Risk and Farmers' Decisions to Farm Organically: The Case of Devon (UK)

By

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Abstract

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Over the past few decades, the organic sector in most developed countries has flourished. Growth in the sector has been paralleled by a substantial amount of research on several arenas (see Cobb et al. 1999; Robles et al. 2005; Jackson and Lampkin 2008; Lobley et al. 2009c; among others). Reasons for adopting organic farming have been studied in a variety of instances (Padel 2001a). Although there is a considerable body of evidence that supports the distinctly 'risky nature' of organic farming, our identification and understanding of how this nature affects farmers' decisions whether or not to farm organically are limited (see, for example, Lockeretz 1995; Duram 1999; Midmore et al. 2001; Baecke et al. 2002; Hattam 2006). It seems that there has been widespread acceptance of the hypothesis that organic farmers are more likely to be risk-takers compared to non-organic farmers. Similarly, the hypothesis that organic farmers with Non-Farming Backgrounds (NFBs) may have different attitudes towards risk has not been investigated yet through detailed empirical analysis.

Accordingly, this thesis seeks to analyse the importance of farmers' willingness to take risk in organic farming in their decisions regarding the adoption of organic farming where it is assumed that there is a link between attitudes and behaviours. The thesis employs a variety of methods: a questionnaire; familiarisation; in-depth interviews; and secondary data.

The findings of this thesis suggest that not all sources and types of risks associated with organic farming are differently perceived by non-organic and organic farmers. In Devon (i.e. the study area), more non-organic than organic farmers mentioned the existence of 'farm-related risks' and 'risks related to farmers' belief'. Further, 'risks related to financial returns' were perceived to be of concern by non-organic farmers compared to their organic counterparts. On the other hand, other types and sources of risks associated with organic farming were equally perceived to be of concern by both groups. As expected, the recent risky environment of organic farming played a significant role in this respect (see also de Buck et al. 2001; Flaten et al. 2005). The wider environment was moreover the cause of greater concern regarding production, market and institutional risks (as opposed to personal ones) among organic farmers in Devon at the time of the questionnaire survey, when compared to the level of concern at the time of adoption. This shows that perceptions of types and sources of risks associated with organic farming are subject to change across time (CRER 2002).

Compared to their non-organic counterparts, organic farmers in Devon were willing to take risk in organic farming. With regard to risk in farming and to risk in general, more organic farmers expressed risk-taking attitudes than did their non-organic counterparts. Consequently, and based on the main reasons for adoption and non-adoption of organic farming, this thesis suggests that willingness to take risk in organic farming acts as an extremely significant trigger for the uptake of organic farming. This in turn confirms what has been emphasised by many researchers (see Baecke et al. 2002; Acs et al. 2005; Serra et al. 2008; among others). It also suggests that investigations into people's behaviours and decisions in relation to a 'risky activity' should take into account their attitudes towards risk in that activity.

This thesis, in common with other studies (e.g. Kaltoft 1999; Lobley et al. 2005), also shows evidence of heterogeneity among organic farmers. A small group of organic farmers

in Devon from NFBs was in search of the 'good life' and wanted to produce public goods from organic farming. Although technical, market and institutional risks associated with organic farming were of concern to organic farmers from NFBs in this study, these farmers did not have distinct risk perceptions. In contrast, they had distinct attitudes towards risk in organic farming. More organic farmers from NFBs than organic farmers from Farming Backgrounds (FBs) were willing to take risk in organic farming.

Finally, and in accordance with Morris and Potter's (1995) work, this thesis has placed 79% of surveyed farmers in Devon on a typology which reflects the fact that farmers are not homogeneous. The 'conditional non-organic farmers' and 'pragmatic organic farmers' in this typology may, with varying degrees of ease, switch between organic and non-organic methods at any point in the future due to possible changes in their attitudes towards risk in organic farming. In contrast, the 'resistant non-organic farmers' and 'committed organic farmers' at the two extremes of this typology will very likely be resistant to changes in their current farming systems. Accordingly, a set of policy recommendations which may help to increase future organic adoption in the UK has been set forth.

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List of acronyms

ASDA	Asquith Dairies
BBC	British Broadcasting Corporation
BSE	Bovine Spongiform Encephalopathy
CAP	Common Agricultural Policy
DEFRA	Department for Environment Food and Rural Affairs
EFRC	Elm Farm Research Centre
ESA	Environmentally Sensitive Area
EU	European Union
FAO	Food and Agriculture Organisation
FBs	Farming Backgrounds
FiBL	Research Institute of Organic Agriculture
FMD	Foot and Mouth Disease
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome
IFOAM	International Federation of Organic Agriculture Movements
IFS	Integrated Farming Systems
LFA	Less Favoured Area
NFBs	Non-Farming Backgrounds
NGOs	Non-Governmental Organisations
OAS	Organic Advisory Service
OASs	Organic Aid Schemes
OCIS	Organic Conversion Information Services
OCW	Organic Center Wales
OELS	Organic Entry Level Stewardship
OSC	Organic Studies Centre
SAO	Soil Association Organisation
SFP	Single Farm Payment
STEC	Shiga Toxigenic Escherichia Coli
UK	United Kingdom
UKROFS	United Kingdom Register of Organic Food Standards
USA	United States of America
WTO	World Trade Organisation

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Author's declaration

At no time during the registration for the degree of Doctor of Philosophy has the author been registered for any other University award without prior agreement of the Graduate Committee.

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I attended the 'A Systems Approach to Organic Research: COR 2006 Postgraduate Course. Heriot Watt University, Edinburgh, United Kingdoom, 17-21 September 2006,

I attended the 'Crop Production Field Trip'. East of England, United Kingdoom, 24-27 April 2006.

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Chapter One: Introduction

1.1 Introduction

The aim of this chapter is to set the scene for this thesis on organic farming. First, I will provide some background information about the rise of organic farming (Section 1.2). I will then briefly state current research on organic farming. Section 1.3 will focus on factors affecting farmers' adoption decisions and will highlight that adoption studies have emphasised the distinctly 'risky nature' of organic farming. Section 1.4 will focus more specifically on the interlinkages between risk and organic farming and will link the discussion to 'risk theory'. In the next section the research gap will be addressed, arguing that only few studies have attempted to link research on organic farming adoption to farmers' willingness to take risk in organic farming. Based on the assumption that farmers' behaviours are directly related to their attitudes, Section 1.5 will suggest that 'reasoned action' theory will form a suitable conceptual framework for this thesis. The potential influence of the distinctly 'risky nature' of organic farming on farmers' adoption decisions forms the basis of the formulation of the research hypotheses and aim and objectives in Section 1.6. Finally, Section 1.7 will provide a brief outline of the structure of this thesis.

1.2 The rise in organic farming

In recent decades, agriculture in the developed world has experienced many changes with regard to the introduction of what are often seen as sustainable farming systems, including biodynamic agriculture, permaculture, integrated farming, alternative farming, wise use of inputs and organic farming (Schaller 1990; Pretty 1998; de Buck et al. 1999; Morris and Winter 1999; Botezatu et al. 2002; Eicher 2003). The move away from 'conventional' farming systems occurs largely as part of a quest for 'sustainable agriculture' (sustainable both in terms of the environment and rural communities)[1]. In particular, the importance and extent of organic farming in developed countries has grown dramatically over the past few decades, as has consumption of organic farming products[2]. While twenty years ago opportunities for food consumers to purchase organic products were limited, today virtually all localities in the developing world offer organic products, accompanied by a rapid increase in the area of organically farmed land (Kourouxou et al. 2008; Willer et al. 2008). Apart from food health related issues, the rise in organic farming has also been associated with environmental, animal welfare and social aims (Thamsborg 2001; Winter 2003a; von Borell and Sorensen 2004; Lobley et al. 2009c).

In Europe, the recent rise in organic farming has been related to three key drivers: policy (in particular the Common Agricultural Policy (CAP) of the EU), consumer demand, and farmer behaviour (Lampkin and Padel 1994; Winter 1997; Michelsen 2001; Botezatu et al. 2002; SOEL and FiBL 2002; Whitehead et al. 2002; Brassley and Lobley 2003; Acs et al.

[1] Conventional Agriculture is seen here as *"an industrialized agricultural system characterized by mechanization, monocultures, and the use of synthetic inputs such as chemical fertilizers and pesticides, with an emphasis on maximizing productivity and profitability"* Eicher (2003: 2).

[2] The definition of 'organic' farming in this study is based on the European Union (EU) Regulations 1804/99 and 834/2007 introducing sets of production standards for organic plant and animal production and stipulating the rules and guidelines for organic producing. See also Section 2.3.1 in Chapter 2 discussing a variety of definitions and concepts of organic farming.

2005; Wilson 2007; Gabriel et al. 2009). Since the mid 1980s, policy has played an increasingly important part in encouraging farmers to practise organic farming. Moreover, organic products are increasingly favoured by consumers seeking greater food safety, particularly after the Bovine Spongiform Encephalopathy (BSE) outbreak and other food scares. Simultaneously, farmers have increasingly looked for alternatives to conventional farming as part of a growing European 'farm crisis'. As a result, many conventional farmers have formally converted to organic farming to satisfy demand which has continued to grow steadily. Further, a significant proportion of non-farmers – particularly from urban areas – have become 'new entrants' to organic farming for a variety of motives, such as financial benefits[3]. According to Willer (2008), in Europe in 2006 about 7 million hectares were farmed organically by 200,000 organic farmers – a rapid increase from only 115,000 hectares with only 7000 organic farmers in 1985 (Lampkin 1996)[4].

Yet in Europe, despite such dramatic increases in organically farmed area and organic product availability, organic farming can still be regarded as a relatively marginal activity compared to non-organic practices[5]. In 2006, for example, only 2% of European agricultural area was organically farmed (Willer 2008). A variety of support mechanisms have, therefore, been implemented at national, regional and EU levels to support organic farming and achieve specific targets (see, for example, CEC 2004; Schmid et al. 2008). In England, for example, an action plan to develop organic food and farming was launched in 2002 where the aim was that 70% of the organic consumption should be nationally produced by 2010 (DEFRA 2002a).

[3] The present research will focus on organic farming as a recent process where organic farmers must follow a package of standards stated by a formal accreditation body.
[4] In the United Kingdom (UK), there were only 300 organic farmers with 6000 hectares of organic land in 1985 while today nearly 740,000 hectares are organically managed by over 5000 farmers (Lampkin 1996; DEFRA 2009).
[5] This category includes 'conventional' agriculture, as well as other agricultural approaches such as precision farming and integrated farming.

1.3 Adoption studies

A review of the literature on organic farming in the developed world suggests that this topic has been well studied over the years (Figure 1.1). However, it also suggests that further research is needed to increase our understanding of complex patterns and processes surrounding adoption of organic farming by farmers (see Section 2.5.2). The substantial amount of work concerning farmers' decisions to adopt organic farming provides the overarching framework for this thesis and warrants closer investigation.

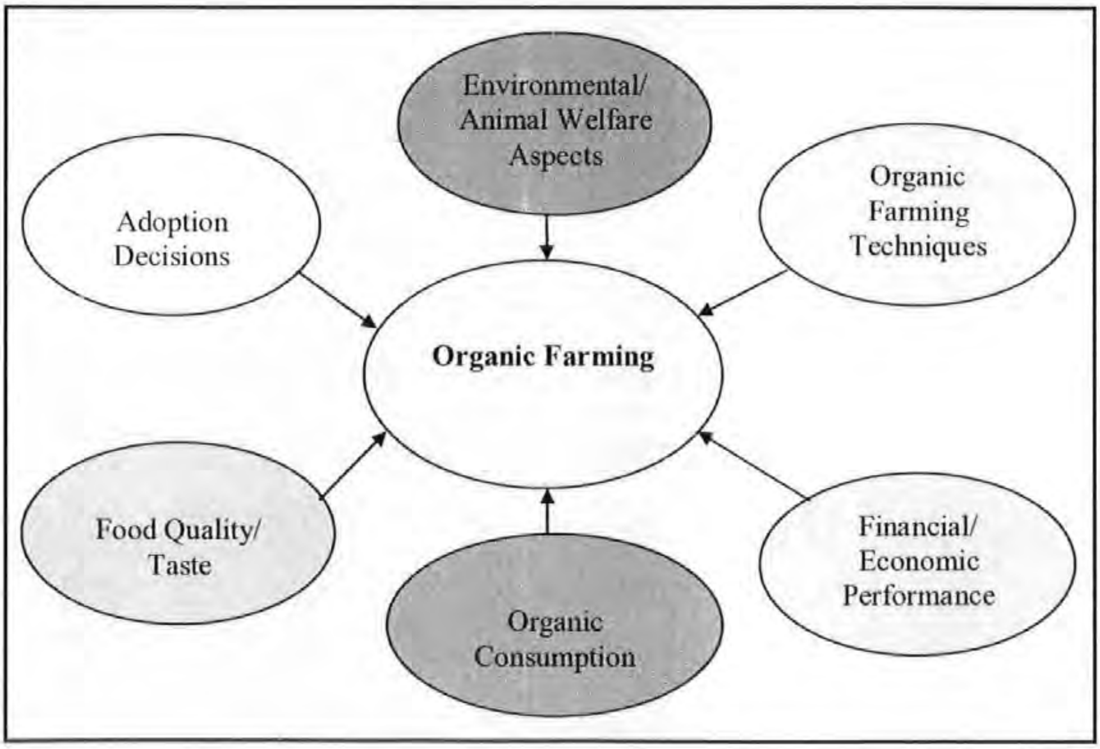


Figure 1.1: Main arenas investigated in organic farming research (Source: Author; after Lampkin 1994b; 2002; Dabbert et al. 2004)

As Table 1.1 highlights, multiple factors have been identified as being important in influencing farmers' decisions to adopt organic or to continue with non-organic farming.

Padel (2008) suggested that these factors can be classified into 'external' factors, as well as 'farm' and 'farmer' characteristics (i.e. 'internal' factors)[6].

External drivers for organic adoption usually fall into the categories of political and policy-related, institutional, economic, knowledge (including technological knowledge), skills-related, and cultural and ideological factors. Many authors have, for example, highlighted the importance of the policy environment in promoting organic farming, emphasising that the availability of 'organic schemes' (i.e. schemes that pay farmers to practise organic farming) can be crucial for increasing the number of organic farmers (CRER 2002; CEC 2004; Schmid et al. 2008). Similarly, institutional drivers – such as the role of government agencies, extension services and environmental Non-Governmental Organisations (NGOs) in promoting organic farming – have been identified as key factors that can influence organic uptake (CRER 2002; Measures et al. 2002; Gibbon, 2008). As sustainable farming systems often need new skills and knowledge (Winter 1997), the importance of the knowledge and skills environment in influencing organic adoption decisions has been well documented. Padel (2001b) and other researchers (e.g. Measures et al. 2002; Genius et al. 2006) highlighted the importance of knowledge about specific skills needed for successful organic farming, in particular as organic farming often requires more specialised and refined knowledge about agricultural and environmental processes, as well as more advanced management skills, than conventional farming (Newton 2004). Cultural and ideological drivers, meanwhile, have been more difficult to identify, although authors such as Padel (2001a) and Lampkin (2002) have suggested that in societies in which nature conservation and human health issues are important concerns organic farming is more likely to find social acceptance.

[6] It is interesting to note that the vast majority of adoption studies investigating why some farmers take up organic farming have focused on the influence of 'internal' factors.

External Drivers

Political Environment	CEC 2004; Robinson 2004; Schmid et al. 2008.
Institutional	CRER 2002; Measures et al. 2002; Gibbon, 2008.
Economic	CRER 2002; Hamm et al. 2002; Lobley et al. 2009c.
Knowledge and Skills	Padel 2001b; Rigby et al. 2001; SOEL and FiBL 2002; Genius et al. 2006.
Cultural and Ideological	de Buck et al. 2001; Padel 2001a; Lien et al. 2006b.

Farm Characteristics

Farm Size	Lockeretz 1995; Burton et al. 2003; Best 2008.
Farm Capacity	Midmore et al. 2001; McEachern and Willock 2004.
Farm Type	McCann et al. 1997; Duram 1999; Midmore et al. 2001.
Farm Location	Midmore et al. 2001.
Farm Income	Lockeretz 1995; McCann et al. 1997; Duram 1999; Flaten et al. 2006.

Farmer characteristics

Age	Lockeretz 1995; McCann et al. 1997; Hattam 2006.
Gender	Lockeretz 1995; Burton et al. 1999, 2003.
Education	Lockeretz 1995; Flaten et al. 2006.
Background	McCann et al. 1997; Duram 1999.
Skills	Lockeretz 1995; Midmore et al. 2001.
Engagement in Rural Community	Burton et al. 1999; Duram 1999.
Husbandry	Wernick and Lockeretz 1977; Vine and Bateman 1981.
Ethical Factors and Worldviews	Wernick and Lockeretz 1977; Darnhofer et al. 2005.
Environmental Concerns	Midmore et al. 2001; McEachern and Willock 2004; Toma and Mathijs, 2007.
Health	Vine and Bateman 1981; Fairweather and Campbell 1996; de Lauwere et al. 2004; Darnhofer et al. 2005.
Financial Motives	Fairweather and Campbell 1996; Duram 1999; Koesling et al. 2005; Tranter et al. 2007a.
Willingness to Take Risk or Challenge	McCann et al. 1997; Midmore et al. 2001; de Lauwere et al. 2004; Koesling et al. 2005.
Farmer Risk Considerations	Fairweather and Campbell, 1996; McCann et al. 1997; Duram 1999; Midmore et al. 2001; Schneeberger and Kirner 2001; Baecke et al. 2002; de Lauwere et al. 2004; Darnhofer et al. 2005; Hattam, 2006.

Table 1.1: Factors affecting farmers' adoption decisions and some related references (Source: Author; after Padel 2008)

As Table 1.1 (above) shows, farm characteristics have been identified as important in influencing decision-making with regard to uptake of organic farming. These include, for example, farm size (e.g. Burton et al. 2003), opportunities that the farm offers with regard to soil management, landscape conservation, or water management and protection (e.g. McEachern and Willock, 2004), farm type (e.g. Duram 1999), farm location and aspect (e.g. Midmore et al. 2001), as well as the potential of the farm to generate a viable income (e.g. Lockeretz 1995; Duram 1999). Many studies have highlighted that while small farms in advanced economies were more likely to farm organically in the past (e.g. Lockeretz 1995), more recently larger farms appear to be more likely to practise organic farming (e.g. Best 2008). With regard to farm location, meanwhile, Midmore et al. (2001) argued that farms in 'marginal' locations are more likely to convert to organic, as they often have fewer alternative income opportunities and/or they can be motivated by non-financial incentives, although other studies have highlighted that farms in such locations have also converted back from organic farming because of marketing and financial difficulties (Rigby et al. 2001).

With regard to farmer characteristics influencing the uptake of organic farming, some studies have pointed towards the importance of age (e.g. Hattam 2006), gender, education (e.g. Burton et al. 1999, 2003; Flaten et al. 2006), background, knowledge, skills, farming experience (McCann et al. 1997; Duram 1999; Midmore et al. 2001) and rural community involvement (Burton et al. 1999; Duram 1999) – with most of these factors acting in complex multi-causal ways to influence farmers' decisions. On the basis of the reviewed research, a significant proportion of organic farmers has been found to be young, better educated, and mainly from urban areas. They are also usually well embedded in rural communities and have less farming experience. For example, college or university education has been achieved by more than 40% of organic farmers surveyed by Flaten et al. (2006). Further, out of thirteen organic farmers only one had previous practical experience of conventional farming in Lockeretz's (1995) work, and McCann et al. (1997) similarly highlighted that only 25% of organic farmers in their sample were not new to farming[7]. There has also been some evidence that the initial idea of practising organic farming on some farms has come from female landholders.

One important component of this field of investigation has focused on the importance of farmers' perceptions and attitudes towards specific issues, factors and driving forces affecting organic farming uptake. As mentioned above, it is here that the 'external' factors influencing decision-making are mediated through farmers' specific views. In other words, the external environment itself only acts as an important factor for organic adoption through the farmer him/herself. Lockeretz (1995), for example, highlighted that younger farmers with multi-farming objectives tend to be more interested in organic adoption, while Burton et al. (1999) found that women are more likely to be the key decision-makers about organic farming adoption when non-financial motives are seen as paramount. Many studies, meanwhile, have emphasised the importance of the policy environment for influencing farmers' decisions to practise organic farming (e.g. Midmore et al. 2001; McEachern and Willock 2004).

There is a wealth of information on adoption of organic farming, although little is known about farmers' willingness to take risk. The majority of research results highlight the link between attitudes and organic farming adoption, especially by focusing on husbandry, philosophic and ethical concerns, environmental considerations, financial considerations,

[7] Other literature on organic farming has also highlighted that a number of organic farmers can be identified as organic farmers from Non-Farming Backgrounds (NFBs). Lobley et al. (2005: 118), for example, found that *"31% of organic farmers were 'new entrants' in the sense that when they entered farming they had never farmed before and did not come from a farming family"*.

etc. Darnhofer et al. (2005), for example, found that some farmers have a significant philosophical and ethical commitment to organic farming. Other studies have found that during the early stages of the organic movement in advanced economies (1970s), for example, farmers' ethical and altruistic beliefs and technical problems in conventional farming, leading to a concern for soil and animal health, played a significant role in farmers' decisions to farm organically (Wernick and Lockeretz 1977; Vine and Bateman 1981).

Further, farmers' attitudes towards human health have been cited as an important consideration in their decision to practise organic farming. For example, both Fairweather and Campbell (1996) and Darnhofer et al. (2005) emphasised that many farmers have been worried about health-related issues linked to conventional farming. Many adoption studies have also assessed the important linkages between what could be termed 'environmental considerations' and the propensity for organic adoption (e.g. Midmore et al. 2001; Toma and Mathijs 2007). More recently, it appears that farmers have become more pragmatic in their approach towards organic farming (Winter, 2003a) with financial factors becoming more important in decisions to embark on organic techniques (Duram 1999; Tranter et al. 2007a). On the one hand, this has partly been helped by the fact that organic produce has become an important component of the shopping basket in most advanced economies, and that consumers are willing to pay a premium for what they perceive to be healthier food (SERIO and Plymouth University 2008). On the other hand, the changing policy environment (e.g. in the UK) has also allowed farmers to be more pragmatic and practical in their approach towards organic adoption, as financial subsidies for organic conversion have substantially increased over the past 20 years. In addition, farmers have begun to realise that practising organic farming may help them save variable cost (e.g. through savings linked to the fact that organic farmers do not need to pay for chemical inputs) (Padel 2001a).

A review of adoption studies suggests that farmers' risk attitudes have so far received little attention, with only a few researchers addressing the potential link between organic farming adoption and risk attitudes. The latter have often only included one statement or a few questions concerning specific risks in organic farming, and often no specific framework related to 'risk theory' has been adopted in these studies[8]. Nonetheless, a few tentative results have emerged from these studies. For example, Midmore et al. (2001) argued that many organic farmers, in contrast to conventional farmers, have welcomed the challenge involved in organic farming. McCann et al. (1997) went further by suggesting that organic farmers are willing to take current yield and price risks to satisfy different farming objectives. Farmers' identification of the existence of different sources and types of risks in organic farming has received more attention in adoption studies[9], especially as organic farming methods provide several sources and types of risks, particularly with regard to controlling weeds, pests and diseases. This has been of major concern to most conventional farmers when thinking about organic farming according to several adoption studies (e.g. Midmore et al. 2001). Further, the need for labour in organic farming has been a great concern of farmers who are practising non-conventional farming (e.g. Lockeretz 1995; Schneeberger and Kirner 2001). Other significant sources and types of risks in

[8] Risk attitudes can be defined as a chosen response to perceived risk (Hillson and Murray-Webster 2005).

[9] This is consistent with one of the concepts of risk perceptions that is employed in 'risk analysis' techniques where the probability of risk occurrence is assessed (see Curry and Weiss 2000). This concept will be the basis of this thesis since risk must exist before a farmer expresses the degree to which he/she wants to take it (Pennings and Leuthold 2000). Other concepts of risk perceptions can be related *"to the probability of failure and the associated negative consequences"* (McCarthy and Henson 2005: 435), or can reflect *"the likelihood of exposure to the content of the risk...and [risk perceptions] can be defined as ... assessment of the risk inherent in a particular situation"* (Pennings and Wansink 2004: 699). Further, risk perceptions can be linked with the expected frequency of the influence of different sources and types of risk on the performance of an activity (see Flaten et al. 2005). See Chapter 2 for a more detailed discussion.

organic farming associated with the organic market are unstable prices, and price risk has been mentioned by many farmers in adoption studies (e.g. Duram 1999; Midmore et al. 2001; Baecke et al. 2002; de Lauwere et al. 2004; Darnhofer et al. 2005). Studies have also shown that market risks in organic farming have been exacerbated by other forms of risk, in particular institutional risks such as standards (e.g. Midmore et al. 2001; Darnhofer et al. 2005), and risks linked to financial support (e.g. Midmore et al. 2001) and information (e.g. Duram 1999). In addition, negative attitudes of members of the wider farm family towards organic farming have also been found to create social pressure, leading many conventional farmers to stay in non-organic farming (Duram 1999; de Lauwere et al. 2004; Hattam 2006).

This brief reviews suggest that the majority of adoption studies have underlined the distinctly 'risky nature' of organic farming. As this is the focus of the present research, more light will be thrown in the next section on the interlinkages between risk perceptions and organic farming by investigating specific literature on organic farming that emphasises different potential sources and types of risks. The next section will also define risk, will explain why organic farming can be considered as a 'risky activity', and will also explain why the present research will employ 'risk theory' as a conceptual framework.

1.4 Assessing risks in organic farming

1.4.1 Risks in organic farming

Although some risks in organic farming can be similar to those in other farming systems (Hanson 2003), Flaten et al. (2005: 11-12) argued that *"organic farmers are exposed to additional and different sources of risk compared to conventional farmers"*. This general notion is well-assessed by many researchers. Morris and Winter (1999: 199), for example, argued that *"for most farmers any shift towards a more sustainable system, whether organic, an agri-environmental scheme or Integrated Farming Systems (IFS), will present new challenges"*. However, as the following paragraphs will show, sources and types of risks in organic farming are complex and multi-faceted. They can be categorised into production, market, institutional and personal and social risks (see Figure 1.2)[10]. Here, it is important to bear in mind that *"the various categories of risks are not independent, i.e. they can influence each other. Institutional risk factors, for example, can influence all the other sources of risk"* (ESG 2001: 19). Further, when occurring, a specific risk is more likely to have multiple impacts (Aven and Renn 2009).

The effectiveness of organic farming techniques that significantly rely on the natural processes inherent in ecosystems can pose important production risks for farmers practising organic farming (Xie et al. 2003; Serra et al. 2008). Here, both food quantity and quality can be affected, since yields in organic farming can be poor (Kristiansen et al. 2006) and organic products are more often exposed to harmful pests (Lampkin 2003). Further, according to von Borell and Sorensen (2004), different perceived benefits of organic farming, such as animal welfare, have not been scientifically proven. In addition,

[10] These categories are based on different areas of farmer activity in which risks might arise.

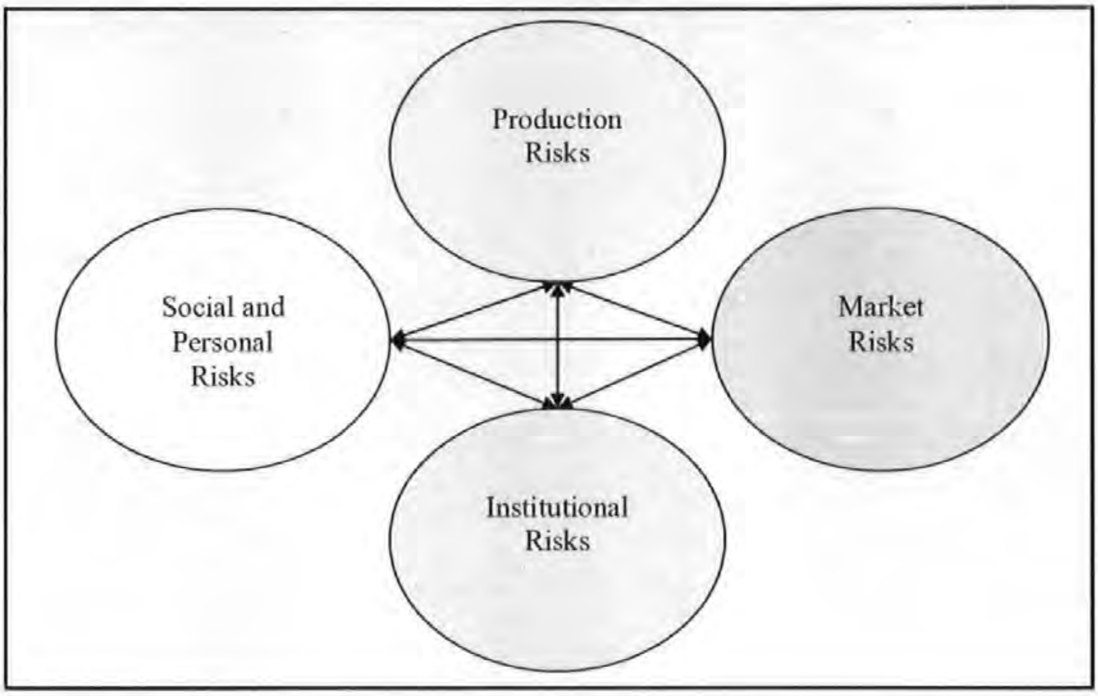


Figure 1.2: Interaction between types and sources of risks in organic farming
(Source: Author; after Hardaker 2004)

the weather can be a high risk factor for both organic and non-organic farming (Hanson 2003), but its effects on organic farmers can be more severe (Padel and Lampkin 1994b) due to complexity and difficulty in organic techniques and practices (Sharma et al. 2008).

