, agriculture has frequently been accused of lacking technical efficiency, meaning that costs could be reduced further and output levels bolstered by using available resources more efficiently. Thus, a primary objective of this research is to identify factors that influence optimum efficient productivity. Specifically, the purpose is to determine the elements that enhance efficient production, at the level that maximised profitability.

Furthermore, Headey et al (2010) found that by utilising a production frontier you could measure the dual purpose of evaluating technical change in the form of shifting the frontier, and efficiency change by measuring distance to the frontier. O'Donnell (2010) defined technical change, also known as technical progress, as improvements in the production possibilities set through increased knowledge. He insisted this was a prerequisite of improving efficiency, and to ensure further development of the sector. Interestingly, Ruttan (2002) found that technical efficiency lags behind technical change in agriculture in his research. This may be as a result of the rapid pace of new technological innovations in agriculture or the associated time required for these techniques to become utilised effectively and efficiently. Therefore, improving technical efficiency concurrently with pursuing technical change will bolster the competitiveness of the organic sector as a key objective of future agricultural policy strategies, which is set out in the Food Harvest 2020 plans in Ireland (DAFM, 2010).

Moreover, Headey et al (2010) noted that efficiency change could be positive or negative and this may reflect the volatility in time series measurements. O’Neill et al (2001) defined technical regress as a loss of productivity over time, due to a lag in
technical change or the loss of technical efficiencies. Headey et al (2010) noted that this technical regress represented by a contraction in the production frontier, indicating a decrease in productivity possibilities. However, there are legitimate criticisms of this concept as errors in measurement may represent technical regress. For example, the refusal to adopt emerging technological advances would represent technical regress under some measurement methods. This would indicate a loss of production possibilities in comparison with competitors, yet would remain constant in relation to their specified capacity. Indeed, Headey et al (2010) claimed that it is reasonable to assume technical change occurs quite smoothly and never regresses. However, it is important to note that there are also a variety of other factors that could lead to technical regress such as the loss of land fertility, the health of the producer or enforced policy restrictions to name but a few.

There are a variety of ways to measure productivity in agriculture such as through the estimation of statistical or econometric models. O’Neill et al (2001) and Tveteras and Battesse (2006) noted that the econometric model of stochastic frontier analysis was particularly useful as it illustrates the production capacity of the best practice farm in the data sample, which can be evaluated comparatively whilst accommodating a plethora of variables effectively. Lohr and Park (2007) echoed this view citing the benefits of measuring both technical inefficiency and random shocks such as severe weather patterns under stochastic frontier analysis. Similarly, a key objective of this research is to identify an effective measure of best practice productivity on organic beef farms that can be systemically replicated on a national basis. However, data limitations prevent the use of stochastic frontier analysis, and thus, this is beyond the scope of this research.

5.3 – Productivity Measurement - Issues
Headey et al (2010) lamented an impending crisis in agricultural development with regard to increasing food prices, partially due to productivity concerns. Therefore improving productivity levels is viewed as a vital long term policy objective, as global waste must be eradicated and greater efficiency in production pursued. Indeed, Morgan and Murdoch (2000) noted that technological innovation has historically been
associated with increasing efficiency in productivity. Headey et al (2010) acknowledged that agriculture has the ability to renew or deplete scarce natural resources, and consequently the need to ensure productivity advancements are pursued sustainably will be a key issue for policy makers. This is arguably a prerequisite for further development and expansion of the wider agricultural sector, and thus, may create additional opportunities for the organic sector.

Efficiency measurement in organic agricultural productivity is not a new concept. As noted previously, Pimentel et al (2005) referred to the ‘Rodale Institute Farming Systems Trial’ conducted in the US since 1947, which aims for increased efficiency in productivity in organic agriculture amongst other key objectives. Best (1995), and Tzouvelekas et al (2001) argued that efficiency levels would actually rise in organic systems. However, Sipilainen et al (2008) found that conventional farms scored superior technical efficiency rates with regard to crop output, but this result vanishes when crop diversity is considered. Lampkin (1990) concurred, arguing that the multi functional approach of an organic system required a more comprehensive measurement of productivity as opposed to the specialist systems measurement more widespread under conventional systems. However, the measurement of this collective productivity is complex as commodities may be considerably diverse, and therefore difficult to combine accurately.

Headey et al (2010) was particularly critical with regard to productivity measurement, stating that existing methods are limited in accuracy, and do not adequately represent the intricate multi input multi output production systems such as the organic system. Therefore an effective innovative measure is required to truly represent productivity levels effectively and thus, outline methods to enhance sustainable productivity and eradicate technical inefficiencies. However, Hossain et al (2003) noted, that both conceptually and empirically it is difficult to disentangle the impact of the increased use of inputs when measuring production impacts. In other words, the combination of inputs is often difficult to evaluate as, for example, family owned labour is a problematic aspect to measure effectively, which is an issue also raised by Matthews et al (2011).
Siplilainen et al (2008) argued that organic farms achieve lower technically efficiency than conventional farms, but are actually more technically efficient with regard to their own production technology given the associated restrictions and limitations imposed. Similarly, O’Neill et al (2001) found significant differences in rates of technical change between different types of farms, which is also inevitable when comparing organic farms with conventional systems. Indeed, Lansink et al (2002) argued that organic systems compensate for lower productivity levels, by achieving higher technical efficiency and reduce avoidable losses. Additionally, Lohr and Park (2007) asserted that organic producers are more financially dependent on operating optimally than their conventional counterparts. Therefore the need to eliminate inefficiencies in production is a critical issue for the organic system.

A contentious issue in agricultural debate at present surrounds the share of utilisable agricultural area that could be converted to the organic system and the associated productivity gains or losses entailed. Connor (2008) commented that existing analyses on the productive capacity of organic agriculture estimate that a complete system changeover would provide enough food for a population of between 3 and 4 billion. This is a significant shortfall given recent population estimates of 7 billion (US Census Bureau 2012) and well short of the 9 billion population predicted for 2050 (UN 2009). Therefore a complete system changeover is an unrealistic prospect, but there is undoubted potential for organic production to increase its share of agricultural production and actively contribute to the improvement of current existing agricultural practices, as a result of its associated benefits for sustainability.

Moreover, Connor (2008) criticised studies that overestimated the possible productivity rates of organic systems, citing a lack of organic nutrients to provide enough fertiliser to maintain desired output levels as a major obstacle. For example, specific estimations assume that crop land can continue to produce consistent levels of output, but in reality it takes considerable lengths of time to recuperate and regenerate the organic matter required. However, Lotter (2003) found no evidence that organic crop yields would
perform weakly in comparison with conventional yields. Furthermore, Ching (2008) found that ecological production, organic been a prime example could compete with conventional yields in developed nations and even exceed them in low input developing countries. In the case of the latter, it is more likely that developing countries apply on farm natural inputs, as chemical fertilisers would not be so widely available or too costly.

Indeed, conceptually, organic farming is an extensive, low input-use activity, that requires the reduction of all purchased inputs to be used solely as a complementary means, implying that the objective of the farmer is to develop self-sufficiency with regards to fertilisation using as much as possible of ‘on-farm’ means (Tzouvelekas et al 2001). They concluded that replacing chemical fertilisers with purchased organic substitutes would only result in marginal improvements for production costs. Therefore, theoretically, thorough adherence to the application of rigorous organic farming principles may result in economic advantages, primarily cost reductions (Clavin and Moran 2011). This would have significant implications for profit margins.

Interestingly, Sauer and Park (2009) found that there was significant overproduction in Denmark on organic farms as producers sought profit maximisation through intensive production regardless of market signals, and therefore reinforcing trends that have been previously witnessed in conventional production, particularly in the 1980s. In other words, farmers increased their production levels at rates that exceeded demand levels, as a result of their belief in the principle of more output would lead to more profit. Indeed, Sauer and Park (2009) continued that this philosophy led to overly ambitious expectations of the sector in Denmark. However, the unexpected shortage of demand meant that there were significant production surpluses, leading to the oversupply, without dual diligence for market trends.

Conversely, the experience of New Zealand suggests that a market oriented approach considerably improved productivity and efficiencies in agriculture. Indeed, O’Donnell (2010) noted that the removal of price support and input subsidy schemes could actually
have a positive impact on scale and total factor productivity. Accordingly, the impact of consumer demand is a key aspect to further development of the organic sector and appropriate policy measures are required to ensure that this demand is stimulated and fulfilled. For example, there could be an improvement in the education of the consumer with regard to the benefits of organic food consumption, through improved communication strategies, an area currently under research by Bord Bia (2010) in Ireland.

Connor (2008) proposed a balanced argument on the benefits of combining organic production with the permission to utilise some degree of conventional methods to assist in exceptional circumstances. He spoke of the need to strike equilibrium between low intensity production and the ability to use chemical fertilisers to replace organic fertilisers when necessary. However it is unrealistic to assume organic idealists will accept this proposal, as they strive for whole farm self sufficiency, and therefore would not allow the dilution of their standards, by accepting conventional practices. However, there is a degree of merit in proposing a balanced strategy, and perhaps opportunities for mixed method farming may emerge. In addition, it is also important to recall that productivity and economic viability are but one wing of the three pillared ambitious goal of organic production, the other two been environmentally friendly production and social sustainability (Shreck et al 2010). Therefore, a balanced strategy to achieve all objectives concomitantly is desirable without focusing priorities on a specific area, such as increases in productivity.

In summary, there are many arguments and criticisms of the various existing methods of measuring agricultural productivity, and increasingly so for organic production at present where further research is imperative. It is important to identify the drivers of productivity in order to gauge a greater understanding of the most significant contributors to achieving efficient production. By identifying these drivers, it is envisaged that key aspects can be targeted for further policy attention. Consequently, these key factors can be utilised to encourage systematic best practices and ensure they are replicated to increase the profitability within the sector. This is the objective of the next section.
5.4 - *Drivers of productivity*

There are many factors that contribute to productivity performance and efficiencies. An appropriate combination of these factors will result in optimising productivity and concurrently achieving technical efficiency. Therefore it is important to identify these factors to classify specific areas of importance and thus, categorise the most significant drivers of productivity. An overview of these possible drivers and their significance is explained in the following sub sections.

5.4.1 - *Population*

Ruttan (2002) argued that improving productivity was essentially a precondition of economic growth as the working population needed appropriate sustenance. Therefore population estimations can assist the assessment of future demand levels that productivity rates can strive to achieve. Accordingly, demographic fluctuations must coincide with productivity targets. Moreover, Ruttan (2002) noted that in countries that are approaching their technological frontier, the demand for food will rise only slowly. Therefore, increasing productivity rates must be initially intended for expanding export markets, or productivity advances will lead to overproduction and increased wastage and inefficiency. For example, the emerging markets in China and India will offer further opportunities as their dietary preferences change towards a more meat orientated diet (Matthews 2008).

5.4.2 - *Technology*

O’Donnell (2010) argued that there are two overriding drivers of agricultural productivity, namely technical progress and technical efficiency improvements, as discussed previously. The ambition must be to pursue these drivers concurrently and ensure that efficient productivity levels are achieved systematically. However, the role of technology is critical to this process as market principles may dictate specific areas that will acquire prominence in these technical advancements. Ruttan (2002) argued that scientific and technical resources will be directed to sustaining or enhancing the productivity of those factors that are relatively scarce and expensive. In other words,
resources most exploitable for achieving economic profit will be the areas that will receive priority in future technological advancements.

Similarly the availability of substitutes such as genetically modified food will dictate the pace of productivity improvements for specific agricultural commodities such as organic food. However, Ruttan (2002) noted that advances in agricultural applications of genetic engineering will almost certainly be slowed by developed country concerns about the possible environmental and health impacts. Accordingly, this may prove a more contentious issue in the medium or longer term as opposed to the immediate short term, as further research is necessary at present.

5.4.3 – Land and Stocking Density
Land is a key aspect of productivity achievements, as it is a fixed resource that relies heavily on effective soil biology for organic systems. Ruttan (2002) noted that countries more restricted by land constraints would have difficulty in achieving significant growth rates in agricultural productivity. This issue may increase in relevancy as utilisable agricultural area competes to maintain its share of rural land from the wider societal interests as noted by Tovey (1997) and Firbank (2005). On this basis, it is imperative that productivity rates be increased to compensate for possible agricultural land reductions.

Lohr and Park (2007) commented that acreage flexibility has a significant positive effect on the value of organic production. However, this is likely to be beyond the control of the farmer, and that this in turn may increase the possibility of a demand for certified organic land, particularly in the rental market. Furthermore, Loureiro (2009) noted the impact of the location of the holding and the associated weather patterns can have on productivity. This can be a positive effect which bolsters productivity rates, or a negative effect that constrains output levels, depending on the stocking density of the holding. The survey investigates this issue further.
Vollrath (2007) also noted the importance of land quality with regard to bolstering agricultural productivity. Indeed, a key driver of productivity for organic agriculture is the usage of soil improving inputs, preferably in a self-sufficient on-farm system as outlined by Lohr and Park (2007). In their study, they found that farms scored technical efficiency levels of 0.788 on average with a score of 1 representing full efficiency. Furthermore, they stated that studies that omit soil quality factors will overestimate productivity rates, by undermining agri-environment qualities, and thus, neglect the sustainability of productivity rates. In essence, the disregard of soil structure and biology, will inevitably lead to productivity losses. This is also analysed in the primary research.

Moreover, Sipilanian et al (2008) noted that during the conversion period, efficiency rates weaken on organic farms, but these can be regained over time as farmers familiarise themselves with their new system requirements. Giovannucci (2007) estimated that yields would return to satisfactory levels or even improve in the third year since adoption depending on the competence of the farmers and soil conditions. This query is also accommodated in the survey, as specifically fully symbolised producers were investigated, and thus their conversion period had lapsed.

Thus, the importance of land and soil management is critical to the productivity on organic beef farms, as it dictates the stocking density, which ultimately leads to the delivery of output. Lampkin (2001) noted the usefulness of stocking density as an indicator of productivity, as it is a volume laden measure that accounts for various aspects of farm performance. The capacity of the land to accommodate stock is a key management task of producers, and thus an effective strategy is essential. Stocking density also indicates the wider aspects of farm management such as cost control, breeding and planning, as higher densities can imply the efficiency of production if high quality produce is delivered. As such, the need to ensure an effective land management strategy is a key aspect of profitability, and therefore is analysed in greater detail in later chapters.
5.4.4 - Labour
Labour is another factor that can have a significant influence on agricultural productivity. Ruttan (2002) conducted research in this area and found that labour productivity could be increased by several multiples by proactively investing in human capital and by more intensive use of technical inputs. However, it is important to note that gains in labour productivity will be dependent on the rate of growth in demand for labour in the non-farm sectors of the economy, which in turn creates the incentives for the substitution of mechanical technology for labour in agricultural production. Ruttan (2002) continued that as the agricultural labour force declines, the need to achieve improved labour productivity is vital. However, Matthews et al (2011) noted the difficulty of measuring family owned labour as tangible economic costs.

Lampkin (2001) and Loureiro (2009) stressed that the experience of the farmer and whether they were combining production with off-farm employment had a considerable impact on their labour productivity. However, Loureiro continued that particular specialist areas such as livestock production required relatively little improvements in labour productivity as it is a mainly extensive farming practice. However, Morison et al (2005) argued that organic production would increase labour requirements, particularly on mixed enterprises. Mayen et al (2010) concurred stating that organic farms are more labour intensive, but implied that further productivity improvements are achievable.

5.4.5 – Research and Education
In order to achieve advances of productivity in organic agriculture, it is imperative that research and education are intensified in order to improve knowledge and expertise in this area (Vollrath 2007). Tveteras and Battese (2006) commented that knowledge spillovers could reduce technical inefficiencies for agricultural producers. They continued that knowledge acquisition was an inevitable positive externality from agricultural production, as best practice methods would be replicated in developing farms. Matthews et al (2011) also argued that research and innovation led to improved technologies that increased productivity. Therefore, the need to advance research into productive techniques is conclusive. However, currently the research dedicated to organic farming productivity, particularly in Ireland, is severely inadequate.
More generally, Avila et al (2002) commented that agricultural biotechnology research can contribute to increased productivity and to sustainable cropping systems, thus improving responsible use of resources and also safeguarding the environment. Avila et al (2002) continued that biotechnological research would reduce intensive input use and improve resistance to disease and herbicides. This research could link in with organic agricultural research with a view to achieving similar key objectives. Accordingly, there are possibilities to pool research efforts to ensure organic production remains on the policy agenda. Indeed, Hossain et al (2003) found in their research into rice production that effective research continues to have extremely large economic payoffs, so it is imperative that organic agriculture is not neglected in future research.