The literature also suggests that adopting organic farming involves market risks, as costs to farm organically can be high (e.g. instability of the organic market; undesirable prices of outputs and/or inputs; necessary changes in farm investments; need for new inputs; etc.) and because markets for organic produce are highly uncertain (especially for highly specialised organic products) (Measures and Lampkin 2001; Newton 2004). An oversupply of organic products can mean an unbalanced market and, as a result, such products are more likely to be sold in conventional markets without access to a premium (Smith and Marsden 2004). Similarly, consumer beliefs and behaviour play an essential role in determining organic prices in the market, as consumers' views of organic farming values and its rules can reduce consumers' willingness to pay high prices for organic food (Wier and Andersen 2003). Some market risks are also associated with the availability of organic farming inputs, including seed, forage – particularly during the conversion period – and labour (Regouin 2003; Roderick et al. 2004; Acs et al. 2005; Lobley et al. 2009c; Gardebroek et al. 2010).

Lack in government commitment towards promotion of organic farming, changes in the policy environment and the increasingly complex governance structures of organic accreditation are all linked to institutional risks influencing adoption decisions (Padel and Lampkin 1994a; Koesling et al. 2004; Gibbon 2008). According to Giovannucci (2003) and Dabbert et al. (2004), this is exacerbated by the fact that there is confusion among EU consumers and producers about organic labelling, as different certifying bodies provide different labels with varying information quality. Further, required time, availability, quality and costs of information and training sources can be risky since organic farming requires the learning of new techniques (Padel and Lampkin 1994a; Regouin 2003). Despite the fact that current regulations aim to achieve specific targets through ensuring the ongoing development of organic farming, some farmers may, therefore, consider organic farming as risky due to the lack of assurance that organic farms will obtain financial support in the future (Lien et al. 2006b). The literature is, therefore, also pointing towards policy-related risks of organic adoption. In particular, although there is a view that organic farming will benefit from liberalisation of agriculture through World Trade Organisation (WTO) trade talks, current uncertainties linked to green or blue box subsidies as part of current WTO trade negotiations means that farmers are also unsure about future policy support (Andersen and Hazell 1997; Barling 2003). This is exacerbated by the fact that future organic trade may be hampered by the absence of an internationally accepted system which harmonises organic standards and regulations (Bowen 2003).

The final category of the sources and types of risks in organic farming is associated with personal and social risks. An extensive organic literature suggests that farmers' actions that result from complex processes are influenced by socio-economic and psychological variables (e.g. Newton 2004; Wilson 2007). Thus, personal and social risks in organic farming need to be well recognised by farmers practising, or considering conversion to, organic farming. In this respect, a farmers' personal life trajectory and 'memory' can influence opportunities for decision-making (e.g. the decision about organic adoption). Organic farming needs a convinced and committed farmer, otherwise this system can not be successfully practised (Lampkin 2002). Indeed, rural sociology and social and economic psychology literature highlights that issues related to risks that may influence a farmers' psychological well-being and identity-related factors can influence farmers' performance (e.g. Burton 2004a; Burton and Wilson 2006). This may be particularly important where only few farmers adopt organic farming and may feel psychologically marginalised from their 'conventional' neighbours (de Buck et al. 2001). Finally, social risk can be closely associated with the farmers' immediate family or farm household and their perceptions/behaviour regarding planned organic conversion. Research has found that where farmers have a supportive household environment (e.g. where the partner supports the planned activity/project), successful change is often more likely (Lampkin 2002).

1.4.2 Risk theory and organic farming

The previous discussion has highlighted the distinctly 'risky nature' of organic farming (which will also be subject of a deeper analysis in Chapter 2; see particularly Section 2.6). However, we still need to determine what risk is, and how a risk definition can be linked to the nature of organic farming. In this context, 'risk theory' has assumed growing importance over the past few decades as a powerful approach to understanding human decision-making under risk (Taylor-Gooby and Zinn 2006). In its broadest sense, a 'risk' can be considered as an activity or outcome that in some way may influence human well-being (Slovic 1998; Napier et al. 2004; Lim and Taylor 2005; Stave et al. 2008). The notion of risk is an inherently human-centred concept and, so, the term 'risk' can be seen differently even within the same group of people, and interesting questions relate to whether risk exists without human beings (Slovic 1999; de Buck et al. 1999). In its most basic sense, 'risk' can be defined as *"a blend of the probability and the severity of consequences"* (Slovic 1998: 1135; see also Curry and Weiss 2000; de Buck et al. 2001; Aven and Renn 2009) where – in general – there are always winners and losers (Beck and Ritter 1992; Adams 1995). This definition has been generally accepted by researchers seeking to measure risk in numerical terms and to address its impacts (Wright 1984; Slovic et al. 2000e). Further, it is in line with Gerrard (1995: 301) who argued that most risk definitions include specific terms such as 'probability', 'likelihood' and 'chance' of something adverse occurring.

One part of the literature on risk emphasises the distinction between 'risk' and 'uncertainty' (Slovic et al. 2000c, 2000d). Hardaker (2004: 4-5), for example, highlights that some researchers have argued that 'risk' can be seen as based on known probabilities, while the notion of 'uncertainty' is seen to relate to unknown probabilities. In contrast, Boyne (2003: 3-10) argued that there is not a clear distinction between 'risk' and 'uncertainty', since data are often available, and people's perceptions can be employed to assess probabilities under different circumstances as long as their perceptions are about beliefs. Thus, these two terms have been interchangeably used by many researchers investigating risky decisions. The literature on risk also highlights that there are many terms surrounding notions of risk, such as 'problems', 'threats', 'disasters' and 'hazards', that are all used interchangeably to refer to dangerous consequences related to the dependency of society on scientific and technical knowledge, particularly in industrial societies (Beck 1999; Gregory et al. 2000; Johnston 2000; Wilkinson 2001). This should not be surprising since our culture and societies contribute themselves towards creating risks (Douglas and Wildavsky 1982; Douglas 1992).

Concurrently, the literature on organic farming also involves several terms, such as 'risk', 'problems', 'barriers', 'uncertainty' and 'difficulty', that have been solely or interchangeably employed to point to different undesirable outcomes that are subject to variously expected frequencies (see, for example, Rigby et al. 2001; Roderick et al. 2004; Turner et al. 2007; see also Section 2.5.2). Yet, although the distinctly 'risky nature' of organic farming has been emphasised in many adoption studies and literature on organic farming, the precise nature and importance of these risks has received little attention in research on organic adoption – a research gap that this study aims to address.

1.5 Research gap

There is a substantial body of evidence that supports the distinctly 'risky nature' of organic farming, but our knowledge and understanding of how this risky nature affects farmers' decisions whether or not to farm organically is limited. While the majority of adoption studies have focused on identifying the existence of different sources and types of risks in organic farming from the farmer's point-of-view (see Section 1.3 above and Chapter 2), these studies have also acknowledged that organic farmers are willing to take more risks compared to other farmers. Yet, there are a few results in adoption studies about farmers' responses to these risks in organic farming, and detailed empirical analyses of the importance of attitudes to risk in organic farming are limited. In addition, little attention has been given to the extent to which organic farmers from NFBs are willing to take risk in organic farming. In seeking to understand and explain farmers' organic adoption decisions, researchers have investigated demographic characteristics of farmers supposed to affect adoption. Of particular concern in the present research is the potential influence that NFB is believed to have on organic adoption[11].

This thesis will attempt to address the gap in our knowledge by analysing whether farmers vary in their willingness to take risk in organic farming, to what extent this willingness to take risk varies between farmers and why, and how this influences their adoption decisions. Here, it is also vital to emphasise that the organic literature has highlighted the crucial role played by attitudes towards risk in decisions on organic adoption. McEachern and Willock (2004: 536), among others (e.g. Baecke et al. 2002; Lampkin 2002; Mackay et al. 2002; Lunneryd 2003; Acs et al. 2005; Serra et al. 2008; Acs et al. 2009), for example, stated – with regard to organic farming – that: *''any behaviour, which can be described as innovative, involves risk; therefore, an important aspect of change is the attitude towards risk held by the individual''*. Further, stances to risk have been found to play a central role in the psychological literature on understanding individuals' decisions and behaviours under risk (see Section 2.2.1).

This thesis will particularly use 'reasoned action' theory based on Fishbein and Ajzen's model (1975) as a conceptual framework. This theory assumes that attitudes are the inner indicator of behaviours and, therefore, assumes interlinkages between attitudes and

[11] This thesis will consider organic farmers who have not previously farmed elsewhere as organic farmers with NFBs (see also, for example, Bohnet et al. 2003; Lobley et al. 2005).

behaviours. 'Reasoned action' theory will enable us to assess farmers' adoption decisions vis-à-vis their positions to risk in organic farming[12].

1.6 Research hypotheses and aim and objectives

This section is divided into two parts. The first outlines the key hypotheses analysed in this study, while the second part assesses its aim and objectives.

1.6.1 Research hypotheses

The main hypothesis of this study is that the distinctly 'risky nature' of organic farming influences farmers' adoption decisions. This hypothesis can be split into five sub-hypotheses based on existing literature of farmers' adoption decisions (see above).

- Organic and non-organic farmers will have different perceptions about the sources and types of risks associated with organic farming (e.g. Midmore et al. 2001; Schneeberger and Kirner 2001; Darnhofer et al. 2005).

- Organic and non-organic farmers will have a different willingness to take risk associated with organic farming (e.g. McCann et al. 1997; Gardebroek 2006).

- Organic farmers from NFBs will have distinct risk perceptions and willingness to take risk in organic farming (Padel 2001b; Mailfert 2007; Reed et al. 2008).

[12] See Section 2.2.2 for a detailed discussion of 'reasoned action' theory.

- Based on Morris and Potter's (1995) 'participation spectrum', farmers can be categorised into a typology based on a 'risk-spectrum' comprising several categories ranging from risk-averse farmers to risk-takers (Darnhofer et al. 2005).

- Farmers who have converted to, or have adopted, organic farming are expected to change their perceptions of sources and types of risks associated with organic farming over time (CRER 2002).

1.6.2 Research aim and objectives

Using Devon as a study area, this thesis aims to analyse the importance of farmers' willingness to take risk in organic farming in their decisions whether or not to farm organically.

This study will have five specific objectives:

1. To assess non-organic and organic farmers' perceptions about sources and types of risks associated with organic farming.

2. To assess the importance of willingness to take risk with regard to non-organic and organic farmers' decisions to farm/not to farm organically or to consider conversion to organic farming.

3. To analyse risk perceptions and willingness to take risk in organic adoption of organic farmers from NFBs.

4. Based on Morris and Potter's (1995) notion of a 'participation spectrum', to categorise farmers into a typology based on a 'risk-spectrum' in order to help increase future organic adoption and to provide policy guidance.

5. To analyse possible changes in risk perceptions over time once farmers have entered into organic farming.

1.7 Structure of the thesis

The structure of this study will be as follows. Issues surrounding organic farming will be discussed in detail in Chapter 2, and the notion of risk, which is the core issue addressed in this thesis, will receive specific attention. Chapter 2 will also provide a detailed discussion of the research gap linked to organic farming and risk, and will elaborate further the key hypotheses, aim and objectives of the study. The methodologies used in this study will be outlined and justified in Chapter 3, with a specific focus on questionnaires, interviews and other types of data used in this study. Chapter 4 will form the first chapter of the analysis section of this thesis (comprised of four chapters overall). Chapter 4 will focus specifically on the different socio-economic characteristics of surveyed farmers in Devon. This will form a key baseline for analysing risk perceptions and attitudes of surveyed organic and non-organic farmers in Devon (Chapter 5). Chapter 6 will then focus on organic farmers from NFBs. The focus here will be on whether this group of farmers has different risk perceptions and a different willingness to take risks compared to organic farmers with Farming Backgrounds (FBs). Chapter 7 will then present a typology of organic farming adoption/non-adoption related to risk, and will also provide policy guidance which may help with regard to future improved organic adoption behaviour. This chapter will also show that risk perceptions are subject to change over time. Finally, Chapter 8 will draw together the key conclusions of this study, will highlight the key contribution of this research, and will also point towards areas for future research.

Chapter Two: Organic farming and risk

2.1 Introduction

This chapter sets the wider background for this thesis. Section 2.2 will address human decisions and behaviours under risk and how risk will be specifically investigated in this research. The section will examine debates in the risk literature, with specific reference to how risk attitudes can play a central role in individuals' decisions and behaviours under risk. The following sections will be concerned with organic farming and risk more specifically. Section 2.3 will review definitions of organic farming and outline its genesis, while Section 2.4 will focus on the main research arenas on organic farming analysed from various perspectives. Adoption drivers in organic farming, a key research arena that attempts to explain, understand and predict farmers' decisions to adopt organic farming, are analysed in Section 2.5. These drivers implicitly and explicitly identify organic farming as a 'risky activity' – an approach that provides the conceptual basis of this research. Organic farming as a 'risky activity' has also been emphasised in large sections of the organic farming literature, so Section 2.6 will discuss sources and types of risks in organic farming. Concluding remarks will be given in the final section.

2.2 Risk and human decision-making

This section consists of two sub-sections assessing human decisions and behaviours in relation to risk and the importance of 'reasoned action' theory for the present research. It is widely accepted that people vary in terms of their reactions concerning risk, so it is important for the present research to understand why such differences happen. Section 2.2.1 will highlight that attitudes are significant drivers in this respect, and will discuss people's decisions and behaviours under risk. Section 2.2.2 will discuss 'reasoned action' theory, and will explain why this approach forms a suitable conceptual framework for this thesis.

2.2.1 Human decisions and behaviours under risk

Risk can be defined as the expected frequency of severe adverse outcomes. This definition has been the basis of a variety of studies concerning people's decisions and behaviours in relation to risk (e.g. Wright 1984; Hardaker 2004). Probabilities of risk are often numerically estimated, although less tangible verbal expressions, such as 'very probable', are also often used (Wright 1994). Individuals vary in the way they define risk (Slovic 1999). For example, some people see risk as an uncontrollable activity (Rodham et al. 2006), while others consider risk as an unpredictable disaster or loss (Mitchell 1999). This is linked to the fact that people are dissimilar in their worldviews, values and experiences, and because there are different characteristics of risk (Sjoberg 2000). Research has, therefore, also focused on conceptual frameworks linked to the social amplification of risk (e.g. Kasperson et al. 1988). Here, it is suggested that people who are not familiar with risk are more likely to be affected by general information on a risk which may magnify or dampen risk perceptions (see also Gore et al. 2005). This suggests that there is no consensus among individuals about socially acceptable risks (Aven and Renn 2009; see also Section 5.7.3).

Several forms of risks have been analysed from different vantage points by the natural, economic and social sciences, based on the assumption that life is full of risks and uncertainties that are often seen as inescapable (Slovic et al. 1977; Gough 1990; Ho 2000; Hardaker 2004; Napier et al. 2004; Chen et al 2007). Adams (1995: 35), therefore, suggested that *"a zero-risk life is not possible"*. However, many people think that there are always two choices with respect to an uncertain decision: either take the decision or avoid it (Stiglitz 1994). Others argue that in some situations there is only one choice, in particular when people are involved in risky or uncertain activities. For example, according to Adams (1999), in road accidents caused by fast drivers, victims do not choose to take an obvious risk.

Yet, when people are willing to, or are forced to, take a risk, this risk will often also affect others as well as the risk-takers themselves (Boyne 2003), because the impacts of uncertain decisions are more likely to influence several actors associated with these decisions rather than just the decision-maker. Using an example from farming, when a farmer makes a decision to practise organic farming and organic prices drop, the farmer's family will also be affected and not just the key decision-maker him/herself (Lampkin 2002). In addition, uncertain decisions can influence others when they are taken on their behalf. Adams (1995) shows an example of this, arguing that when adults make uncertain decisions on behalf of infants and young children, they are directly affecting these infants and children (not always with the right decision). This poses the important question whether people's decisions under risk and uncertainty can be rational. In other words, do people make the right decisions and maximize their utility? Boyne (2003) indicated that people must be rational when they make decisions, as they are (almost) always seeking to maximize their utility. On the other hand, many people have been found not to be rational in their decisions, especially as people are not always perfect decision-makers or utility-maximisers (see Morgan 1986; Weinstein 1987; van Raaij and Crotts 1994; Sjoberg 1999a).

There are several scientific approaches for helping people to make decisions under risk, and for describing behaviours under risk. The theories of 'cost-benefit analysis', 'expected utility', and 'risky choice' are the most widely accepted models in the economic sciences which can serve both descriptive and normative aims (Pearce 1983; Thaler 2000; Hardaker 2004). These theories measure the outcomes of a given action, policy, project, programme, etc. and are based on the assumption that the decision-maker always seeks the highest utility. However, several studies have criticised these approaches because they often fail to describe observed behaviours under risk (e.g. Rabin 2000; see also Section 2.5.1). As a result, researchers have used different approaches and models to understand and explain people's decisions and behaviours under risk. To take a few examples from the farming and risk literature, Koesling et al. (2004) and Flaten et al. (2005), for example, have used the model of van Raaij (1981) which puts emphasis on people's perceptions and other characteristics, such as attitudes, to take economic decisions. Also, Pennings and Leuthold (2000) have sought to understand the relationship between farmers' behavioural attitudes and use of future contracts by employing Fishbein and Ajzen's (1975) reasoned action theory. Here, risk attitudes are seen to play an important role in farmer's decisions and behaviours under risk.

Other researchers have also emphasised the importance of psychological factors linked to risk attitudes (e.g. Slovic et al. 1977; Fischhoff et al. 1978; Sjoberg 1999b; Slovic and

Monahan 2000; Barnett et al. 2005; Taylor-Gooby and Zinn 2006; Serra et al. 2008; Greiner et al. 2009). Through a conceptual model, Adams (1999) has illustrated the suggested association between attitudes towards risk and people's behaviours and decisions under risk and how these attitudes are shaped (Figure 2.1). Here, people's behaviours are seen to affect their 'rewards' and 'accidents' which, in turn, influence their perceptions of, and attitudes towards, risks. Here it is argued that psychological elements, filtered culturally, result in people's behaviours – an assertion that will also form the conceptual basis for this thesis (see below).

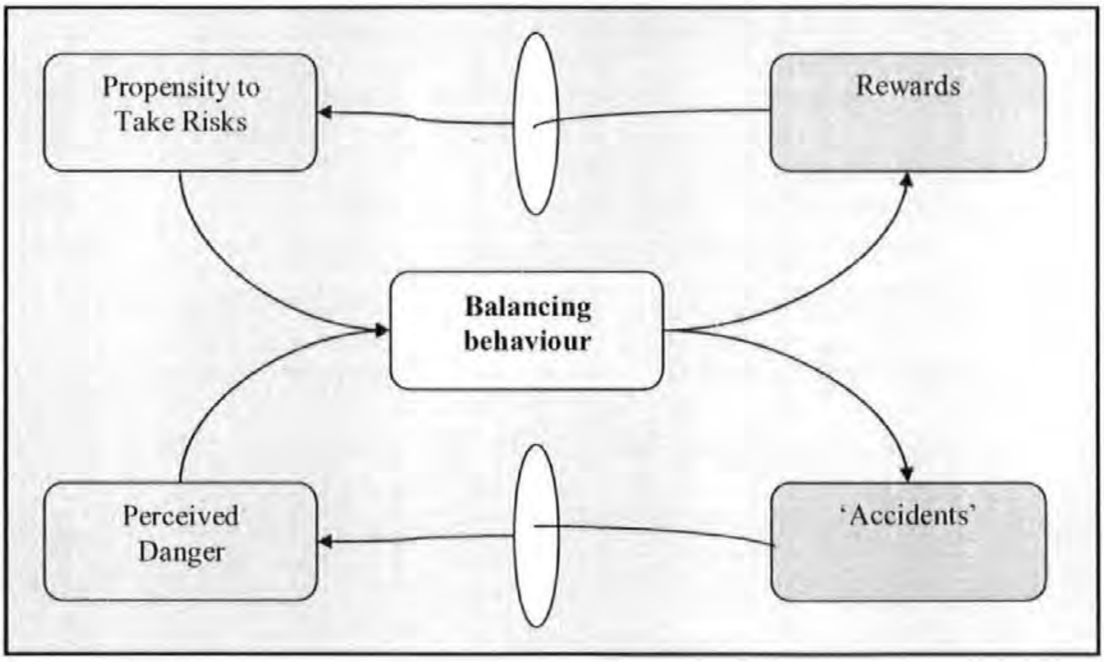


Figure 2.1: Adams' risk model
(Source: Adams 1999: 35)

Since people differ in their attitudes towards risk, they are also more likely to vary in their responses to risk. For instance, teenagers are more likely to be willing to take higher risks because they think that these activities are somehow under control (Benthin et al. 2000; Rodham et al. 2006). However, Slovic (1998) found that teenagers often lose control and, therefore, often suffer undesirable outcomes. 'Losing control' is quite common in organic farming where, for example, Rigby et al. (2001) have shown that some farmers lost control over marketing their organic products and converted back to conventional farming. Nonetheless, individuals' willingness to take risk continues to be subject to extensive debate in the literature on risk. For example, Adams (1999) argued that everyone has a willingness to take risk, since rewards and risk are often linked. In contrast, Rabin and Thaler (2001) found that some people are risk-averse. Here, people's perceptions of and willingness to take risk directly interact with their objectives. Adams (1995), therefore, argued that some people prefer to undertake some activities which are perceived as having a high level of loss, such as skiing, simply to enjoy themselves. Thus, not only high probability of risk, but also low probability of perceived loss, may encourage people to take excessive risks to satisfy their enjoyment (indeed, this heightened enjoyment may be directly linked to the fact that activities are perceived as risky). Car driving, again provides some of the most useful examples in this context as some drivers, for instance, may want to reach places on time, and so they drive more quickly because they do not perceive high levels of risk (Slovic et al. 2000a).

The literature also suggests that under risk people may seek to mitigate accompanying undesirable impacts. This is referred to as 'risk management strategies' that include, for example, equipment, insurance, contracts, income source diversification, training, etc. (Slovic 1986; ESG 2001; Meert et al. 2005; Stave et al. 2008). The use of these strategies is more likely to be influenced by risk attitudes, and it is argued that people who are unwilling to take risk tend to more frequently utilize a variety of risk management strategies (Helmberger and Chavas 1996; Hardaker 2004). In addition, it is important to note that several factors interact with individuals' willingness to take risk and, as a result, they affect the way a person manages risk. For example, both willingness and ability to purchase insurance or/and contracts play a crucial role in coping with risk (Slovic et al.

1977). The development of risk management strategies shows the increasing concern people have with regard to different types and sources of risks and the importance of managing them (Slovic 1993; Slovic et al. 2000b; Meuwissen et al. 2001 Hardaker 2004; Bergfjord 2009).

The discussion so far has analysed why people make various decisions and behaviours in relation to risk and how their decisions differ. In the following, I will discuss how findings in the risk literature can be employed with regard to risk and farmers' attitudes.

2.2.2 Risk, farmers' attitudes and 'reasoned action' theory

This sub-section will suggest that farmers' attitudes towards risk in organic farming are affected by several indirect variables related to different beliefs. This will allow the formulation of the conceptual framework for this study based on 'reasoned action' theory.

As several indirect variables have been identified as potentially influencing farmers' attitudes towards risk, they will be taken into account in the present research (Figure 2.2). The indirect variables include farming years, age, farm size, farm income, farm type, gender and education (see Meuwissen et al. 2001; Midmore et al. 2001; Flaten et al. 2005; Bergfjord 2009). Further, since McCann et al. (1997) and Darnhofer et al. (2005) have shown the importance of farmers' motivations in their willingness to take risk, farmers' objectives in farming will also be considered in the present research as indirect variables.

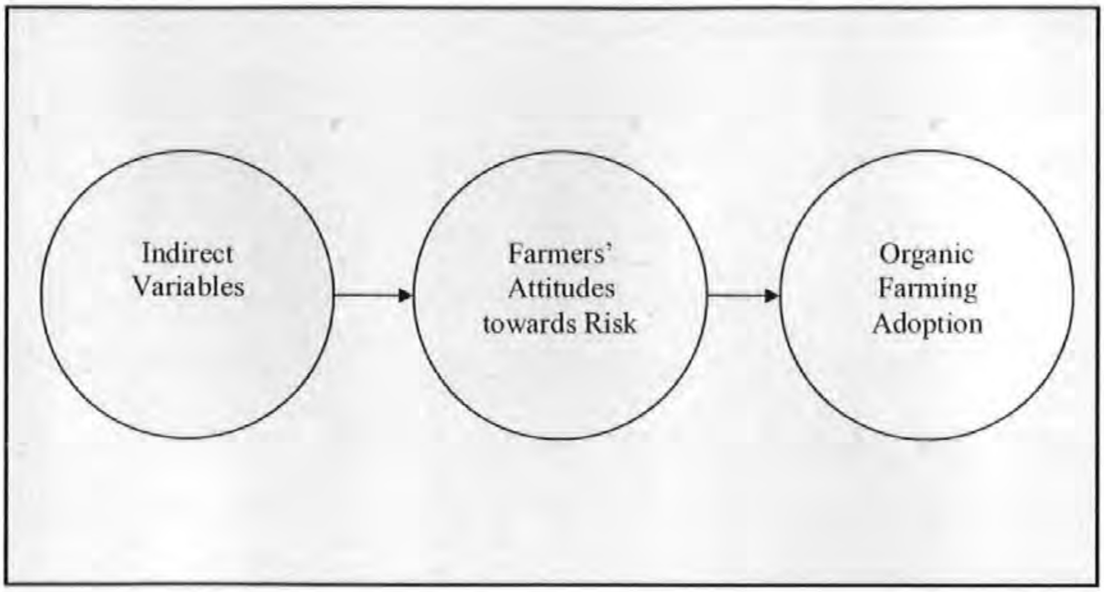


Figure 2.2: The theoretical framework of the present research
(Source: Author; after Fishbein and Ajzen 1975)

This thesis argues that there is a link between farmers' willingness to take risk in organic farming and their adoption decisions (see also Chapter 1). This assertion is supported by 'reasoned action' theory based on Fishbein and Ajzen's model (1975), and will be the basis of the conceptual framework of the present research (Figure 2.2). 'Reasoned action' theory assumes that an association between attitudes and behaviours exists, based on the assumption that behaviours are directly related to attitudes. Thus, if a farmer agrees to take risk in organic farming, it is supposed in this study that his/her farming system will reflect this attitude.

What are the basic concepts of 'reasoned action' theory? According to Fishbein and Ajzen (1975: 6), attitudes can be described as, *"a learned predisposition to respond in a consistently favourable or unfavourable manner with respect to a given object"*. Further, it is suggested that attitudes work as a latent variable as they are not directly observed, and they can be elicited either directly by 'standard direct measures' or indirectly by means of obtaining 'behavioural beliefs'. While the former often use a set of multi-item scales, the latter derives attitudes by summing the products of beliefs about the likely outcomes of a given behaviour and about the evaluations of these outcomes. However, some researchers argue that attitudes are determinants of beliefs, rather than the opposite. Sjoberg (2000), for example, showed that beliefs about risk related to nuclear power have been driven by attitudes.

Reasoned action theory, introduced by Fishbein and Ajzen (1975), has given new impetus to behavioural approaches used for understanding actions by individual decision-makers such as farmers (Wilson 1992; Burton 2004a). In behavioural approaches, the emphasis has been *"on the motives, values and attitudes that determine the decision-making processes of individual farmers"* (Morris and Potter 1995: 55). Nevertheless, Burton (2004a) indicated that behavioural approaches are not without pitfalls because of a lack of clearly stated comparative methodologies. Although Fishbein and Ajzen (1975) acknowledged that there are many competing definitions used for 'attitudes', they also argued that several theories include 'attitudes' and related terms (e.g. beliefs), and that most behavioural studies, therefore, can be interlinked in one way or another with 'reasoned action' theory.