Similarly the level of education of the producer and the relationship to productivity must be investigated. It has been assumed that there is a positive relationship between the level of education and the productivity levels achieved by producers. Ching (2008) found that a strengthening of agricultural knowledge and science would contribute to addressing environmental issues whilst maintaining and even improving productivity. Lio and Liu (2008) also argued that education would lead to increasing marginal returns from capital stock from producers as they applied greater expertise. Likewise, organic production could also benefit from further education and training for producers as the system continues to evolve.

Furthermore, consumer education in relation to the benefits of organic food could be further improved. Henchion and McIntyre (2008) noted the importance of consumer awareness in driving the organic market. They found that almost 100 percent of consumers are aware of the organic label in Ireland but lamented that this did not necessarily translate into retail sales. This awareness needs to be supplemented by facts on the benefits of organic produce. Bord Bia (2010) have continued research into the marketing of organic food and outline specific areas that could be improved such as reinforcing the advantages of organic food for health and environmental reasons,
increasing visibility of products, and escaping the luxury imagery that consumers may associate with organic food.

5.4.6 – Support Services
O’Neill et al (2001) found that utilising support services such as agricultural advisory offices had a positive influence on productivity performance. Lohr and Park (2007) commented that these organisations were important in ensuring updated effective information was provided to producers. Accordingly, this reinforces the need for the widespread availability of digestible information to ensure farmers have the opportunity to maximise their efficiencies by imitating best practice methodologies. The Department of Agriculture, Food and Marine, Teagasc, Bord Bia and the various national certification bodies such as IOFGA and Organic Trust could contribute to this process by improved communications with producers and consumers. However, Lotter (2003) warned that uninformed or uncooperative extension agents could also act as a constraint to productivity in US organic farms. Therefore, the need for increasing expertise is crucial for these bodies. The role of supporting bodies is also addressed in the primary research.

5.4.7 – Institutions and Investment
Vollrath (2007) stressed the importance of the institutional environment on agricultural productivity. Indeed, Lio and Liu (2008) concluded that effective governance was crucial for agricultural productivity as institutional structures can influence market activities and implement key macroeconomic policies benefitting areas such as rural infrastructure and low cost competition. This institutional influence is also critically important for advances in productivity on organic farms, by creating an environment to facilitate targeted investment.

Sauer and Park (2009) found that increasing investment, particularly an increase in subsidy payments, had a positive impact on a farms technical change and increased technical efficiencies over time. Headey et al (2010) concurred arguing that there is a significant relationship between public agricultural expenditure and total factor
productivity growth. Conversely, Lio and Liu (2008) found that agricultural performance is often constrained by poor institutions and polices that impede the adoption of appropriate technologies. Thus, it can be argued that that agricultural productivity is profoundly dependent upon investment (Lio and Liu 2008, Sauer and Park 2009). O’Donnell (2010) agreed, citing the ability of policy makers to enhance or retard productivity levels, through funding, education and extension services. However, he warned that funding can be wasteful if firms are approaching full technical efficiency. Moreover, increased total investment is dependent on available funding which may not persist indefinitely.

Moreover, investment at the farm level is important in relation to improving productivity performance. Individual investment patterns may imply the proactive efforts of farmers to improve their production capacity, whether through investments on land, livestock, buildings or machinery. Investing in land and livestock may prove beneficial to a farms stocking density, by improving the capacity of the land to produce adequate levels of grassland, or by draining excess water, whilst the employment of appropriate breeds could significantly improve productivity, such as the Short Horn breed on mountainous land. Investments in buildings may be mandatory under the housing conditions of the organic scheme, where as investment in machinery is intended to reduce levels of labour or transport costs depending on the machine in question. Therefore, the investment patterns reflect the ambition and drive of the producer, and as such may have significant ramifications for productivity in the organic beef sector.

5.4.8 – Biodiversity and the Environment
Sipilanian et al (2008) argued that the omission of biodiversity and environmental responsibilities in the analysis of agricultural efficiencies creates biases that legitimise increasing productivity in the short term to the detriment of the long term sustainability of resources. In other words, the exclusion of these factors can create a misleading illusion that further intensification must be pursued. However, tangible progress in this area is dependent on whether these issues are valued goals of society, as queried by Sipilanian et al (2008). Moreover, Lohr and Park (2007) stressed that value indicators are required to measure accurate agri-environmental production efficiencies, based on
this assumption that intensive agricultural systems have prioritised productivity at the expense of environmental protection and sustainability. Similarly Firbank (2005) commented on the need to strike a balance between biodiversity and productivity, and found that whilst there is general consensus on the need to enhance biodiversity, the methodology of achieving this is contested by policy actors. A balanced perspective on effective biodiversity enrichment coupled with efficient productivity is desirable, yet very difficult to attain given the assumption that rational farmers aim to maximise profitability. This policy debate will continue to increase in intensity in the coming years. These issues are also examined in the primary research as to their significance at constraining productivity.

5.4.9 – Producer Profile
Loureiro (2009) noted that there are also important factors external to farm management that may have a significant impact on their productivity. For example, health issues are critical for productivity performance as producers need to execute the physical labour required on organic farms. In fact, Shreck et al (2006) implied that organic agriculture is a healthier working environment than conventional agriculture in the US. Accordingly, the omission of harmful chemicals and fertilisers on organic systems may prove beneficial on health grounds.

Moreover, Tveteras and Battese (2006) noted that the age of the farmer had a significant impact on productivity achievements. On the one hand, farmers gain expertise through experience. However, on the other hand, research suggests that upon reaching a particular age, technical efficiency becomes reduced, possibly as a result of health implications as noted above. O’Neill et al (2001) identified this particular age as 49 years as the turning point when the previous positive relationship between age and efficiency is reversed.

5.4.10 – Other Drivers
Lohr and Park (2007) and Vollrath (2007) found that increasing farm size and scale were positively related to improved productivity on organic farms as self sufficient soil
inputs would be more readily available and thus improve efficiency levels. However, they also acknowledged that this would likely be a divisive issue at policy level with smaller scaled farmers, a central component of organic production ideology, likely to face market exit if larger scaled production was prioritised. Nonetheless, Lohr and Park (2007) noted that management specialisation and crop diversification have been shown to have significant positive effects on the value of organic production.

Interestingly, Headey et al (2010) found a significant correlation between agricultural price reforms and total factor productivity growth. This reinforces the assumption of farmer’s rationality of producing increased quantities of output for higher available price receipts, and thus, increased profits. Moreover, Sauer and Park (2009) found that rising veterinary expenses had a positive impact on productivity. They argued that producers responded by improving animal care by controlling and eliminating the risk of disease in order to avoid using veterinary services.

5.5 - Conclusion
Productivity measurement and advances in technical efficiencies are key components of the further development of agricultural sectors, and therefore for the organic sector. However, these concepts are complex to measure accurately and hence, many commentators have debated the limitations of existing methods and criticised studies that provide inaccurate estimations on productivity possibilities. Currently, the existing literature in Ireland measures productivity in organic agriculture on the same basis as conventional agriculture, which may provide a misleading representation given the stricter rules and regulations. Therefore a new measure that incorporates the wider issues of organic agriculture is necessary to truly reflect the technical efficiency and productivity of the system in Ireland. Accordingly, a core objective of this research is to incorporate the broader issues affecting productivity, such as the managerial factors, motivations, policy influences and ownership factors to develop a superior representation of productivity results for the organic beef sector in Ireland.
Moreover, there are a number of contradictions surrounding the effective assessment of organic productivity advancements. For example, on the one hand environmental and extensive production policies curb productivity possibilities, but on the other hand existing market opportunities and increased numbers of producers should incentivise increased production. The need to strike a balance in these areas will be a key objective for agricultural policy makers in the future.

A number of possible drivers of productivity were outlined to investigate their influence. Factors such as demographics, economics, governance, research, biodiversity, and the environment all contribute to the production process. However, a targeted approach that employs resources to prioritised productivity drivers would be a valuable policy tool to support systemic sector improvements for organic beef productivity. This is the key focus of the subsequent primary research.

However, prior to conducting the survey, it is necessary to evaluate the existing data available for organic farms. This data was analysed from the National Farm Survey, and the significant trends are presented in the next chapter.
Chapter 6-Analysis of the National Farm Survey Data

6.1 Introduction
The National Farm Survey (NFS) is an official agricultural analysis conducted by Teagasc annually in Ireland. The NFS is the longest running project in Teagasc, having been first collected in the 1960s (Teagasc 2012). It records a cross sectional representation of farms nationwide and evaluates performance, with a particular focus on the financial data. Moreover, the NFS delivers Ireland’s statistical data on output, costs and incomes across a representative sample of Irish farms to the EU-Farm Accountancy Data Network in Brussels (Teagasc 2012). Accordingly, data recorders collect statistics from randomly selected farms nationwide, to analyse the trends and developments in the agricultural sector. Inevitably under this approach, a number of organic farms are also examined, although these are few in number.

The purpose of this chapter is to examine the data on organic farms in the NFS over recent years. As a consequence of the low numbers involved, these statistics and relationships are not intended to represent the total organic sector. However, there are some interesting relationships and trends, that are interpreted as a catalyst for framing the questionnaire in the subsequent primary research phase of this thesis.

The structure of this chapter is that initially a brief outline of the objectives and role of the National Farm Survey is provided. This is followed by an overview of the available statistics and trends of the organic beef farms recorded in Ireland over the years 2009, 2010 and 2011. Subsequently, further analysis is conducted on 5 individual farms data recorded over the reference period. Finally, the summary outlines the significance as well as the limitations of the findings.
6.2 National Farm Survey

The National Farm Survey (NFS) has been collected on an annual basis by Teagasc since 1972, and its core objective is to determine the financial performance of Irish farms. Newman and Matthews (2004) described it as a survey of a stratified representative sample of Irish farms, collected randomly in conjunction with the Central Statistics Office in Ireland. Approximately 1,000 farms are recorded and subsequently weighted to represent the national population of 105,000 farms (Hennessy et al 2011). The NFS is undoubtedly the most comprehensive agricultural survey conducted in Ireland and provides some useful indicators of productivity and associated incomes. However, it is also limited by prioritising the financial performance of production, without necessarily attributing equitable focus on the managerial factors that also affect productivity (Lampkin 2001).

Data is also collected on organic farms under the NFS. A wide range of variables are recorded, including costs, income, stock, utilisable agricultural area, socio economic data, labour, and typology. This data is analysed to examine the performance of the overall sector. Moreover, a hierarchy of the most profitable farms can be determined, which can be adopted as a benchmark for, efficient productivity achievements, and areas that require further improvement. This is utilised as a foundation to analyse the key financial drivers of productivity in the organic beef sector, prior to investigating the key managerial, technical and political influences that are examined in greater detail in the subsequent chapter.

6.3 – Trends in the organic beef sector

Data was analysed under the reference period of 2009, 2010 and 2011. With respect to fully certified, organic beef producers, 14 farms were observed in 2009, 15 farms in 2010 and 10 farms in 2011. The results of the performance of these farms are presented in this section.
6.3.1 Utilisable Agricultural Area
The number of utilisable agricultural hectares, defined as arable and pasture land (Europa 2012), observed during these years is illustrated in the following chart:

Figure 6.1: Organic UAA

![Utilisable Agricultural Area Chart](image)

Source: Adapted from the National Farm Survey 2010

Given that approximately 1.2 percent of total utilisable agricultural hectares was farmed organically in Ireland in 2011 (Clavin and Moran 2011), it is unsurprising that the number of hectares of organic pasture land recorded under the NFS is relatively few. However, this does provide an indication of productivity possibilities on the area under observation. Interestingly, the average utilisable hectares on record is above the true sector average of 37.63 hectares for each year of the reference period.

6.3.2 –Gross Margin
Gross output refers to the value of goods produced on the farm unit. Teagasc (2012) define gross output for the NFS as the value of total sales less purchases of livestock, plus the value of farm produce used in house, plus other receipts such as for hire work, or direct payments. The gross output recorded for the 15 organic beef farms indicated a gradual increase in productivity year on year. However, by extracting costs from the gross output we can calculate a superior measure, namely the gross margin. This
illustrates the margin producers accrue directly from their enterprise, excluding their overhead costs (Teagasc 2012). Accordingly the total gross margin statistics for the sector are as follows:

**Figure 6.2: Organic Gross Margin**

![Gross Margin Chart](Source: Adapted from the National Farm Survey 2010)

Evidently, 2010 results indicate the highest gross margin on average from the farms on record. Interestingly, the divergence between 2010 and 2011 is reduced on average to €5,437.79, as opposed to the data between 2009 and 2010 recorded as €10,617.52, despite the fewer number of farms. This could be as a result of higher market prices for produce, reduced costs in 2011, or favourable production conditions such as favourable weather patterns. Nonetheless, it can be argued that efficiency levels improved in 2011.

**6.3.3 - Costs**

Another critical aspect of production is cost control. Direct costs are defined as costs directly incurred at the production of a particular enterprise, and overhead costs are costs not directly connected to the enterprise. The summation of both costs is the total costs (Teagasc 2012). The following chart illustrates the total costs for the organic beef sector over the reference years, with the associated ratios of direct and overhead costs:
Clearly, overhead costs account for the largest ratio of total costs across the reference years. Consequently, reducing these costs would significantly increase profitability on organic beef farms. However, the lower ratio of direct costs is considered a positive aspect of organic production, and could be viewed as a key incentive to adopt organic beef production, as income levels could be bolstered (Clavin and Moran 2011).

6.3.4 – Family Farm Income
However, the most superior measure of financial performance on organic farms is family farm income (FFI) as recorded in the National Farm Survey, which is defined as gross output less total net expenses (Teagasc 2012). This measure incorporates the disposable income that accrues to the farm from production. Family farm income statistics for the organic beef farms in the reference years, are displayed in the following chart:
This chart reveals that 2011 was the most lucrative of the reference years on average with a marginally higher return to the 10 farms. This evidence epitomises the recent optimism of the organic sector, as income has gradually increased year on year over the reference period. Furthermore, it incorporates the importance of financial support payments as 2011 records a €341.82 increase on 2010, counter intuitive to the gross margin results. However, although this data is not intended to represent the organic beef sector in its entirety, it does indicate the possibility of a viable enterprise with regard to organic beef production.

Nonetheless, the previously noted weighting system included in the national farm survey, indicates the level of representativeness of each farm surveyed. Teagasc (2011) explained that the weights assigned to farms accumulate to represent the entire farming population which was estimated at 105,000 farms in 2010. However, as the participating farms change year on year, farm sizes may vary, and farms may adopt alternative enterprises on a given year. Consequently, the weights may adjust year on year, even for the same farm holding, to accommodate the latest nationwide sample. Furthermore, a
farm may have been included in the NFS, but if their data is not published, then no weight is attached to that particular farm. Accordingly, 5 of the 14 farms in 2009 represent 377.084 of farms, 9 of the 15 farms in 2010 represent 596.7388 farms, and 6 of the 10 farms on record in 2011 have assigned weights, which accumulate to a total of 715.4666. This means that those farms represent approximately 715 agricultural farms nationwide, although these are not intended to specifically represent organic farms.