Nevertheless, the assumed relationship between attitudes and behaviours on which reasoned action theory is based has been subject to criticisms. Bagozzi (1992), for example, emphasised that this relationship is static and cannot form the 'decision tree' which models how people make their decisions (Gladwin 1976). Further, Festinger (1957) argued with reference to what has been termed 'cognitive dissonance' theory that cognitive elements are not always consistent. *"Dissonance, that is, the existence of non-fitting relations among cognitions, is a motivating factor in its own right. The term cognition means any knowledge, opinion, or belief about the environment, about oneself, or about one's behaviour"* (Festinger 1957: 3). This view suggests that behaviours may not be determined by, for example, harmonious knowledge, opinion or attitudes. A person may continue to gamble although s/he knows that gambling is bad, or a farmer who is willing to take risk in organic farming may continue to run a non-organic farming system. There are many reasons that explain why dissonance between pairs of cognitive elements may arise. Ability (or lack thereof), for example, has been seen as one of the most important reasons for dissonance (van Raaij 1999; Morris and Potter 1995; Morris and Winter 1999). As a result, the theory of cognitive dissonance has received much attention and a considerable body of research supports it (Harmon-Jones and Harmon-Jones 2007).

Nonetheless, people are often seeking to adjust their cognitive elements to be consistent and, therefore, they can often cope with tension and discomfort (Festinger 1957; Fishbein and Ajzen 1975). Yet, as reasoned action theory concerns only one of these decisive factors (attitudes), Wilson (1996) suggested that this theory may not always help in understanding and explaining people's environmental actions since other factors are usually at play (Fishbein and Ajzen 2005). Such criticisms were one of the reasons why the theory of reasoned action was extended by Ajzen (1985) to also include 'planned behaviour' theory. This theory can be seen as a compromise between reasoned action and cognitive dissonance theory, as it assumes that people's behaviours are related to their intentions which are, in turn, formed by their attitudes, subjective norms and perceived behavioural control. Accordingly, planned behaviour theory has been increasingly applied in a variety of domains, such as farming or education (Ajzen and Madden 1986; Burton 2004a; Hattam 2006). Although the argument in this thesis will be broadly based on reasoned action theory, results will also be interpreted in light of planned behaviour theory, and it will be acknowledged throughout that farmers' actions may not always be mirrored by their expressed attitudes.

This section has highlighted the conceptual framework on which the present research will be based. It has also highlighted that attitudes have played a central role in the psychological literature of risk for understanding human decisions and behaviours. This, in turn, can be tested through the present research on organic farming adoption. The likely association between farmers' attitudes towards risk in organic farming and their adoption decisions is expected to enrich understanding of why differences in farming systems occur. In particular, this thesis has linked the definition of risk to the distinctly 'risky nature' of organic farming, and risk theory has been identified as a suitable framework for research into organic adoption by farmers (see also Chapter 1). It was also argued that rural research on the whole has until recently received relatively little influence from 'new' theories, such as risk theory (Cloke 2001), and that this thesis may contribute towards analysing how such theories may further enrich contemporary rural and agricultural enquiry.

The remainder of this chapter will focus on a variety of issues related to organic farming. First, the next section will set the scene for understanding organic farming and will highlight how it is defined and has been developed over the years.

2.3 Organic farming: definitions and genesis

This section is divided into two parts. The first part discusses definitions and concepts of organic farming, and the second part focuses on the genesis of organic farming, in order to show its development in a historical context.

2.3.1 Definitions and concepts of organic farming

According to Lampkin (2002), it is very difficult to find a widely accepted definition of organic farming. This is not surprising since organic farming can be conceptualised in different ways depending on the specific vantage point of the commentator (Vine and Bateman 1981). Moreover, the term organic farming is often used as a synonym for other terms such as biological, ecological and sustainable agriculture (Mannion 1995). However, three main clusters of organic farming definitions are suggested by the literature. Here, it is important to highlight that these clusters are used to introduce different definitions and concepts of organic farming and a clear-cut distinction between them is difficult to be drawn as they are closely connected.

The first cluster focuses on organic farming principles. Measures and Lampkin (2001) and Padel (2001a), for example, have shown that organic farming can be seen as synonymous with ecological agriculture, since its inputs are to a large extent internal and they both rely on closed cycles in the ecosystem. This can explain why organic farming is usually known as the opposite of 'conventional farming', particularly in northern Europe (Michelsen 2001). It can also clarify why organic farming is often defined as a change in the approach to farming (i.e. from external to internal inputs) (Pugliese 2001). Indeed, organic farming principles have become very important for many researchers and agencies, and several national and international agencies have collated global organic farming principles to establish clearer definitions and to emphasise their importance. For example, the United States Department of Agriculture has formulated the following definition:

> *"Organic farming is a production system which avoids or largely excludes the use of synthetically compounded fertilisers, pesticides, growth regulators and livestock feed additives. To the maximum extent feasible, organic farming systems rely on crop rotation, crop residues, animal manures, legumes, green manures, off-farm organic wastes, and aspects of biological pest control to maintain soil productivity and tilth, to supply plant nutrients and to control insects, weeds and other pests"* (Lampkin 2002: 5).

In the EU, organic farming is associated more with agricultural policy objectives (Lampkin 2003). In this respect, organic farming is seen to differ from other farming systems through a package of developed standards and regulations.

The second cluster of definitions perceives organic farming as a sustainable farming system because it is seen to create several benefits. In this respect, Lampkin (2003: 288) pointed out that *"organic farming can be defined as an approach to agriculture where the aim is to create an integrated, humane, environmentally and economically sustainable agricultural production system"*. Here, the focus is on the notion that organic farming is more likely to promote biodiversity, biological activities, landscape and rural development (Stockdale et al. 2001; Lang and Heasman 2004: von Borell and Sorensen 2004; Topp et al. 2007).

The final cluster of organic farming definitions is associated with the term 'sustainability', in particular the environmental benefits, because organic farming does not require the over-exploitation of living materials (i.e. soil and animals). These definitions are based on the philosophic, holistic and ethical bases of organic farming, where philosophy – rather than agricultural rules – shapes organic farming concepts (Xie et al. 2003). This highlights the holistic meaning of organic farming. McEachern and Willock (2004: 534), thus, argued that organic farming depends on *"working with natural systems rather than seeking to dominate them"*. Scofield (1986) went further by focusing on issues of cooperation between different actors within natural systems. As a result, the term *"wholeness"* has been introduced as one of the key ethical and holistic bases of organic farming. Such definitions are consistent with the argument proposed by many scholars where the organic farm is considered as an *"organism"* (e.g. Vindigni et al. 2002). This suggests that a variety of living materials interact dynamically on the organic farm and shape its core. These different functional interactions on the organic farm have been the basis for the International Federation of Organic Agriculture Movements' (IFOAM) definition of organic farming (Dabbert 2004).

Although the first cluster of organic farming definitions and concepts focus on environmental management, any farming system that does not use or limit the use of chemical inputs can be added to this cluster. This idea has been discussed by several researchers (e.g. Conford and Dimbleby 2001; Botezatu et al. 2002) and means that a huge area of agricultural land in the world could be classified as 'organic' land. This argument is true to some extent, since organic farming avoids the use of chemicals. This approach, however, may be misleading, since organic areas in most countries are subject to specified regulations and standards (see below). Further, the majority of organic techniques and practices are well developed and 'modern' in comparison to their 'traditional' organic counterparts. Nonetheless, organic farms outside of modern accreditation systems have affected the identity of the historical development of the organic movement, as will be highlighted in the second part of this section.

2.3.2 Genesis and global extent of organic farming

Organic farming as a movement has its roots in ancient times, but it is very difficult to set a specific date for its genesis. This is because of the debate that pre-industrial farming systems can all be seen as 'organic' as there was no use of artificial inputs. For example, Conford and Dimbleby (2001) argued that farming in most European countries before the 19th century – the date of the introduction of chemicals into farming – could be classified as 'organic'. This date saw the introduction of what is known as 'conventional farming'. This 'new' farming system received increasing interest both before and after the Second World War because it resulted in higher production (Pfeiffer 1983; Potter 1998)[1]. Tate (1994) argued that the remaining 'organic farming' systems suffered due to poor yields (especially until the 1970s), and were put under increased pressure by the chemical lobby. In the 1980s, more attention was given to organic farming in Europe by many of the main actors because of the perception of its potential benefits and wider changes in society towards greener thinking (see below). Since then, organic farming has received increasing official and non-official support (Lampkin 1994a; Stolze and Lampkin 2009), although it had been firmly established as a separate type of farming as early as the 1940s in many European countries (SOEL and FiBL 2002)[2].

Environmental, health and social gains are perceived as public goods of organic farming by a variety of European actors, including policy-makers, farmers and consumers (Lampkin 1994a; Haring 2002; Vogl et al. 2005; Topp et al. 2007; Gibbon 2008; among others)[3]. This has played a crucial role in the recent development of organic farming. As organic farming is often seen as an environmentally friendly farming system (Thamsborg 2001), it has been particularly supported for its potential environmental benefits (Makatouni 2002; Vindigni et al. 2002; Fuller 2003; Hermansen and Zervas 2004). In addition, Acs et al.

[1] After the Second World War, the CAP encouraged the use of chemicals in farming because of the need for high quantity of agricultural products.

[2] For more detail about the historical development of the organic movement in Europe see SOEL and FIBL (2002).

[3] Over the years perceived benefits of organic farming have been criticised. Rosati and Aumaitre (2004: 42; see also Section 2.4 below), for example, argued that *"nowadays, European consumers believe that organic food is free from residues, produced in an environmentally friendly manner and in consideration of animal welfare, has better taste, and is healthier .... Obviously, all these beliefs are not scientifically proven"*.

(2005) highlighted that organically produced food has come to be perceived as healthy and tasty food, and these potential gains have encouraged the uptake of organic farming to satisfy increasing organic demand (Vindigni et al., 2002; Hallam, 2003; Smith et al. 2004). Further, there are many potential social benefits for rural areas and animal welfare resulting from organic farming (Midmore 1994; Stock 2007; Lobley et al. 2009a)[4]. These benefits have positively influenced attitudes of many actors towards organic farming (Padel 2001a; Makatouni 2002; Vindigni et al. 2002; Smith et al. 2004). However, the importance of organic farming is perceived differently by many actors. For instance, the perceived environmental benefits of organic farming may be the most important concern for some actors, while related health gains may be most significant for others. This interlinkage between actors' objectives and the perceived benefits of organic farming is likely to influence actors' behaviours regarding organic farming. Table 2.1 (below) shows how different actors have generated dramatic changes in organic farming in some European countries since 1985.

Similar motives to those mentioned above have influenced organic farming in other advanced countries such as the United States of America (USA) (Zinati 2002). The situation is different in developing countries, particularly as organic farming is often driven by economically-oriented farmers, since most organic products are exported (Hallam 2003)[5]. Willer et al. (2008) argued that in 2006 organic farming, following one of the stated standards, was important in 138 countries in the world, covering about 30 million hectares and 700,000 organic farms. Of these, about 7 million hectares are farmed organically by the 200,000 organic farmers in Europe. Although these 2006 figures for Europe are high compared with the only 115,000 hectares and 7000 organic farmers in

[4] Part of these benefits is that organic farming often encourages consumers to purchase their organic food directly from the farm, tourists to visit the countryside and enjoy themselves, rural people to stay in their areas and practise organic farming, and investors to establish organic markets in rural areas.
[5] See Section 8.4 for a brief overview of organic farming in Syria (the home country of the researcher).

1985 (Lampkin 1996), recent levels of uptake have not been satisfying (SOEL and FiBL 2002; FiBL et al. 2008). The majority of European countries, therefore, have implemented various policies to further increase organic farming area, and many measures and recommendations have now come into force (DEFRA 2002a; CEC 2004; OCW 2004; Schmid et al. 2008). In Austria, for example, the European country with the second highest percentage of organic land (13%), the second action plan that was launched in 2008 has aimed to further increase this percentage to 20% by 2010 (FiBL et al. 2008). Further, Stolze et al. (2007) highlighted that the first national action plan in Italy, the country in Europe with the largest area of organic land, was initiated in 2005, while a series of national action plans with different quantitative and qualitative objectives for increasing organic farming levels have been developed in the UK (with the fourth largest organic farming area in Europe) (Table 2.1).

	1985 Organic Area (hectares)	2006 Organic Area (hectares)	1985 Organic Farms	2006 Organic Farms	2006 Share of Total Agricultural Area
Italy	5000	1,148,162	600	45,115	9
UK	6000	604,571	300	4485	4
Austria	10,000	361,487	500	20,162	13

Table 2.1: Changes in registered organic area and farms in selected European countries (Sources: Lampkin 1996; Willer 2008)

In the UK, after rapid expansion the organically managed area has remained relatively unchanged in the past few years (Figure 2.3). This suggests that only some farmers have adopted organic farming. In addition, it is possible that farmers leaving organic farming because of, for example, oversupply in some products (e.g. organic milk), has negatively affected the area of organic land (see SAO 2004). This has been empirically supported in studies investigating farmers who had left organic farming in the UK between 2000 and

2003 (see Harris et al. 2008). Here, not only financial reasons, but also negative experiences of certification, problems with the organic management system on the farm, and changed personal circumstances explain the recent decrease in organic land in the UK. Nevertheless, reasons for the relative constancy of organic area remain unclear and need more research, especially in view of the fact that the UK still imports about 30% of consumed organic products (Stacey 2009).

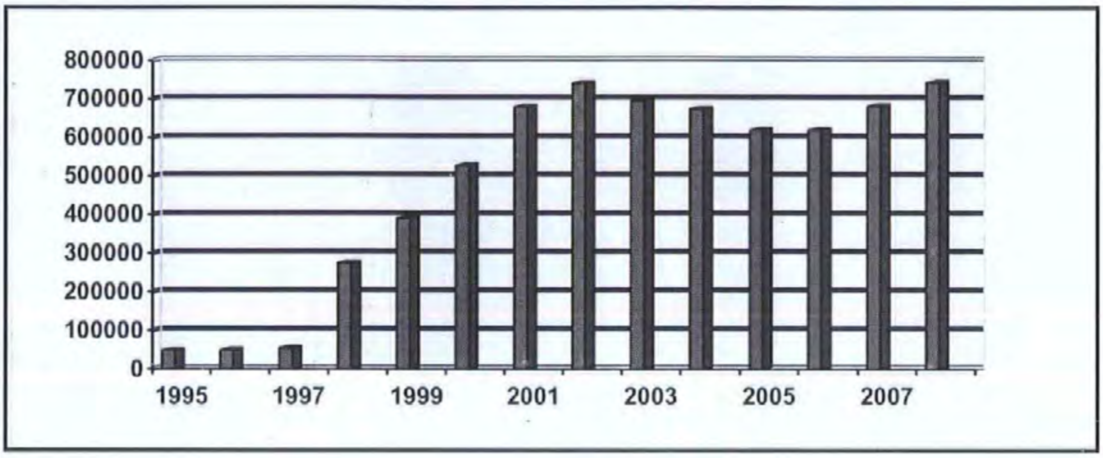


Figure 2.3: Changes in registered organic area in the UK
(Sources: OCW 2003; DEFRA 2009)

This section has outlined several concepts and definitions of organic farming and highlighted its development over time. The next section will discuss more specifically debates on organic farming in the academic literature.

2.4 Organic farming: well studied?

This section will discuss the many arenas of organic farming research (see also Figure 1.1, Chapter One), while Section 2.5 will focus on organic adoption studies, which forms the basis of the present research focusing on risk and organic farming adoption.

Development in the organic sector – particularly over the past few decades – has encouraged many researchers to analyse various aspects of organic farming. This has resulted in a plethora of studies on organic farming (Lampkin 1994b). These studies highlight several arenas in organic farming research including environmental issues, animal welfare, organic farming techniques, financial issues, organic consumption, food quality issues and questions associated with adoption of organic farming by landholders (Pimentel et al. 2005).

Many studies have explored the environmental impacts of organic farming. Studies have suggested that on organic farms levels of biodiversity, water conservation measures and soil biological activity are usually better than in non-organic farming systems (e.g. Cobb et al. 1999; Jacobson et al. 2003; Pacini et al. 2003; Pimentel et al. 2005). This is often attributed to organic methods, such as the use of high crop diversity and specific cultivation methods, resulting in positive effects on conservation and landscape (Stolze et al. 2000). In addition, use of crop rotation in organic farming is crucial and is generally believed to reduce soil erosion (e.g. Pimentel et al. 2005).

However, some studies (e.g. Pacini et al. 2003) have found that soil erosion can also be high on organic farms, especially in mountainous areas. Contrary to many people's beliefs, air and water pollution can also be a problem on organic farms, because of the use of organic fertilisers, in particular manure, which can easily be mismanaged. For instance, de Bore (2003) suggested that the emission of substances and gasses into air and water in organic dairy farming was not significantly reduced by changing from conventional to organic production. This is particularly linked to the fact that the volatility of methane gas is the same for both organic and non-organic farms, therefore organic dairy farms cannot greatly help reduce the effects of global warming (de Bore 2003) although low chemical application rates in organic farming may somewhat help mitigate this phenomenon (Cobb et al. 1999; Lotter 2003). Moreover, some studies have shown that nitrate leaching in both organic and conventional farming is similar (e.g. Pimentel et al. 2005).

Organic farming is usually seen to have positive impacts on animal health and welfare. According to Lampkin (2002), this can be related to the fact that standards of organic farming emphasise the use of organic feed, and that animals are given the opportunity to be outdoors in fresh air and sunlight. Spoolder (2007), therefore, suggests that through its farming principles organic farming meets what can be called the *"five freedoms"* for farm animals: freedom from pain, injury and disease which, in turn, ensure animal health and welfare. Yet, despite the existence of these standards and principles, von Borell and Sorensen (2004) have emphasised that organic farmers must implement these standards strictly, especially since severe diseases have also occurred on organic farms (see also Kijlstra and Eijck 2006). In this respect, Lampkin (1997) and Nielsen and Thamsborg (2005) have suggested that well-chosen feeding strategies and carefully used equipment by organic farmers are significant for ensuring animal health and welfare.

There has also been much research into technical aspects of organic farming. Many actors, including policy-makers, agree that providing organic farmers with suitable advice, information and training is key (Turner et al. 2007; Watson et al. 2008). Therefore, there has been a huge body of research investigating different techniques used in organic farming, including weed and pest control, energy use, animal health and welfare, and manure management (Boiteau 2008). In the UK, for example, the Department for Environmental, Food and Rural Affairs (DEFRA) has commissioned much research, such as "Integrated control of slug damage" on organic farms (DEFRA 2002b). Further, and in addition to official support, NGOs also play an essential role in developing specific techniques in organic farming (HDRA 1999; SAO 2000; Measures and Lampkin 2001; Measures et al. 2002; Olmos and Lampkin 2003). Research by these organizations has improved the use of organic management techniques, and new management strategies have been gradually introduced into organic farming over time. For instance, Zinati (2002) has referred to the importance of controlling pests by natural predators, a now well developed and efficient method in organic farming. Thamsborg (2001) went further by promoting improvements in organic livestock methods, as well as providing advice to ensure potential health benefits from organic farming. Nonetheless, the IFOAM EU Group (2004) and Watson et al. (2008) argued that more work on organic farming techniques is still needed to help farmers implement successful preventative methods.

The third arena of research in organic farming focuses on the key question of financial performance of organic farms, where several approaches using actual and hypothetical data have been used (e.g. Offermann and Nieberg 2000; Lee and Fowler 2002; Waterfield 2002). These approaches depend largely on annual financial parameters, such as margin returns, net margin returns and net farm income. The financial performance of various organic enterprises and farms has particularly been compared with their non-organic counterparts, but results have been criticised for several reasons. In particular, Padel and Lampkin (1994b) and Firth (2002) have indicated that the used financial measures are often not sufficiently accurate and compatible for one specific organic enterprise, since there are always interactions in complex ways between the farm enterprises. In addition, when financial performance measures are applied – usually to compare different farming systems over a few years – they may mislead analysts because the figures can be affected by unusual circumstances (e.g. fluctuations in income due to weather). However, much of the organic literature suggests that different financial outcomes for organic farming are often due to instabilities in factors such as organic premia, yields and operation costs (e.g. Pimentel et al. 2005; Gundogmus 2007; Lobley et al. 2009c). This often explains why financial variations between organic farming and other farming systems, as well as between organic farms themselves, have been identified (see, for example, Schneeberger et al. 2001; Butler 2002; Pacini et al. 2003). As a result, Fowler et al. (2000, 2001) and Jackson and Lampkin (2008) highlighted that the net farm income in a specific year for organic farms can be highly variable, and that it often is also not consistent for similar organic farms in two consecutive years.

Consumer attitudes, perceptions and behaviours in relation to organic products have also been the focus of several studies. Over the past few years, products from 'sustainable' farming systems (including organic farming) have seen increasing demand for several reasons (Ilbery and Bowler 1998; Pretty 2002; Winter 2003a; Robinson 2004; Selfa et al. 2008). These reasons for purchasing organic products have been investigated in detail to understand and explain organic consumer behaviour. For example, Vindigni et al. (2002) emphasised that organic consumers seek to satisfy different social needs, that they perceive several positive benefits of organic farming, and are also financially able to purchase organic products. Consumers also decide to buy organic food because they see organic produce as healthy food of high quality (Makatouni 2002; Zanoli and Naspetti 2002; Wier and Andersen 2003; Midmore et al. 2005; Padel and Foster 2005; Robles et al. 2005; Arvola et al. 2008). In addition, other incentives, mainly linked to ensuring animal health and welfare and environmental benefits, have also been important for decisions to purchase organic food (Gil et al. 2000; Makatouni 2002; McEachern and Willock 2004; Robles et al. 2005).

Consumer preference for locally produced organic food was identified by both Wier and Andersen (2003) and McEachern and Willock (2004) as a motive for Danish and British consumers to pay higher premia for organic food. Yet, contrary to some studies, Winter (2003a) found that purchasing organic food has not been that significant in five rural case study areas of England and Wales. This draws attention to the importance of other factors, such as local embeddedness, which affects consumers' behaviour with regard to purchasing both conventional and organic food (see also SERIO and Plymouth University 2008). As a result, based on consumers' willingness to pay more for organic food, Lobley et al. (2009c) have placed organic consumers on a typology ranging from *"purist"* to *"occasional"* purchasers. This helps explain why some organic consumers are willing to pay more for organic products (Krystallis and Chryssohoidis 2005; Radman 2005). On the other hand, Gil et al. (2000), Padel and Foster (2005) and Radman (2005) have shown that some non-organic consumers, though willing to buy organic products in principle, were put off by higher prices. The availability of organic products can also be one of the most crucial barriers for consumers who are willing to purchase organic food but may not be able to obtain organic produce in the shops (see Zanoli and Naspetti 2002). Studies have also highlighted additional characteristics of organic consumers. For example, according to Midmore et al. (2005), most organic consumers are well-educated, middle-class and middle aged, suggesting that consumers with specific characteristics are more likely to be willing and able to consume organic products.

Although consumers are usually attracted to organic products because of health motives, Lampkin (2002) and Xie et al. (2003) argued that it is difficult to scientifically assess organic food quality because of the variety of 'quality' aspects, involving, in particular, appearance and flavour, and the lack of evaluating criteria. This may explain the limited amount of scientific work on organic product quality. This is exacerbated by the fact that current scientific evidence on perceived health benefits of organic farming also remains scarce, and Krebs (2003), for example, suggested that organic products are not better or healthier than those produced through conventional methods. As a result, existing work on organic food quality has shown a variety of results. For instance, Xie et al. (2003) have suggested that organic food – as shown in many studies – contains high levels of minerals, vitamins and dry matter in comparison with non-organic food. On the other hand, Rosati and Aumaitre (2004) argued that the implementation of organic standards in Europe has not improved the quality of dairy products. Likewise, Thamsborg (2001) highlighted possible health risks to humans from organic animal food, such as zoonotic infections. This can be attributed to the fact that organic products can be stained by microorganisms, found in manure (used as fertiliser) and animal parasites (Rosati and Aumaitre 2004; Kuhnert et al. 2005). As a result, high organic quality can be difficult to achieve. Indeed, there are several reasons why organic products are not immune to contamination. For example, the use of chemicals at conventional farms located near organic farms, as well as chemicals allowed on organic farms, can negatively affect the quality of organic products (Baillieux et al. 1994; Darnhofer et al. 2005). Many researchers have, therefore, recommended that because a clear picture of the quality of organic food cannot be obtained through current evidence (Stolze et al. 2000; Xie et al. 2003), there is a clear need for more research into this arena despite apparent scientific difficulties (e.g. Lotter 2003).

2.5 Adoption drivers in organic farming

Organic adoption studies form the key basis for this thesis. This section will first provide a general picture of how research into farmers' adoption decisions has changed. Second, factors affecting farmers' decisions whether or not to farm organically will be reviewed in-depth.

2.5.1 Research into farmers' adoption decisions

Over decades, interest in helping farmers to make decisions and in explaining observed behaviours has increased. Consequently, several theories have appeared in agricultural literature, such as 'cost-benefit analysis' and 'expected utility' (Gittinger 1982; Hardaker 2004). These theories attempt to measure predicted financial benefits and costs and to answer the question of whether measured benefits outweigh measured costs. These approaches also take into account potential changes in different variables which influence financial outcomes (e.g. seed prices) (Arrow and Lind 1994; Curry and Weiss 2000). Although farming benefits include other intangible aspects such as pleasure and employing agricultural workers, the key assumption in economic theories is that profit is the only goal of farmers (Irvin and Brown 1978; Gittinger 1982), based on the general economic assumption that each individual is an "*economic person*" that is heavily influenced by economic decisions (Ilbery 1983).

However, economic studies have also shown that farmers do not always make rational economic decisions (e.g. Jacobsen 1994) and that farmers, under uncertain circumstances, may behave differently from what is expected by economic theories (Rabin 2000; Rabin and Thaler 2001; Schechter 2005). This may be linked to the fact that (some) farmers are not profit-maximisers (see below) or that they do not have perfect information to make perfect economic decisions (Ilbery 1983). Thus, for understanding farming decisions a new approach has emerged in the economic sciences, which emphasises the relevance of psychological variables behind economic behaviour, including motives, perceptions and attitudes (see Adesina and Zinnah 1993; van der Meulen et al. 1996; Wossink et al. 1997). Economists using this approach have investigated how farmers make economic decisions according to their mental evaluations, rather than based on measured financial benefits and costs based on economic theories.

The growing realization of the importance of non-financial aims in farmers' decision-making has drawn the attention of many researchers seeking to explain and better understand farmers' behaviours. In this respect, Gasson (1973), Colman (1994) and Maybery et al. (2005) have argued that many considerations, such as ethical and social values, play a crucial role in the decision-making of farmers. Therefore, research on farmers' decisions has concentrated on the influence of a variety of economic and non-economic factors. These studies have received a considerable boost by employing different socio-psychological approaches, such as studies of farmer perceptions and attitudes (e.g. Wilson 1992; Wilson 1997a; Brotherton 1991; Burton 2004a; Morris 2004). Several theoretical approaches have been used, broadly clustered around what has been termed the "*behavioural approach*" – an approach which has been particularly widely employed for understanding decisions of farmers in relation to participation in European agri-environmental schemes (Wilson 1997a). This approach focuses on the link between motives, values, attitudes and behaviours (Morris and Potter 1995). However, research on behaviour has identified several factors that affect farmers' decision-making (Fishbein and Ajzen 1975; Wright 1984; Feder et al. 1985; Ajzen and Madden 1986; Ajzen and Driver

1992; van Raaij and Crotts 1994; Rogers 1995; Salamon et al. 1997; Midmore et al. 2001; Serra et al. 2008; Ahnstrom et al. 2009).

Although the vast majority of adoption studies in organic farming have emphasised the importance of 'farm' and 'farmer' characteristics (i.e. 'internal' factors), 'external' factors also affect organic adoption. The next section will assess both 'external' and 'internal' factors in organic adoption, as well as analysing in more detail the results of adoption studies, which are the basis of the present research.

2.5.2 External and internal factors affecting organic adoption

This section will discuss factors that affect the decisions of farmers to adopt organic farming practices. These factors will be classified as 'external' and 'internal'. The section will show that the vast majority of organic adoption studies have focused on 'internal' factors, especially as ''*external factors seem to be external in a way that farmers can not affect them directly. Internal factors are more related to the farmers themselves and their personal circumstances*'' (de Lauwere et al. 2004: 4). Nonetheless, it is argued here that it is important to address all possible drivers behind organic adoption, and that these can be classified into 'external' and 'internal' factors which are interdependent and can result in different impacts (Figure 2.4).

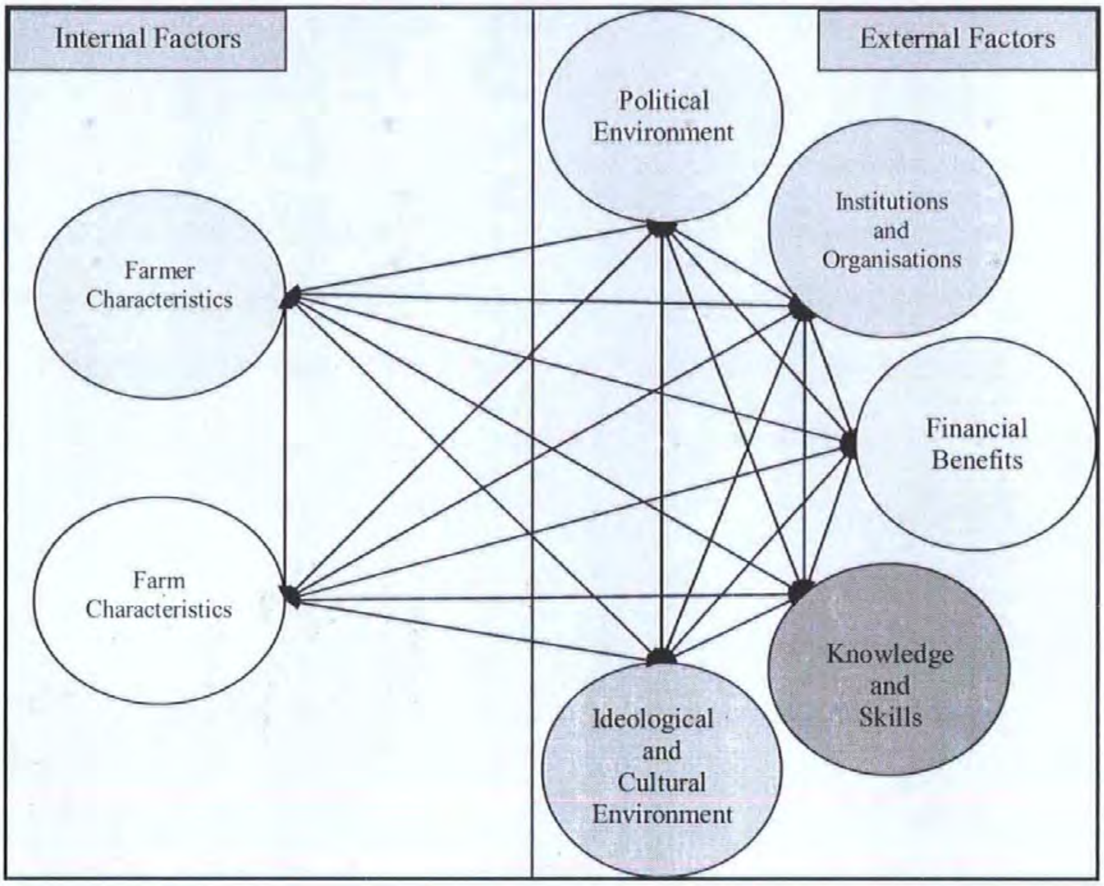


Figure 2.4: Potential interaction between external and internal factors influencing farmers' decisions to adopt organic farming (Source: Author; after Padel 2008)

External factors

External factors involve the political environment, institutions and organisations, financial benefits, knowledge and skills and the ideological and cultural environment (Padel 2008). These external drivers will be assessed in the following.

The political environment, which includes agricultural policy, is considered one of the most important factors in farmers' farming decisions (Whitehead et al. 2002). It is not surprising, therefore, that national agricultural policies of many European countries have supported organic farming prior to EU membership. For instance, Denmark was the first

European country to introduce national standards and subsides for those opting to practise organic farming (Dabbert et al. 2004). Lampkin and Padel (1994) indicated that, in 1989, Germany was the first EU country to support organic farming financially, although this type of support only began officially in 1992 under EU regulations. The 1992 reform of the CAP, which was an attempt to solve several environmental and socio-economic problems of European farming (Brassley 1996; Ackrill 2000; Robinson 2004) emphasised the importance of the transition to a non-productivist era by recommending different agri-environmental schemes – some of which encouraged organic farming (Ilbery and Bowler 1998; Ritson and Harvey 1998)[6]. Winter (1996) highlighted how several stakeholder groups, such as environmental groups, have played an important role in the formulation of key policies affecting organic farming. Indeed, during the 1990s, the underlying principles of organic farming met many of the objectives of both European agricultural policy and those of environmental groups which sought the reduction of chemicals in agriculture (Lampkin 2003).

In subsequent years, organic farming was expected to be further positively influenced by reform of the CAP (i.e. Agenda 2000). Agenda 2000 particularly emphasised the importance of environmental protection and the development of rural areas, which coincided to a large extent with organic farming principles (Lang and Heasman 2004). However, contrary to these expectations, the organically farmed area in the EU continued to be relatively small (see Section 2.3.2 above). As a result, many EU countries had to introduce national action plans to further promote organic farming (WOFI 1999; SOEL and FiBL 2002). In addition, a European action plan for organic food and farming was

[6] *"Post-productivism implies that modern agricultural regimes have changed in such a way that agriculture is no longer seen to be solely concerned with the production of food and fibre — labeled as the so-called 'productivist era'— but that it comprises a multitude of functions with an emphasis on food quality, environmental conservation and a move away from state-sponsored production subsidies that have encouraged agricultural intensification"* (Wilson 2004: 461).

implemented in the early 2000s to encourage more farmers to practise organic farming (CEC 2004). Consequently, the EU organic sector has expanded (FiBL et al. 2008), further boosted by the 2003 CAP reforms which introduced Single Farm Payment (SFP) which focused on more sustainable land use (Tranter et al. 2007b; Offermann et al. 2009). An overview of national agricultural policies that support organic farming in the EU highlights four main areas of concern (see Figure 2.5). These arenas emphasise that government intervention is visible and crucial, and that farmers' adoption decisions are not independent from the wider policy environment. The establishment and funding of advisory services associated with these policies under 'rural development programmes', falling under the bracket of 'related support policies', have also contributed towards improvement of skills and knowledge of organic farmers (see below).

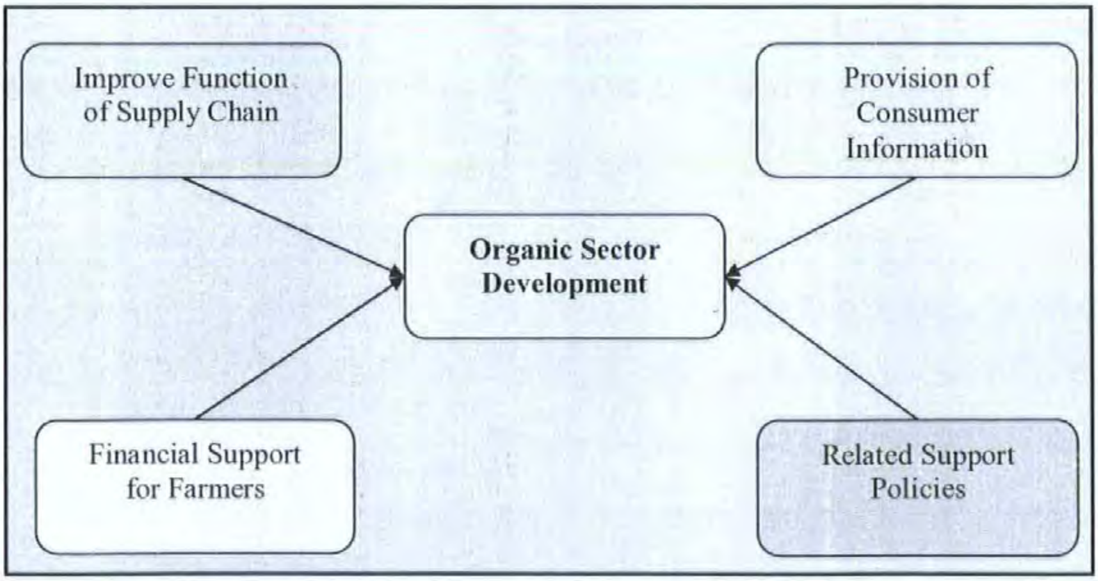


Figure 2.5: Main policy areas of government intervention in the organic sector (Sources: Schmid et al. 2008: 12)

In addition to the CAP, there are institutions and organisations that also promote organic farming. Among the most important international organisations, IFOAM and the Food and Agriculture Organisation (FAO) have sought to develop organic farming through accreditation programmes and by facilitating the international organic trade (SOEL and FiBL 2002). Further, there are several NGOs that have played and are playing a key role in developing the organic sector in many European countries (SOEL and FiBL 2002; Olmos and Lampkin 2003; see also Section 2.4 above). In the UK, the Soil Association Organisation (SAO), founded in 1946, has been one of the most important drivers for the development of organic farming (SAO 2000) by, for example, improving organic standards which have also partly influenced the formulation of EU regulations (Tomlinson 2008). In this respect, it is important to note that the 'Food from Britain' organisation established the United Kingdom Register of Organic Food Standards (UKROFS) in 1987, funded by the Ministry of Agriculture and in charge of approving UK certification bodies (Tate 1994). Further, the Research Institute of Organic Agriculture (FiBL) was established first in Switzerland in 1974 as one of the key institutions in Europe for research and consultancy on organic farming, which also conducts a worldwide survey on organic land and farmers (SOEL and FiBL 2002; Willer et al. 2008). Finally, private Institutions offering subsidies to organic farmers have also played a significant role in the uptake of organic farming and can be found in different European countries (see below).

Another important external factor is linked to financial benefits resulting from becoming an organic farmer. Official financial support to organic farmers in the EU began under the 1992 reform of the CAP and continues indirectly under different regulations of further CAP reforms, such as Regulation 1783/2003 (Offermann et al. 2009). In addition, more subsidies are offered by national/regional European action plans (DEFRA 2002a), as well as by several national schemes and programmes such as the 'Marketing Development Scheme' or the 'Rural Development Programme' in the UK (Measures and Lampkin 2001; DEFRA 2008e). Financial support to persuade farmers to practise organic farming can also be offered by institutions in the private sector interested in developing organic farming for various reasons, such as satisfying the increased demand of organic food. In the UK, these include, for instance, Asquith Dairies (ASDA), a super-market which was offering inducements for its meat producers to switch to organic products, and the Wessex Water Company which has provided financial support to farmers who help reduce water pollution (i.e. organic farmers) (AC 2001). 'Subsidies' have encouraged more farmers to practise organic farming (Marsden and Sonnino 2008) and, hence, the organically farmed area in Europe has experienced rapid growth – in 2006 to an area of almost 7 million hectares (Willer 2008) – especially boosted by strong financial support during the 1990s (see CRER, 2002, as an example of dramatic changes in UK organic farming under high levels of subsidies, and Winter, 2000, for modest changes in organic farming in the UK under low levels of subsidies).

Although the relative success of subsidies in supporting organic farming supports the notion that some organic farmers can be financially motivated, such incentives continue to be heavily debated. At present, one of the most important arguments asks why governments should offer financial support to an already thriving organic farming sector (Bartram and Perkins 2003). However, Lampkin (2003) argued that organic farming should be financially supported because it provides public goods, and because it still is an 'infant industry'. Other important sources of financial benefits that often encourage practising organic farming include high organic premium and low input costs, particularly for chemicals (Benoit and Veysset 2003; Fuller 2003; Sarker and Itohara 2010).). Nevertheless, Hamm et al. (2002) showed that decreases in organic prices are one of the most important factors explaining why some organic farmers have reverted back to conventional farming. Furthermore, seed costs may be high, and this can also offset the reduction in chemicals costs (see Section 2.6.2 below). In conclusion, while financial benefits of organic farming can be important for some farmers, they are often insufficient to persuade others to convert to organic methods.

Winter (1997: 369-370) emphasised that under any new model of food production, particularly in environmentally sustainable farming systems such as organic farming, *"farmers will need new knowledge and skills"*. This is particularly important in organic farming which requires the introduction and harmonisation of new management skills (Lampkin 1990; Sharma et al. 2008). Thus, a variety of services are available to improve information, knowledge, advice and training on organic farming through, for example, the EU Action Plan, government advisory services and programmes, and private organisations (CEC 2004; Wheeler 2008). These services have been incorporated into several national action plans in Europe and in the 'Rural Development Programme for England', especially by offering information associated with marketing of organic produce (SOEL and FiBL 2002; DEFRA 2008g). Additionally, Measures et al. (2002) have shown that in the UK the Organic Advisory Service (OAS), established in 1985, provides a variety of information to potential organic farmers, such as conversion plans and management advice. Experienced organic farmers can also be a significant source of vital information for new organic entrants, particularly concerning how to manage an organic farm (Kilpatrick and Johns 2003).

The positive influence of these different sources of information and knowledge on farmers' decisions to farm organically is evident in many studies. In particular, in the UK the introduction of the Organic Conversion Information Services (OCIS) in 1996 has played a crucial role in the rapid increase in organic farming (CRER 2002). The high uptake of organic farming through new information sources emphasises that farmers continuously need information about organic farm management, and also supports the assertion that organic farming is *"information intensive"* (Lockeretz 1991; .Genius et al. 2006). Nevertheless, Mackay et al. (2002) suggested that information on organic methods can be expensive and, in some cases, limited. As a result, many potential organic farmers may not practise organic farming due to lack of information – an assertion which the present study will also investigate in detail. Bohnet et al. (2003) further argued that farmers contacting different agricultural knowledge systems to improve their environmental management have often not achieved their aims. This can be related to the inefficiency of systems that in the past encouraged agricultural modernisation and that now need time to become better tailored towards less intensive agricultural activities (Winter, 1997). This in turn may explain why organic farmers are still facing technical problems, often related to the nature of organic farming as a complex farming system (see Section 2.6.1 below). As a result, many new entrants into organic farming – especially those from NFBs – often make mistakes and choose inappropriate actions on their farms (Reed et al. 2008).

According to Rogers (1995), access to information is the key factor in promoting the adoption of innovations such as organic farming by farmers who may be motivated by ideological and cultural considerations (see also van der Ploeg 2003). This highlights the importance of the ideological and cultural environment associated with organic farmers and particularly with those who could convert to organic. Padel (2008: 66), thus, argued that potential organic farmers need to feel accepted by rural communities before they embark on organic techniques, and to avoid undesirable social outcomes which may be linked to inappropriate farm management actions due to inexperience with new organic systems. This is related to the fact that the uptake of organic farming is often associated with 'wrong' management and mistakes, particularly in the first stages of conversion (Measure and Lampkin 2001), which can be mitigated if strong emotional support is available from the farming community (Lampkin 2002). It is not surprising, therefore, that social pressure in favour of conventional farming often negatively affects the number of organic farmers in a locality (Lampkin 2003). On the other hand, positive normative beliefs (the social image of organic farming) that promote organic pathways can stimulate the uptake of organic farming (Hattam 2006). This social support is more likely to be provided when the different benefits of organic farming are well-recognised and widely appreciated (Padel 2001b). Here, the farming family and/or other actors in rural communities, such as other farmers and stakeholders, can be crucial in harnessing support (de Buck et al. 2001). An important consideration for this study is that the often negative social image of organic farming, particularly in tight-knit communities, may have less influence on organic farmers from NFBs, as these farmers depend less (at least initially) on being accepted in their rural communities. Thus, it can be hypothesised that organic farmers with NFBs are more likely to be willing to take social risks linked to organic farming than local farmers (Savills 2001).

Internal factors

Characteristics of farms and farmers have been the focus of the vast majority of adoption studies in organic farming. These studies have investigated how different internal factors affect farmers' decisions to farm or not to farm organically. In this sub-section, these internal factors will be discussed in two parts: farm characteristics and farmer characteristics.

Farm characteristics

The vast majority of adoption studies have investigated why some farms are organic while others are not. Several characteristics of farms, such as size, capacity, type, location and income, that are thought to influence organic uptake, will be discussed in the following.

The size of organic farms, in general, is typically smaller than conventional farms, but as organic farming becomes better established the average size often increases (Foster and Lampkin 1999; Padel 2001a). It is hypothesized that large farms are more likely to be financially orientated (productivist), and, therefore, tend to be less interested in conservation practices because they perceive conservation measures as less financially beneficial (McCann et al. 1997). This assumption persists despite general agreement that these farms are also more likely to be able to afford financial burdens that accompany such conversion (McEachern and Willock 2004). However, Padel (2001a) suggested that recent changes in the structure of the agricultural industry might explain why farmers with larger farms have increasingly entered organic farming (see Best 2008)[7]. Offermann and Nieberg (2000) – in their analysis of the financial performance of European organic farming – have even suggested that the average size of conventional farms has been smaller when compared with organic farms. This suggests that the better development of the organic market can now attract larger farms into organic farming.

Nevertheless, studies have found that organic farms in the USA and UK are still smaller in comparison with conventional farms (e.g. Lockeretz 1995; Burton et al. 1999, 2003)[8]. This

[7] This adoption study examined implications of the conventionalisation hypothesis (i.e. that organic farming is resembling non-organic production) in Germany.
[8] Burton et al. (1999) used binomial and multinomial legit techniques to a sample of horticultural producers from the UK to analyse obstacles of the adoption decisions, while Burton et al. (2003) applied duration analysis as a new statistical approach into organic farming to identify factors motivating farmers in the UK to

may be due to the large number of organic farmers from urban areas in the study samples who choose to farm organically from their first year of farming. These farmers are less likely to have inherited land and financial resources and, as a result, cannot establish large farms (Padel 2001a). Additionally, Burton et al. (2003) have investigated the relation between large farms and organic uptake, and have argued that farm size did not influence organic adoption. Again, contrary to this trend, old organic farms in the USA tend to be larger than conventional holdings (Wernick and Lockeretz 1977)[9]. The latter research suggests that a positive correlation between large farms seeking to address problems in conventional farming, and adoption of conservation practices (e.g. organic farming), can be explained through past farm development pathways. However, overall the ambiguous results in these studies highlight that further research is needed to fully understand the influence of farm size on farmers' decisions to farm or not to farm organically.

As agricultural methods, protecting the environment, and managing the countryside have been key concerns of EU agri-environmental policy, particularly in the 1990s (Buller et al. 2000), organic farming was actively supported as a potential tool for environmental conservation (Potter 1998). Indeed, Ilbery and Bowler (1998) suggested that there has been a need to move towards extensive production methods. This can explain why extensive farms have more capacity to practise organic farming (Midmore et al. 2001), as fewer efforts and financial costs are required. On the other hand, some intensive farms, though willing to practise organic farming, may not convert because of additional work and resultant costs (Gay and Offermann 2006). Lampkin (1997) supported this argument for the poultry sector, where only few have converted to organic, further highlighted by results

farm organically. Organic and conventional fruit and vegetable growers in the USA were surveyed to highlight their different characteristics by Lockeretz (1995).

[9] The key motives and practices in organic farming were investigated in the USA by Wernick and Lockeretz (1977).

obtained by McEachern and Willock (2004)[10] for the UK where poultry enterprises remained at a low number in organic farming in comparison with other livestock enterprises, such as beef. These findings show that poultry, which requires intensive production techniques, is more likely to stay non-organic. Overall, it appears that intensive farms are often more difficult to be organically managed, and the most common organic farms are usually those that are already farming under extensive production methods.

Farms with diverse types of production are also more likely to practise organic farming, as implementing organic farming principles and creating a closed system are not too difficult on these farms (Lampkin 2002). This again shows that the type of production on a farm may play an important role in farmers' decisions to adopt organic farming practices. For example, farms with livestock willing to adopt organic farming are unlikely to be too concerned about soil fertility due to lack of manure (see Widmer et al. 2006). Further, since organic farming also seeks to prevent diseases by farming different kinds of crops, farms with diverse crops often require less effort to switch to organic farming methods. These farms are also more likely to enter into and establish organic farming more quickly, because farmers already have some experience in the management of different crops. Yet, despite these arguments, Duram (1999)[11] found more complex results in the USA where many organic farms in her study were pure crop operations, although few organic farms were pure grain, orchard or livestock. She argued that farm location and farmers' expertise played an important role in the decisions to practise organic farming (see also Huxham et al. 2005; Schmutz et al. 2007). On the other hand, McCann et al. (1997)[12] highlighted in

[10] In this adoption study, both producers and consumers of organic livestock production in the UK were surveyed to identify their attitudes to organic (McEachern and Willock 2004).
[11] This adoption study was conducted in the USA where organic farmers' attitudes towards organic farming and agriculture were analysed.
[12] McCann et al. (1997) investigated similarities and differences between organic and conventional farmers in the USA in relation to, for example, demographic and farm profiles and economic orientation towards farming.

their survey in the USA that many organic farms had greater crop diversity than conventional farms, therefore supporting the notion that rotation in organic farming is one of the most important preconditions for becoming organic. In addition, Midmore et al. (2001)[13] suggested that organic farms in the UK can be both livestock and crop based, as on-farm crops are often fed to animals. These farms clearly reflect what has been termed 'the organic farming core', where using external inputs is more likely to be low. However, mixed farming approaches may have already existed on a farm prior to organic conversion, or the farm needed to introduce them post-adoption. As a result, without knowing the farm type before conversion, it can be difficult to determine the direct influence of farm types on farmers' adoption decisions.

Farm location can also be an important factor for adoption of organic farming. Although organic farms can be found in different geographical locations (Winter, 2003a), Midmore et al. (2001) found that many organic farms in the UK are in disadvantaged and seriously disadvantaged areas (e.g. hill country or mountainous areas) in comparison with non-organic farms. Yet, several factors are at play here, making it difficult to explain exactly why many organic farms are in marginal areas. For example, Gabriel et al. (2009) showed that farms in Less Favoured Areas (LFAs) are more likely to be farmed organically in England, but Rosita and Aumaitre (2004) suggested that farms in marginal areas may also practise organic methods as a survival strategy while the organic market is booming. On the other hand, Rigby et al. (2001) cited the example of farms ceasing organic farming in the UK where geographical isolation had led to difficulties in marketing organic products, problems in receiving a high premium for the organic produce, and suffering additional costs because of distance from markets. This means that some organic farms in marginal

[13] Midmore et al. (2001) analysed UK farmers' stances to conversion to explore determinants of organic adoption.

areas may not benefit from conversion to organic farming, and may prefer not to continue as organic farms. Some organic farms in marginal areas, in particular those that are motivated by non-financial incentives, may, nonetheless, continue with organic farming even though they are less profitable. Overall, however, it appears that most studies suggest that a farm's location, capacity and type generally influence the decision to practise organic farming. Midmore et al. (2001) particularly highlighted that extensive livestock farms are often located in mountainous and other marginal areas in Europe, and that they are generally more likely to practise organic farming.

The final factor linked to farm characteristics is farm income – i.e. how much an organic farmer depends on his/her farming returns. Lockeretz (1995) discovered that a smaller fraction of the organic family income came from the farm, compared with conventional farms that are selling conventional products and are more motivated by economic incentives. On the other hand, Burton et al. (1999, 2003) found that organic farmers can also rely more heavily on their farm income to satisfy family needs than conventional farmers. Burton et al., therefore, suggested that farm income may not always be a key factor in determining organic adoption, and that other factors, such as concern about the environment, can be more significant in farmers' adoption decisions. This is partly substantiated by McCann et al. (1997) and Lobley et al. (2005) who found that both organic and conventional farms in the USA and UK can provide a similar share of farming income for the farm family. This could be attributed to non-financial factors, in particular concerns about the environment, which have played an increasingly important role in the adoption decision of many organic farmers. These two studies also highlighted that conventional farmers were facing financial problems, precisely because they were largely motivated by economic concerns.

Many studies have highlighted that organic and/or conventional farmers may undertake off-farm work to meet the farm family needs (see Lockeretz 1995; McCann et al. 1997; Burton et al. 1999, 2003; Lobley et al. 2005; Flaten et al. 2006)[14], emphasizing that agriculture in advanced economies is often no longer able to satisfy farm family needs (Bailey et al. 2000). Yet, other studies (e.g. Duram 1999) found that some organic farmers are making profit from their farming system, mainly due to high demand for organic products and the lucrative direct sale of these products to consumers. As a result, Duram suggested that these farmers have been largely motivated by financial incentives in their decision to convert to organic. This is consistent with Lobley et al.'s (2005) findings that highlighted that some organic farmers, who were financially motivated in their adoption decision, would stay in organic farming as long as there were profits to be made. Overall, therefore, farm income and profit can play a key role in determining the adoption decision of organic farmers, particularly for farmers who are largely financially motivated. On the other hand, farm income is not always the key factor for organic farmers, especially for those encouraged by non-financial incentives (see below).

The previous paragraphs have discussed several farm characteristics and how these can affect farmers' decisions to adopt organic farming. In addition to these characteristics, there are several traits related to the farmers themselves that can play an important role in adoption decisions. The influence of these farmer characteristics will be explored in the following discussion.

[14] Flaten et al. (2006) grouped Norwegian organic dairy farmers through the variable 'time of conversion' to explore a variety of characteristics including farming goals, motives for conversion, and attitudes to organic farming.

Farmer characteristics

In this section, the influence of farmer age, gender, education, background, skills, community involvement, and attitudes and perception for decisions to farm organically will be discussed. The literature suggests that these factors can affect the adoption decision, and that they can play a significant role in understanding and explaining farmers' behaviours.

Organic farmers are usually reported to be younger than conventional farmers (e.g. Lockeretz 1995; Burton et al. 1999, 2003; Lobley et al. 2005; Hattam 2006)[15], although some adoption studies have shown a different result (e.g. McCann et al. 1997). Despite this seemingly clear link between age and organic farming, age is not necessarily a statistically significant factor for organic adoption in many studies (e.g. Midmore et al. 2001; McEachern and Willock 2004). However, both Feder and Umali (1993) and Regouin (2003) have suggested that older farmers without a long-term farm plan or successor are less likely to adopt environmental innovations such as organic farming. More generally, Wilson (1997a) argued that young farmers are more likely to participate in agri-environmental schemes for conservation reasons, although he also suggested that age is not necessarily a determining factor in some cases. Lobley et al. (2005), meanwhile, suggested that young farmers can also be financially motivated to practise sustainable farming systems. As a result, the influence of age on adoption decision remains unclear and needs further research.

[15] Hattam (2006) used planned behaviour theory to explore psychological barriers to the adoption of organic agriculture in Mexico.

Although Midmore et al. (2001) found that their organic farmer sample was roughly 90% male, there was no significant correlation between gender and other factors affecting decisions to farm organically, implying that those farmers who were willing to farm organically were able to do so irrespective of gender. McEachern and Willock (2004) and Lobley et al. (2005) had similar results, although the majority of organic farmers in their survey samples were male. Organic farmers were persuaded by several motives in their decision to convert to organic, and non-financial motives, such as health concerns, encouraged both female and male farmers to practise organic farming (see Trauger et al. 2008). Padel (2001a), however, argued that in a number of cases women have persuaded their partners to take up organic farming as women (rather than males) usually take care of their family's health and food-related welfare, supported by the fact that organic products are often perceived to be healthier than conventional products by women (especially by those with small children). These debates interlink with the highly controversial assertions by Jackson (1994) that women may be more environmentally conscious than men. Some also argue that concern for the environment and the perception to be better protected by organic farming methods may explain why a high proportion of organic farmers are female compared to their non-organic counterparts (in the developed world) (e.g. Lockeretz 1995; Burton et. al. 1999, 2003). Yet, as the discussion in the analysis chapters of this thesis will highlight, the question of gender and organic adoption is a complex one and more work is needed to further clarify whether gender does influence adoption and perceptions of organic farming.

Results on the interlinkages between education and organic adoption appear more straightforward. In general, organic farmers are often well-educated with different levels of general education such as high school or university degree (e.g. Lockeretz 1995; Duram 1999; Lobley et al. 2005; Flaten et al. 2006; Hattam 2006). Indeed, more formal education may influence skills in farming (as outlined below). It is important to highlight here that the issue of education and organic farming interlinks with questions about rural or urban background of organic farmers. Thus, higher education levels among organic farmers may also be due to the fact that many organic farmers are from urban backgrounds as identified in many adoption studies (e.g. Duram 1999). This suggests that a clear conclusion about the impact of education for organic adoption may be difficult to find, as organic farmers come from different rural and urban backgrounds with varying educational profiles. It could be suggested that, as urban areas are usually more polluted, some well educated people concerned about the environment and their health may retreat to rural areas to practise organic farming, as organic farming is generally perceived as an environmentally sustainable farming system (Wilson 2007). This, in turn, might contribute to the assertion that farmers interested in conservation-oriented farming are likely to be non-financially oriented (Feder and Umali 1993; Wilson 1996; Wilson 1997a). On the other hand, other expected benefits of organic farming, such as financial profit, might play an important role in persuading urban people to become organic farmers (Lobley et al. 2005). Similarly, many studies have highlighted that urban people choose to live in the countryside for non-farming purposes, linked to various social, economic, environmental and political driving forces (e.g. Lewis 1998; Marsden 1998; Chaney and Sherwood 2000; Stockdale et al. 2000; van Dam et al. 2002; Millward 2005). As mentioned above, studies explaining why some organic farmers are from cities and, therefore, from NFBs, are limited and this issue still requires more academic attention.