6.4 – Individual farm data
As noted previously, the NFS is conducted on an annual basis on a randomly representative selection of farms nationwide. Consequently, some farms may be recorded on a given year, and then omitted the next. However, in relation to organic beef farms, five farms were recorded for the three reference years under examination. Therefore, their specific data offered an insight into the financial performance of organic farms on a micro level. Their output, costs, incomes and ambitions could be comparatively analysed, to gain an improved understanding into the operation of each farm. Although these results are not intended to represent the farms more generally, this data does provide an indication of possible financial returns that could be achieved on organic beef farms. Accordingly, the analysis of these particular farms on a case study basis was a worthy addition to this research. The performance of these farms is presented in the following sub sections.
6.4.1 – Gross Margin
This is a useful measure to gauge the different scales of production among the five farms. The results for gross margin levels are displayed in the following chart:

Figure 6.5: Case Study Gross Margin

![Gross Margin Chart]

Source: Adapted from the National Farm Survey 2010

Evidently, farm E achieves the largest gross margin of the sample. This could be attributed to a variety of causes such as the larger scale of production or superior available resources. Indeed, farm E operates on 92.61 hectares of land in 2011 and 2010 and 97.2 in 2009. Farm C is increasing its gross margin year on year over the reference period despite an invariable UAA of 67.20. Similarly farm A has shown an increase of 46 percent in output from 2010 to 2011 on a constant 44.8 UAA. Farm B has produced consistent levels of output over the reference years over a its UAA of 17 hectares, which is relatively small scale. Finally farm D shows indications of a gradual decline in gross margin over the reference years on their UAA of 50.2 hectares.
6.4.2 – Costs
As argued previously, controlling costs is a key component of efficient, profitable production. Accordingly, the cost structures of these five farms provide some interesting analysis. The following chart illustrates the ratios of both direct and overhead costs in terms of total costs on each farm:

Figure 6.6: Case Study Costs

![Chart illustrating total costs for farms A to E]

Source: Adapted from the National Farm Survey 2010

Clearly, overhead costs account for the larger ratio of total costs, which is consistent with the data for the overall sector. Thus, it can be argued that the need to reduce overhead costs must be a key priority for future production. In this case, Farms C and E incur the higher costs, where as farm B incurs the lowest as a result of its smaller scale production system.
6.4.3 – Family Farm Income
Over the years 2009, 2010 and 2011, the following table demonstrates the accumulated Family Farm Income (FFI) results for the five farms in question over the reference period:

Table 6.1: Case Study FFI

<table>
<thead>
<tr>
<th>Farm</th>
<th>FFI</th>
</tr>
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<tbody>
<tr>
<td>Farm A</td>
<td>10,459.85</td>
</tr>
<tr>
<td>Farm B</td>
<td>14,808.60</td>
</tr>
<tr>
<td>Farm C</td>
<td>13,954.38</td>
</tr>
<tr>
<td>Farm D</td>
<td>82,553.68</td>
</tr>
<tr>
<td>Farm E</td>
<td>81,934.88</td>
</tr>
</tbody>
</table>

Source: Adapted from the National Farm Survey 2010

From this table it is clear that farms D and E are earning the highest income, and must operate a much larger scale production system. However, further analysis illustrates the gradual decline in gross margin on Farm D in its FFI data year on year, whilst Farm E is experiencing an upward trend. Farms A and B are earning modest incomes, where as farm C performed at a loss of €10,562 in 2009, partially due to a €33,000 investment on land improvements, before returning to positive income in 2010 and 2011 of €10,244 and €14,273 respectively. Perhaps, assuming the investment was successful Farm C will continue to increase its profitability in the short term.
Interestingly, when the family farm income is divided by the number of utilisable agricultural hectares to remove scale discrepancies, the following chart applies:

**Figure 6.7: FFI/UAA**

From this chart it is evident that farm D earns the highest income per hectare, and significantly outperforms farm E on a per hectare basis, despite its gradual reduction in gross output. Moreover, farm D is representative of 68.46 farms nationwide in 2009, 54.72 farms in 2010 and 77.52 farms in 2011 according to the weighting system applied under the NFS. Farm B achieves an income per hectare comparable to farm E, despite the much smaller scale of production. Overall farm A is performing at the lowest income, although 2011 indicates improvement with €182.90 per hectare recorded on its 44.80 hectares. Farm A is representative of 51.14 farms in 2009, 74.44 in 2010 and 99.75 in 2011. The weights for the other farms were unavailable for the three consecutive years under observation.

*Source: Adapted from the National Farm Survey 2010*
6.4.4 – Investments
There were some interesting divergences among the investments on each of the five farms. Investment patterns may be interpreted as an indication of the ambition of the producer in question. The following chart illustrates the differences in total investment in relation to machinery, buildings, land improvement and livestock investments:

Figure 6.8: Case Study Total Investments 2009-2011

From these charts, it is evident that Farm E is actively investing in all areas of its farm with the exception of land improvement, whereas Farm B is not investing significant amounts. Perhaps, farm C signals the greatest intention of increasing its production capacity, given their investment patterns, and specifically their investment in land improvement. Clearly, these investments contributed to their increased costs in the short term, and therefore reduced their family farm income levels. However, these investments would be expected to contribute to higher yields in subsequent years, which appears to be the case over the income levels recorded over the reference period.
6.4.5 – Stocking Density

Stocking density can be a useful measure of productivity. It is a volume laden indicator (Lampkin 2001), that provides indications of the intensity of production, land capacity and cost control. The NFS collects data on stocking rates simultaneously with the financial data. However, financial data records were not provided in detail in the primary research of this thesis, but stocking density was recorded on a cross sectional basis. Thus, the purpose of this section is to outline the stocking intensity of the farms under the NFS so the two data sets can be compared using this method. Accordingly, this section presents the stocking density of the five farms recorded over the reference years 2009, 2010 and 2011. Livestock units (LU) are measured on the NFS as follows:

**Table 6.2 Livestock Units**

<table>
<thead>
<tr>
<th></th>
<th>LU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suckler Cows</td>
<td>0.9</td>
</tr>
<tr>
<td>Stock Bull</td>
<td>1.0</td>
</tr>
<tr>
<td>Heifers in calf</td>
<td>0.7</td>
</tr>
<tr>
<td>Calves under 6 mths</td>
<td>0.2</td>
</tr>
<tr>
<td>Calves 6-12 mths</td>
<td>0.4</td>
</tr>
<tr>
<td>Cattle 1-2 yrs</td>
<td>0.7</td>
</tr>
<tr>
<td>Cattle 2+ yrs</td>
<td>1.0</td>
</tr>
</tbody>
</table>

(adapted from the Teagasc 2007 User Manual)
The total livestock unit results are presented in the following table:

Table 6.3: Case Study Stocking Density

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Farm A</td>
<td>44.8</td>
<td>12.42</td>
<td>10.18</td>
<td>10.61</td>
<td>0.247</td>
</tr>
<tr>
<td>Farm B</td>
<td>17.0</td>
<td>8.5</td>
<td>7.79</td>
<td>7.14</td>
<td>0.459</td>
</tr>
<tr>
<td>Farm C</td>
<td>67.2</td>
<td>79.5</td>
<td>68.94</td>
<td>70.1</td>
<td>1.084</td>
</tr>
<tr>
<td>Farm D</td>
<td>50.2</td>
<td>27.78</td>
<td>21.76</td>
<td>12.07</td>
<td>0.409</td>
</tr>
<tr>
<td>Farm E</td>
<td>94.14</td>
<td>53.89</td>
<td>47.03</td>
<td>52.38</td>
<td>0.542</td>
</tr>
</tbody>
</table>

(adapted from Teagasc National Farm Survey 2010 data)

From this table, it is clear that farm D is reducing its stocking rate significantly at a level of 43 percent over the three years. Farms A and B have maintained their stocking density, and farms C and E have varied their stocking rate modestly over the years in question. The final column divides the average number of livestock units by the number of hectares to provide a superior indication. However, the primary research does not distinguish cattle under 6 months, and thus may slightly overestimate the stocking density.
The following chart illustrates this data as number of livestock units per utilisable agricultural hectares on an annual basis:

**Figure 6.9: Case Study Stocking Density**

![Stocking Density Chart](image)

*Source: Adapted from the National Farm Survey 2010*

From this chart, it is evident that Farm C has the most intensive production at just over 1 unit per hecane. Farm A is the lowest stocked over the reference years, and the gradual reduction of stocking density on farm D is also evident. Interestingly, the stocking densities are lower than the recommendations of the organic advisors for 1-1.4 units per hectare (Teagasc 2006).

**6.5 – Implications**

The data from the National Farm Survey provides useful insights into the financial performance of a selection of farms in the organic beef sector in Ireland. Despite the limited numbers of organic farms observed under the NFS, some trends among them are evident, which raise some important issues to investigate in the primary research. These themes are presented in the following subsections.
Income, Margins, and Costs

Average family farm incomes are gradually increasing on an annual basis, and direct costs are proportionately lower over the years observed. On the latter point, lower direct costs, that is costs incurred from the production, is seen as a key advantage of the organic system (Clavin and Moran 2011). However, it is imperative that overhead costs are reduced to increase profitability. Also interestingly, the average gross margin in 2011 indicated a gain in productivity efficiencies as it retained 83 percent of its gross output, as opposed to 79 percent in 2010 and 82 percent in 2009. Concurrently, although 2010 recorded the highest average gross output and average gross margin for the years on record, it also reflected the largest inefficiency in production. Improving these efficiencies is a key prerequisite to the further development and success of the sector.

However, although these trends are not intended to represent the wider organic sector, they do provide an indication of the financial performance from specific farms, and outline productivity issues that could be applied to larger samples, such as the need to improve efficiencies and manage costs as argued by Matthews et al (2007). Moreover, the need to pursue technical efficiency improvements concurrently with technical change should augment the viability of the organic beef sector (Lansink et al 2002, Lohr and Park 2007, Siplilainen et al 2008). A proactive approach to embrace progressive technological advancements, whilst ensuring optimum individual performance will have a positive effect on profitability achievement.

Moreover, the importance of direct payments as advocated by Connolly et al (2008) and Clavin and Moran (2011) is evident given the results of the family farm income data in comparison with the gross margin. Thus, the reliance on additional support from policy appears a key factor in the viability of these farms, and as such will be investigated further in the survey.
Stocking Density

Moreover, stocking densities are low on the recorded organic farms, with an average of 0.548 livestock units per hectare recorded on the five individual farms, which is much lower than that recommended by Teagasc (2006). This may be due to a number of reasons such as stocking restrictions, land limitations, access to investment capital, or a lack of marketing channels among other concerns. Indeed, the heterogeneity of organic farms as advocated by Tovey (1997), Pannell et al (2006) and Hazel and Wood (2007) implies that each farm has different experiences. Nonetheless, this lower stocking density offers justification for further investigation given that Lampkin (2001) outlines its significance as a measure of productivity, and thus is also addressed in the primary research.

Case Study

The evidence from the case study data on the five farms recorded on the NFS, provides some valuable findings regarding the individual performance of specific farms. These farms were diverse with regard to farm size, scales of production, investment patterns, and in levels of income accrued from their production. Unsurprisingly, the farms displayed differences in relation to ambition (Willock et al 1999, Vanclay 2004), with farm C actively investing to improve their farm, and farm D showing a gradual decline in output, despite its superior efficiency. Farm B was relatively small scale, whereas farm E was large scale. Farm A was closest to the true population average size of 37.63 as adapted from the Department of Agriculture, Food and the Marine (2010).

Furthermore, the financial results offered an indication into the annual performance possibilities on these individual organic farms. These statistics were useful, as this type of data collection was beyond the scope of the survey conducted for this research, due to the sensitivity of the information required. However, these findings provide a useful foundation, that circumscribes the questions in the primary research, that aim to further examine the underlying factors that impact on productivity performance in the sector, such as the managerial influences asserted by Lampkin (2001). The awareness of
producers on cost control, their motivations, the relevance of scale, the factors affecting productivity, and the influence of market developments are all integral elements of the survey. These factors are not adequately addressed in the NFS.

Limitations of NFS

The key limitations of the data recorded in the NFS is that the wider aspects of farm performance are not incorporated into the analysis. For example, the broader managerial influences of goals, duration, and skills as advocated by Lampkin (2001) are not accommodated. However, although the NFS does not specifically collect this data, it does record the level of education, and investment patterns which offer some indication of ambition. Nonetheless, all these factors are addressed in the survey, as motivations, ambitions, farm management and technical expertise are queried. Additionally, the broader drivers and constraints of productivity are not adequately addressed under the NFS, and as such the importance of these factors is also examined in the subsequent chapter.

Moreover, another key limitation of the NFS is its failure to record significant numbers of organic farms. Just 13 farms were recorded on average over the three year period, and as such are too few to conduct adequate statistical analysis. Furthermore, the farms under observation were not chosen specifically as a representation of organic farms, but as part of a wide stratified sample of all agricultural farms in Ireland (Newman and Matthews 2004). Thus, a more targeted approach would provide more detailed analysis of the organic beef sector.

Thus, the data from the NFS is combined with the results of the survey to provide a comprehensive indication of the important factors of productivity in the organic beef sector in Ireland. The function of the next chapter is to present the results of the primary research.
Chapter 7-Primary Research: Analysis

7.1 – Introduction

The analysis of the National Farm Survey data in the previous chapter raised some pertinent questions in relation to the management, capacity and responsiveness of organic beef farmers. There are key omissions in the survey such as the managerial factors as outlined by Lampkin (2001), the motivations and decision making as researched by Vanclay (2004) and Läpple (2010), or indeed, broader issues relating to the policy influences and the drivers of productivity as discussed previously. The purpose of this research is to bridge this gap in the knowledge by investigating these issues further through a survey.

For this purpose, the paper by Lampkin (2001), was adopted to assist the framing of the questionnaire. Lampkin identified 3 aspects of managerial influences that were paramount in achieving profitability on organic farms. Personal and business goals, time under organic management, and skills and management ability were the three aspects derived. Concurrently, it can be surmised from the evidence presented in the literature review, that efficient productivity is also a key element in achieving profitability on organic farms. Moreover, Lampkin’s report (2001) concluded investment in training and the dissemination of technical information were important elements of the further development of the organic sector. He also stressed the importance of premiums and support for the financial viability of the sector, a point that was resoundingly agreed upon by the participants in this survey. Lampkin also emphasised the importance of clearer information on the efficiency of input use, a mandatory development to ensure that organic farms achieve improved productivity results. These assertions are applicable to this research, and have been addressed in this survey. A combination of these factors, in addition to the associated financial performance on these farms, and thus, their responsiveness to policy are key objectives of this research to investigate the consistent themes. Moreover, the wider concerns of participating farmers were also absorbed through the open ended questions provided, which gave a unique insight into the issues affecting these organic beef farmers.
Accordingly, the survey was formulated to address these issues that surround productivity performance on organic beef farms. The literature review revealed, that research on organic agricultural productivity is severely limited, and thus, required further investigation to identify an effective strategy for optimising efficient productivity, and consequently maximising profitability. Thus, a key goal of this thesis is to identify the underlying principles of the most efficient producer to provide a useful blueprint that smaller producers may choose to imitate. Therefore, this survey investigates these underlying principles to gain an improved understanding as to what factors influence productivity, whilst also identifying the wider factors affecting participating farmers.

The structure of this chapter is that firstly, the data and data collection are described. This outlines the criterion for eligibility and the justification for the survey design, and their representativeness of the sample surveyed. Subsequently the results of the analysis are presented, with the associated interpretations and discussion. Furthermore, the 5 best performing farms are analysed in isolation, in order to observe their specific strategies in acquiring higher sales. Finally, the conclusion summarises the results, and identifies the key themes that are discussed further in the final chapter.

7.2 Data

The questionnaire was intended to comprehensively address the issues affecting organic beef productivity, both broad and narrow as outlined previously. Questions were designed on the basis of the limitations of the literature and National Farm Survey, the findings of the literature review, and upon consultation with Teagasc, to thoroughly investigate the issues affecting the organic beef sector. The various themes were subdivided into seven sections as outlined below:

Section 1 - Farm profile data: This section was designed to profile the farms and participants of the sample for this survey through a variety of questions including age, location, education, duration as an organic producer, and their farm size and enterprise. A broad sample that was comparable to the organic beef sector average was desired.
Section 2 - Motivations of producers: The objectives of this section were to evaluate the underlying reasons that producers adopted the organic system, their key production objectives, their reliance on support, and the factors they perceive as influential incentives and barriers to conversion for organic production. This section provides some useful insights into the aims of the participants that can be related to their personal and business goals, along with their ambition, drive and determination, which are key managerial influences outlined by Lampkin (2001).

Section 3 - Farm management data: The purpose of this section was to outline the key management strategies of each participating farmer, in order to examine the various techniques applied. Accordingly, this focused on the third aspect of the Lampkin (2001) paper that skills and management ability were critical to the achievement of improved profitability. The questions covered a broad range of topics including levels of labour, current stocking rate, breeding, and land management. The responses illustrate the level of diverse methods among the participants surveyed.

Section 4 - Sales receipts: The goal of this section was to create a hierarchy of productivity for the participating farms. Farmers were asked to provide details of their sales over the last 3 years both in terms of monetary receipts, and also in terms of average livestock units sold. However, responses were based on estimations, and consequently, were limited in terms of accuracy. Moreover, some producers had only recently acquired full symbol organic status, and thus had not completed any organic sales. Furthermore, some producer’s stock had been stricken by disease and therefore could not sell their stock as their herd was locked. Nonetheless, some interesting data was collected, and the sales estimations from 2011 provided an alternative indication of productivity, with the 5 best performing farms isolated for further analysis.

Section 5 - The drivers and constraints of productivity: The fundamental objective of this research was to examine the drivers of productivity. Accordingly, the survey sample was provided with a number of possible factors that could influence productivity, which they had to rate on a Likert scale of 1-5 in order of importance. Moreover, participants were also asked as to their marketing channels, and their
estimated premium prices in relation to their outputs. Furthermore, respondents were examined on their intent to increase technical knowledge through formal courses attended.

Section 6 - Supporting bodies: This section examined the frequency and satisfaction rate of participants with supporting bodies for the organic sector, including the Department of Agriculture, Food and the Marine, Teagasc and the national certification bodies. An open ended question was also provided to accommodate suggestions for service improvement. The information complemented the discussion on policy influence, as it provided additional recommendations and criticisms of the current organic scheme, its implementation, and the various actors involved in delivering and improving the organic beef sector in Ireland.

Section 7 - Further comments: The final section of the questionnaire provided an opportunity to contribute any further comments and suggestions from participants, and yielded some interesting insights on the challenges for the organic sector. This information is combined with the findings of the literature review to investigate consistency among the key themes of this research.

These sections ensured that a broad range of information was collected, that provided a comprehensive data set, to ensure effective analysis. A copy of the questionnaire is included in the appendix.

7.3 – Data Collection
The questionnaire was distributed to 36 voluntary participants. The aim was to choose a sample on a semi structured basis, in that it was representative of the typical organic beef farm, yet also accounted for the diversity among farms based on their location, and focussed on fully certified producers. However, results are not expected to be generalised as a consequence of the low number of observations. Indeed, this sample is intended to specifically represent the sample under observation, and thus, the factors they identified as important. These results outline some interesting themes that could be incorporated into a more thorough analysis with a larger representative sample size.
Nonetheless, for the purpose of this sample, three specific criteria were chosen in relation to refining the sample. The key objective was to achieve a sample that was comparable in terms of the national average farm size. Therefore, farms were chosen that resembled the 37.63 hectares of utilisable agricultural area (UAA) which was the average size of organic farms recorded by the Department of Agriculture, Food and the Marine in 2010. However, some smaller and larger farms were also included to incorporate the different scales of production, although these farms did not excessively skew the data set, with the final average size for the sample gathered recorded at 43.11 hectares. Thus, it can be accepted that the farms recorded are typically sized organic farms, as the sample average is in close proximity to the true population average, despite, the limited number of observations preventing a true sector representation.

Secondly, another core objective was to conduct the survey over a broad geographical area in order to determine the various challenges producers faced in relation to soil types, the acquisition of inputs, and distribution of outputs. Therefore 12 counties in Munster, 11 counties in Connaught and 13 counties in Leinster were recorded in the sample, ensuring an adequate diversity of locations within Ireland were surveyed. Moreover, counties in the western region were observed in the majority, on the basis of the clustered organic development as identified by Connolly et al (2008) and the Western Development Commission (2010).

Thirdly, another desired criterion was that each participant was a full organic symbol holder, as converting farms would not yet have achieved a full management system, and consequently may not have acquired the necessary expertise regarding the productivity issues required for this survey. As such, participants must have completed the mandatory 2 year conversion period to achieve the full symbol organic status. The average years as an organic producer collected was 7.37 years for the participants in the sample. This average is consistent with the more recent accelerated phase of conversion to the organic system as evident in the Department of Agriculture, Food and the Marine data (2010).
Initially the participants were selected from the Teagasc national organic beef farm demonstration walks, and subsequently on a face to face basis after recommendations from Teagasc and Organic Trust, aligned to the specific criteria outlined above. These farmers were contacted by phone at first, prior to a brief meeting been arranged. These meetings were conducted at the participant’s convenience, and were approximately 15 minutes in duration. Additionally, 3 farmers replied by email, 1 posted his response and 1 survey was conducted by phone. By meeting with the majority of farmers on a face to face basis, supplementary thoughts and feedback were collected, and any queries relating to the research were addressed instantaneously.

The data was analysed using the IBM SPSS Statistics 19 package, which is an effective research tool for analysing qualitative data. Other software packages, such as E-Views and Microfit were considered, yet were unattainable or inappropriate for this research.
7.4 – Results

The results of the survey are summarised and presented in the following subsections. Further analysis on the best performing farms and discussion on the impact of the findings and the themes identified is provided in the concluding section and final chapter.

7.4.1 - Section 1: Farm Profile

The average age of participating farmers was 49.75 years. The survey was conducted nationwide with the following chart displaying the 36 participants’ representative counties:

Figure 7.1: Survey Locations

![Counts Surveyed Chart]

The average number of hectares farmed was 43.1 hectares (ha), which exceeds the sector average of 37.63 in 2010, as noted previously. Sixty one percent of farmers owned their land, where as the remaining 39 percent leased their hectares, partially at least. Of the farmers, 55 percent were beef only producers where as the remaining 45 percent used a mixed farm approach combining their beef production with various enterprises including sheep, tillage, pigs, and poultry.
However, the focus of this research is on the organic beef sector, and thus, the dominant beef enterprise type employed within the survey sample is presented in the following chart:

Figure 7.2: Survey Production Type

The average number of years farming was 25.65 years, with 7.37 years as the average for organic production specifically. Therefore, approximately 29 percent of the total years farming have been as an organic producer from this sample. Finally the number of years in formal education post primarily level was 6 years on average, indicating that the average participant completed second level education. However, further analysis of this data indicates that 6 participants completed 10 years or more of education, where as 3 years was the most frequent response, and 2 participants indicated that they had no formal education.

Thus, it can be argued that this cross sectional representation of organic beef farmers is consistent with average sized farms in the population, involves a diverse regional spread amongst participants, and exceeds requirements in terms of years as an organic producer, given that 2 years are mandatory for the conversion process. Therefore, all 3 eligibility criteria for the sample have been achieved, and we can be satisfied that this sample is an
appropriate representation of the typical organic beef farms, despite not achieving adequate numbers for a true reflection of the total organic beef sector.

7.4.2 - Section 2: Motivations
This section examined the motivations, objectives, the reliance on support, and the perceived barriers to conversion to the organic system for conventional farmers. The questions were framed to avoid ambiguity by specifying a variety of focussed options. As the majority of questionnaires were completed in person, any queries were answered at that point. Motivations were classified as the factors that incentivised the participants to adopt organic beef production. Objectives focussed on their short term and long term goals on their farm enterprise at present. The barriers to conversion implied what factors may be of concern to potential converters, and also to these participants retrospectively upon the adoption of organic production. Thus, these barriers to conversion offered specific examples that farmers could rank in order of their importance as disincentives. These three elements were distinguished to indicate a thorough impression of the views of the participating farmer.

The first question focused on the factors that were influential in their decision to convert to organic production. Each participant was asked to indicate the importance of a factor on a scale of 1-5. For the purpose of this analysis, responses of 4 and 5 are considered strong factors, 3 is considered indifferent and 1 and 2 are considered weak factors. This ‘Likert Scale’ approach is consistent with the work of Gregoire and Driver (1987) and Tarrant et al (1997).
The specific question asked ‘what were important factors in the decision to convert to organics?’ This implied that specific factors may have been influential, but there was also an open ended option for alternative suggestions from the participants themselves. The results are displayed in the following table:

**Table 7.1: Motivations**

<table>
<thead>
<tr>
<th></th>
<th>Weak(%)</th>
<th>Indifferent(%)</th>
<th>Strong(%)</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Organic Ethos</strong></td>
<td>14.28</td>
<td>20.0</td>
<td><strong>65.71</strong></td>
<td>3.88</td>
</tr>
<tr>
<td><strong>Environmental</strong></td>
<td>2.85</td>
<td>28.57</td>
<td><strong>68.56</strong></td>
<td>4.02</td>
</tr>
<tr>
<td><strong>Health</strong></td>
<td>5.7</td>
<td>31.42</td>
<td><strong>62.85</strong></td>
<td>3.91</td>
</tr>
<tr>
<td><strong>Income Security</strong></td>
<td>19.44</td>
<td>19.44</td>
<td><strong>61.1</strong></td>
<td>3.66</td>
</tr>
<tr>
<td><strong>New Challenge</strong></td>
<td>16.16</td>
<td>19.44</td>
<td><strong>63.88</strong></td>
<td>3.69</td>
</tr>
<tr>
<td><strong>Reduce Costs</strong></td>
<td>11.11</td>
<td>8.33</td>
<td><strong>75.55</strong></td>
<td>4.25</td>
</tr>
</tbody>
</table>

Overall, lower production costs recorded the strongest score on average. Interestingly, a score of 5 was the most frequent response for all factors, with the exception of income security, which registered a score of 4. Some other motivations provided by participants included criticisms of conventional production, to create closer contact with customers, and the availability of funding.
In relation to their key objectives for their organic farm the question asked ‘what are your key objectives in relation to your organic farm?’ The following results were recorded:

Table 7.2: Objectives

<table>
<thead>
<tr>
<th></th>
<th>Weak(%)</th>
<th>Indifferent(%)</th>
<th>Strong(%)</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improve Livestock</td>
<td>8.32</td>
<td>33.33</td>
<td>58.32</td>
<td>3.74</td>
</tr>
<tr>
<td>Increase Organic UAA</td>
<td>63.88</td>
<td>19.44</td>
<td>16.66</td>
<td>2.02</td>
</tr>
<tr>
<td>Learn New Techniques</td>
<td>11.1</td>
<td>27.77</td>
<td>61.1</td>
<td>3.86</td>
</tr>
<tr>
<td>Reduce Costs</td>
<td>0</td>
<td>19.44</td>
<td>80.54</td>
<td>4.44</td>
</tr>
<tr>
<td>Improve Husbandry</td>
<td>2.77</td>
<td>22.22</td>
<td>74.99</td>
<td>4.11</td>
</tr>
</tbody>
</table>

Overall, to reduce costs was the highest scored importance, implying that it is a key objective for these participants, where as the expansion of agricultural land as organic is less so.

The significance of direct payments to income security in organic production was also examined, and the results indicated that 72 percent of participants scored them as a 5 highlighting the importance of these payments. Similarly, 75 percent of participants scored the availability of premium prices as strong importance. With regard to market exit, 11 percent indicated that they would consider exiting the organic sector, 8 percent were unsure, and the remaining 81 percent stated that they would not consider exiting the organic sector at present. Interestingly, there appears to be a reliance on the importance of cost reduction, subsidies and premium prices as motivations to convert to the organic system, yet at this point the majority of participants would not consider exiting the market. Therefore it can be deduced that the incomes received on these organic farms are adequate at present.
Finally, the factors participants rated as the most significant barriers to conversion to the organic sector were queried. The question asked ‘in your opinion, what are the most significant barriers to conversion to organics?’ The following table highlight the results for each individual factor:

Table 7.3: Barriers to Conversion

<table>
<thead>
<tr>
<th></th>
<th>Weak(%)</th>
<th>Indifferent(%)</th>
<th>Strong(%)</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of Policy Support</td>
<td>36.11</td>
<td>30.55</td>
<td>33.33</td>
<td>3.08</td>
</tr>
<tr>
<td>Lack of Knowledge</td>
<td>19.44</td>
<td>19.44</td>
<td>61.1</td>
<td>3.69</td>
</tr>
<tr>
<td>Bureaucracy</td>
<td>19.44</td>
<td>25.0</td>
<td>55.55</td>
<td>3.61</td>
</tr>
<tr>
<td>Low Compensation</td>
<td>25.0</td>
<td>25.0</td>
<td>50.0</td>
<td>3.28</td>
</tr>
<tr>
<td>Technical Requirements</td>
<td>27.77</td>
<td>25.0</td>
<td>47.21</td>
<td>3.28</td>
</tr>
<tr>
<td>Competition</td>
<td>66.66</td>
<td>13.88</td>
<td>19.44</td>
<td>2.2</td>
</tr>
<tr>
<td>Fees</td>
<td>13.88</td>
<td>19.44</td>
<td>66.66</td>
<td>3.81</td>
</tr>
<tr>
<td>Lack of Markets</td>
<td>30.55</td>
<td>11.11</td>
<td>58.32</td>
<td>3.25</td>
</tr>
</tbody>
</table>

Overall, the cost of fees scored the highest as a barrier to conversion. Other answers provided included the lack of access to raw materials and stock, and the social pressure of remaining a conventional producer. On the latter point, one farmer remarked that he was treated with suspicion upon adopting the organic system.

In summary, the results of this section provide unique insights into the attitudinal and determining factors that drive the participating farmers in the survey. The most common responses indicated lower production costs and income security as motivations to adopt the organic system. Some farmers specified alternative motivations such as an opposition to the conventional method, to interact more with customers, and one indicated the availability of grants as an incentive, which reinforces the important role of policy support identified in the literature review (Connolly et al 2008).
As noted previously, the works of Läpple (2010), Willock et al (1999), Gorton et al (2008), Pannell et al (2006), Vanclay (2004) and Howley and Dillon (2012) argue that a combination of a range of factors influence producers to adopt a new agricultural innovation. Evidently, the survey participants echoed this view given the diversity of responses. Interestingly, a number of the participants were unsure of their longer term future as organic beef producers, despite 81 percent indicating they would not exit the organic sector in the shorter term. Furthermore, expanding their farmland area as organic was not identified as of significant importance by over 60 percent of producers, implying that many are not intending to increase their holdings as organic. The perceived barriers to conversion may provide insight into the underlying concerns of the participating farmers, as well as their opinions on conventional producers contemplating the organic sector. In this case, the bureaucracy, fees and lack of knowledge of the organic system were highlighted as barriers. Thus, the importance of income security, increasing profits by reducing costs, and the need to ensure the viability of organic production are consistent themes in both the literature review, and also by the farmers who participated in this survey.

7.4.3 - Section 3: Farm Management
The following subsections present the results of the various farm strategies applied by the participants of the survey.

**Labour**
Firstly the average hours of labour per week was recorded at 38.58 hours. However, there was significant variance in the results, as some producers worked part time, rather than full time, with wide variability in their hours from season to season with higher levels required particularly during the winter and calving seasons. Moreover, 72 percent stated that they relied on family unpaid labour in the operation of their farm. Fifty three percent of participants were also employed off farm, with a wide variety of occupations reported including engineering, management, psychotherapy, teaching, construction, environmental, transport, and consultancy.
Stocking Rate
The next sub-section focused on their current stocking rate. The purpose of this question was to determine the stocking density of each farmer to estimate their productivity level. Each participant listed their number of livestock units, stratified into the number of suckler cows, stock bulls, and younger animals both male and female. They also estimated their average value per unit and average weight, in order to determine their opinion of current market values. Livestock unit (LU) calculations were adapted from the 2007 National Farm Survey (Teagasc 2007). However, details of the livestock units under six months were not provided, and consequently estimations are slightly overinflated under these assumptions. Nonetheless, the following table indicates the livestock unit measures adopted:

Table 7.4: Livestock Units

<table>
<thead>
<tr>
<th></th>
<th>LU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suckler Cows</td>
<td>0.9</td>
</tr>
<tr>
<td>Stock Bull</td>
<td>1.0</td>
</tr>
<tr>
<td>Heifers in calf</td>
<td>0.7</td>
</tr>
<tr>
<td>Cattle 0-1 yr</td>
<td>0.4</td>
</tr>
<tr>
<td>Cattle 1-2 yrs</td>
<td>0.7</td>
</tr>
<tr>
<td>Cattle 2+ yrs</td>
<td>1.0</td>
</tr>
</tbody>
</table>
Accordingly, the following chart displays the stocking density recorded for the sample:

**Figure 7.3: Survey Stocking Density**

![Livestock units per hectare chart]

It must be recalled that stocking density on organic beef farms will be lower than on conventional farms due to stringent regulations, such as the prohibition of fertilisers and synthetic pesticides that tend to reduce quantities of grass produced. Therefore the stocking density evident in the chart from this sample appears quite low. Nevertheless, this chart illustrates 4 producers with a stocking rate of above 1.4 livestock units per hectare, as the most intensive production in the sample. The lowest stocking density was attributed to 2 producers with less than 0.4 livestock units per hectare. The average stocking density of the sample was 0.8927 livestock units per hectare. Moreover, 2012 has been a poor meteorological year, leading to severely wet weather patterns, and this may have reduced the possible stocking densities further given the associated land limitations. Interestingly, Teagasc (2006) recommended a stocking rate of 1-1.4 livestock units per hectare for organic beef farms as noted previously, and evidently these farms stock below this level.

The following table presents the results of the average number of livestock units per farm, the average estimations of values (€/hd) and the average weights per head (kg/hd):
Table 7.5: Current Stock, Valuations and Weights

<table>
<thead>
<tr>
<th>Livestock units</th>
<th>Value €/hd</th>
<th>Weight kg/hd</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suckler Cows</td>
<td>17.56</td>
<td>1,251</td>
</tr>
<tr>
<td>Stock Bulls</td>
<td>0.67</td>
<td>2,158</td>
</tr>
<tr>
<td>Cattle 0-1 yr (M)</td>
<td>3.13</td>
<td>649</td>
</tr>
<tr>
<td>Cattle 0-1 yr (F)</td>
<td>3.51</td>
<td>614</td>
</tr>
<tr>
<td>Cattle 1-2 yr (M)</td>
<td>5.62</td>
<td>1,017</td>
</tr>
<tr>
<td>Cattle 1-2 yr (F)</td>
<td>6.34</td>
<td>985</td>
</tr>
<tr>
<td>Cattle 2+ yrs (M)</td>
<td>2.77</td>
<td>1,415</td>
</tr>
<tr>
<td>Cattle 2+ yrs (F)</td>
<td>3.66</td>
<td>1,328</td>
</tr>
</tbody>
</table>

From this table it can be deduced that the majority of farmers operate a suckler cow based enterprise, and sell their produce within 24 months of age. It is also interesting to note the estimated values and weights, reflecting the participants’ opinions of current market trends. These estimations imply that producers are in receipt of prices ranging from €2/kg for suckler cows to €2.90/kg for stock bulls. However, these estimates are not intended to imitate genuine market prices, as this cross sectional representation of stock have not been distributed to the market at this point.