With regard to education levels of organic farmers in general, Burton et al. (1999, 2003) have found that education was not an important determining factor for the adoption of organic farming. This may suggest that levels of education of new entrants into organic farming may not be an important factor in their adoption decisions. This is supported by findings by McCann et al. (1997) where both organic and conventional farmers were relatively well educated. However, the influence of higher educational levels on organic farmers' skills may be an important factor, especially with regard to specific subjects studied by farmers such as agriculture, history, literature, biology, etc. (Murphy 1992; Duram 1999; Flaten et al. 2006). Two important issues can be highlighted on the basis of the relation between education and skills. First, the extent to which the obtained degree contributes to farmers' understanding of farming is more likely to influence farmers' skills (Beus and Dunlap 1992). In other words, well-educated farmers, particularly those who have a degree not only in agriculture but also in other subjects, are more likely to be skilled (Fane 1975; Alene and Manyong 2007). Second, farmers who have never studied can nonetheless run successful farms as they can acquire their skills directly by practicing different farming methods (Gasson 1998).

Time spent in farming can also affect organic farmers' skills, as organic farmers usually have spent fewer years farming than conventional farmers (Murphy 1992; Lockeretz 1995; McCann et al. 1997; Egri 1999)[16]. Starting organic farming later in life is again closely associated with the fact that some organic farmers are from NFBs. Burton et al. (1999: 49), for example, stated that for their sample in the UK "*the set of organic producers comprises new entrants who have chosen to use organic practices from their first year of management*", while Duram (1999) found that 66% of organic farmers in the USA were not brought up on conventional farms. This high percentage of NFBs among organic farmers can be related to the fact that many organic farmers are from urban areas (see above). It can be hypothesised, therefore, that since many organic farmers are from NFBs with relatively high education levels, this group of farmers may have distinct perceptions

[16] In Canada, Egri (1999) investigated dissimilarities between organic and conventional farmers in terms of their socio-demographic, farm-related, attitudinal and communication behaviour.

of, and attitudes towards, risk in organic farming – a question that will be analysed in detail in Chapter 6. Practicing organic farming itself may explain why many organic farmers have considered themselves skilled (Midmore et al. 2001). Additionally, when organic farmers indicate that they are 'not well qualified' to manage organic farms, this may reflect the many difficulties in organic farming (see Section 2.6). In general, the majority of organic farmers recognise that organic farming requires a high level of skills and, therefore, their ability to master organic farming is an important factor in the adoption decision (de Buck et al. 2001; Lobley et al. 2005).

Some studies have found that many organic farmers are well-involved in different formal and informal community groups and activities and with high participation levels in environmental organisations (e.g. Duram 1999; Lobley et al. 2005). This may indicate that organic farmers are more likely to be accepted as members of environmental organisations as they are usually highly motivated by environmental concerns. It has also been suggested that organic farmers are close to consumers (Duram 1999), to other organic farmers (Burton et al. 1999, 2003), and to professional members in organic organisations (Lobley et al. 2005). As many consumers of organic products are interested in seeing the production systems where their healthy and safe food comes from, they are more likely to regularly visit organic farms. This strengthens the social links between organic farmers and consumers and, since organic farmers and organisations play a crucial role in organic farming networks, it can be expected that positive contacts are developed within these networks. Alternatively, de Lauwere et al. (2004)[17] showed that many organic farmers in the Netherlands were socially isolated, particularly when local rural communities do not accept organic farming as a true alternative to conventional farming. This means that some

[17] This adoption study was conducted in the Netherlands and investigated motives for converting or not converting to integrated or organic farming and factors affecting these decisions.

potential organic farmers prefer to continue with conventional methods, and not to take the risk of organic conversion which may be associated with losing emotional and social support. However, de Buck et al. (2001) highlighted that those farmers who decided to convert to organic had obviously decided to take the risk, with the possible outcome of social and emotional marginalisation.

The majority of adoption studies have focused on attributes of organic farming from the farmers' points of view. The emphasis has particularly been on farmers' attitudes, considerations, evaluations and expectations. In this respect, Padel (2001a) suggested that there has been a general shift, over the years, in the motives for the uptake of organic farming from husbandry, philosophic and ethical concerns to environmental and financial considerations and acceptance of organic farming as a challenge. In the following, these specific motives will be discussed in greater detail. It will be shown that it is important not to over-generalise the importance of these motivational factors in adoption decisions, and that a clear distinction between different motives is often difficult to find (in particular between ethical concerns and environment considerations).

By avoiding the use of chemical substances, by seeking to deal with living materials (soil and livestock), and by improving soil and animal health, organic farmers are influenced by husbandry, philosophic and ethical concerns to farm organically. Problems with conventional farming methods (e.g. soil health, animal health and welfare, etc.) have been essential reasons for practising organic farming, particularly in the past (e.g. Wernick and Lockeretz 1977; Vine and Bateman 1981)[18]. For example, the negative impacts of chemical use on organisms and soil that became evident in the 1970s and 1980s in several

[18] Vine and Bateman (1981) surveyed organic farmers in England and Wales. They investigated several issues, including questions about motivations for adopting organic farming.

developed countries encouraged many farmers to farm organically. Characteristic for the 1970s, many of these farmers were also seeking more 'esoteric' human-environment interlinkages, especially linked to a wish to live more in harmony with other living beings such as soil organisms. Such concerns have continued to be factors in the decision to farm organically by some farmers in more recent studies. For instance, de Lauwere et al. (2004) highlighted the importance of 'cooperation with nature' for some organic farmers. Additionally, McEachern and Willock (2004) found that ethical concerns, such as animal welfare, have been a major concern of many organic producers. Yet, some studies have shown that such concerns are not always important for adoption decisions. Duram (1999), for instance, found that several organic farmers in the USA were motivated more by financial benefits in organic farming. Similarly, Midmore et al. (2001) indicated that animal welfare and soil health were not key motives for non-organic farmers considering conversion to organic farming. The latter studies indicate both the complexity of issues surrounding ethical motives of organic farming adoption, and that different ethical considerations may be relevant for both organic and conventional farmers.

Other ethical concerns, including healthy food, farmers' safety and environmental considerations, have been important incentives for many farmers to practise organic farming. For example, Vine and Bateman (1981) found that concerns over food quality and well-being have been important motives for practising organic farming, while Flaten et al. (2006) even suggested that such concerns have been the most important motives for taking up organic farming. Further, Lockeretz (1995) and de Lauwere et al. (2004), in contradiction to Koesling et al.'s study in Norway (2005), showed that many organic farmers chose organic farming for its relative safety related to health (i.e. reduction of health risk linked to less use of chemicals) and environmental benefits. This is associated with the fact that the intensive use of chemicals on conventional farms has been recognized to generate severe health and environmental problems, and these problems have played an important role in the adoption decisions of many organic farmers. Yet, while concerns for food quality and well-being have been significant motives over the years, concerns for the environment have received more attention of late. This is linked to the recent recognition of severe environmental problems linked to productivist farming, as well as to the increasing interest in protecting the environment (i.e. in Europe especially since the 1980s/1990s) (Burton et al. 1999; Egri 1999; Midmore et al. 2001; Burton et al. 2003; McEachern and Willock 2004; Darnhofer et al. 2005[19]; Best 2008).

Although farmers who are concerned about environmental impacts of farming are more likely to adopt organic farming (Toma and Mathijs 2007)[20], the environmental benefits associated with organic farming are often not recognized by conventional farmers who have decided not to convert to organic (e.g. Lockeretz 1995). These farmers have often argued that organic farming is not more environmentally friendly than conventional agriculture. This draws attention to an important issue, as not only concerns for the environment, but also the perception of the environmental benefits of organic farming, are important factors in the adoption decision. Thus, some conventional farmers may be willing to protect the environment, but they may still not choose to undertake organic farming because they do not see it as more environmentally friendly. This suggests that more information provision about the environmental implications of organic farming may help provide a clearer picture to potential organic farmers. There is no doubt, however, that some organic farmers can be classified as fully committed to organic farming based on philosophical and ethical concerns and considerations (Fairweather and Campbell 1996; Darnhofer et al. 2005; see also Chapter 7). These farmers have been willing to forgo

[19] Darnhofer et al. (2005) investigated the decision-making processes for practising organic farming in Austria.
[20] In Toma and Mathijs's (2007) work, factors affecting farmers' tendency to take up organic farming in a Romanian rural region were explored.

(some) financial profit by staying in organic farming, highlighting how philosophical and ethical aspects of organic farming can be important in influencing decisions to practise organic farming.

Financial considerations in farmers' decisions to practise organic farming appear to have increased in importance over the years. This is associated with an increased demand for organic food, particularly over the past few decades, which has encouraged many financially-oriented farmers to switch to organic farming. This highlights that organic farming cannot automatically be equated with a strongly multifunctional farming system (Marsden 2003; Wilson 2007; Wilson 2010). Duram (1999), for example, found that several USA-based organic farmers practised organic farming largely for economic reasons. McEachern and Willock (2004) also found that several organic farmers had been persuaded by the strong organic market in their adoption decisions, while Baecke et al. (2002) found that 28% of organic farmers in Belgium saw the higher price of organic food as the most significant motive for conversion to organic[21]. Similarly, Tranter et al. (2007a) identified financial drivers as the most important incentives for considering conversion to organic farming in their UK-based study. These studies suggest, therefore, that financial motives can be the most important consideration for organic conversion for some farmers, highlighting that any future reduction in financial benefits of organic farming could result in overall reduction of organically farmed area (see Chapter 7). This is also supported by Fairweather and Campbell (1996) and Darnhofer et al. (2005) who found that some organic farmers who were not willing to absorb low financial returns in organic farming would revert back to conventional farming.

[21] Baecke et al. (2002) analysed attitudes of conventional farmers towards organic farming and evaluated payment rates in the organic sector.

It is interesting to note that these more recent organic adoption studies contradict findings from earlier studies (especially from the 1980s and 1990s) that suggested that financial concerns were not always crucial in farmers' adoption decisions (see above). Thus, while earlier studies suggested that farmers usually did include financial considerations in their farming decisions in order to satisfy their farming family needs, other factors (e.g. altruism) were possibly more important in the first few decades of the organic farming movement. Overall, the complex interplay of financial and non-financial motives in organic uptake decisions suggests that farmers are not always profit-maximisers (Padel 2001a).

The fact that organic farming can be seen as a 'challenge' or 'risk' by farmers has been highlighted in a few adoption studies. Some studies argue that entering into organic farming can be considered a positive challenge (e.g. Duram 1999; Midmore et al. 2001; de Lauwere et al. 2004; Koesling et al. 2005; Flaten et al. 2006); while others have highlighted that many farmers also see organic conversion as risky (e.g. McCann et al. 1997; Hattam 2006). Darnhofer et al. (2005) have used both challenge and risk to further explore the nature of organic farming, and have highlighted the complex interplay between these two concepts. Indeed, the discussion above has already highlighted that practicing organic farming is not an easy decision, and de Lauwere et al. (2004), in particular, found that experiencing organic farming as a positive 'challenge' can be a very important factor in adoption decisions. Indeed, many organic farmers appear to be enjoying the challenge of having to master multiple management challenges simultaneously (e.g. Duram 1999; Midmore et al. 2001; Koesling et al. 2005; Flaten et al. 2006), although Midmore et al. (2001) suggested more pragmatically that organic farmers' willingness to take on the 'challenge' can also be positively correlated with high prices of organic produce. Additionally, the willingness to take on organic farming as a 'challenge' has been associated with respondents' ability to farm organically (e.g. skills), and there is often a negative association between willingness to take on organic farming as a challenge by non-organic farmers and perceived difficulties in organic farming. In addition, organic farmers who are willing to take on a challenge are often seeking to achieve high benefits from farming.

Why organic farmers are willing to practise organic farming despite its distinctly 'risky nature' was particularly analysed by McCann et al. (1997). Their study showed that organic farmers in the USA were financially orientated and willing to take both current crop yield and price risks to achieve future financial benefits, although, conversely, several farmers indicated that they were taking such risks for 'non-financial' benefits. Likewise, Hattam (2006) found that Mexican organic farmers had accepted risks associated with social pressure, certification costs, and scarcity of information when they converted to organic farming. Darnhofer et al. (2005), meanwhile, showed that committed organic farmers in Austria were willing to risk income reductions for the sake of environmental benefits, while pragmatic organic farmers accepted organic farming as a 'challenge' to achieve a higher income. They also found that pragmatic conventional farmers saw organic farming as 'too risky'. Although there is general agreement that farmers are often risk-averse, these studies suggest, therefore, that organic farmers are often willing to take risk in comparison with non-organic farmers in order to achieve various financial and non-financial benefits – an assertion that will be analysed in detail in this present study. What is evident is that farmers' willingness to take different risks in organic farming, and the extent to which they are willing to take such risks in relation to their adoption decisions, has received little attention in adoption studies.

The majority of adoption studies have nonetheless shown that different sources and types of issues such as 'risks', 'problems', 'disadvantages', 'obstacles', 'barriers' or 'uncertainties' in organic farming are perceived to exist from the farmers' point-of-view, and the importance of these risks and barriers have been emphasised in farmers' adoption decisions. Yet, Padel (2001a: 51) cautioned that *"on the basis of the available literature it is difficult to assess whether or not ... risk (hampering the uptake of organic farming) is perceived or real"*. However, a number of adoption studies have focused more on conventional farmers and their adoption decisions (e.g. Midmore et al. 2001; Schneeberger and Kirner 2001[22]; Darnhofer et al. 2005). As the next section will discuss, one of the most important perceived difficulties for many conventional farmers to not practise organic farming has been controlling weeds, pests and diseases (Midmore et al. 2001; Baecke et al. 2002). These difficulties have been particularly related to uncertainties about the efficiency of organic farming, although an additional risk is perceived to be associated with additional required labour in organic farming. While many organic farmers acknowledge that required additional labour can be a disadvantage (Lockeretz 1995), non-organic farmers are particularly worried about this aspect of organic farming. Since organic farming usually requires more farm workers, especially for the annual control of weeds, farmers are concerned about this in their adoption decisions and are, therefore, often unwilling to convert to organic (Schneeberger and Kirner 2001; Baecke et al. 2002). Only when farm workers are readily available does concern about employing additional workers diminish, and non-organic farmers may then decide to convert to organic farming.

Another important perceived risk for organic adoption relates to the policy environment. It appears that changes in policies linked to organic farming can be seen by farmers as a

[22] Willingness to become an organic farmer and the barriers hampering such conversion were explored among non-organic farmers in Austria by Schneeberger and Kirner (2001).

considerable source of risk. In this respect, the main concerns have been opaque standards (Midmore et al. 2001; de Lauwere et al. 2004; Darnhofer et al. 2005), dissatisfaction with provided subsidies (a constraint mentioned particularly by non-organic farmers) (Midmore et al. 2001), and lack of information (Duram 1999). Here, again, organic farmers who are more likely to be willing to take risks in general are often more likely to also risk having to deal with complex policy risks. In addition, it is well known among farming communities that changes in the organic market can cause financial problems for many organic farmers (Duram 1999), and for many non-organic farmers this has been identified as a key reason not to convert (de Lauwere et al. 2004). Market aspects, in particular, can explain why, at times, non-organic farmers are considering organic farming as unprofitable (Midmore et al. 2001; Baecke et al. 2002; Darnhofer et al. 2005). Thus, low financial returns in organic farming can be a barrier to adoption, particularly when conventional farmers have high mortgages and loans (Fairweather and Campbell 1996). Further, McCann et al. (1997) and Midmore et al. (2001) found that many farmers are concerned with the financing of an organic farm, especially as structural changes are often required (e.g. the costly additional employment of workers as highlighted above). Farmers who can afford such financial burdens are more likely to practise organic farming in comparison with other farmers.

Finally, household-related factors can also be important in conversion decisions. In particular, a farm family which generally is in favour of conventional farming rather than organic farming may make it difficult for an individual in that family to decide to convert to organic (Duram 1999). This can be exacerbated by views of other actors in the farming community, such as agricultural teachers who are against organic farming, which may reduce the likelihood for conversion (de Lauwere et al. 2004; Hattam 2006). As highlighted above, general acceptance of organic farming in society, thus, also plays an important role in farmers' decisions to convert, and farmers who may be more convinced in organic farming are, therefore, more likely to farm organically than more undecided ones.

In spite of the previous findings, there are some contradicting results in several adoption studies. For example, Lockeretz (1995) found that both organic and conventional farmers have not considered controlling weeds a disadvantage in organic farming. Furthermore, McEachern and Willock (2004) indicated that many organic producers have been satisfied by organic standards and policy, while Midmore et al. (2001) discovered that many farmers have been optimistic about organic markets and have thought that information is easily obtainable. In addition, many farmers have adopted organic farming although they had debt (Vine and Bateman 1981). Nonetheless, this discussion suggests that different potential sources and types of risks in organic farming are linked to farmers' adoption decisions. They also indicate that the majority of adoption studies have emphasised the distinctly 'risky nature' of organic farming.

This section has discussed the most important factors affecting farmers' decisions to adopt organic farming, and it has shown that such decisions involve different types and sources of risks. This may be due to the distinctly 'risky nature' of organic farming as identified by both organic and conventional farmers. In view of these debates, the hypothesis can be formulated that organic and non-organic farmers may differ in their perceptions about the sources and types of risks in organic farming, and in their attitudes towards risk in organic farming. Based on attitudes towards risk in organic farming, it can further be assumed that a typology could be developed that describes different clusters of farmers linked to different attitudes towards risk in organic farming, and that such a typology may be able to provide policy guidance which could usefully complement above-mentioned research on organic farming adoption (see Chapter 7). The key point emerging from the debates in this section, however, relates to the fact that the majority of adoptions studies and other agricultural and environmental literature refer to organic farming as having a distinctly 'risky nature'. To understand this latter issue better, the final section will discuss in more detail the variety of potential types and sources of risks in organic farming.

2.6 Organic farming: types and sources of risks

This section will seek to highlight potential types and sources of risks in organic farming that can be grouped into production, market, institutional, and personal and social risks (Figure 2.6). In contrast to the previous discussion which focused on factors affecting organic adoption, the discussion here will focus on risks in general associated with organic farming as discussed in the critical literature.

As the previous discussion has highlighted, organic farming is an inherently risky business and, therefore, risks are more likely to be at the forefront of organic farmers' minds in comparison with other farmers (e.g. Morris and Winter 1999; de Buck et al. 2001; Wynen 2003; Hanson et al. 2004; Koesling et al. 2004; Flaten et al. 2005; Gardebroek 2006; Genius et al. 2006; Serra et al. 2008). Indeed, many researchers have suggested that organic farming can be riskier than other farming systems (Padel and Lampkin 1994b; de Buck et al. 1999; Gardebroek 2006). In the following, I will discuss in detail the different types and sources of risk associated with organic farming.

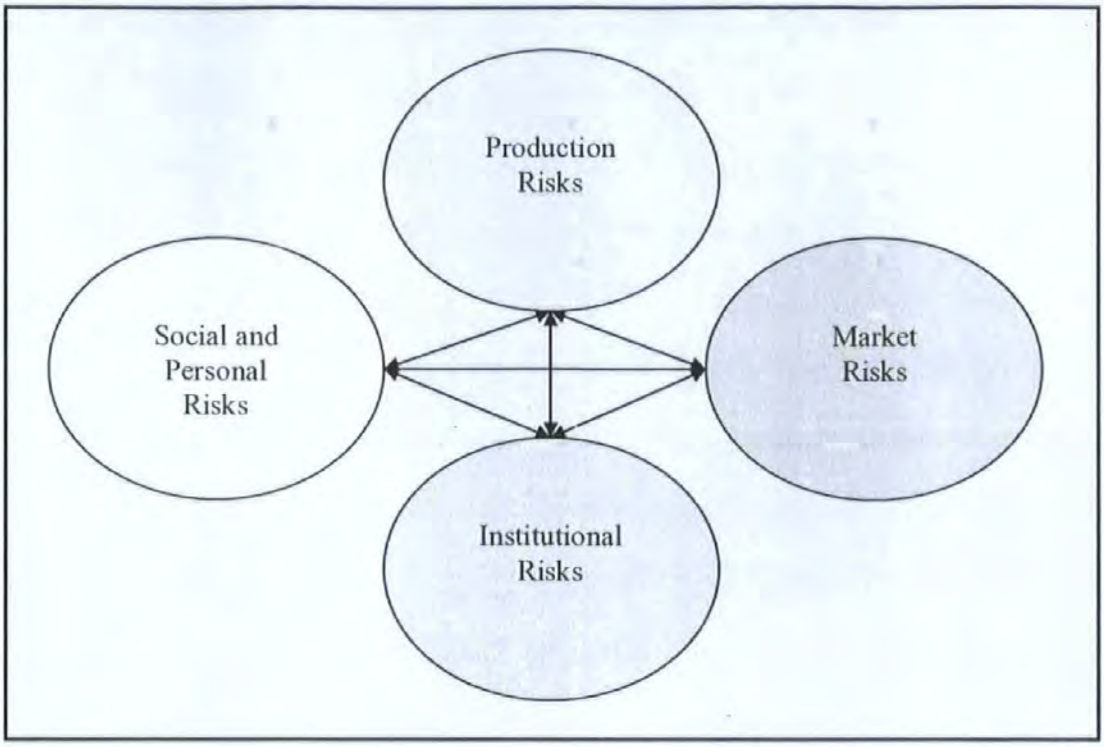


Figure 2.6: Interaction between types and sources of risks in organic farming (Source: Author; after Hardaker 2004)

2.6.1 Production risks

Production risks are linked to the different methods of organic farming, and they arise in the production context of the organic farmer's activities. According to Vasilikiotis (2000), there is a debate about the ability of feeding the world through organic farming alone. This can be related to findings showing that organic yields are often low and, as a result, farmers may need to cultivate more agricultural land to produce yields similar to those in other farming systems (Kristiansen et al. 2006; Gundogmus 2007). Not only food quantity but also quality is often the source of increasing concern by different actors in society (see Section 2.3.2 above), and organic farming methods cannot necessarily guarantee the production of food high in quality (Kouba 2003). For example, Lampkin (2003) and Kuhnert et al. (2005) have indicated that some harmful pathogens, such as E. coli 0157, Shiga Toxigenic Escherichia Coli (STEC), or the O157:H7 pathogen have been discovered in organic food. Although the use of chemicals in organic farming is limited to the maximum extent possible, chemicals can contaminate organic produce as well, for example microorganisms found in manure. This suggests that there is no zero risk with regard to organic food quality (see also the discussion on 'food quality' in Section 2.4 above).

Practicing organic farming also does not ensure safe organic production for farmers with regards to their concerns about personal risk, particularly from exposure to chemicals. Although the limited use of chemicals would suggest lower risk for organic farmers in comparison with conventional farmers (Jones 2003), the limited use of permitted chemicals or even full chemical treatment in specific cases suggests that organic farmers are not fully protected against exposure to agricultural chemicals (Lampkin 2002). This also means that organic production can affect the environment undesirably. For example, some studies have found that biodiversity has been greater on conventional farms (Bartram and Perkins 2003), although both Hamm et al. (2002) and Norton et al. (2009) have referred to extensive evidence about increased biodiversity on organic farms. Despite the latter, this debate highlights that organic farming is not always associated with the creation of 'positive' public goods linked to the environment (see also the discussion on 'the welfare of the environment and animals' in Section 2.4 above).

Organic production is also considered to be risky in terms of the implementation of organic farm management practices. Cultural methods upon which organic farming heavily relies include, for example, more diverse rotation, cover crops, field isolation, delayed planting, mulching and biological control. These methods can be complex and difficult to implement because they often demand integration of a variety of techniques and practices and a wider range of knowledge (Blake 1987; Wookey 1987; Morris and Winter 1999; de Buck et al.

1999; Bond and Grundy 2001; Boiteau 2008; Sharma et al. 2008). In particular, high risks in organic farming with regard to the control of pests, diseases and weeds, and linked to the maintenance of good soil and enough livestock, are often mentioned in the literature (Hanson 2003; Xie et al. 2003; Gardebroek 2006; Lee et al. 2008; Lobley et al 2009c). Problems can be exacerbated by the fact that preventative methods are given priority, and because the use of chemicals is limited on organic farms (Baillieux et al. 1994; Hertzberg et al. 2003; Acs et al. 2009). Other important elements that are connected with production risks include weather and climate. Although these risks similarly affect organic and conventional farms (Hanson 2003), they are often of greater concern to organic farmers (Spoolder 2007). Padel and Lampkin (1994b) have highlighted that different weather conditions can lead to highly divergent yields on organic farms. In particular, harsh weather can result in lower organic yields, as identified by Padel (2001b) with regard to organic milk production.

2.6.2 Market risks

Other potential types and sources of risks in organic farming are linked to the market, where processes such as investments, demand, supply and prices interact in complex ways. As highlighted above, these can increase the risk in farmers' decisions to farm organically. In addition, availability of organic inputs (seed, forage, manure, etc.) and labour can be a significant concern of farmers (Regouin 2003; Roderick et al. 2004; Hanson et al. 2004; Acs et al. 2005; Lobley et al 2009c; Gardebroek et al. 2010). Here, the organic market can increase the levels of potential risk in farmers' decisions, as the market may not be able to supply specific inputs needed for organic farming, especially in areas with high organic adoption rates and the resulting problem that many organic farms may need more organic inputs than they can produce (see also Section 2.5.2 and Chapter 5). In addition, and as discussed above, Pimentel et al. (2005) have indicated that organic systems require between 7% and 75% more labour than conventional farm systems, especially as the need to control weeds annually on organic farms is important and organic farms have to employ more workers for this task. Therefore, a lack of workers can be a significant concern for farmers practising or being willing to practise organic farming.

In addition, by facing shortages of different inputs in organic farming, farmers may need to pay more for inputs offered on the market (Regouin 2003). This can be a major concern for farmers and could be considered an important type of market risk for organic farmers. Not only input, but also output prices can have a great impact on farmers' adoption decisions, especially because these prices are often unstable. This instability is partly linked to the fact that consumers' willingness to purchase organic produce fluctuates (Hallam 2003). For example, consumers are more likely to purchase organic food during food crises, but after such crises many consumers revert back to purchasing non-organic food. This partly explains the growth of the organic market in the 1990s in many European countries, as food scares such as BSE drove consumers towards organic produce. Low organic demand, in turn, can also be a source of serious risk in organic farming, especially when demand cannot absorb organic produce and when the supply of organic food exceeds organic demand. This often means that organic farmers have to sell their products at low prices in non-organic markets. Related to this, the organic market may also offer low prices for organic products at times of oversupply. According to Hamm et al. (2002), Wynen (2003), Smith and Marsden (2004) and Harris et al. (2008) this was often the case during the 1990s and 2000s in Switzerland, Denmark and the UK with regard to organic products such as milk. This shows that organic prices are often uncertain (Smith et al. 2004; Genius et al. 2006; Gundogmus 2007), and that the development of the organic market is relatively unreliable (Hanson et al. 2004; Smith and Marsden 2004). An undeveloped organic market can generate another source of risk for farmers. For example, Dabbert et al. (2004) highlighted that long distance to organic markets costs farmers more as they have to transport their organically produced food to these markets (see also Lobley et al. 2009c).

2.6.3 Institutional risks

Risks that are related to, for example, agricultural policy, organic farming regulations and accreditation, and occur in the institutional context of organic farmer activities, may be termed 'institutional risks' in organic farming. Agricultural regulations are increasingly seen by many farmers to be unexpected and changeable (Fennell 1997; Koesling et al. 2004)[23]. As a result, it is not surprising that there is a general lack of trust in government regulations with regard to organic farming (Padel and Lampkin 1994a). Although many regulations related to subsidies for organic farmers are there to help organic farming (Tomlinson 2008), CRER (2002) have argued that the subsidy regime has nonetheless created an 'unstable' policy environment in organic farming. Farmers particularly face difficulties in predicting future regulations in organic farming, exacerbated by the fact that the 2003 reform of the CAP will only last until 2013 (Offermann et al. 2009). As a result, it is difficult for farmers to make predictions about future regulations in connection with organic farming. In addition, national and/or regional organic regulations, that often include targets for both size of organic land and produced organic food, can be difficult to forecast by farmers (FiBL et al. 2008). Thus, once these targets are achieved, it may be

[23] For detail about recent changes in EU organic regulations see particularly Gibbon (2008: 560-562).

difficult for farmers to obtain further subsidies[24]. Further, farmers may be uncertain about future policy support in organic farming due to the consequences of liberalisation of agriculture through the WTO trade talks (Potter and Tilzey 2005). Although organic farming may benefit from trade liberalisation, studies in this respect have reached contradicting conclusions, and have also emphasized that agricultural markets and prices remain uncertain (Andersen and Hazell 1997; Barling 2003). Accordingly, for these and other reasons, farmers may consider future organic policy uncertain and, therefore, may fear undesirable changes. For example, Lien et al. (2006b) have indicated that some Norwegian farmers have been unsure about future organic subsides, and have been greatly concerned about reductions in current subsides.