Participants were also asked of their intention in relation to their stocking rate, with 56 percent intending to increase their stocking rate, and a further 31 percent opting to maintain current levels. Furthermore, participants were queried on the perceived challenges of increasing their stocking rates. Overall, land limitations scored the highest average score of 3.24 out of 5 and was the most frequently chosen strong indicator, implying that land capacity was problematic in accommodating additional stock. Interestingly, formal stocking restrictions scored a weak significance of 2.06, which reinforces the previous results, indicating that most farms were under utilising their
stocking density at present, and thus could increase their current stocking rate. Housing requirements, and low profitability were also cited as challenges to the stocking rate.

**Breeding**
Participants were queried on their views on the relevance of breeding on organic beef farms. The results showed that 89 percent of respondents reported breeding as of strong importance. Moreover, the remaining 11 percent were indifferent, meaning that no participants assigned a weak level of importance to breeding. Farmers employed a wide variety of different breeds on their farms with Aberdeen Angus and Charolais the most popular breeds for sires, while Aberdeen Angus and Limousin were the most common breeds for dams. In relation to insemination, 39 percent of respondents use bull insemination, 28 percent use artificial insemination and 19 percent use a combination of both. 14 percent of respondents use neither form, as they do not utilise a calving system.

**Land Management**
A number of questions were asked in relation to the land management strategy of the participants. The purpose was to identify the most frequently utilised techniques, and whether producers were consciously implementing a formal land management strategy. In relation to the latter point, participants were asked about their nitrates application rate for 2011, but just 25 percent of respondents were aware of the value when asked, without consulting their documentation. Of those that did provide an answer, the average nitrates application rate recorded was 59.5 kilograms of Nitrogen per hectare.

Importantly, farmers were asked to rate the quality of their land for organic production on a Likert scale of 1 to 5. Nineteen percent of respondents indicated that their holding was a 5 for organic production, indicating best quality, with a further 33 percent rating it at 4. However, the average score recorded was 3.61 indicating that overall, farmers were only marginally satisfied with their land as suitable for organic production. Additionally, participants were queried as to the emphasis they placed on soil management. Eighty three percent of respondents indicated that they place prominence on soil quality in their management, which is consistent with the importance of soil
fertility for organic production as implied in the literature (Vollrath 2007, Lohr and Park 2007).

Moreover, participants were asked questions relating to their grassland management, reseeding, nitrogen fixing crops, and fertilisation strategies. In relation to the former, 91 percent of respondents claimed they implemented a formal grassland management strategy, with rotations and paddock grazing indicated as the most prominent approach. Thirty six percent of respondents indicated that they do not reseed, with 11 percent reseeding annually, and a further 11 percent stating that they reseed in 3 year cycles. Eighty three percent of respondent’s utilised nitrogen fixing crops in their soil management. Specifically, white clover was the most popular choice of crop, utilised in almost half the farms surveyed with a further 39 percent of farms employing it mixed with red clover. Other crops specified included peas and beans which can also be used for feed purposes. Seventy eight percent of respondents indicated that they had not purchased commercial fertiliser in the previous five years, with a further 8 percent indicating that they utilised commercial fertiliser prior to conversion to an organic system. Physiolithe, rock phosphate, dairy sludge and kalsyplate seaweed were among the types of organic fertiliser applied. Furthermore, 61 percent of participants utilised lime on their land to aid the fertilisation process. Of the 39 percent that did not use lime, the majority were located in rich limestone soil areas.

Finally, enquiries were made as to the production of cereals on farm for feed purposes. Thirty one percent of farmers confirmed that they produce cereals specifically for feed. Wheat, barley, oats, peas, and beans were among the cereals produced. This would significantly reduce the input costs for these farmers, as opposed to other who may have not had the capacity to grow feed crops, and thus may need to purchase additional feed.

Accordingly, it can be concluded that the majority of organic farmers in this survey are indeed, consciously and actively implementing a land management strategy to ensure that the productivity of their land is of a high standard. This is consistent with Lampkin’s (2001) paper on the importance of executing an efficient strategy to achieve
optimum productivity, and thus higher profitability. Moreover, the work of Pimental et al (2005) concurred insisting effective management can improve farm profitability. The diversity of strategies among the participants outlines the range of options available. The 5 farms with the highest sales returns are also analysed in isolation with a view to identifying their specific strategies, to examine what lessons may be applied to other farms. This is the focus of a latter subsection.

7.4.4 – Section 4: Sales
As noted previously, this section aimed to establish a hierarchy of productivity based on sales results, in order to gauge the different scales of production, assume the higher income earners within the sample, and evaluate the performance of the participating farmers. The following chart illustrates the trends in sales over the 3 reference years:

Figure 7.4: Sales 2009-2011

This indicates that the value of estimated sales has been increasing overall annually with an acceleration in 2011 for total sales. Furthermore, the average sales figures have increased 25 percent in 2011 from the previous years. However, the data in 2011 includes an increased number of producers that supplied organic beef in that year, as many farmers had only recently sold produce as a full organic symbol holder. Indeed, 31 of the respondents indicated sales results for 2011, but just 25 recorded results for 2009, and 26 for 2010.
On a per hectare basis the sales estimations provide a more comparable result for each participating producer. The following chart illustrates the results of 2011 sales divided by the utilisable agricultural area:

**Figure 7.5: Sales per hectare in 2011**

![Sales per hectare 2011](image)

Evidently, the data illustrates a considerable diversity in the results. The average sales in 2011 was recorded at €619 per hectare, with the minimum and maximum recorded at €83 and €1,745 per hectare respectively. Also, 5 omitted farms are evident from this chart, as they had just recently attained full organic status, and had yet to record any sales. Importantly, 2 of the participating farmers estimated that they achieved sales greater than €1,500 per hectare, with a further 3 achieving more than €1,000 per hectare. These 5 farms are analysed in more specific detail in the subsequent section, to examine the techniques, and thus perhaps provide an example of a blueprint for best practice production and therefore, increased profitability.

Additionally, participants were asked to estimate their number of animals sold per year, to predict the average sales value per animal. The average number of animals sold per farm was 25 per annum, with an average estimated sales value per animal was €1,165. However, as this figure is based on estimations, it is not intended to provide an accurate
representation of the true sales receipts in 2011, rather to demonstrate the sales values recalled by participants.

7.4.5 – Section 5: Productivity, Output Channels and Technical Upskilling
This section aimed to investigate the influential drivers and constraints to productivity, which was a core objective of this research. Concurrently, data on their existing output channels and technical skills were also collected. The results of this section are presented in the following subsections.

Drivers of Productivity
The title of this thesis is the drivers of productivity in the organic beef sector in Ireland. As such, it was imperative to allocate a specific section to examine the participants’ views on this issue. The factors chosen for this question were identified previously in the literature review, and supplemented with additional suggestions to explore all possible factors that were perceived as the most important drivers of productivity from this sample.
The specific question asked ‘in your opinion, what are the most important drivers of productivity?’ Furthermore, there was an open ended option, for participants to add their alternative suggestions. The following table illustrates the various options provided and the corresponding results:

Table 7.6: Drivers of Productivity

<table>
<thead>
<tr>
<th></th>
<th>Weak(%)</th>
<th>Indifferent(%)</th>
<th>Strong(%)</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumer Demand</td>
<td>11.1</td>
<td>22.22</td>
<td>66.66</td>
<td>3.94</td>
</tr>
<tr>
<td>Land</td>
<td>5.71</td>
<td>8.57</td>
<td>85.71</td>
<td>4.29</td>
</tr>
<tr>
<td>Stocking Rate</td>
<td>8.32</td>
<td>16.66</td>
<td>74.99</td>
<td>3.94</td>
</tr>
<tr>
<td>Scale</td>
<td>28.56</td>
<td>34.28</td>
<td>37.14</td>
<td>3.14</td>
</tr>
<tr>
<td>Soil Structure</td>
<td>2.85</td>
<td>17.14</td>
<td>79.99</td>
<td>4.3</td>
</tr>
<tr>
<td>Labour</td>
<td>31.42</td>
<td>37.14</td>
<td>31.42</td>
<td>3.06</td>
</tr>
<tr>
<td>Policy and Funding</td>
<td>8.32</td>
<td>19.44</td>
<td>72.21</td>
<td>3.94</td>
</tr>
<tr>
<td>Support Services</td>
<td>28.56</td>
<td>22.85</td>
<td>48.56</td>
<td>3.34</td>
</tr>
<tr>
<td>Market Opportunities</td>
<td>5.55</td>
<td>22.22</td>
<td>72.21</td>
<td>4</td>
</tr>
<tr>
<td>Education, R &amp; D</td>
<td>14.28</td>
<td>8.57</td>
<td>77.14</td>
<td>3.97</td>
</tr>
<tr>
<td>Availability of Subs</td>
<td>22.84</td>
<td>17.14</td>
<td>60.0</td>
<td>3.51</td>
</tr>
</tbody>
</table>

From these results, it is clear that all these drivers of productivity were viewed as important to the respondents, with the exception of their indifference to the impact of labour on productivity, contrary to the research conducted by Ruttan (2002), Morison et al (2005) and Mayen et al (2010). Overall, soil scored the highest average score of 4.3, followed by land at 4.29. This justifies the crucial role of land management for productivity performance, in addition to improving expertise, and the synchronisation of productivity levels to market fluctuations. Breeding was also highlighted as another
important driver of productivity, with farmers elaborating that improved breeding programmes would yield significant tangible increases in productivity.

**Constraints to Productivity**

In relation to productivity constraints, the specific question asked ‘in your opinion, what are the most significant constraints to productivity?’ In this instance, options could overlap, such as the influence of policy as the literature review concluded that it could accelerate or retard the development of the organic sector (O’Donnell 2010). Moreover, costs were provided as an option for constraining productivity, which could also be interpreted as an indication of the consistency of previous responses. Participants that selected cost reduction as a primary motivation for adopting the organic system may have found that costs remained problematic once the new system was applied. Once again, an open ended option was provided for respondents to indicate further suggestions. The following table displays the results from the sample:

**Table 7.7: Constraints to Productivity**

<table>
<thead>
<tr>
<th></th>
<th>Weak(%)</th>
<th>Indifferent(%)</th>
<th>Strong(%)</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Policy and Funding</strong></td>
<td>11.11</td>
<td>27.77</td>
<td>61.1</td>
<td>3.83</td>
</tr>
<tr>
<td><strong>Environmental Laws</strong></td>
<td>41.66</td>
<td>19.44</td>
<td>38.88</td>
<td>2.94</td>
</tr>
<tr>
<td><strong>Biodiversity</strong></td>
<td>57.14</td>
<td>25.71</td>
<td>17.13</td>
<td>2.37</td>
</tr>
<tr>
<td><strong>Market Challenges</strong></td>
<td>11.42</td>
<td>22.85</td>
<td>64.59</td>
<td>3.77</td>
</tr>
<tr>
<td><strong>Production Costs</strong></td>
<td>14.28</td>
<td>20.0</td>
<td>65.71</td>
<td>3.74</td>
</tr>
</tbody>
</table>

Thus, policy and funding, market challenges and the costs of production are all viewed as significant constraints to productivity, where as the environment and biodiversity are less so. Other responses provided included the limitations of land highlighted by 3 participants, profitability and viability suggested by 2, and bureaucracy as indicated by 1 farmer who lamented ‘the difficulty of accessing the local butcher shop due to the
rigidity of the system regulations, and thus reducing his need to improve productivity levels.’

**Markets**
The previous results indicated that farmers have a high responsiveness to market trends. Therefore, the objective of these questions was to assess the output channels utilised by participants, and whether they were in receipt of a premium price for their output, in order to examine the distribution and profitability of their operations.

In relation to output channels, 25 percent of respondents indicated that they supply the local market. Accordingly, the existing marketing channels from the survey are illustrated in the following chart:

**Figure 7.6: Marketing Channels**

This chart clearly indicates the dominance of the processor as a channel of distribution for these organic producers, commanding almost half of all output. Indeed, concerns were raised over the lack of options for selling output, with essentially only one large scale purchaser, with the negative consequences for competitive pricing. Some participants argued that the price offered by the processor was insufficient to
compensate for abiding by the organic regulations with the associated limitations involved. Although 21 percent of producers indicated that they utilise the organic marts, there were issues raised as to the limited number of marts per annum, and the distances producers had to travel to avail of these marts. Other output channels provided included organic butchers, restaurants, other organic farmers, and conventional marts. The latter was utilised if premium prices were deemed inadequate from organic purchasers.

Similarly, 86 percent of the sample stated that they receive a premium price, and the average estimated percentage mark up was 15 percent compared to conventional prices. This appears an optimistic estimation, as conventional prices have increased in recent times, but it is based on an estimation, and thus, not truly reflective of accurate market prices. Furthermore, this estimation contradicts the criticisms of the price offered by the processor as noted above.

**Technical Expertise**

Section 5 also investigated the technical skills and training that each participant had undertaken as an organic producer. These questions were formulated on the basis of the third aspect of Lampkins (2001) paper on the impact of skills and managerial influences on organic farm profitability. Lampkin emphasised the importance of technical knowledge, and thus, this section was intended to identify the producers who deliberately attempted to improve their expertise. Accordingly, respondents were queried on whether they attended a training course to improve technical knowledge, marketing and financial budgeting skills. Additionally, an open ended question was provided to suggest additional desired training.

In relation to improving technical knowledge, 86 percent indicated that they have attended a formal course, with the organic course as their most common response. However, for the more recent entrants this is a mandatory course, so it does not necessarily outline a deliberate intent to acquire additional technical knowledge. Other answers included the Teagasc demonstration farm walks, REPS meetings, the Beef Technology Adoption Programme (BTAP) meetings, organic conferences and courses.
on soil management. Seventeen percent of respondents stated that they had attended a marketing course, whilst 22 percent stated that they had attended a financial budgeting course. A masters in marketing, and courses run by the County Enterprise Boards were selected for the former, and the Teagasc e-profit monitor and farm finance course were indicated for the latter as specific examples.

In relation to the open ended question as to what type of additional training they would benefit from, the most common responses included additional specialist courses incorporating improved soil management, breeding, weed control, marketing, budgeting, animal health, business operations, and diversification. There were also requests to increase the number of demonstration walks and to focus on imitating internationally best practice organic farms. This information may be interpreted as farmers proactively seeking to enhance their farm performance by improving their expertise over a broad range of targeted areas. In relation to farm management, improved land and stock management should provide significant improvements in productivity performance. Business development training would also ensure greater profitability, through superior financial management and efficient business delivery. Thus, these suggestions offer valuable insights into areas the sample deem as in need of improvement.

**Measures to Improve Productivity**

Finally, participants were asked an open ended question to suggest practical measures that could improve their individual productivity performance. Overall, farmers replied with a broad variety of suggestions, with the areas of reseeding, improved manure and grassland management as key recommendations, which reinforces the importance of soil and land management for productivity performance identified perviously. Moreover, despite previous results indicating that producers implement a formal grassland strategy, they also recognise this as an area in need of improvement. Stock improvements, funding, weed control, and improved techniques to deal with erratic weather patterns were also common answers among the various responses provided. These responses provide unique suggestions from active producers in the organic beef sector, and are discussed further in the final chapter.
7.4.5 – Section 6: Support Services
This section aimed to provide feedback on the level of interaction and satisfaction with
the actors involved in assisting organic producers, namely the Department of
Agriculture, Food and the Marine, Teagasc, and the organic certification bodies. The
frequency of interaction, service rating, and recommendations for each organisation are
presented in the following table:

Table 7.8: Support Services

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Average</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dept of Agriculture</td>
<td>5.7</td>
<td>3.4</td>
<td>Coordinate movement of cattle</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Increase expenditure</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Improve inspections</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Improve interaction and assistance</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Greater flexibility and lenancy</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Increase transparency on organic prices</td>
</tr>
<tr>
<td>Teagasc</td>
<td>4.6</td>
<td>3.7</td>
<td>Improve knowledge of organics</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Increase organic advisors</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Improve information and advice</td>
</tr>
<tr>
<td>IOFGA</td>
<td>1.7</td>
<td>3.8</td>
<td>Increase staff numbers</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Increase profile of sector</td>
</tr>
<tr>
<td>Organic Trust</td>
<td>2.7</td>
<td>4.4</td>
<td>Improve assistance in appeals process</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Reduce certification fee</td>
</tr>
</tbody>
</table>
Many of the comments were applicable to more than one organisation. The common trends were for greater support in the sector, improved information and expertise, and increased coordination for a more efficient organic sector. The overall impression was that more effective assistance could be provided, in a cooperative manner. Some participants implied that particular factions of the support network operated on a ‘them versus us’ basis, which created an unnecessary tension, when the overall goal of developing the organic sector should be a collectively desired target, as argued by Crowley (2006).

7.4.6 – Section 7: Further Comments
The further comments section of the questionnaire was designed to collect valuable qualitative data from participants relating to their views of the research, the organic beef sector in general and further suggestions to enhance the sector. These comments varied from concerns over the future of the sector, to criticisms of the current policy direction and media coverage, to specific productivity related concerns, and the need for ongoing research and promotion.

More specifically, improving the operation of the sector and ensuring that funding was guaranteed into the future were the most common responses. These requests were supplemented with recommendations for improved information on market trends, and prices. Moreover the need to ensure the premium price was retained was emphasised, or stock may be sold as conventional. Research and development, was also identified as important aspects of future development, particularly in areas involving soil fertility, animal health and breeding. Concerns were also raised in relation to the role of policy, and the need to increase lenancy in specific cases where there are weed control, fertilisaton or stocking rates issues. Participants commented on the fear of penalties for minor offences, the high cost of compliance, the admission of new entrants without organic ideals, and problems with the acquisition and sale of stock. Furthermore, the farming media was criticised for its apparent indifference to the organic sector, and consequently there is a need to improve the representation of organic farmers, perhaps through the addition of a new interest group. Finally, the role of annual meetings and the influences of organic planners was praised.
These issues are discussed in greater detail in the final chapter, in tandem with the investigation into the common themes that emerged relating to productivity in the organic beef sector.

### 7.5- Best Practice Performance

Section 4 of the survey provided an indication of a scale of productivity, with 5 farmers estimating that they achieved sales in excess of €1,000 per hectare in 2011. Further analysis of these farms outlines common strategies in particular areas, whilst alternative methods in others. The results of these farms are now briefly summarised.

All 5 farms were located in Leinster or Munster with no farm located in Connaught. The farmers were 50 years old on average, with over 28 years experience in farming, and 7 of those recorded as an organic producer, similar to the averages of the total sample.

In terms of motivations, income security, cost reduction and a new challenge were chosen as important, with cost reduction also identified as a key objective for their farm going forward. Interestingly, these farmers placed greater emphasis on the importance of the premium price receipt than to direct payments. Many of the other farmers surveyed would not share this sentiment, perhaps as a result of more limited resources available to them. A lack of knowledge of the sector was the strongest perceived barrier to conversion from these 5 participants.

The farm management strategies of these farmers reveals some important common approaches, that could provide a benchmark for the less successful operators in the sector to imitate. On average these farmers applied 44 hours of labour to their farms each week, indicating that this is their primary full time occupation. Interestingly, 3 of the farmers operated a weanling to beef system, whilst another operated a store to beef system. This implies that higher sales are available from these systems. However, it is
important to note that these systems also involve purchasing stock, and thus, although their sales receipts are high, they do not accurately reflect their true profit margins. In terms of their current stock break down, the following chart illustrates the diversity among the 5 farmers:

**Figure 7.7: Current Stock on Best Performing Farms**

Farms were labelled in Roman numerals to avoid confusion with the 5 farms analysed under the National Farm Survey in the previous chapter. Unsurprisingly, stock aged between 1 and 2 years is most common across the 5 farms under observation due to the enterprise employed. The following table illustrates their stocking density and sales per hectare to distinguish among the 5 farms:

**Table 7.9: Stocking Density and Sales Estimations 2011**

<table>
<thead>
<tr>
<th></th>
<th>LU/ha</th>
<th>2011 Sales/ha Estimations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farm I (44 ha)</td>
<td>1.04</td>
<td>€1,591</td>
</tr>
<tr>
<td>Farm II (55 ha)</td>
<td>1.07</td>
<td>€1,745</td>
</tr>
<tr>
<td>Farm III (66 ha)</td>
<td>0.82</td>
<td>€1,485</td>
</tr>
<tr>
<td>Farm IV (60 ha)</td>
<td>1.49</td>
<td>€1,083</td>
</tr>
<tr>
<td>Farm V (20 ha)</td>
<td>0.63</td>
<td>€1,215</td>
</tr>
</tbody>
</table>
From this table, farm IV is the most densely stocked, and is also the only farm that operates a suckling to beef system. Farm V is lowly stocked on a small holding, but is making an impressive return on its 18 animals aged between 1 and 2 years, based on these estimations. Interestingly, farmers I, IV and V rated the quality of their land as high quality on the Likert scale with an average of 4 out of a possible 5. All 5 farms placed a strong emphasis on soil management with paddock grazing common to all farms. Moreover, all farms with the exception of farm I applied a nitrogen fixing crop of clover, both white and red, and all 5 applied lime to their land. In terms of reseeding, all 5 expressed an intention to reseed in the short term, and farms II, III and IV actively implement a reseeding plan at present. Finally, all 5 farms insisted on the importance of breeding, with Charlaois, Angus, Hereford and Limousin recorded as their dominant breeds.

With regard to productivity drivers, the 5 participants rated consumer demand, soil management and education as of strong importance, whilst policy and funding were identified as strong constraints to productivity. They estimated an average premium price receipt of 13 percent, and 4 sold their produce to the processor with the other selling directly to restaurants. This estimated premium is in stark contrast with other participating farmers who criticised the price offered by the processor. In terms of upskilling 4 had attended a technical knowledge course, 2 attended a financial budgeting course, and none attended a marketing course. Grassland, financial and expansion management courses were suggested for additional training, concomitantly with the reinstatement of the department demonstration farm. Reseeding, credit access, increased expert literature, and to improve grassland management by introducing new varieties and green manures were cited as practical measures to improve productivity performance.

Their patterns of interaction with supporting bodies varied considerably. The Department of Agriculture, Food and the Marine was visited seldomly by 4 of the participants, but an estimated twice a week by Farmer III. Furthermore, Farmer III rated the service provided by them as extremely poor, and called for them to reform and increase their helpfulness. The other participants were less scathing on their attack, with
2 actually offering maximum praise on their assistance. However, the majority of recommendations were directed at the Department and included the need to systematically coordinate the movement of cattle, increase staff numbers, and improve their service generally. Teagasc was consulted an average of 7 times per annum with a 2.8 satisfaction rate out of a possible 5 recorded by these respondents. Suggestions for Teagasc included improving advice, providing a news bulletin, and improving expertise on grassland management. In relation to the certification bodies, 4 of the farmers utilised Organic Trust, whereas Farmer V utilised IOFGA. Both bodies received positive ratings from the farmers, yet could improve their service further, by assisting more effectively in the appeals process, improving information dissemination, and enhancing their liaisons with the Department of Agriculture.

Finally, in their further recommendations, these 5 farmers offered some interesting suggestions. Firstly, Farmer II insisted that the Irish Cattle Breeding Federation should improve its expertise on breeding whilst simultaneously enhancing their advisory service. Farmer IV criticised the current system in relation to acquiring high quality stock, and called for increased pragmatism overall to the unique circumstances of individual farmers. Farmer III suggested that the farming media needed to support the organic system as opposed to neglecting it with limited attention given to the sector at present. Finally, Farmer V warned that sector exit would be considered if funding was reduced in upcoming budgets, despite his impressive sales per hectare of €1,215 in 2011, and insisting premium prices where more important. Farmer I did not provide any additional information.

7.5.1 – Comparative Analysis
In summary, these 5 farms offer an indication of how higher sales per hectare are achievable given appropriate resources, and the implementation of a sound farm management plan. Their recommendations and criticisms of the organic sector are generally in agreement with the overall findings of the survey, with a keen emphasis on profitability from productivity performance that must be a focus of further development in the sector.
In relation to farm management, these farms operated an effective strategy employing a slightly above average stocking rate of 1 LU/ha, with the lesser stocked farms intending to increase their stocking density to the equivalent of the average. Thus, it may be argued that a stocking density of this level is desirable on efficient holdings, despite Teagasc’s (2006) higher expectations of 1-1.4 LU/ha. Paddock grazing and the application of clover and lime were influential in their productivity performance, where as reseeding was also viewed as a proactive measure. These approaches could be replicated on other organic farms, assuming similar conditions and resources.

Moreover, in terms of motivations these farmer’s indicated improving profitability is a key ambition for their holding, implying that achieving higher technical efficiency is a key objective, consistent with the assertions of Lansink (2002) and Lohr and Park (2007). This is reinforced by their recommendation for increased expertise in the literature and that this must be available in digestible format from the supporting bodies, concomitantly with the reinstatement of the demonstration farm for reference. Thus, the objective of this section to present a blueprint example of efficient production is also a shared aspiration among these farmers to improve their operations, and consequently achieve higher profitability through productivity. This assertion is reinforced by their claims of soil management, education and the influence of policy on improving productivity.

The 5 best performing farms under observation in the survey also share some similarities and differences with the case study farms on the National Farm Survey in the previous chapter. The farms from the survey indicate a more intensive level of stocking density with an average of 1 LU/ha as opposed to 0.55 LU/ha for the NFS farms. All farms are below the recommended stocking densities (Teagasc 2006), but the farms recorded under the NFS are a more random sample, as opposed to the best performers captured in the survey. Moreover, the 5 farms recorded under the NFS reflect diverse ambitions as evident from their investment patterns, with 1 farmer aggressively attempting to improve productive capacity, whilst another aims to improve...
efficiency, 2 intend to maintain their operations, and the final farm is reducing its stocking density. However, the 5 farms isolated in the survey are all attempting to improve their capacity and efficiency as reflected in their responses that focus on achieving higher profitability.

Nonetheless, it is difficult to compare the farms captured in the survey and those in the NFS on the basis of the randomness of the sample and on the data variables collected. The NFS collects primarily quantitative data focussed on the financial performance of the random farms, where as the survey aimed to focus on the wider issues that affect farm performance, namely the motivations, resources, farm management and productivity factors. Thus, data such as costs, gross margins and incomes that were captured on the NFS are not collected in the survey. Similarly, data relating to factors that drive productivity, producer ambitions, and qualitative suggestions on improving the sector are collected in the survey, but not on the NFS. Accordingly, a more co-ordinated thorough analysis that captured both elements of the surveys, combined with an adequate sample size to reach statistical significance would be an invaluable policy tool in future research.

7.6 - Conclusion
This survey collected a broad range of important data, to gain a perspective on the factors that affect a sample of organic beef producers in Ireland, including their perceived drivers of productivity. The variety of questions, coupled with the diversity of participants provided some valuable insights into the issues on organic beef farms. Information was collected regarding the drivers of productivity, motivations, management strategies, policy influence, and the role of support services, to complement the findings of the literature review, and supplement the data from the National Farm Survey. The open ended questions ensured that valuable unique qualitative data was also collected to complement the quantitative Likert scale data. Thus, the questionnaire provides a comprehensive insight into the opinions of active producers within the sector.
The dominant themes that emerge from the data is that increasing profitability from efficient productivity, improving grassland management, and solidifying the support from governing bodies are key prerequisites to the further expansion of the organic beef sector in Ireland. Overall, there was an implication that the present productivity levels could increase efficiencies, but caution was urged as the stability of the market was questioned, as was the long term security of financial assistance. The 5 farms with the highest estimated sales per hectare in 2011 were analysed in more specific detail to outline a possible blueprint for production, and they demonstrated a focussed management approach that may be replicated on other farms.

These themes and issues are discussed in greater detail in the concluding chapter.
Chapter 8-Discussion and Conclusion

8.1 – Summary
This study aimed to investigate the influential drivers of productivity in the organic beef sector in Ireland. The literature relating to this topic is limited, particularly with regard to the broader factors in achieving optimum efficient productivity, such as the managerial influences as noted by Lampkin (2001). The literature review illuminated these absences, particularly in the specific case of organic beef in Ireland. This fact provided ample motivation in conducting this research, by presenting analysis on the factors that improve productivity performance, and thus, increasing profitability for organic producers nationwide.

For this purpose an extensive literature review was conducted. Initially the definitions, benefits, and criticisms of the organic sector were discussed, as were the objectives of this research. This revealed the level of contention among the commentators as to the advantages and shortcomings of organic agriculture. This was followed by a profile of the organic sector that illustrated the size of the sector, the dominance of beef production within the organic sector, the existing opportunities to expand the sector and the challenges that process entailed. 1,459 organic farms were registered as organic in Ireland in 2011, operating on a total utilisable agricultural area of 52,390 hectares, with 1,004 of those farms registered as organic beef producers. The average size of organic farms was 37.63 hectares (Clavin and Moran, 2011). The subsequent chapters traced the development of the sector, with a particular emphasis on the influence of farmer attitudes and public policy in the progress or regress of the industry.

Accordingly, a number of key policy issues were identified as important to the organic beef sector. These included the identity and policy position of organic lobbyists, regulation, communication, economics, market security, funding, resources, and farm management. The development and criticisms of each aspect were discussed in detail. However, the influence of a formal policy was paramount, with the CAP of the
European Union identified as a key factor of the continued development of the sector. Their regulations are adopted by national governments, and administered to producers directly, or through conjunction with supporting bodies, such as the certification organisations. This structure is under review at present as the European Union’s agricultural policy is scheduled to undergo reform in 2013.

The literature review also examined specific issues in relation to productivity measurement in the agricultural sector. A number of techniques were discussed, and the literature implied that organic farms produced lower levels of output, yet recorded higher rates of technical efficiency in comparison with conventional agriculture. The wider objectives of the organic system were also highlighted, such as the multi-functional purpose of food production, coupled with sustainable, environmentally ambitions, which insinuated a direct comparison with conventional production was misleading. Moreover, the existing literature on agricultural productivity was predominantly focussed on financial analysis, excluding adequate accompanying research into the broader factors that affect productivity, such as the managerial influences, or available resources. Interestingly, a considerable dearth in the literature was also identified regarding organic beef farms in Ireland, which legitimised and encouraged the objectives of this research. Moreover, a number of drivers of productivity were identified in the literature, including demographics, economics, resources, labour, research and development, policy and biodiversity. The identification of these themes was invaluable in the formulation of the questionnaire utilised in the primary research.

The data utilised in this research was twofold. Firstly, data was analysed from the Teagasc National Farm Survey, which is an annual stratified survey conducted to measure agricultural performance in Ireland (Newman and Matthews 2004). Under this survey a limited number of organic beef farms were recorded, outlining some interesting trends over the years 2009, 2010, and 2011. Family farm income levels have gradually risen over the three years on average, which also reflected a gain in efficiency in 2011. Moreover, the cost structure indicated that direct costs were lower than overhead costs, confirming that lower direct costs are achievable on organic farms.
(Clavin and Moran 2011). Furthermore, five individual farms were compared on a case study basis, and the results indicated a diversity in ambition and productivity achievements. However, the limited number of observations on the NFS, prevented an adequate analysis of the data. Nonetheless, the data provided a useful foundation, albeit of a predominantly financially based approach, as to the costs, output, income and ambition associated with these farms. However, there was a significant deficit in the NFS data as to the underlying reasons for productivity performance. Therefore, a survey was designed to conduct further research into the root causes of decision making and farm management to a sample of registered organic beef producers in Ireland.

The primary research was divided into seven sections, socio economic background, motivations, farm management, sales, productivity issues, support service appraisals and further comments. Participants were asked a combination of closed, categorical, rank order, and open ended questions under these headings. Thirty six participants completed the survey, and participants were selected on the basis of three main criteria, to represent average sized holdings, geographical spread, and that they were fully registered organic symbol holders. These criteria ensured that the data collected was comparable and incorporated a diversity of land types.

The survey yielded some interesting results. Participants were just under 50 years of age, with 6 years of post primary education on average. The majority of respondents utilised a calving based beef production system, with 45 percent indicating they also employed an alternative enterprise on their farm. The most common motivation to convert to the organic system was to reduce costs, whilst farmers also indicated a reliance on direct payments and premium pricing. Over eighty percent of respondents refused to consider exiting the market, and the cost of certification fees and lack of knowledge were identified as barriers to conversion.

In relation to farm management factors, the average hours of labour per week was 38.58 hours, with the majority of producers also employed off farm. Respondents outlined their current stocking density which ranged from 0.29 LU/ha to 1.6 LU/ha, with
estimated values of between €2/kg and €2.90/kg at present. Interestingly 56 percent of the sample intended to increase their current stocking rate, with land limitations highlighted as the most significant challenge to this intention. Breeding and land management were signified as important aspects of farm management with paddock grazing and rotations as the most common grass management strategies, and clover utilised to increase fertility. In relation to outputs, producers estimated their sales as an average of greater than €600 per hectare in 2011.