Inconsistencies in internationally harmonized organic standards, together with the existence of too many certification systems, also do not facilitate the international trade of organic products (Bowen 2003; Vogl et al. 2005)[25]. Thus, limited international organic trade can have a negative affect on the growth of organic farming, especially because some organic markets are available to too many farmers who want to export their products. Yet, as these international organic markets exist, they may pose a risk for locally produced organic food by leading to over-supply of international organic products in local organic markets. For example, in the early 2000s organic imports contributed to an oversupply of organic milk in the UK (SAO 2004). This situation is often exacerbated by the complexity of different certification systems in different countries (Bowen 2003; Lobley et al. 2009c)[26], and these systems, which include different organic labels, often confuse

[24] This may be the case in England in the future as England has achieved its objective of 70% of organic produce supplied from within the UK (FiBL et al. 2008).
[25] It is important to remember that many farmers may consider their farms organic, but are less likely to export their products as 'organic' because their products are not produced under specific standards (not certified by an accrediting body).
[26] For example, in the UK there are nine organic certification bodies. See http://www.defra.gov.uk/farm/organic/standards/index.htm for details.

consumers and may reduce organic sales as a result (Giovannucci 2003; Dabbert et al. 2004). Lampkin (1997) and Cierpka and Geier (2003) have particularly shown that different certification bodies mean different standards, which can also confuse farmers who are willing to practise organic farming.

Further, implementing a specific package of organic standards requires registration, and fees and paperwork may, therefore, deter organic farming adoption (Hampshire and Riggulsford 2006; Lobley et al. 2009c). Not only standards, but also available information and services can be a major concern in organic farming. This can be attributed to the fact that organic farming relies heavily on complex environmental management, requiring farmers to learn new techniques to farm organically. Therefore, deficiencies in organic knowledge sources and/or distant sources of information can increase the risk in organic farming (Lampkin and Padel 1994; Mackay et al. 2002). Padel and Lampkin (1994a) and Regouin (2003) have also highlighted the importance of the quality and cost of available organic knowledge. This is particularly important as organic farming requires effective and accurate information, and because any 'inappropriate' knowledge can result in products that do not achieve the necessary standards to be classified as 'organic'. Yet, such specialist knowledge can be expensive, since it is difficult to obtain. Therefore, some potential organic farmers may not farm organically because of the high cost of required information.

2.6.4 Personal and social risks

The final types and sources of risks in organic farming are personal and social risks, which often arise in the social and personal context of the individual farmer. On the one hand, skilled farmers are more likely to be able to deal with possible mistakes or inappropriate action while practising organic farming (Lobley et al. 2005). On the other hand, unskilled farmers can increase risk in organic farming, in particular production risks (see above), because of difficulties in practising specific environmental management tasks related to organic farming (Harris et al. 2008). Newton (2004) has argued that skills such as processing, marketing and talking to traders and consumers, are particularly important in organic farming. Without these specific skills, organic farmers may not be able to cope with specific environmental management requirements linked to organic food production. Unskilled farmers converting to organic may be particularly influenced by productivist farm trajectories experienced in the past under a different farming regime (McEachern and Willock 2004). Regouin (2003) has argued that such farmers may have converted to organic because of social pressure linked to high adoption rates in their area, but that they may not be convinced in the benefits of organic farming.

Lampkin (2002) has argued that organic farming is, first of all, tied to personal changes in a farmer's attitude and approach to farming. This means that committed organic farmers are less likely to be negatively exposed to the different risks associated with organic farming, especially as these farmers are often well-embedded in their community (which may have accepted organic farming), and because they may have positive relationships with other actors such as consumers, processors, marketers and tourists (Lobley et al. 2005; Mikkola 2008; Reed et al. 2008). On the other hand, unskilled organic farmers who cannot successfully communicate with other actors in their community may be 'excluded' from a local community that accepts organic farming and which may have pushed an unskilled farmer to practise organic farming (Regouin 2003; Padel 2008). The notion that organic farmers should receive emotional support from their community that appreciates their role in farming is, therefore, very important. In contrast, communities that are not in favour of organic farming are more likely to negatively affect organic farmers. Tate (1994) suggested that a community with a strong chemical lobby, for example, is less likely to accept organic farming. Further, when most farmers in a community are conventional and reject organic farming, new organic farmers can be isolated from the farming community. The few organic farmers in such a community may need to establish a new network of their own or join external organic networks, as they may face particular difficulties in farming organically (de Buck et al. 2001). Overall, problems related to rural social risk can influence farmers' organic uptake and performance and, as a result, the negative social context can bring additional risks for organic farmers (Shrapnel and Davie 2001; Burton 2004a; Burton and Wilson 2006).

Sections 2.5 and 2.6 have emphasised the distinctly 'risky nature' of organic farming by identifying potential sources and types of risks. It is, therefore, not surprising that the uptake of organic farming can be considered a *"unique decision"* (Lunneryd 2003). This decision is made in the context of specific sources and types of risks in organic farming (CRER 2002) and with risks varying across space and time (ESG 2001; Röhr et al. 2005). The discussion in this chapter has also highlighted that organic farmers' perceptions of risk in organic farming will change over time – a hypothesis that this thesis will test in detail (see Chapters 5-7).

2.7 Conclusions

This chapter has suggested the links between attitudes towards risk in organic farming and farmers' adoption behaviours. The risk literature suggests that individuals' beliefs about risk play an important role in decisions and behaviours under risk, and this chapter explained why this study will use 'reasoned action' theory as a conceptual framework to assess risk in organic farming. The chapter also highlighted that there are various definitions and concepts of 'organic farming', suggesting that it is a farming system with many contradictory meanings and perspectives. The discussion showed that organic farming has expanded steadily in the past few decades, especially because it has been supported by several key actors in society including consumers, policy-makers and the farmers themselves. The chapter specifically focused on literature that has explored the motives for organic adoption, and results have shown that motives and barriers linked to organic farmers and farm characteristics have not been homogenous. It was particularly emphasised that in countries such as the UK many organic farmers come from urban areas and/or have NFBs. Most importantly, and in relation to the key question asked in this thesis, the majority of adoption studies have also highlighted the distinctly 'risky nature' of organic farming.

The review of literature presented in this chapter enables us to identify key clusters of hypotheses (see also Chapter 1). The main hypothesis of this study is that the distinctly 'risky nature' of organic farming influences farmers' adoption decisions. This hypothesis can be split into five sub-hypotheses based on existing literature of farmers' adoption decisions:

- Organic and non-organic farmers will have different perceptions about the sources and types of risks associated with organic farming. These perceptions can be linked to factors such as farm size, farming experience, etc. (e.g. Midmore et al. 2001; Schneeberger and Kirner 2001; Darnhofer et al. 2005).

- Organic and non-organic farmers will have a different willingness to take risk associated with organic farming. A variety of indirect factors, such as education, age, etc. may explain differences in risk attitudes (e.g. McCann et al. 1997; Gardebroek 2006).

- Organic farmers from NFBs will have distinct risk perceptions and willingness to take risk in organic farming. Production risks in organic farming will be of particular concern to this segment of organic farmers (Padel 2001b; Mailfert 2007; Reed et al. 2008).

- Based on Morris and Potter's (1995) 'participation spectrum', farmers can be categorised into a typology based on a 'risk-spectrum' comprising several categories ranging from risk-averse farmers to risk-takers. Each farmer cluster will have different attitudes towards organic farming (Darnhofer et al. 2005).

- Farmers who have converted to, or have adopted, organic farming are expected to change their perceptions of sources and types of risks associated with organic farming over time (CRER 2002).

Having discussed the literature on organic farming and risk, how data will be gathered and analysed for this study will be the main focus of Chapter 3.

Chapter Three: Methodology

3.1 Introduction

The chapter will outline the methods used for gathering and analysing data, and drawing conclusions about risk and organic farming adoption. It first justifies the use of Devon as the present study area and all farming systems within that area as the sampling frame. The multiple-method approach to data collection is then described, with quantitative data acquired by a telephone questionnaire administered to 168 organic and 155 non-organic farms; qualitative data gathered by 'familiarisation' and 'in-depth interviews'; further supported by use of secondary data. The final part of the chapter presents the approach to analysis of the data collected.

3.2 Study area

This section will outline why Devon, a county in the south west of England, was the area from which farmers who participated in this study were selected.

According to DEFRA (2007a) and several personal contacts with DEFRA personnel, the south west of England has the largest number of organic and in-conversion organic farms in the UK; and the county of Devon, which is in the south west of England, has the highest number of registered organic farms of any county in the UK (see Figure 3.1)[1]. The south west of England is a region well-served with organic extension services, such as the OSC (Organic Studies Centre), and the market for organic produce in this region is well-established (Lobley et al. 2005; Waugh 2006).

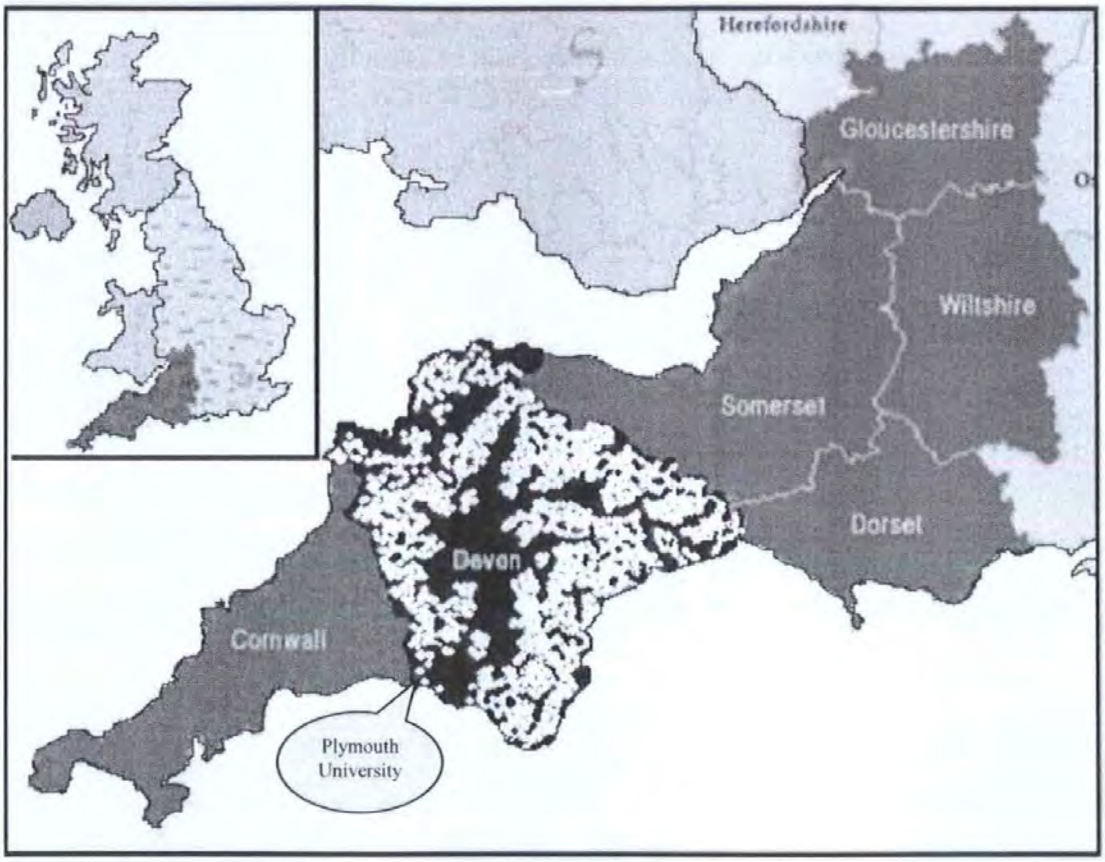


Figure 3.1: The location of Devon in the south west of England, the distribution of registered organic farms in it, and Plymouth University
(Source: Author; after DEFRA 2008d; http://www.picturesofengland.com)

The choice of Devon as the study area was influenced by several factors. The number of registered organic farms in Devon was considered sufficient to allow conclusions about risk and farmers' adoption decision to be drawn. Further, the high number of registered organic farms would allow distinction between different types of registered organic farms

[1] In 2007, there were almost 1282 and 430 registered organic farms in the south west of England and Devon, respectively.

using different certifying bodies (see the next section). Furthermore, it was hoped that conclusions could be drawn about reasons for non-adoption decisions of organic farming. The high number of farm holdings in Devon offered a good sampling frame for non-organic farmers, and the high proportion of organic farms was expected to result in non-organic farmers in Devon being relatively well-informed about organic farming[2].

3.3 Choice of farms

Size of sample was determined primarily by the needs of chi-square analysis, which was considered likely to be the main analytical tool applied to the eventual results (see Section 3.11). This statistical test is not valid where the sample size is too small to ensure certain conditions to be met (i.e. no expected value of zero, fewer than 20% expected values less than 5) (Lovett 2005). To ensure adequate conditions for detailed cross-tabulation and testing, it was decided to test 150 organic farms and 150 non-organic farms (see Section 3.8). Both registered and unregistered organic farms would be put in the 'organic farms' sample, and all other farms would be placed in the 'non-organic farms' sample.

The 'organic farms' sample involved organic farms within Devon that had been registered with different certifying bodies (see Table 3.2 and Sections 1.2, 2.5.2 and 3.7)[3]. No single certification body of organic farms in Devon was intended to be targeted as different

[2] According to DEFRA (2007b), there were 16,735 farm holdings in Devon in 2007.

[3] According to many contacts made in 2006 and 2007 with DEFRA and all the certification bodies in the UK, it was found that there were four certification bodies of organic farms in Devon: the SAO, the Bio-Dynamic Agricultural Association, Organic Farmers and Growers, and the Organic Food Federation. In this respect, in 2007, the SAO undertook about 63% of organic certification in Devon (see Sections 3.2 and 3.8).

registered organic farms with various certifying bodies are more likely to provide a variety of information about potential risks in organic farming, particularly market and institutional risks (see Sections 2.6.2 and 2.6.3).

It has been highlighted in Section 1.2 that there are many farming systems which can be seen as sustainable farming systems, such as biodynamic agriculture. It can be difficult to observe clear differences between these systems (Botezatu et al. 2002). Farmers practising those farming systems may consider their farms to be organic even though they have not registered with a certifying body (Burton et al. 1999). Hampshire and Riggulsford (2006) had noted the existence of unregistered organic farms in Devon, arising from a number of factors such as official subsidies (see Section 2.5.2), pressure from, for example, tourists and/or growing concern about the environment, and encouragement of more sustainable land use in Devon as elsewhere (Burton et al. 1999; Winter 2002, Lobley and Butler 2004). Consequently unregistered organic farms within Devon were included in the 'organic farms' sample (see Table 3.2) in the expectation that understanding of the influence of the distinctly 'risky nature' of organic farming on adoption decisions can be enriched (see Burton et al. 1999; Hanson et al. 2004)[4].

The sampling frame for 'non-organic farms' sample of this study was taken to be all farms in Devon not included in the 'organic' classification. This resulted in the inclusion of farms with 'integrated' farming systems as well as more conventional farms (see Section 3.8). IFS attempt to create a more balanced relationship between farming and the natural environment than in conventional farming, but without wholesale adoption of organic principles and techniques (Wossink et al. 1997; de Buck et al. 1999). In other words, IFS

[4] Burton et al. (1999) found some unregistered organic farms in their investigation in the UK; these farms have been regarded as organic by their farmers, who have revealed several institutional concerns about becoming registered organic farmers.

can be *''conceptualised as a 'third way' or middle course for agriculture between conventional and organic farming''* (Morris and Winter 1999: 193)[5].

Having been selected for either the 'organic' or the 'non-organic' sample, farmers received a telephone call, aiming to collect data through a questionnaire. The next section will show why and how a questionnaire was employed in this thesis.

3.4 Questionnaire

Data for this study were gathered from multiple sources. This approach enables 'triangulation' *''where two or more distinct methods ...are employed to measure the same phenomenon, but from different angles''* (Arksey and Knight 1999: 23). According to Denzin (1989: 93-94), there are four types of triangulation including data source, investigator, theory and methodological. The use of this technique enables the researcher to try to maximise the understandings of the research question, since it enables the researchers to develop converging lines of inquiry (Yin 2003). Therefore, the data source triangulation technique was used in this thesis where 'questionnaire', 'familiarisation', 'in-depth interviews' and 'secondary data' were the sources of this investigation data (see below). Through the use of the data source triangulation technique, a wider variety of data and information were collected (see Chapters 5-7). It is possible that the weakness of one methodology was outweighed by the strengths of another (Hoggart et al. 2002). In this respect, this section will justify why and explain how a questionnaire was conducted in this thesis.

[5] For more information about the principles of IFS, see Morris and Winter (1999: 194-195).

As outlined in Section 2.2.2, the present research uses 'reasoned action' theory to investigate the importance of attitudes towards risk in organic farming in farmers' decisions whether or not to farm organically. This theory, allowing for the understanding of the decisions of independent decision-makers, is based on statistical measures (Fishbein and Ajzen 1975; Ajzen 2006; Pannell and Pannell 2006). Thus a questionnaire was used in the present research to collect raw data for consequent statistical analyses[6]. Further, the use of a questionnaire in analysing individuals' behaviours and decisions under risk is a commonly used methodology (Pennings and Wansink 2004; McCarthy and Henson 2005; Fausti and Gillespie 2006; Gabriel et al. 2009; among others). This can be attributed to the fact that a questionnaire survey is an *''indispensable tool when primary data are required about people, their behaviour, attitudes and opinions and their awareness of specific issues''* (Parfitt 2005: 78). It should be kept in mind, though, that a questionnaire survey offers only limited insight into the decision-making process and the interaction between several factors in this process (Darnhofer et al. 2005; Neuman 2006). On the other hand, this survey allows for the quantification of investigated factors and for the inclusion of a large number of participants (Hoggart et al. 2002). This, in turn, can reflect a realistic view of an entire population without the need to survey everyone within it through a simple approach and, as a result, the quantitative method appeals to many researchers and policy-makers (Hoggart et al. 2002; Burton 2004a). Table 3.1 shows both the advantages and disadvantages of using a questionnaire in research.

[6] In addition to questionnaire, there are different methods of quantitative data collection, such as secondary analysis of statistics and experiments (Neuman 2006).

Advantages	Disadvantages
• Participants can see what is asked so can give informed consent. • Closed questions are quiet easily analysed. • Can be reliable, because can easily be repeated. • Quite quick and cheap to administrate.	• Participants may not be trustful, so validity lacking. • Closed questions mean participants cannot give all information so data may be lost. • If repeated on a different day, different answers might be given. • Poor response rate, especially if sent by post. • Questionnaires only find out about attitudes towards something, not about how a person would actually behave.

Table 3.1: Advantages and disadvantages of using a questionnaire
(Source: Brain 2002: 309)

According to de Vaus (2002), the harmony between research features, involving topic, objectives, resources, such as time and money, the choice and use of certain techniques, etc. plays an important role in its design and, thus, it affects the selection of its techniques. In the context of the choice of a proper questionnaire survey technique, there are different options. They are interviewer-administered (face to face), postal, telephone and internet-based questionnaire surveys (Parfitt 2005). Based on Neuman's (2006: 300) rich picture of the pros and cons of each of the above mentioned techniques[7], the telephone method was chosen for the present research. The interviewer-administered questionnaire would have been too time-consuming and expensive given the sample sizes; the postal method was not selected because of the need to lead respondents through complex topics, such as risk[8]. Similar considerations applied with regard to internet-based questionnaires, and in addition there were concerns about the level of access to internet and e-mail among farmers in Devon: Warren (2004) highlighted the relatively slow adoption rate by farm businesses of

[7] See also: de Vaus (2002: 132).
[8] Fausti and Gillespie's (2006) work on the reliability of an array of risk-attitude approaches through a mail survey finds that some informants did not understand some questions well enough to give responses.

communication technology, such as internet, compounded by weak rural internet infrastructure.

Although asking questions over the telephone has many advantages (see above), it has some limitations. While de Vaus (2002) argued for the capacity to use highly complex questions in the telephone questionnaire survey, Parfitt (2005) held that the technique is suitable for relatively simple and straightforward questions, but rather less adequate for questions on complex matters, such as attitudes. Consequently, in constructing the questionnaire extra attention was given to ensuring the clarity and easiness of all questions. The conducting of a pilot study helped to refine difficult and vague questions (see Section 3.6). Finally, the researcher conducted the study himself in order to guide respondents through and, thus, to facilitate the use of different types of questions, such as attitudinal questions.

Some observers consider that the response rate to a telephone questionnaire survey is likely to be relatively low (Neuman 2006), and indeed Midmore et al. (2001) achieved a very low response rate (20%) using the method. On the other hand, several researchers have demonstrated that personal delivery of a questionnaire can lead to high rates of participation (e.g. McCann et al. 1997; Wilson 1997a), and Whitehead et al. (2002) showed that careful choice of the times for contacting farmers for a telephone survey can help achieve a high response rate (80%).

3.5 Questionnaire structure

In addition to the method by which a questionnaire is to be administrated, there are several important factors influencing the constructing of a questionnaire (Brain 2002; Parfitt 2005). One is the research problem that determines which concepts need to be considered. Accordingly, the content of the questionnaire (see Appendix One) was based on the objectives of this study (see Section 1.6.2). Several considerations were taken into account in formulating the questions. Both reliability and validity, for example, were given attention; the questions were carefully worded to achieve consistent responses from every potential informant and to measure what had been intended to measure[9]. Also, significant attention was given to different principles of question writing, for example avoiding useless and double-negative questions. All this was related to the need to meet the thesis aims and to help the respondents to feel that the questions were understandable and easy-to-answer.

Particular attention was also given to the layout of the present research questionnaire, since the accuracy and completeness of a questionnaire and the flow of its questions can be improved by a good layout (de Vaus 2002; Neuman 2006). A cover sheet was used, covering different issues, such as the topic of the research project. This cover sheet was complemented by an introduction, including a welcoming statement, the purpose of the contact, the respondent rights, etc. to help the potential informant to feel comfortable about the contact and questionnaire[10]. After the introduction some easy-to-answer and interesting questions were used, such as those about farmers' backgrounds and farming years, to put

[9] ''*In reliability, the question should be answered in the same way on different occasions if given to the same person (assuming that the person has not changed in the meantime)*'', *and* ''*a valid question is one that measures what we think it does*'' (de Vaus 2002: 96).

[10] The introduction played a vital role in the researcher-farmer interaction (see Section 8.3.3).

the informant at ease. The middle part of the questionnaire involved questions that mainly concerned the primary topic of the research (risk attitudes), so as to ensure that these important questions were asked before there was a danger of the respondent becoming fatigued and/or running out of time. The last section included demographic questions that could be considered sensitive, such as age and education, left to the end in case the informant was reluctant to answer them, and was subsequently deterred from continuing with the questionnaire. This last section also included some open questions and opportunity to make additional comments, to help the respondent to release any stress that might result from completing the questionnaire. A statement at the end of the questionnaire thanked the informant for his/her participation, to leave him/her with a positive feeling about the study and about his/her contribution to the present research.

Another factor in the success of a questionnaire is the choice of question type (Parfitt 2005). A variety of open and closed questions was included in the questionnaire. The choice of this array relied on paying attention to diverse factors, particularly the question content and the strengths and weaknesses of different types of questions (Brain 2002; Parfitt 2005; see also below). According to Neuman (2006), while open questions allow respondents to give any response using their own words, closed ones offer a fixed set of responses from which the respondent should select an answer. Each type has a number of advantages and disadvantages (Neuman 2006: 287). As closed questions are usually used for eliciting specific facts about respondents, a closed question in this questionnaire, for example, aimed to categorizse farms into two groups (organic and non-organic). Consequently, the respondent followed a specific path over the questionnaire (either Part A or B) (see Appendix One).

Another example of a closed question used in the questionnaire is the rating question (de Vaus 2002), constructed in Likert scale format to obtain certain facts about farmers' willingness to take risk[11]. In this respect, different statements, allowing agreement or disagreement to be rated, were employed. Likert-type questions are recommended by various authors for scaling procedures for attitudes (Fishbein and Ajzen, 1975; Ajzen 2006; Pannell and Pannell, 2006), and they have been utilised in many studies investigating risk from individuals' points of view (e.g. Pennings and Leuthold 2000; Meuwissen et al. 2001; McCarthy and Henson 2005). The wide use of the Likert-scale developed by Rensis Likert in the 1930s can be attributed to the fact that it is easily constructed, and it can be easily tested on its reliability (Neuman 2006). Also, its points are more likely to be equidistant in terms of gaps between them, in spite of some researchers arguing for the opposite (see Sproull 1988).

The statements measuring farmers' attitudes towards risk in this questionnaire reflected the use of the direct attitudinal questions approach. Since this approach is simple and can elicit dispositions towards risk in different contexts, it is widely applied in the literature on risk (Patrick and Musser 1997; Pennings and Leuthold 2000; Meuwissen et al. 2001; Koesling et al. 2004; Flaten et al. 2005; Fausti and Gillespie 2006; Lien et al 2006a; Gabriel et al. 2009; see also Section 2.2.2). Here, not only farmer' attitudes towards risk in organic farming, but also towards risk in farming and towards risk in general were elicited in the present research, on the understanding that dispositions towards risk in farming and dispositions towards risk in general may affect performance of a given risky activity within farming, such as the uptake of organic farming, (Pennings and Leuthold 2000; Flaten et al.

[11] Since *"recording changes in the attitude ...need to confront the formidable methodological difficulties which all researchers face when they attempt to measure and explain attitudinal shifts"* (Morris and Potter 1995: 52), the present research assessed the attitudes of farmers towards risk at one point in time (the time of the study).

2005). As reliability is of prime importance when attitudes towards risk are being measured by the applied approach (Pennings and Leuthold 2000; Fausti and Gillespie 2006; among others), indirect questions, producing positions to risk, were used as well. Non-organic farmers, for example, were asked to "*give the main reasons for not converting to organic farming*". These indirect questions and others (see Appendix One; see also below) were left open for several reasons. Firstly, open questions are easy to ask (see, for example, CRER 2002; Whitehead et al. 2002; Parfitt 2005). Secondly, this study sought to obtain data on complex subjects, such as farming aims and the main reasons for organic farming adoption/non-adoption (see Section 2.5), and open questions are often recommended and used for collecting data on these subjects (McEachern and Willock 2004; Neuman 2006). Finally, although open questions need time and effort in subsequent coding (see below), they allow respondents to express their underlying beliefs in their own words and to give an unlimited number of possible responses, thus providing better insight into those beliefs (Parfitt 2005; Neuman 2006; see also below).

According to Neuman (2006: 287), coding of responses to open questions is difficult. This is because different degrees of detail may be provided by different respondents. In other words, a number of answers to a specific open question may have multiple meanings (Parfitt 2005). Unless such answers are checked for their meanings, there is a greater likelihood of a reduction in the number of categories into which responses to the open question are grouped. Further, as these categories are more likely to be coded by broad themes, such as 'financial motives' rather than 'non-subsidy related financial motives' and 'subsidy related financial motives' (see Figure 4.1; see also below), conclusions about respondents' answers would be unable to be drawn in more detail (Brain 2002; Neuman 2006). In this respect, the present research utilized three strategies to maximise insight into subjects investigated by the open questions which had been included in the questionnaire (see Appendix One).

When possible, vague answers found in a completed questionnaire were checked on their meanings through detailed responses to other questions (i.e. the first strategy). As a result, the answer *"financial"*, for example, which was mentioned by a number of organic farmers who participated in this study in response to the open question: *"could you please tell me the main reasons for organic farming adoption*?" was, on many occasions, placed in the category 'non-subsidy related financial motives' rather than the category 'subsidy related financial motives' (see Section 4.5)[12]. This was based on the fact that a number of these farmers cited, for example, *"to make a profit, to produce products that consumers want to buy"* in response to the other open question: *"could you please describe the most important objectives in your approach to farming?"*.

The second and third strategies consisted respectively of re-contacting by telephone (see Section 3.4) and asking during 'in-depth interviews' (see Section 3.9) a number of farmers who had provided answers with multiple meanings to explain their responses (see also Wilson 1996). These two strategies were employed more frequently than the first one (see above). For example, a few farmers received a second telephone call asking them to clarify their answer *"prices"*. This answer was mentioned in response to one of the following open questions: *"which risks in organic farming are of concern to you now?"* and *"in your opinion, which risks do organic farmers face now?"* (see Appendix One). It could also refer to high prices of inputs and/or low prices of outputs. Following the second contact, the answer *"prices"* was then put in the appropriate category (i.e. the category 'risks

[12] Section 4.5 also includes a variety of comments related to the categories grouping the main reasons for organic farming adoption.

related to production inputs and facilities' and/or the category 'risks related to financial returns', Section 5.3)[13]. Similarly, the reason "*costs of being an organic farmer*", for example, which was cited by Non-Organic Farmer 17 as one of his main reasons for organic farming non-adoption, was clarified and placed in the category 'institutional risk avoidance' after a subsequent telephone call. Here, it is important to note that the reason given may refer to 'certification costs' (i.e. 'institutional risk avoidance') and/or 'inputs costs' (i.e. 'market risk avoidance') (see Section 4.6)[14]. Further, the answer "*to create a good product*", which was mentioned by Organic Farmer 46 in response to the open question: "*could you please describe the most important objectives in your approach to farming?*", was put in the category 'creating public goods' (see Section 4.4) as this farmer clarified his comment during the 'in-depth interview'.

The three strategies mentioned above were applied after completion of the questionnaire survey. Thus, responses to each open question were put into categories which were differently coded by themes, based on the reviewed literature (see, for example, 'public goods related motives', Figure 4.1, and CRER 2002). These steps enabled counts to be made in each category and in many cases percentages were utilized in the analytical context of this study (see Chapters 4-7). Accordingly, conclusions about different subjects which had been investigated through open questions were drawn in greater detail although "*publications suffer from the fact that coding methodologies are rarely published*" (Wilson 1996: 119; see also McEachern and Willock 2004).

[13] A variety of comments and elements, relating to the categories grouping risks which were perceived to be of concern in organic farming, are included in Sections 5.2, 5.3, 5.4 and 5.5.

[14] Section 4.6 includes a variety of comments provided in response to the open question: "*please give the main reasons for not converting to organic farming*", and related to the categories describing these reasons.

This section has shown that the present research questionnaire was carefully constructed to meet important principles, such as clarity and reliability. It was also pre-tested by conducting a pilot survey.

3.6 Pilot study and additional fieldwork

Hoggart et al. (2002: 181) argued that *"in survey work, a first step in checking the credibility of an instrument is a pilot survey"*[15]. Indeed, running a trial to test how a determined instrument works – even when there is a clear path to follow – is a significant procedure for ensuring the validity of the examined instrument (Caunce 1994). Therefore, a pilot survey to test the questionnaire was undertaken. This allowed the effectiveness of the questions to be tested and improved before a large-scale investigation was tackled in Devon (see Section 3.8).

In August and September 2007, the pilot study took place, timed to take place particularly during lunch times and evenings to ensure availability of either the sole decision-maker or at least one of the decision-makers on the farm. This study utilised a pilot sample of 16 organic and 18 non-organic farms from Cornwall. Cornwall is adjacent to Plymouth and Devon (see Figure 3.1), providing the opportunity to undertake additional fieldwork with minimal additional cost (see below), without impacting on the target population in the main study area, and allowing the researcher to familiarise himself with farming conditions and culture similar to that of Devon (DEFRA 2008e; see also Section 3.9). In addition,

[15] The pilot survey is *"essentially a small scale replica of the actual survey and it is carried out before the actual survey is undertaken. It should duplicate, as near as possible, the survey which is to be made because it may reveal snags in the proposed questions and methods"* (White 1998: 5).

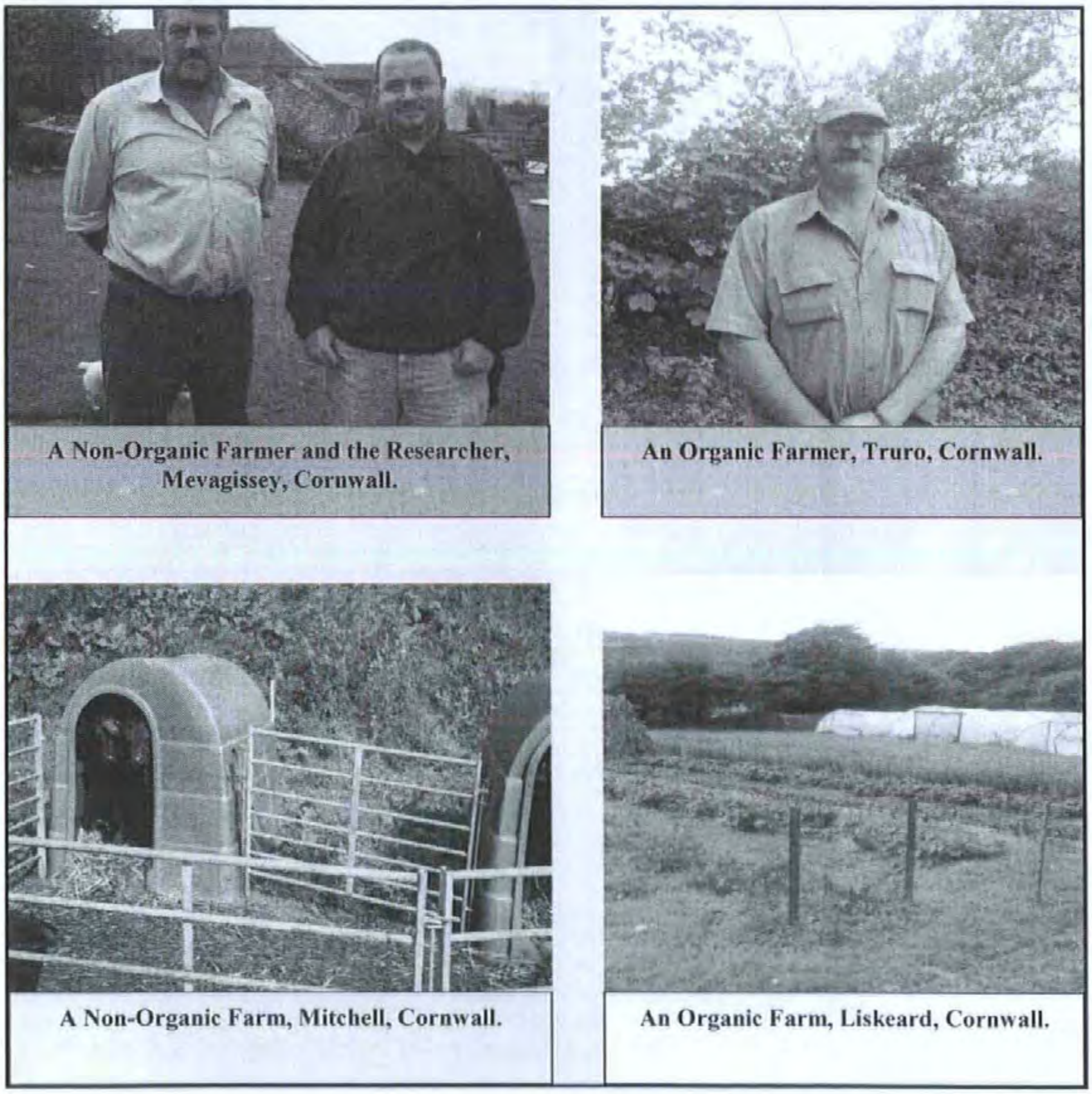
according to a contact with DEFRA in 2007, Cornwall with 195 registered organic farms, ranked equal second in the UK in numbers of organic farmers.

On the assumption that fifteen organic and fifteen non-organic farms would be sufficient for the pilot study, farmers were systematically selected from two lists (see Section 3.7). The first list was of organic farmers in Cornwall who had registered their farms with the SAO while the second one was of farmers listed in the Yellow Pages directory. When the pilot farmers were contacted by telephone, the response rates were 80% and 46% for organic and non-organic farmers respectively[16]. The telephone interviews lasted from seven to eighteen minutes where the mean was about 10 minutes. The pilot respondents were subject as nearly as possible to the likely conditions of the main investigation in the interests of rigorous and reliable testing (Fink and Kosecoff 1998; de Vaus 2002).

The pilot informants' responses and comments helped in the constructing of the questionnaire. Several questions were subject to minor changes to improve clarity and simplicity. On the other hand, a few questions were considerably modified to measure what was indented to evaluate, while others were rearranged to ensure the logical flow of questions. Not only were a number of questions modified and reorganized, but a few questions, such as question seven (see Appendix One), were also added during the pilot study. In addition, it was decided that collecting raw data for this thesis through the telephone questionnaire survey technique should not only rely on written notes. With the consent of the respondents, these data would also be tape-recorded for ensuring the accuracy of responses during the main survey (see Section 3.8). Through employing the

[16] This was based on the formula: Response rate $= \frac{\text{number returned}}{\text{number in sample} - (\text{ineligible} + \text{unreachable})} \times 100$ (de Vaus 2002).

pilot study, the present research questionnaire was improved and developed to meet various aspects of questionnaire design. This study was followed up by additional fieldwork that was undertaken to help the researcher to become familiar with the farming culture of Devon (see Figure 3.2).



A Non-Organic Farmer and the Researcher, Mevagissey, Cornwall.

An Organic Farmer, Truro, Cornwall.

A Non-Organic Farm, Mitchell, Cornwall.

An Organic Farm, Liskeard, Cornwall.

Figure 3.2: Photos from the additional fieldwork diary
(Source: Author)

Three organic and three non-organic farmers in Cornwall were visited; these visits were held on different days in September and October in 2007. Depending on each farmer's work schedule on the day of the visit, the visits lasted from three to seven hours. The farmers selected for these visits had agreed during the pilot study that the researcher could spend the entire day on their farms and were as close to Plymouth University as possible (see above). Further, these visits allowed the researcher to spend time in the countryside and to talk to the visited farmers and others, such as their spouses. This, in turn, helped with familiarisation with the farming culture of Cornwall and thus, given the similarities between the two counties, with Devon. During these visits, 'in-depth interviews' with the farmers were tape-recorded (see Section 3.9); the farmers responded on different questions, elaborated on various comments made throughout the pilot study and highlighted other issues. Also, notes were collected through additional remarks and observations made by the researcher. Not only were the farmers providing qualitative data about risk and organic farming adoption, but they also were receiving information from the researcher. Almost all the farmers and some of their family members were interested in knowing more about the researcher, his country and agriculture in his country[17].

3.7 Sampling

In this section the sampling approach will be explained, including the adoption of a specific strategy to cope with non-response errors.

Usually, in social science, a subset or 'sample' of the target population is surveyed rather than the whole population (Hoggart et al. 2002; see also Section 3.4). The sampling

[17] On the occasion of the researcher's first farm visit, the farmer's son, on learning that the visitor was from Syria, brought out a map and asked to be shown where Syria was (see Section 3.9).

method should ensure that the members of a population selected for a sample have a high probability of representing the whole population that the researcher is investigating (Galloway 1997). White (1998) shows that in random sampling each member of the likely population has an equal chance of being chosen to be targeted and investigated, while in non-random sampling some members of the likely population have a higher, but not known, chance of being selected. Thus, a non-random sample is not immune against biased selection by the researcher, unlike a random sample. Consequently the random sampling method was employed in this survey.

According to Parfitt (2005), the random sampling methods include, for example, simple random sample, systematic sample, stratification and proportionate sample. Further, "*the ideal source of information from which to sample any population is an up-to-date list of all the members of that population for the study area. Such a list is called a sampling frame*" (Parfitt 2005: 96). The systematic sample method depends on a sampling interval that can be generated by dividing the obtained population size by the required sample size. Then, the first member of the sample will be randomly chosen from the first member to the n-th member of the eligible population[18]. With regard to the remaining members of the sample, they will be every n-th member of the eligible population where the starting point for counting is the first selected member of the sample. By completing the process the required sample size can be achieved and a list of targeted members will be produced. Therefore, the systematic sample method was used in this thesis, as obtaining lists of all farms within Devon was difficult (see below), and drawing the present research samples from lists of farms within Devon with different dimensions was required (see Section 3.3). Although the use of the systematic sample method is widespread as it scatters the sample members systematically, it has some disadvantages. According to White (1998), this method can be

[18] N denotes the generated sampling interval, whatever it is.

considered not truly random because of selection on the basis of a sampling interval. Further, members selected for a sample may have some particular characteristics since they are periodically chosen and, as a result, bias can be introduced (Galloway 1997). Nevertheless, the occurrence of bias that is caused by any sample method is always probable since selected members for a sample can have some specific characteristics in common. Therefore, different parts of a sampling frame must not be distinct and the applied sample method must be carefully employed to reduce such bias (Parfitt 2005). Not only the applied sample method, but also the targeted members can cause bias. The disadvantages of non-response errors are more likely to create problems, so a specific strategy was applied in this investigation to cope with these errors.

Non-responses are the refusals of targeted members, identified according to the applied sample method, to take part in research and/or non-contacts with these members (Galloway 1997). The resulting reduction in the size of the sample investigated is the consequence of most likely concern to the researcher, particularly when the proportion of non-responses is large. Further, factors by which the sample size is determined can be influenced, and non-response bias is more likely to occur. According to Galloway (1997) and Hoggart et al. (2002), there are several factors, such as the allowed errors rate and the chosen methodology, on which the required sample size depends. When there are many non-response errors (i.e. there is a big gap between the size of the sample and the number of members actually investigated), these factors are more likely to be affected. For example, the efficiency and accuracy of the chosen methodology to draw conclusions about investigated subjects are more likely to be limited. Further, conclusions, drawn under the non-responses errors, can create a sort of bias. This bias is most likely to be a problem when the proportion of non-responding members is large in size and these members have different characteristics from responding members (Hoggart et al. 2002). Here, the respondents may not provide a variety of information as they are small in number and have similar characteristics and, therefore, conclusions drawn can be biased.

Because of the disadvantages of non-response errors, it is widely accepted that a strategy for coping with these errors must be determined for a research study (Parfitt 2005). Thus, the present research utilized a specific strategy to reduce the negative effects of non-response errors. This strategy was the selection of the next member to that one expressing a non-response error from the same sampling frame. When the chosen member took part in this thesis, the sampling interval was added to its number to identify the next targeted member. Repetition of this process allowed this thesis' samples to be drawn, and consistency was ensured as this strategy was applied at all sampling frames of the present research.

In the UK, many studies have used the data of different certification bodies as a basis for investigating organic farmers' adoption decisions (e.g. Midmore et al. 2001; Burton et al. 2003; McEachern and Willock 2004). These data are reliable and valid, and they were expected to be available for the present research. As this thesis had aimed to survey organic farms registered with various certifying bodies, the certification bodies, applied in Devon (see Section 3.3), were contacted and requested to provide lists of organic farms in Devon. For several reasons, such as confidentiality, these bodies – with exception of the SAO – refused to give the requested lists. Accordingly, the SAO was used as the sampling frame source of the 'organic farms' sample of this study (see Section 3.8). This was also related to the fact that other possible sources of lists of farmers in Devon (organic and/or non-organic) were also targeted, but, again for a variety of reasons, the requested lists were unobtainable[19]. Relying on the SAO reflects the approach adopted by McEachern and Willock (2004). However, in the hope of ensuring that the 'organic farms' sample of the present research would involve organic farms which had been registered with various certifying bodies in Devon, a 'snowballing' method was also used (see Sections 3.8).

The Yellow Pages directory provided the sampling frame for the 'non-organic' farms, having the advantages of being available at low cost and easy to access (see above). It has been used in several other studies gathering information about farmers' attitudes (e.g. Morris and Potter 1995; Holloway and Ilbery 1996). Support for the representativeness of the Yellow Pages directory as a sampling frame in agricultural studies has been given by Errington (1985) and Emerson and Macfarlane (1995). Others, such as Burton and Wilson (1999), suggest that farmers listed in the Yellow Pages directory are more likely to be less environmentally-orientated and, so, the Yellow Pages directory is most likely to be suitable as a basis for investigating farmers operating productivist methods. This, in turn, supported the use of this directory for this study for selecting non-organic farmers in Devon.

Both the SAO and Yellow Pages directory provided basic information, such as farm names, addresses and phones numbers, but details about farmers' farming backgrounds were not included. In other words, identifying organic farmers who originated from NFBs was difficult and, thus, determining a specific sample size of this subgroup of organic farmers in this study was not possible. Therefore, the questionnaire classified organic farmers on the basis of their farming backgrounds to meet the third objective of this thesis (see Section 1.6.2).

[19] These sources included Business the Link Support Agency, DEFRA, the Farming Statistics Branch, the National Farmers' Union, the National Statistics Office, the OSC and the Farm Business Survey Unit.

3.8 Conduct of the questionnaire survey

The questionnaire survey was carried out particularly during lunch times and evenings, during January and March 2008. Farmers were contacted by telephone: the interviews lasted between 7 to 30 minutes (mean 11 minutes). These interviews – with exception of 10 organic and 4 non-organic interviews – were also tape-recorded by agreement with the respondent. Transcription of the tapes began at the same day the questionnaire survey started and lasted till August 2008. Initially, it was intended to involve 150 farms in each sample of this thesis samples (see Section 3.3), but as some appointments were made before and they were due to occur after achievement of the intended quota, 168 organic and 155 non-organic farms within Devon were surveyed. The registered organic respondents comprised 38% of all registered organic farms within Devon (see Section 3.2) and the 56% of all registered organic farms (N=270) with the SAO within Devon (see Table 3.2).

	Registered Organic Farms				Unregistered Organic Farms	Total
	SAO	SAO and Organic Farmers and Growers	Organic Farmers and Growers	Bio-Dynamic Agriculture Association		
SAO List	118	0	0	0	0	118
Yellow Pages List	6	0	4	0	5	15
Recommended (Snowballing)	26	2	6	1	0	35
Total	150	2	10	1	5	168

Table 3.2: Sources of surveyed registered and unregistered organic farms
(Source: Author's questionnaire 2008)

As intended (see Section 3.3), the 'organic farms' sample of the present research included registered organic farms with different certifying bodies and unregistered organic farms in Devon. The official organic farms were registered either by the farmers who participated in the study or by the previous owners. Five organic farmers explicitly mentioned during the questionnaire survey that their farms also included small areas (less than a quarter) which were farmed non-organically. As a result, the 'organic farms' sample also included these five farms that contained small non-organically farmed areas. The figures in Table 3.2 show that respondents were asked to recommend any other organic farmers within Devon who would be interested in taking part in the research (see Section 3.7) – the 'snowballing' process[20]. They also show that the sampling frame of the non-organic farm sample (see Section 3.7) helped in relation to the inclusion of unregistered organic farms. The 'non-organic farms' sample involved 148 conventional and 7 integrated farms in Devon (from a list of 4100 farms within Devon under the heading 'farmers' from the Yellow Pages directory). Although many non-organic farmers had reduced their use of chemicals and/or participated in schemes designed for more sustainable land use (particularly SFP), they classified their farms as conventional in the terms of this research.

This study achieved a response rate of approximately 88% of organic farmers and of almost 70% of non-organic farmers. These high rates can be seen as a reflection of farmers' interest in the present research topic. The times of conducting the telephone interviews, making appointments for later calls, the researcher' identity (see Section 8.3.3) and the 'snowballing' method (see above) were also key elements.

[20] The 'snowballing' method *"describes using one contact to help you recruit another contact, who in turn can put you in touch with someone else"* (Valentine 2005: 117).

So far the emphasis in this chapter has been on the questionnaire survey. This is a multi-method investigation, however, and the next section will focus on 'familiarisation' and 'in-depth interviews' as prime sources of qualitative data.

3.9 Familiarisation and in-depth interviews

As this study sought to collect data on likely interlinked and complicated relations between different issues, such as relations between farmers' attitudes towards risk and probable future changes in their adoption decisions (Morris and Potter 1995), methods that offer insight into these relations were needed. According to Hoggart et al. (2002) and Crang and Cook (2007), methods creating qualitative data are more likely to lead to a nuanced understanding of linkages between many different attributes. Hence the use of 'familiarisation' and 'in-depth interviews' in the present research[21].

The 'familiarisation' method used is similar in several features to a 'participant observation' method, which *"involves living and/or working within particular communities in order to understand how they work from the inside"* (Cook 2005: 167). The 'participant observation' method requires the researcher to move between participants and develop relationships with them in a specific community, to immerse into its everyday routines and to collect notes. Because the area of the present research is large in size and

[21] The main qualitative methods are 'participation observation' (i.e. visual), 'focus group' and 'interviews' (i.e. oral) and documents and images (i.e. written); each method has advantages and disadvantages where the overall success of the research depends significantly on the appropriate choice of the qualitative survey methods when such methods are required (Hoggart et al. 2002; Conradson 2005; Cook 2005; Valentine 2005).

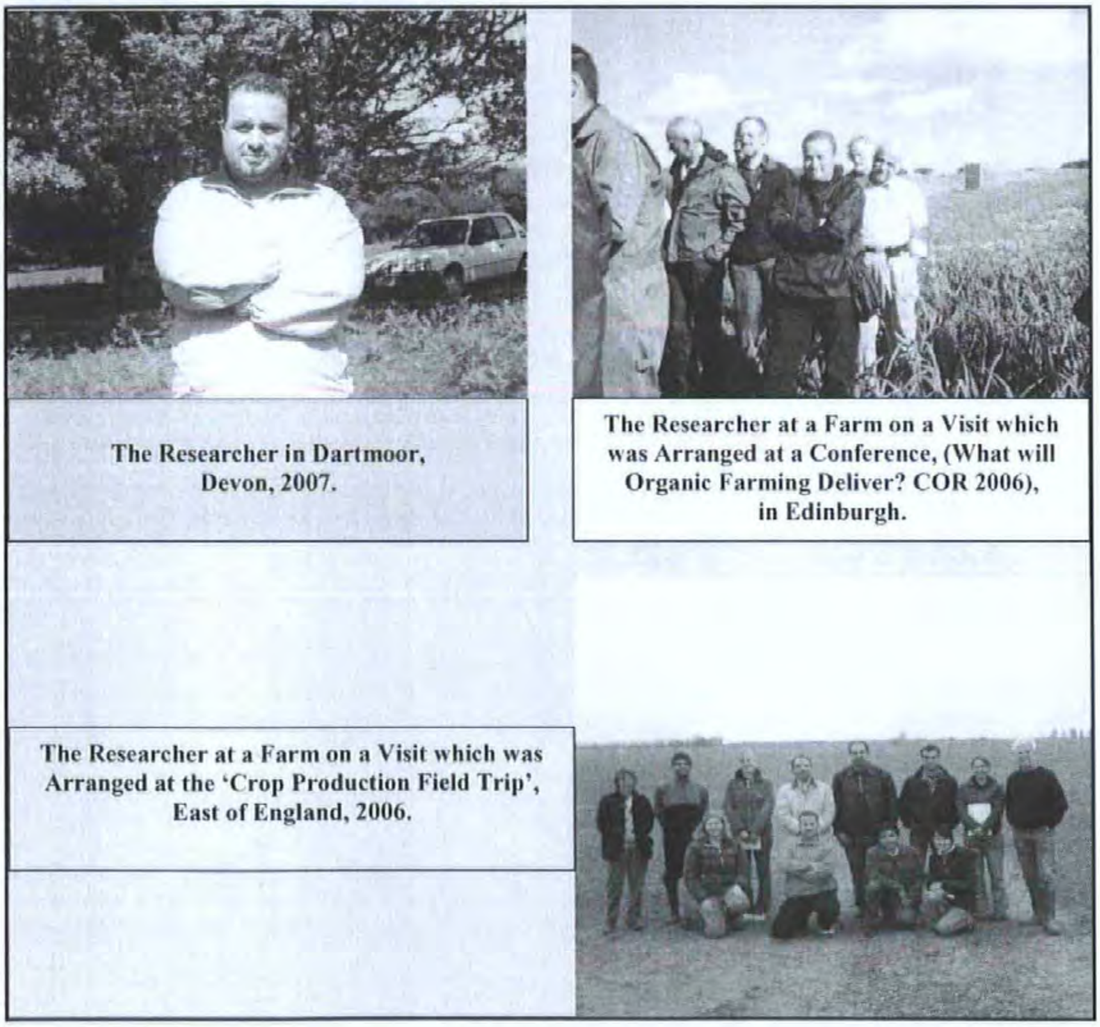
participants were scattered in different communities within it, employing the 'pure' form of participant observation method was considered to be inappropriate.

Through 'familiarisation' the researcher sought to achieve two objectives. First, to enrich understanding of risk and farmers' decisions to adopt organic farming through recording observations on, for example, the activities that visited farmers and others, such as their spouses and workers, would be performing and describing what would be going on. Second, to ensure employed 'in-depth interviews' with a number of farmers and their family members would achieve their aims even though the researcher is from a different culture[22]. According to Hoggart et al. (2002), researchers do not often express their personal difficulties connected with a conducted research. Nevertheless, it is relevant to note here that the researcher comes from Syria; and this means a different culture. Also, it meant that the researcher needed to be familiar with the farming culture of the study area (Devon) to reduce the possible misunderstanding of that culture and related expressions, and consequently, to reduce the possible negative impacts of this misunderstanding on conclusions drawn about the investigated subjects (see also Section 8.3.4). This was related to the fact that misunderstanding of informants' responses, because of differences in meanings of words, is common when interviews take place in a different cultural context (Valentine 2005).

Therefore the 'familiarisation' method, taking the opportunity to stay in the countryside and to talk to visited farmers and others, was employed to minimise the possible misunderstanding of the farming culture of Devon (Hoggart et al. 2002). Accordingly, understanding different aspects of that culture was achieved, with particular focus on risk aspects in farming with which the researcher is familiar, having worked on a farm and

[22] A variety of issues linked to the researcher' positionality are discussed in more detail in Section 8.3.

studied agriculture in Syria (see Sections 8.3.2 and 8.4). In addition, and before the pilot study and main survey were undertaken, the researcher was aware of the importance of familiarising himself with the wider farming culture of the UK, particularly that of Devon. Therefore, a number of opportunities were taken, such as attending conferences and events and making trips (see Figure 3.3), allowing the researcher to be in the countryside of the UK and/or to talk to farmers.



The Researcher in Dartmoor, Devon, 2007.

The Researcher at a Farm on a Visit which was Arranged at a Conference, (What will Organic Farming Deliver? COR 2006), in Edinburgh.

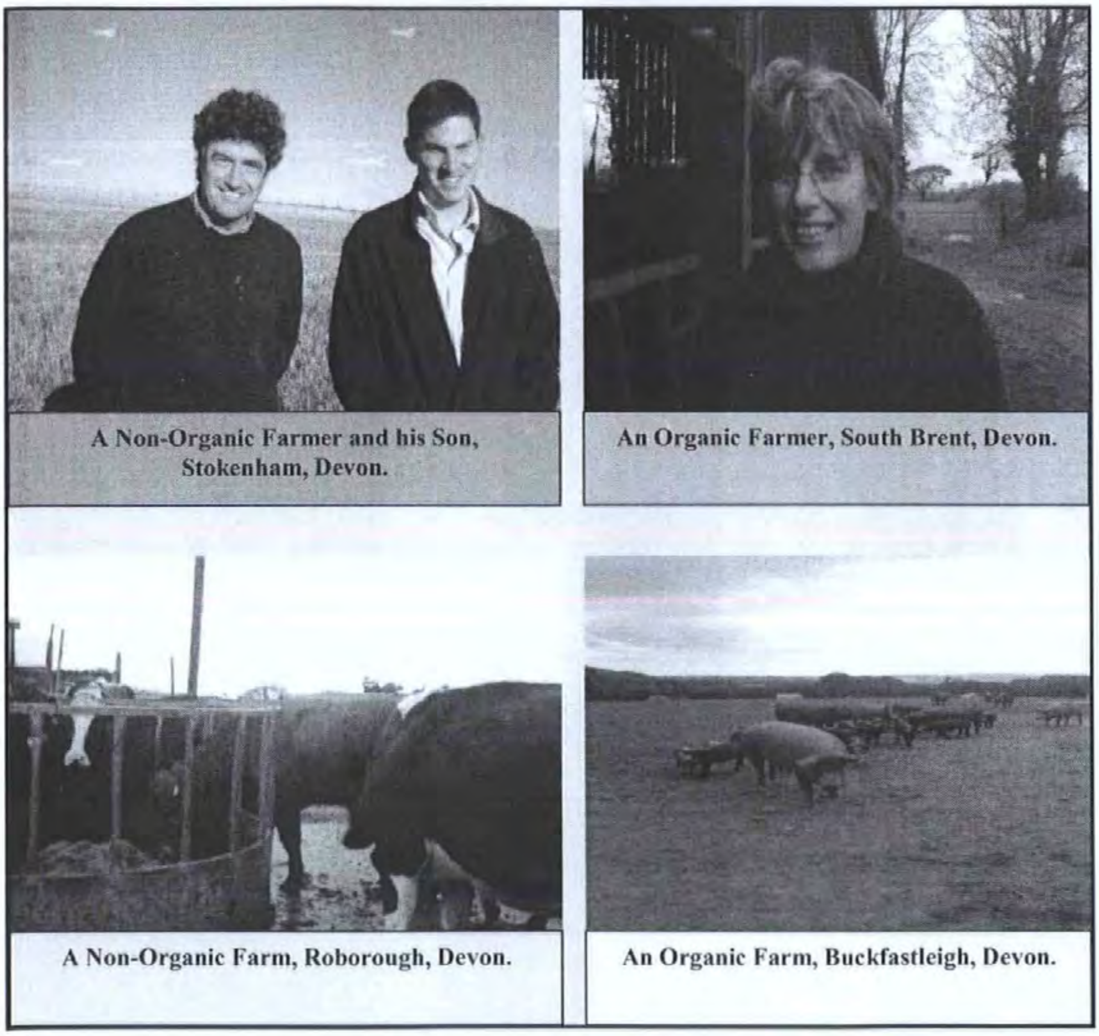
The Researcher at a Farm on a Visit which was Arranged at the 'Crop Production Field Trip', East of England, 2006.