With regard to drivers of productivity, soil and land recorded the greatest importance, closely followed by market opportunities, research and development. Policy and funding were also highlighted as important both as a driver of productivity and as a constraint to productivity. Additionally, in relation to marketing channels, 25 percent indicated that they supply the local market, while 45 percent sold produce to the processor. Eighty six percent attended a course to improve their technical expertise, while 17 percent attended a marketing course and 22 percent attended a budgeting course. Additional suggestions included the need to improve soil management, breeding and weed control.

Furthermore, 5 farms were analysed in isolation on the basis of their higher sales estimations in 2011 with all recording receipts in excess of €1,000 per hectare. These farms indicated their preferences in relation to farm management, and the issues that were important to them at present. Grassland management, breeding, improved support and the need to enhance profitability from productivity were key aspects of their surveys.
8.2 – Discussion

A number of key themes were consistently repeated throughout this thesis. Influential drivers of productivity were identified, the role of policy in the continued development of the sector, the importance of managerial strategies and profitability, and the broader motivations and concerns of farmers were all captured through the comprehensive literature review and the primary research. Indeed, the objective of the primary research was to supplement the findings of the literature review and the National Farm Survey with the underlying broader influences affecting productivity.

Lampkin’s (2001) paper was fundamental to the formulation of this research, as it incorporated the broader issues surrounding profitability on organic farms, including productivity performance. Lampkin found that personal and business goals, time under organic management, and skills and management ability were important influences in achieving improved profitability on organic farms. His conclusions confirmed the importance of efficient productivity as a profit factor, that technical knowledge and management ability were obvious in the best performing farms, the importance of research, investments and premium price receipts, and for the need to further investigate the importance of labour requirements and rural employment. The primary research of this thesis adopted these broader managerial influences into the formulation of the survey, and examined his conclusions further. The consistencies of Lampkin’s findings with the empirical results of this thesis are discussed under the four broad themes that emerged from the analysis in the following subsections.

8.2.1 – Drivers of Productivity

The title of this thesis was the drivers of productivity in the organic beef sector in Ireland. Thus, the core objective of this research was to identify the factors that affected productivity performance, in order to identify specific issues to prioritise in the ongoing development of the sector. As the literature review revealed, improving productivity was crucial in attaining improved profitability (Lampkin 2001), and consequently, the need to identify these drivers was important. These drivers could then be targeted to ensure that best practice performance could be replicated systematically in the organic beef sector.
The literature review identified a number of potential drivers of productivity including demographics, technology, land, scale, education, support, investment, and the environment. Undoubtedly, a combination of these factors contributes to optimum productivity performance, and each in isolation has important implications for production. Demographics, education, research and development were also acknowledged as important drivers of productivity as a result of the current market structure, and the necessity to continuously increase expertise and improve existing methods. Land management is critical under the organic beef system, as neglect will inevitably reduce the capacity of the land, to produce sufficient pasture for stock. The scale of production is largely dependent on the available access to resources, and similarly, support and investment are reliant on favourable economic conditions. The importance of environmental regulations is increasing for agriculture in general, particularly for the European Union, and therefore, achieving a sustainable production system is a key challenge for the sector. The current evidence suggests organic systems perform favourably in this regard, and thus by improving productivity performance further without adversely affecting the environment would be a key advantage for the sector.

The results of section 5 in the survey revealed some useful findings consistent with the existing literature in relation to the drivers of productivity. Land, soil structure, stocking density and research and development were identified as important drivers of productivity. Participants were keen to emphasise the importance of resource management, and the need to increase expertise in this area, consistent with the findings of Lampkin (2001). Certainly, the impression was that more efficient productivity was possible, and could be achieved with an improved strategy. This theme was also reflected in the results of the National Farm Survey, as farmer’s appeared to improve their efficiency in 2011. Moreover, the influence at the policy level, and market opportunities were also highlighted as important factors in productivity performance, as previously advocated by O’Connor (2010) and Legun (2011). The participants of the survey indicated a high level of responsiveness to market signals, and were rewarded with premiums of an estimated 15 percent on average.
However, policy, market challenges and costs were also viewed as significant constraints to productivity, due to the rigidity of the regulations, uncertainty over the longer term market, and the continued rise in input costs. These results reinforce the awareness of respondents of their management ability, coupled with the need for improved research, policy support and market opportunities, as noted previously by Lampkin (2001) and O’Connor (2010). A wholesome strategy as argued by Blake (1994) is necessary in order to ensure that improved productivity performance is achieved, and thus, profitability margins increased. This must be a pertinent objective for the sector to avail of the existing opportunities to expand the sector further.

However, the importance of labour was not confirmed from the empirical data as argued by Lampkin (2001), Ruttan (2002) and Mayen et al (2010). The results of the survey identified labour as the weakest factor of productivity, despite claims in the literature of enhancing rural employment (Morison et al 2005, Matthews 2008). However, this may be explained by the focus of this research on the organic beef sector specifically. Indeed, Condon (2010) implied that organic beef farming required lower levels of labour due to the extensive nature of production, combined with the temperate climate in Ireland and its ability to produce large quantities of pasture for livestock (Leavy 2009).

These findings illustrate that there are common themes within the literature and from the sample under observation in the survey. Accordingly, these intuitive factors could be targeted for future research to contribute to the ongoing development of the organic beef sector in Ireland, and avail of the current opportunities, particularly in the export market. Identifying the important drivers of productivity would positively contribute to a more focussed organic beef sector with improved farm performance, and therefore increased profitability. However, these findings require further research on a larger sample for verification.
8.2.2 – Policy Influence
The importance of policy to accelerate or retard the development of the organic sector has been another consistent theme of this research, as previously identified by many authors such as O’Donnell (2010). Policy makers hold the ability to encourage a particular production system, by offering support and incentives to producers, and assisting in the process of developing new markets. Conversely, policy makers can also reduce the viability of an agricultural sector by withholding support and neglecting development prospects at the expense of alternative opportunities in rival agricultural activities. This balancing act is traditionally problematic in agriculture as diverse interests compete for attention at the policy level (Tovey 1997).

The results of the survey reinforce these assertions as participants indicated that policy was both an influential driver of, and constraint to productivity. It was widely accepted that support payments were a necessary addition to income levels, but some participants commented that the reduction of these payments would result in immediate reversion from the organic system. Moreover, some participants criticised the strict regulations imposed at policy level, with little or no flexibility for unique circumstances such as the death of a newborn calf. In this instance the farmer argued that it was unreasonable that a calf from a conventional herd could not replace the lost organic calf for bureaucratic reasons, despite the associated loss of income to the farmer. This was just one specific example of the rigidity of the system, despite the heterogeneity of circumstances as argued by Tovey (1997), Pannell et al (2006, and Hazel and Wood (2007).

Participants were asked to provide their level of satisfaction of supporting bodies including the Department of Agriculture and Teagasc, and to indicate their frequency of interaction. This varied considerably among the sample, but overall, the average rating was 3.4 out of a possible 5 for the Department implying that their support is satisfactory, but there is room for improvement. Accordingly, participants offered a wide range of suggestions for more effective support including the need for increased pragmatism, increased expertise and to proactively cooperate with producers to achieve the common goal of sector development. In relation to the latter point, some producers criticised the attitude of the Department of Agriculture as hostile to the extent that they
sought to identify breaches for penalties as opposed to cooperatively embracing innovating techniques.

In fact, the open ended questions relating to the supporting bodies often received the more animated reaction from the sample. The general impression was that participants are acutely aware of the influence of policy makers and the bodies in the future security of the organic beef sector. This influence must continue to ensure that the sector can prosper, and the neglect of such action could lead to the decline of the sector with the associated reversions inevitable.

However, a key aspect of policy influence consistent with the Lampkin (2001) paper is the importance of research, education and investment. The need to secure policy funding was predominantly agreed upon from the results of the survey, and furthermore, that this should be targeted at improving the sector, as argued by Tovey (1997). Therefore, it could be interpreted that adequate funding is required to encourage greater research on areas such as profitability from productivity, and additional training programmes on farm management. Indeed, over 86 percent of respondents indicated that they had undertaken a formal course to improve their technical skills for organic production. However, they also emphasised the need to continue improving technical expertise, and requested a plethora of additional types of training courses to further enhance their skills. The need to improve expertise in relation to resource management was particularly important to the farmers in the survey, consistent with Lampkin (2001).

8.2.3 – Farm Management
The management of the farm is a key aspect of successful production and profitability (Lampkin 2001). Farm management includes resource management such as land and stock, business management and in some cases personnel management. Rationally, the more effective a management strategy is implemented, the more success the farm will achieve.
The second managerial influence in Lampkin’s (2001) paper was time spent under organic management, and this was addressed in the third criterion for selection in the survey sample. The average duration as an organic producer in the sample was 7.37 years. The 2 year conversion period under the current organic scheme is designed to enable farmers to complete a system changeover, and acquire the necessary skills required to produce organically. Logically, the duration spent implementing a production system will inevitably improve expertise and efficiencies. Thus, a period of 7 years as an organic producer should yield superior farm performance results as predicted by Lampkin (2001).

The skills and management ability aspect of Lampkins paper were addressed under sections 3 and 5 of the questionnaire, when farm management strategies, and technical expertise were examined. The majority of respondents indicated a formal management strategy, particularly in relation to land management. Paddock grazing, rotations and strip grazing were common strategies, whilst clover and lime were widely applied to bolster land fertility. Furthermore, the majority of respondents intended to increase their current stocking density, whilst adhering to an improved breeding philosophy, and actively seeking to improve their land management. As noted previously, 2012 has been a poor year in terms of weather patterns, and thus the cross sectional data collected may have reflected this in their lower stocking density. Accordingly, it is unrealistic to expect these respondents have implemented their desired land management strategy in its entirety, given the harsh conditions evident this year.

Nonetheless, the importance of a sound farm management system was confirmed as a fundamental prerequisite to improving profitability from productivity performance, consistent with Lampkin (2001). The best performing farms in the survey showed that given favourable conditions, and effective management, sales receipts in excess of €1,000 per hectare were achievable. Accordingly, to imitate the best practice farms would be a progressive step towards improving efficiencies and bolstering income levels, which also echoes the conclusion of the Lampkin (2001) paper. Thus, land, stock, and business management could be prioritised in the ongoing development of the
organic beef sector to avail of the current market opportunities as outlined in the literature review.

8.2.4 – Motivations and Objectives
A key managerial influence identified by Lampkin (2001), was the personal and business goals of each producer. The survey accommodated these aspects through the interpretation of the responses to the motivations section of the questionnaire, which also focused on their objectives and ambitions, and therefore addressing the third research question as set out in this research. The results of the survey indicated that respondents were motivated by the opportunity to reduce their costs, and improve their production techniques in an environmentally friendly, health conscious manner. This ambition was coupled with the primary objective of maintaining a viable income, which was supplemented by direct payments and the receipt of premium prices, which were also key conclusions of Lampkin’s (2001) paper.

The literature review confirmed the importance of farmer motivations, attitudes and objectives. Their decision making process is complex and rationale is heterogeneous, and consequently reduces the validity of generalisations (Pannell et al 2006). Vanclay (2004) argued there are a combination of factors that influence farmers to adopt a new production system, such as the organic beef system. The analysis of the National Farm Survey also indicated the ambition of farmers, particularly in the case study, as farm investment patterns signified the objectives of the producers, with farms proactively investing to improve their holdings, and others content to maintain their existing scale of production, or even gradually decline their operations. However, the results of the survey elaborated on these claims by offering a unique insight into the ambitions and concerns of a specific sample of active producers and yielded some interesting results.

A specific example would be that over 80 percent of farmers surveyed identified lower production costs as a key motivation for adopting the organic system based on the results of the Likert scale question asked. Of those farmers, all but two also attached an equally strong weight to the reduction of production costs as a core farm objective,
indicating a deliberate coherent strategy to improve farm efficiencies. This is confirmed by a strong spearman rank order correlation between both that was significant at the 1 percent level. This theme was reinforced by additional comments to ‘reduce costs by eliminating the middle men and bottlenecks, and thus reduce the price for consumers’ and ‘need to continue support to combat increased production costs’. Accordingly, it can be deduced that the sample under observation placed an important emphasis on controlling costs, implying a conscious effort to achieve higher incomes, which is dependent on the principle of efficient productivity performances, as argued by Lampkin (2001) and Lohr and Park (2007).

In conclusion, the empirical results of this research reinforce the common themes that emerged from the literature review. The three aspects of Lampkin’s (2001) paper fundamental to this thesis, have been adequately incorporated into the primary research design, and his findings have been reinforced by the results. Moreover, the broader issues identified through the National Farm Survey, and the primary research complement the existing literature, by expanding on these themes, and piloting issues for future research. The impact of the findings are now discussed in more detail in the remainder of the chapter.

8.3 - Conclusions
The findings of this research identify influential drivers of productivity, verify the influential role of the policy process, and establish the factors that may motivate farmers to adopt the organic system, which were the central questions of the research. It also pilots broader issues that can contribute to future research into the performance of organic beef farms in Ireland. Thus, this research improves the existing literature, by confirming the importance of incorporating the wider managerial influences into productivity measurements as advocated by Lampkin (2001), rather than focusing predominantly on financial performance. The existing analysis of productivity neglects the significance of motivations, management ability, and policy support. However, this research develops a methodology to incorporate these factors, by expanding on the literature and National Farm Survey data, and providing a more thorough insight into
the ability and determination of active organic beef producers. The impact of these findings are discussed in this section.

8.3.1 – Factors that affect productivity
Firstly, in relation to the primary research question on the influential drivers of productivity in the organic beef sector, a number of key factors were identified on the basis of the literature review, and the results derived from the survey. Resource management, soil functionality, market trends, research and development, and the importance of sustainable production methods were indicated as key influences in productivity performance. A targeted approach to bolster expertise in these specific areas could significantly improve the efficiency of the organic beef sector, and thus generate increased profitability through reduced waste. This would proactively assist in the further expansion of the Irish organic beef sector.

Evidence presented in this research suggests that there is ample scope for improvement in the organic beef sector in relation to productivity. Previous research from Tzouvelekas et al (2001) and Lansink et al (2002) found that organic farms achieved higher technical efficiency than conventional farms. However, the findings of this research indicated that surveyed participants intended to increase productivity, implying that they could improve their technical efficiency at present given their current capacity. This could be achieved in a number of methods, such as improving the fertility of the soil, implementing an effective farm management strategy, or more progressive technological advances. For example, improving soil biology, enhancing the genetics of the herd, and controlling costs are all important elements of efficient productivity, derived from the findings of the survey. However, the results also indicated a paradox in that although the participants intend to increase their current stocking rates, they are simultaneously concerned with the capabilities of their land to absorb larger quantities of stock, given recent weather patterns and economic conditions. Accordingly, the need for favourable conditions coupled with adequate land management, will ultimately determine the stocking density, and therefore productivity on organic farms.
Therefore, it can be argued that this research expands on the existing literature by exploring the broader issues that surround productivity performance. The existing measures, whilst useful, are limited by primarily focusing on financial returns, without sufficient attention paid to the motivations, ability or expertise of producers. This thesis pilots a survey that attempts to incorporate these factors as central to productivity performance, and the findings indicate the need to improve profit margins, provide a systematic best practice example of organic beef farming, and focus on the quality of produce as key aspects of future developments in the organic beef sector.

8.3.2 – Policy implications
A consistent theme throughout this research was the influential role of policy and the development of the organic sector (O’Connor 2010). The establishment of a supranational policy in the form of the CAP regulation on organic production, the role of the supporting networks, and the creation of a National Steering Group have all positively affected the adoption of organic beef production in Ireland. The formal policy created a viable environment for organic producers, and thus, is also a key element of future development strategies. This research extended this argument, by incorporating the various policy actions into the survey and analysing the views of the participants. Accordingly, this research outlines some key themes that may contribute to policy formulation dialogue.

Undoubtedly, this research confirms the need for a wholesome strategy to ensure the further expansion of the organic beef sector in Ireland, as argued by Tovey (1997) and Sundrum (2001). However, the difficulty in the uniform application of a policy on a heterogeneous agricultural sector is clear, and the survey responses revealed the importance of flexibility within policy to ensure equitable opportunities for all organic producers. Indeed, participants asserted that the fear of penalisation for minor breaches of regulations was of concern, as was the need to increase pragmatism among authorities in unique circumstances, such as the death of a new born calf, as discussed previously. Thus, this research confirms the complexities of the policy process for organic beef production, but also the need to create an effective strategy to prolong the recent success of the sector.
This research also implies that organic producers respond to market fluctuations. Accordingly, it can be deduced that while forecasts indicate existing market opportunities, producers are also more sceptical and cautious of the challenges of the market. Indeed, market challenges were reported as strong constraints to productivity by 65 percent of respondents in the survey. Furthermore, in terms of output channels, concerns were raised over the limited options available to producers. Respondents criticised the dominance of the monopolistic processor, insisting this had negative implications for prices due to the lack of competition. Moreover, they raised the issue of the limited number of marts per annum, and the distances producers had to travel to avail of these marts without a guarantee of a sale or purchase. These concerns were amplified with the result that just 25 percent of the sample supplied the local market, and other respondents revealed that they sell their output on the conventional market, meaning they forgo their opportunity at receiving a premium price. Thus, it can be concluded that the security of the market, and increased competition among buyers are key prerequisites to accommodate a coordinated increase in productivity levels at present. These specific findings illustrate areas of concern to active organic beef producers in Ireland, and thus, indicate direct criticisms of the existing sector and policy environment. Accordingly, policy measures could be enforced to alleviate these concerns through the further promotion of the sector to guarantee the consumer market, or by providing incentives to increase production and output channels, as two possible examples.

Moreover, the need to secure funding in the sector may be viewed as a direct policy issue. The literature revealed the importance of support payments to the viability of production (Connolly et al 2008, Clavin and Moran 2011), and the analysis of the National Farm Survey and the primary research reinforced this claim. Producers are largely dependent on this support in achieving an income comparable to other industrial sectors in the economy. Thus the removal or reduction of these payments could accelerate the rate of reversion from the organic sector, as argued by Sauer and Park (2009) and echoed by the respondents of the survey. Furthermore, the desire to increase expertise through additional training, research and development may be viewed as a
policy funding issue, as the allocation of agricultural budgets have a profound impact on improving the knowledge and expertise of specific sectors.

The impact of these findings is significant as a contribution to the literature, as we approach agricultural reforms in 2013. There are existing market opportunities, that provide ample openings to expand the sector from its present level of utilising just 1.2 percent of agricultural hectares in Ireland to the 5 percent envisaged under the Food Harvest 2020 agricultural strategy. Accordingly, an appropriate policy is fundamental to realising this potential, and by ensuring the achievement of optimum, efficient productivity, profitability will inevitably increase.

8.3.3 – Motivations to adopt organic production
The motivations for adopting the organic system were also investigate though the literature review and primary research of this thesis. Farmer attitudes and decision making are the result of a combination of intricate and complex aspects as outlined by Vanclay (2004), Pannell et al (2006) and Willock et al (1999). The heterogeneity of producers prevent a systemic formula for predicting the behaviour of farmers, and the results of this survey reinforce this claim. However, the importance of accommodating diverse attitudes among the organic farming community remains critical in continuing to develop the sector.

There were consistencies and divergences among the literature on motivations in the organic sector, and the results of the primary research. For example, Läpple (2010) found that farmers were discouraged to convert on the basis of new knowledge acquisition, or market challenges. The results of the thesis concurred with these as important, but the fees associated with organic certification were viewed as of greater significance as a barrier to conversion. The health and social motivations of farmers as argued by Padel (2001) were also reflected in the results of the survey. However, Padel found financial motives as of secondary importance, which was in contrast to the survey, where profitability factors were of primary importance, a point echoed by Tress (2001).
Accordingly, it can be argued that the diverse motivations of producers must be accommodated in future strategies to continue the development of the organic sector. Potential converters seek the necessary reassurance before making a decision to adopt a particular agricultural innovation (Padel 2001, Vanclay 2004 and Pannell et al 2006). Thus, it is imperative that substantial evidence is provided as to the viability of organic beef production as an alternative farm enterprise. This information must be comprehensive and digestible to ensure the recent acceleration of new entrants to the sector persists (Fairweather 1999). The results of the open ended questions in the survey provided some useful additional information on motivations to convert, such as the availability of financial support, criticisms of the conventional system and to develop closer contact with consumers. They also highlighted unique barriers to conversion such as the social pressure not to adopt organic production on the basis of recognition as an ‘outsider’, or the more practical problem of acquiring adequate raw materials to ensure optimum productivity. These issues offer additional insight into the attitudes of active organic beef producers, and thus would enrich further analysis if expanded.

Therefore, a combination of the literature review, the financial analysis of the NFS data, and the results of the survey ensure this research provides a valuable contribution to the existing literature, by piloting additional issues that could provide a foundation for additional research. The drivers of productivity, influence of policy and diversity of motivations among producers provide further insights into the wider issues affecting farm performance in the organic beef sector. Accordingly, progressive measures could be implemented to avail of the existing opportunities in the Irish organic beef sector, particularly in the export market (Purcell 2010). However, the need for a comprehensive targeted strategy, will ensure that the future potential of the organic beef sector in Ireland is achieved effectively, which has been a consistent theme through this research.
8.4 – Further Recommendations

The findings of this research pilot a number of issues that could be explored further in future research. These recommendations are presented in this section.

This research provides a useful contribution to the literature regarding the productivity on organic beef farms. However, it also suffers from limitations, constrained by the limited data collected and the limited number of the sample. The number of observations on the NFS prevented adequate statistical analyses. Moreover, although the data on the NFS provides valuable data on the costs, and production statistics, it is overly focussed on financial data, and ignores the wider aspects of the managerial influences. Conversely, the survey accommodated the wider managerial factors, but then suffered from limitations in relation to the financial data. Therefore, to combine both data sets with increased numbers of observations would provide a superior analysis. Furthermore, with improved data a stochastic frontier econometric model could be utilised to accurately measure technical change and technical efficiency, whilst incorporating the wider managerial influences as identified by Lampkin (2001).

Accordingly, increased research and development in these areas would assist the policy process, as a comprehensive multi-functional strategy is required, in order to fulfil the potential of the organic beef sector in Ireland. Indeed, research and development were also identified as influential drivers of productivity, and thus it is imperative that optimum, efficient productivity techniques are identified and replicated systematically, in order to achieve higher profitability and enhance the development of the sector further. A new policy direction must incorporate the motivations of producers, prioritise optimum, efficient productivity, enhance research into land and stock management, and actively pursue expanding the current market. A combination of these factors would ensure the continued expansion of the organic sector.

However, research into the motivations and objectives of organic producers will be important to the ongoing expansion of the sector, as improved awareness and proactive
initiatives will incentivise greater numbers of producers to convert. The goal must be to promote the viability of the organic beef sector as a competitive alternative production system, whilst diminishing the perceived barriers to conversion. This thesis outlines a possible method for circumscribing such a strategy, but must be applied to a larger sample. However, the importance of accommodating the complexities of the motivations, objectives and heterogeneity of farmers is an important prerequisite for the sector to avail of the existing opportunities at present.
Bibliography


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Fairweather, J. R. (1999) 'Understanding how farmers choose between organic and conventional production: Results from New Zealand and policy implications', *Agriculture and Human Values*, 16(1), 51-63.


Orientated Behaviour in Scotland, *Journal of Agricultural Economics* 50(2) pp. 286-303


Appendices

Appendix A: Ethics Approval

Appendix B: Cover letter distributed to survey participants

Appendix C: Letter of consent signed by survey participants

Appendix D: Questionnaire issued to survey participants
Dear Anthony,

Many thanks for your research ethics application which has been reviewed by the KBS Research Ethics Committee. I am pleased to inform you, that your application has been given research ethics approval.

Kind regards

Michelle

Michelle Cunningham
KBS Research Office
Kemmy Business School
University of Limerick
Limerick
Ph: 353 61 202627 - Room S207
Email: michelle.cunningham@ul.ie
To whom it concerns,

This is your opportunity to partake in the University of Limerick’s research of the influential drivers of productivity in the Irish organic beef sector, and the necessary policy alterations to ensure the continued growth and development of the sector. This work is also co-supervised by Teagasc, as I am an external Walsh Fellowship student. The research objectives include identifying the key factors that improve productivity, profiling the organic beef sector, and examining the role and influence of policy. The goal is to provide a framework for optimum performance, to ensure improved efficiency, and thus, profitability in the production process.

I would be extremely grateful if you could complete the survey and contribute to this valuable research. Full anonymity and confidentiality is guaranteed in this survey, and ethics approval has been granted. The questionnaire asks a series of questions relating to your farm characteristics, performance, technical expertise, attitudes and motivations, with the aim of identifying best practices of production. In return for your help and time we offer you detailed feedback on the relative performance of your farm, thus outlining areas you can strengthen to improve profitability, and will send you on a copy of the final thesis if you so wish.

Once again, thank you for your time and attention. Should you have any queries, please do not hesitate to contact me at the numbers below.

Yours sincerely,

Anthony Cawley,
Post graduate researcher,
Department of Economics,
Graduate Centre of Business,
University of Limerick
Tel: (061)202656 (087) 6202613
Email: anthony.p.cawley@ul.ie
Appendix C

Letter of Consent

I the undersigned, declare that I am willing to take part in this research thesis which is conducted by Anthony Cawley in conjunction with the University of Limerick and Teagasc as part of a Research Masters programme.

Title of Study: The Drivers of Productivity in the Irish Organic Sector

☐ I declare that I have been fully briefed on the nature of this study and my role in it and have been given the opportunity to ask questions before agreeing to participate.

☐ The nature of my participation has been explained to me and I have full knowledge of how the information collected will be used.

☐ I fully understand that there is no obligation on me to participate in this study and that I am free to withdraw my participation at any time without having to explain or give a reason.

☐ I am also entitled to full confidentiality in terms of my participation and personal details.

Signature: ___________________________ Date: ___________________
Appendix D
Questionnaire (please check box or number appropriate answer where relevant)

Section 1: Farm Profile

1. Age _____ Location (County) ________________

2. Please indicate the number of hectares/acres farmed (UAA)____________________

3. Of this how many hectares/acres are owned? __________ How many are leased? __________

4. Do you use a mixed farm approach or specialised beef? Mixed ☐ Beef only ☐
   If you answered mixed, what other enterprises are on your farm?
   ___________________________________________________________

5. In relation to organic beef production what type best describes your method?
   Calf to store ☐ calf to beef ☐ store to beef ☐ store to store ☐ weanling to beef ☐
   suckling to beef ☐ suckling to store ☐ suckling to weanling ☐ Other ☐
   ___________________________________________________________

6. Please indicate the number of years farming ________________
   Specifically how many as an organic producer? ________________

7. Please indicate your number of years in formal education (2nd level and higher)
   ______________________

Section 2: Motivations

8. What were important factors in the decision to convert to organics?
   (circle in order of importance with 5 representing most important)

<table>
<thead>
<tr>
<th>The organic ethos</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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</thead>
<tbody>
<tr>
<td>Environmental</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Health</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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</tbody>
</table>
9. What are you key objectives in relation to your organic farm?

(circle in order of importance with 5 representing the most important)

<table>
<thead>
<tr>
<th>Objective</th>
<th>1</th>
<th>2</th>
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<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improve livestock</td>
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<tr>
<td>Expand UAA under organic</td>
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<tr>
<td>Learn innovative techniques</td>
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<tr>
<td>Reduce costs</td>
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<tr>
<td>Improve husbandry</td>
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<tr>
<td>Other</td>
<td></td>
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</tbody>
</table>

If you selected other, then please specify
__________________________________________________________

10. On a scale of 1-5, how significant are direct payments to your income security in organics?

(check box with 5 as most important) 1 □ 2 □ 3 □ 4 □ 5 □

11. How significant was the availability of premium prices in your decision to convert?

(check box with 5 as most important) 1 □ 2 □ 3 □ 4 □ 5 □
12. Would you consider exiting the organic sector?  
Y □ N □  
Unsure □

13. In your opinion what are the most significant barriers to conversion to organics?  
(circle in order of importance with 5 representing most important)

<table>
<thead>
<tr>
<th>Barriers</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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</thead>
<tbody>
<tr>
<td>Lack of institutional support</td>
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<tr>
<td>Lack of knowledge</td>
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<tr>
<td>Bureaucracy</td>
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<tr>
<td>Compensation payments</td>
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<tr>
<td>Technical requirements</td>
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<tr>
<td>Competition</td>
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<tr>
<td>Fees</td>
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<tr>
<td>Lack of markets</td>
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<tr>
<td>Other</td>
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</table>

If you selected other, please specify  
__________________________________________________________

Section 3; Economic data (inputs)

14. On average, how many hours of labour are involved on your farm each week?  
________________________

15. Are you employed off farm?  
Y □ N □  
If yes, then what is your off farm occupation?____________________________________________________

16. Do you rely on family unpaid labour?  
Y □ N □

17. What is your current stocking level?  
__________________________________________________________
<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Value €/hd</th>
<th>Avg kg/hd</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suckler Cows</td>
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<tr>
<td>Stock Bulls</td>
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<tr>
<td>Cattle 0-1 yr Male</td>
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<tr>
<td>Cattle 0-1 yr Female</td>
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<tr>
<td>Cattle 1-2 yrs Male</td>
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<tr>
<td>Cattle 1-2 yrs Female</td>
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<tr>
<td>Cattle 2+ yrs Male</td>
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<td></td>
</tr>
<tr>
<td>Cattle 2+ yrs Female</td>
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</tbody>
</table>

18. What is your Nitrates stocking rate for 2011? _____________________________________kgsN/Ha
19. What are your intentions in regard to the stocking rate? Increase □ Decrease □ Maintain □ Unsure □
20. What are your main challenges in relation to increasing your stocking rate?
   *(circle in order of importance with 5 representing most important)*

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<th>2</th>
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<tr>
<td>Stocking restrictions</td>
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<tr>
<td>Lack of capital</td>
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<td>Land limitations</td>
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<tr>
<td>Marketing channels</td>
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<td>Other</td>
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</table>

If other, then please specify
________________________________________________________________________

21. What is your dominant breed of animal? ________________________ sire
    ________________________ dam
22. Do you use AI □ or Bull □
23. On a scale of 1-5 how important is breeding for organic beef in your opinion?
24. On a scale of 1-5 how would you rate the quality of your land for organic production?

25. How much emphasis is placed on soil quality in your farm management?

26. Are you utilising a formal grassland management strategy?

27. How often do you reseed?

28. Do you use nitrogen fixing crops? (such as legumes)

29. Have you purchased commercial fertiliser in the last 5 years? (such as basic slag, patent kali, rock phosphate etc)

30. Do you use lime?

31. Do you produce cereals on farm for feed?

Section 4: Economic Data (Outputs)

32. What was your value of sales in the last 3 years?

33. What was your output in terms of livestock units sold? (avg no. of animals per yr)
Section 5: Productivity, Farm Management and Markets

36. In your opinion, what are the most important drivers of productivity?

*(circle in order of importance with 5 representing the most important)*

<table>
<thead>
<tr>
<th>Factor</th>
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<th>2</th>
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<tbody>
<tr>
<td>Consumer demand</td>
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<td>Land</td>
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<td>Stocking rate</td>
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<td>Scale</td>
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<td>Soil structure</td>
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<td>Labour</td>
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<tr>
<td>Policy / Funding</td>
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<tr>
<td>Support services</td>
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<tr>
<td>Market opportunities</td>
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<tr>
<td>Education / R &amp; D</td>
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<tr>
<td>Availability of substitutes</td>
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<tr>
<td>Other</td>
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</table>

If other, then please specify
________________________________________________________________

37. In your opinion, what are the most significant constraints to productivity?

*(circle in order of importance with 5 representing most important)*

<table>
<thead>
<tr>
<th>Factor</th>
<th>1</th>
<th>2</th>
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<tr>
<td>Policy / Funding</td>
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<tr>
<td>Environmental protection</td>
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<td>Biodiversity</td>
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202
Market challenges 1 2 3 4 5

Production costs 1 2 3 4 5

Other 1 2 3 4 5

If other, then please specify
___________________________________________________________________________

38. Do you supply the local market with your produce?
   Y [ ] N [ ]

39. Do you achieve an organic ‘premium’ price for your produce?
   Y [ ] N [ ]
   If yes, then approximately what percentage is this ‘premium’ price versus conventional? ________%

40. What are your existing marketing channels?
   Direct Markets [ ] Organic Marts [ ] Processor [ ] Wholesaler [ ] Other [ ]
   __________________________

41. Have you undertaken any courses to improve your technical knowledge? (ie. Teagasc events)
   Y [ ] N [ ]
   If yes, then specify
   __________________________________________________________________________

42. Have you undertaken any courses to improve your marketing techniques? (ie. CEB course)
   Y [ ] N [ ]
   If yes, then specify
   __________________________________________________________________________

43. Have you undertaken any courses to improve your financial budgeting? (ie. E-profit)
   Y [ ] N [ ]
   If yes, then specify
   __________________________________________________________________________

44. What type of additional training would you benefit from?
   __________________________________________________________________________
   __________________________________________________________________________

45. In your opinion, what practical measures could be taken to improve productivity performance on your organic farm?
Section 6: Support Services

46. (a) How often do you utilise the following per annum?

(b) Also, how would you rate the assistance provided by these supporting bodies?

- Department of Agriculture
- Teagasc
- IOFGA
- Organic Trust
- Demeter
- Other

(5 representing excellent)

47. What practical steps could supporting bodies take to improve their services to clients?

Section 7: Further Comments