Figure 3.3: Photos from attended conferences, events, etc. from the 'trips diary' (Source: Author)

Farmers who had agreed during the initial telephone contact to take part in personal interviews and that the researcher could spend the entire day on their farms (see Appendix

One), were the basis of the 'familiarisation' method. Here, eight organic and seven non-organic farmers in Devon, that would ensure appropriate coverage of different issues, were selected and visited (see Figure 3.4). These visits were carried out in November 2008 and January 2009 and lasted from four to seven hours due to farmers' work schedules and transportation time tables. During these visits, the researcher was offered food, tea, etc. helped – in a number of cases – with the work on the farms, had guided tours of the farms and often accompanied picking up farmers' children from their schools. In addition, there was transfer of knowledge between the farmers and a number of their family members on the one hand and the researcher on the other and collection of notes. Here, it is important to note that a neutral stance was taken by the researcher to ensure the validity of the present research (see also 8.3.4). Further, 'in-depth interviews' – explained in the next discussions – were carried out at the end of the visits.

Interviews can allow informants to reveal their own beliefs of their experiences by describing their lives in their own words (Hoggart et al. 2002). Therefore, they do not lead the interviewee as they are often more fluid and the questions are of an unbiased nature (Yin 2003). Additionally, they take different patterns, such as 'in-depth', 'more fluid' and 'oral histories' (Caunce 1994; Hoggart et al. 2002). Here, the researcher must pay close attention to ensure that interviews do not shift away from their purpose, as conversations can be expanded to include other subjects (Parfitt 2005). As 'in-depth interviews', compared to questionnaires, allow a deeper understanding of underlying factors in informants' decisions (Darnhofer et al. 2005; Valentine 2005), they were employed in this study. These interviews were 'semi-structured' (Parfitt 2005; Valentine 2005), allowing them to gather details about listed and unlisted themes (Valentine 2005). Listed themes can be covered during the interview, while unlisted ones can be explored as revealed by the interviewee (see, for example, Appendix Two; and see below). However, it should be noted, here, that 'semi-structured' interviews need *''confidence about interviewing''* and consume time as they require careful preparation of themes that need to be explored (Valentine 2005: 119).



A Non-Organic Farmer and his Son, Stokenham, Devon.

An Organic Farmer, South Brent, Devon.

A Non-Organic Farm, Roborough, Devon.

An Organic Farm, Buckfastleigh, Devon.

Figure 3.4: Photos from the 'familiarisation' method diary
(Source: Author)

In November 2008 and March 2009, semi-structured 'in-depth interviews' were undertaken with ten non-organic and fifteen organic farmers. As expected, these interviews, lasting from about one hour to two hours, were sufficient for gathering qualitative information on different issues. Appendix Two shows the themes covered by these interviews. In some cases, additional information was discussed with the respondents, for example farmers who were not from Devon were specifically asked to give their reasons for moving to and living in the county (see Section 4.2.1). Of the interviewed organic farmers, five were with NFBs to gain details about this group of organic farmers and, thus, to achieve the third objective of this thesis (see Section 1.6.2). Further, interviewed farmers were chosen according to their interest in being interviewed (see Appendix One). This method is common for recruiting interviewees, particularly, when a questionnaire is employed, since it is quick, easy and the researcher knows something about the interviewees and their opinion before talking to them (Valentine 2005). On the other hand, it can create a self-selection bias, though consistency is ensured as it is applied to all informants. 'In-depth interviews' were carried out not only with twenty five farmers, but also with two groups of actors.

Farmers taking part in the main survey, and consistent with the majority of adoption studies in organic farming (e.g. McCann et al. 1997; Duram 1999), were considered as individual actors and decision-makers. This was related to the fact that the final decisions to take up organic farming are usually undertaken by those individuals who are responsible for operating their farms (Lockeretz 1995; see also Section 2.5.2). Nevertheless, the fact that farmers' decisions are often affected by others' opinions, behaviours and interventions was not neglected in this study. Here, it is important to refer to the fact that many researchers, such as Wilson (1996), have indicated that farmers' decisions are not individually formed, but others' views – in the farming culture of farmers – are more likely to influence different decisions (for example, adoption decisions of organic farming). Further, Winter (1997) argued that agricultural policy has treated farmers as objects, and that it has not paid much attention to their own views, particularly to their own knowledge. Therefore, it can be noted that policy-makers have important influence on farmers' decisions (see also Section 2.5.2). Indeed, the farming culture and social structure of farmers play an important role in producing different social practices and actions of farmers constituting the social system (Morris and Evans 2004; Burton and Wilson 2006). Accordingly, and to provide a rich picture of risk and farmers' adoption decisions, additional 'in-depth interviews' with two groups of actors, influencing farmers' decisions, were conducted in this investigation.

The first group involved different actors from the farm family (farm respondents outside the questionnaire). As intended, the researcher encouraged the interviewed farmers' families to participate in personal interviews after finishing the interviews with the twenty five farmers. Nevertheless, in many cases various reasons prevented this participation. Often, family members were occupied elsewhere, while others showed little interest in the subjects under discussion and/or were too young to participate meaningfully. However, in six cases, the researcher was able to converse to a greater or lesser extent with members of the immediate farm family, such as spouses and/or children (see Figure 3.4). These conversations focused on topics associated with risk and the uptake of organic farming.

The second group that was interviewed in-depth included five key stakeholders involved in the field of organic farming (non-farm respondents) (see Table 3.3). Here, different organizations, certification bodies, large supermarkets, etc. were targeted for several reasons to invite key stakeholders to participate in 'in-depth interviews' (see Table 3.3). Targeted key stakeholders were identified according to their profiles on the internet of the selected organizations, centres, etc. In cases where such information was not available, the researcher contacted the public relations department of the relevant organization, centre, etc. requesting its help to recommend – according to the subjects at hand – the most appropriate key stakeholder to interview and to provide a contact path. In this case, only

Waitrose and Tesco ignored the initial contact and thus did not recommend any key stakeholder. After determining the targeted key stakeholders, the researcher contacted them by a letter, telephone and/or e-mail according to the available contact ways and their requests (see Table 3.3). The research was explained, subjects that would be the focus of the 'in-depth interview' were highlighted and invitation to participate was made. Five interviews were eventually conducted; they were carried out in February and May 2009 and lasted from almost forty five to sixty minutes.

Targeted Organisations, Departments, Supermarkets, etc.	**Rationale**	**Mode of Contacting the Targeted Stakeholder**	**Reply**
Organic Team, DEFRA.	A UK government team. It is working on developing organic farming in the UK through offering a wide range of information, launching action plans, providing financial support, etc.	E-mail.	Accepted.
Centre for Rural Policy Research, Exeter University.	The center conducts research on rural economy and society. Organic farming is one of several arenas that have received a special focus (see, for example, Lobley et al. 2005).	E-mail.	Accepted.
OSC.	The centre is funded partly by DEFRA. It has contributed to the development of organic farming in the south west of England (Lobley et al. 2005). It provides a variety of services, such as formal and informal training and education for those interested in developing a career in organic agriculture.	E-mail and telephone.	Accepted.
SAO.	It is the UK's leading campaigning and certification organisation for organic food and farming (SAO 2000). Further, about 63% of organic farms within Devon were certified by it in 2007 (see Section 3.3).	E-mail.	Accepted.
Bio-Dynamic Agriculture Association.	Alternatively to Organic Farmers and Growers (see below), the Bio-Dynamic Agriculture Association was contacted. It is an association existing in order to	Telephone.	Accepted.

	support, promote and develop the biodynamic approach to farming, gardening and forestry. It applies in more than forty countries including the UK, and it is one of the control bodies in Devon.		
Organic Farmers and Growers.	It has its special view of organic production and processing. It certifies organic farms not only in Devon, but also in many counties in the UK.	E-mail and telephone.	Declined.
Sainsbury.	A multiple supermarket that had the highest percentage of organic products among the large retailers in the UK (Dibb 2006).	Telephone and a letter.	Declined.
Waitrose.	A multiple supermarket that ranked second after Sainsbury in a 2006 survey regarding the availability of organic products (Dibb 2006).	Not applicable.	Not applicable.
Tesco.	Alternatively to Sainsbury and Waitrose (see above), Tesco was contacted. Tesco is one of the three retailers in the UK with the biggest organic market shares (SAO 2009).	Not applicable.	Not applicable.

Table 3.3: Targeted organizations, centres, etc. for 'in-depth interviews' with key stakeholders
(Source: Author)

The 'in-depth interviews' were tape-recorded, as this is more likely to provide rich information about investigated subjects, in particular subjects with important details (Hoggart et al. 2002). In addition, tape-recorded interviews can help the researcher to concentrate more on investigated themes, although more caution regarding dealing with a recorder is needed (Valentine 2005). In this investigation, each interviewee was asked if he/she would permit recording. Further, and as recommended by Valentine (2005: 126), each tape-recorded interview was transcribed as soon as possible to avoid dealing with numerous tapes after finishing the interviews.

3.10 Secondary data

This section will explain the use of 'secondary data' in the research, and will highlight the different sources of these data.

"*Secondary data means information that has already been collected by someone else and which is available for you, the researcher, to use*" (Clark 2005: 57). They can be offered through different sources, for example, letters, reports, maps, books, media, census, etc. (Yin 2003), and they are extremely useful when doing research as they can provide a context for primary data (Hoggart et al. 2002). Nevertheless, Clark (2005: 58) states various weaknesses of the 'secondary data' method, for example, its inflexibility (the researcher cannot customize it to his/her needs). Further, 'secondary data' are not immune to bias since they can reflect the attitudes of the people of the organisation that has collected them, and they can be limited and, so, there is often a need for different sources of 'secondary data' (Hoggart et al. 2002).

However, the internet websites of various organizations, centres, etc., for example, were used in this study as sources of 'secondary data'. The website of the Organic Centre Wales (OCW), for example, offering data on the development of the organic market in the UK over years, helped the analytical context of the present research (see Section 4.5). Further, the Government Office for the South West of England, providing data on and information about, for example, population and services in Devon, was utilised in this thesis. It is important to note that, on many occasions, findings uncovered by the present research could not be compared with the farming population in Devon or even with the national farming population due to availability of relevant data and information (see, for example, Section 4.2). Other sources of 'secondary data' included newspapers, media, articles and books that could be combined with data and information gathered in the course of the main survey in drawing conclusions about risk and organic farming adoption. For example, an article in the 'The Independent', a British newspaper, was used in Section 6.4 analysing and interpreting farming goals of organic farmers with NFBs. Also, a British Broadcasting Corporation (BBC) news report, pointing to the fact that organic farming produces more biodiversity than conventional farming, helped with regard to clarifying main reasons for organic farming non-adoption in Devon (see Section 4.6).

3.11 Data analysis

With respect to analysis of the questionnaire survey data, several inferential statistical techniques were used for testing hypotheses. As intended, the chi-square procedure was used to identify the statistical significance of the independence between two variables. It, for example, was applied to 'farmer status' (organic or non-organic) and 'gender' and 'formal education' and the aim of 'creating public goods' of organic farmers (see Chapter 4). This bivariate tabular analysis is widely used as it is simple and appropriate for categorical questionnaire data (Sproull 1988; Burt and Barber 1996). Since the chi-square test cannot be applied to parametric data (Lovett 2005), the t-test procedure was used in the present research to test the significant difference between the mean scores of, for example, the 'farm size' profile (see Section 4.2.1), and the 'organic farms' and 'non-organic farms' samples. This procedure compares the means of two non-categorical variables in relation to the variation in the data (Robinson 1998).

Further, as the chi-square test should not be used when more than twenty percent of the expected frequencies are less than five, and details will be lost by aggregation (Robinson 1998; Lovett, 2005), multiple linear regression was used to explain variations in farmers' risk attitudes (see Section 5.7). According to Schroeder et al. (1986), in the multiple linear regression procedure, the relationship between a dependent variable and one or more independent variables is assumed to be linear. Further, this statistical test aims to take into account all the independent variables that have potential influence on the dependent variable and minimizes the sum of the squares of the distances between the data and the regression line. The multiple linear regression procedure is a complex multivariate statistical technique and does not consider non-linearity (Sousa et al. 2007). However, and as recommended by Neuman (2006: 369), this procedure was used in this thesis to test the assumption that multiple independent factors affect farmers' risk attitudes (see Section 2.2.2). In this respect, and similar to Koesling et al. (2004), the stepwise model was selected as it allows each independent variable to be tested for its significance more than one time and produces a list of only significant variables[23].

As there were only 15 organic farmers from NFBs in this study (see Sections 3.7 and 6.2), the analysis and interpretation of data on this sub-group were undertaken with care. Here, and similar to Lockeretz (1995) and Duram (1999), methods of exploratory analytical techniques were used. Counts in each category of a variable were mainly presented as percentages while parametric variables were expressed by their means. Further, relationships between two variables were tested through cross-tabulation. According to Neuman (2006: 356), this method is "*the process of placing data for two variables in a contingency table to show the percentage or number of cases at the intersection of variable categories*". It also can be applied to data measured at any level of measurement and

[23] In the analytical context of this thesis, *, ** and *** will refer to $p \leq 5\%$, $p \leq 1\%$ and $p \leq 0.1\%$, respectively.

widely used when inferential statistics are not possible (Lockeretz 1995; Lovett 2005). Nevertheless, the cross-tabulation method requires thorough scrutiny when relationships are being explored (Lovett 2005).

The first step in analysing the qualitative data of this thesis was putting them into categories. This process required much attention since synonyms and words having multiple meanings were common. A category is *''a group of words with similar meaning or connotations''* (Weber 1990: 37). Each generated category was coded by a theme to help with making sense of its content. According to Crang (2005: 223-224), codes are *''abbreviations or acronyms put on similar segments''*, and whatever codes are, they *''provide a means of conceptually organising your materials, but are not an explanatory framework in themselves''*. Therefore, and on many occasions in this thesis, collected qualitative data that contributed towards each emergent theme were used for drawing conclusions about subjects at hand. For example, and in addition to quantitative data from the questionnaire, quotes from the conducted 'in-depth interviews' were used for placing 256 surveyed farmers on a typology. This typology was developed on the basis of Morris and Potter's (1995) notion of a 'participation spectrum' and helped the understanding of possible future changes in farmers' farming systems on the basis of their risk attitudes (see Chapter 7).

3.12 Conclusions

This chapter has shown how a variety of methodologies were used to address the objectives of this investigation. A questionnaire survey, rigorously designed and tested and administered by telephone, was used to produce data – mainly quantitative – from two systematically-chosen samples of farmers in Devon (organic and non-organic). For enriching the understanding of risk and farmers' adoption decisions, qualitative data were also gathered through 'familiarisation' and 'in-depth interviews'. Primary data were complemented by using different sources of 'secondary data', used to help draw conclusions about the subjects at hand.

The next Chapter begins the reporting of the results of the data collection, focusing on respondents and their farms.

Chapter Four: Characteristics of organic/non-organic farmers and their farms

4.1 Introduction

This chapter is the first of four analytical chapters which will examine the importance of farmers' willingness to take risk in organic farming. As several socio-economic characteristics have been found in the literature to have potential impacts on attitudes towards risk (see Section 2.2.2), Chapter 4 will compare organic and non-organic farmers in Devon in relation to these characteristics. The characteristics are; farm size, farm type, farming income, gender, age, formal education, number of years spent in farming and farming objectives. Section 4.2 will present an overview of farm size, type and income in relation to organic/non-organic status, whilst Section 4.3 will compare organic and non-organic farmers in terms of their gender, age, formal education and number of years spent in farming. Section 4.4 will then focus on the farming objectives of these farmers. Chapter 4 will also analyse the main reasons for adoption and non-adoption of organic farming in Sections 4.5 and 4.6 respectively. These reasons for adoption or non-adoption will later play a crucial role in assessing the research aim, which is to analyse the importance of farmers' willingness to take risk in organic farming in their decisions whether or not to take up organic farming. Finally, Section 4.7 concludes the chapter.

4.2 Organic/non-organic farm characteristics

According to Section 2.2.2, farm size, type and income may act as independent variables affecting farmers' attitudes towards risk. Therefore, it is important to analyse these variables, in order to understand farmers' stances to risk in organic farming and their decisions about whether or not to farm organically.

4.2.1 Farm size

The statistical analysis in Table 4.1 shows that organic farms are smaller than their non-organic counterparts in Devon (p=0.05). This result supports the findings in several other studies (e.g. Lockeretz 1995; Midmore et al. 2001; Burton et al. 1999, 2003; Lobley et al. 2005).

		Organic Farmers (N168)		**Non-Organic Farmers (N155)**
Farm Size (hectares)	**Mean**	89		114
T-Test		**DF**	**P**	**Significance[1]**
		321	0.05	*

Table 4.1: T-test, farm size and farmer status
(Source: Author's questionnaire 2008)

According to the data derived from this research project, non-organic farmers were more likely to be from local farming families than their organic counterparts. This result reflected a strong commitment to remaining in farming (Wallace et al. 1994; Lobley and Potter 2004), enabled them to operate large farms and to expand these farms for a range of reasons, including *"financial"* and *"land became available"*. Peter, for example, who was running a 107 hectare non-organic farm and who was interviewed in-depth, mentioned:

[1] * p≤5%.

> *"In 1945, my father came to this area and started farming this land. I helped on the farm as a child. Later, I left school at 15 years old. I have not studied more because I wanted to leave school and work on the farm more. I was never encouraged to stay on and do more...... . I was learning from my father about agriculture.... . The farm was smaller. Then, my father bought some land.....about 50 hectares..... .Later, I took on the farm from my father, and my son will take it on from me. Over the years, I have bought more land to expand the farm. Now, it is 107 hectares"* (Non-Organic Farmer 142).

Box 4.1: Peter's life story[2]

Also, a 145 hectare non-organic farm was passed on to Andrew, who was the third generation of a farming family. Andrew later added 40 hectares to the inherited land:

> *"I was born on this farm. I am the third generation of my family to farm here. We bought lots of ground. When my father retired, my brother and I broke the partnership. My brother went off with 125 hectares and I had here 145 hectares. Over the last 10 years we have added 40 hectares to this one...... . I have been farming this farm with my wife for probably 12 years"* (Non-Organic Farmer 44).

Box 4.2: Andrew's life story[3]

Conversely, 46% of organic farmers were not from Devon (the percentage was 14% for their non-organic colleagues)[4]. Also, organic farmers who grew up in Devon tended to be from non-farming families compared to their non-organic counterparts. Consequently, established farms (large farms) were less likely to be run by organic farmers. Further, as prices of and rents for agricultural land have risen over the years (DEFRA 2007c), the organic farmers in this study with limited capital resources were only able to operate small farms. For example, Robin, who came from Hampshire and was not financially able to operate a larger organic farm, stated during the 'in-depth interview' that he was farming 23 hectares (see also Section 6.2, focusing on the farm structure profiles of organic farmers from NFBs).

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[2] In the analytical context of this thesis, respondents' names have been changed.

[3] This life story was told by Andrew to the researcher during the 'in-depth interview'.

[4] Reasons for moving to and living in Devon were various (see, for example, Boxes 4.5, 6.1 and 6.2). They also support what Dr. Matt Lobley, Exeter University (see Table 3.3), expected: *"I think a lot of people are attracted to Devon because of the coast, lovely countryside, etc. The environment of Devon is attractive to people. Devon also attracts people interested in food. Devon has some well-known local food businesses. Lots of people want to live in Devon anyway"*.

> *"Although I was born in a rural area in Hampshire, my family did not have a farm. My father was in the military, and my parents moved to that rural area because it was close to my father's job. I started farming when I was 16 years old. I worked on many farms which were not organic. Then, I did my agricultural degree in Gloucestershire. Later, I worked in building. Before I came to Devon, in 1991, and farmed this farm which was informally organic, I was in Hampshire for about a year. I came to Devon because my partner grew up in this area. She knows it very well… . Since 1991 I have had my own tenancy. The farm is 23 hectares. I have not expanded the farm because of the cost of adding land"* (Organic Farmer 10).

Box 4.3: Robin's life story

Another possible clarification for the difference in farm size between organic and non-organic farmers is, as suggested by Bergevoet et al. (2004), related to financial considerations. The chi-square test was used to establish whether there was a relationship between different factors (main reasons for organic adoption or farm type, for example) and farm size for organic farmers. However, no relationship was found to exist in this sample. On the other hand, Table 4.2 shows that a desire to avoid market risks associated with organic farming and which could directly affect farm income is more likely to be expressed by large non-organic farms (p=0.029). This, in turn, partly explains why non-organic farms in Devon were larger than their organic counterparts.

<table>
<tr><td colspan="4" rowspan="2"></td><td colspan="2">Market Risk Avoidance</td><td rowspan="2">Total (155)</td></tr>
<tr><td>No*</td><td>Yes</td></tr>
<tr><td rowspan="4">Non-Organic Farmers</td><td rowspan="4">Farm Size</td><td rowspan="2">1-99 (hectares)</td><td>Count</td><td>58</td><td>25</td><td>83</td></tr>
<tr><td>Expected Count</td><td>51.4</td><td>31.6</td><td>83</td></tr>
<tr><td rowspan="2">Over 99 (hectares)</td><td>Count</td><td>38</td><td>34</td><td>72</td></tr>
<tr><td>Expected Count</td><td>44.6</td><td>27.4</td><td>72</td></tr>
<tr><td colspan="4" rowspan="2">Chi-Square Test</td><td>DF</td><td>P</td><td>Significance</td></tr>
<tr><td>1</td><td>0.029</td><td>*</td></tr>
</table>

Table 4.2: Chi-square test of market risk avoidance and farm size for non-organic farmers (Source: Author's questionnaire 2008)

* In this table, the 'no' response refers to the fact that 69 non-organic farmers did not mention 'market risk avoidance' as a main reason for organic farming non-adoption (see Section 4.6)

4.2.2 Farm types

Although Devon has a complex mix of farm types (Lobley et al. 2003), the county has a strong dairy, grazing livestock LFA and grazing livestock lowland sector (Butler and Lobley 2007). This matrix of farm types was reflected in the data from this research project, where the livestock sector was predominant (53%). Table 4.3 suggests that there is a significant relationship between farm type and farmer status in Devon (p=0.001)[5]. For example, the farm type 'others' included more organic than non-organic farms. This reflected the fact that 13 horticultural farms were organic while only one horticultural farm was managed non-organically. In this farm category, 85% of the organic horticultural farms were operated by farmers who took up organic farming because it was perceived to deliver a variety of public goods (see Sections 4.5). In addition, a variety of reasons had prompted organic farmers from NFBs to manage horticultural farms (see Section 6.2).

		Farm Type			Total
		Livestock*	Mixed**	Others***	
Organic Farmers	Count	77	67	24	168
	Expected Count	88.4	64.5	15.1	168
Non-Organic Farmers	Count	93	57	5	155
	Expected Count	81.6	59.5	13.9	155
Chi-Square Test		DF	P	Significance[6]	
		2	0.001	***	

Table 4.3: Chi-square test for farm type and farmer status
(Source: Author's questionnaire 2008)

* Livestock include dairy and grazing livestock LFA, and lowland

** Mixed are: cropping and dairy; cropping, cattle and sheep; cropping and mixed livestock; cropping, pigs and poultry; and mixed livestock

*** Others include not classified, cereals, specialist pigs, general cropping, specialist poultry and horticulture

[5] According to DEFRA (2007b), farms are classified into dairy, grazing livestock LFA, grazing livestock lowland, mixed, not classified, cereals, specialist pigs, general cropping, specialist poultry and horticulture.

[6] *** $p \leq 0.1\%$.

Table 4.3 also shows that the category 'livestock' involves more non-organic than organic farms. This can be interpreted in terms of the availability and price of organic feed, which was a concern to many organic farmers for a number of reasons (see Section 5.3.1). This may have prevented the organic dairy and grazing livestock LFA and lowland sector from becoming stronger. Further, as demand for different types of organic food varies across time (OCW 2007; Lobley et al. 2009c), this is more likely to affect the organic farm type (Smith and Marsden 2004). Here, 'in-depth interview' data provided evidence for this trend. Organic Farmer 168, for example, whose life story is presented in Box 4.4, stated:

> *"We get poultry, vegetables and some beef. The main products are poultry and vegetables. If we were not doing all these things, this farm would not be viable....... Riverford Organic Vegetables wanted to expand the vegetables and they were looking for more growers, and so we grow vegetables".*[7]

Also, another organic farmer in his fifties mentioned:

> *"Originally, if I go back just before I went organic, we had a mixed farm. In 1998, I went to organic dairy production. I supply my organic milk to a good market"* (Organic Farmer 116).

This, in turn, is another possible interpretation of the findings presented in Table 4.3. It is important to note that in general, demand for organically produced food in Devon is strong for several reasons. First, the county has the largest population in the south west of England (GOSW 2008). Second, there is strong demand from within Devon for locally produced food (Winter 2003a). Third, the population of Devon is more likely to be well-educated and employed in public administration, education, health, distribution, hotels or restaurants (GOSW 2008), and well-educated and middle class people are more likely to purchase organic food (Midmore et al. 2005). Finally, Devon is a well-established area of organic farming (Ilbery et al. 1999; Lobley et al. 2009c). In other words, the county is well-known nationwide for its organic produce (SERIO and Plymouth University 2008).

[7] In 1987, 'Riverford Organic Vegetables' was established to produce and deliver organic vegetables to local consumers (see http://www.riverford.co.uk).

4.2.3 Dependency on farming income

In the context of this study, organic and non-organic farmers in Devon were significantly different in terms of their dependency on income from farming (p=0.001, Table 4.4). Organic farmers appeared to gain less income from farming compared to their non-organic counterparts. This finding is consistent with other studies (e.g. Lockeretz 1995). However, In Michigan, USA, organic and non-organic farmers show no significant differences in terms of their dependency on agricultural income (McCann et al. 1997). Likewise, a study by Lobley et al. (2005) found that organic and non-organic farmers in Northern England, Eastern England and Devon were not significantly different in relation to reliance on farming income. In the two studies noted above, organic and non-organic farmers had similar financial orientations towards farming. This, in turn, can explain why both groups have gained parallel income from farming.

		Organic Farmers (N168)	Non-Organic Farmers (N155)	
(%) of Dependency on Farming Income	**Mean**	59	72	
T-Test		**DF**	**P**	**Significance**
		321	0.001	***

Table 4.4: T-test for farming income and farmer status
(Source: Author's questionnaire 2008)

Table 4.5 shows a positive statistically significant relationship between farm size and farming income of organic farmers (p=0.007). A similar relationship was also found between farm size profile and farming income of non-organic farmers (p=0.001, Table 4.6). Clearly, an increase in farm size will result in more income from farming, whether the farm is organic or non-organic. However, more importantly, as the average organic farm was smaller than its non-organic counterpart (see Section 4.2.1), organic farming income contributed less to household income in percentage terms. This, in turn, is one possible explanation of the findings shown in Table 4.4.

				Farm Size (hectares)				Total (168)
				1-19	20-49	50-99	Over 99	
Organic Farmers	(%) of Dependency on Farming Income	0-74	Count	22	28	23	25	98
			Expected Count	15.2	25.7	25.1	32.1	98
		75-100	Count	4	16	20	30	70
			Expected Count	10.8	18.3	17.9	22.9	70
Chi-Square Test				DF		P	Significance[8]	
				3		0.007	**	

Table 4.5: Chi-square test for farm size and farming income of organic farmers (Source: Author's questionnaire 2008)

				Farm Size (hectares)				Total (155)
				1-19	20-49	50-99	Over 99	
Non-Organic Farmers	(%) of Dependency on Farming Income	0-74	Count	9	16	16	25	66
			Expected Count	3.8	12.3	19.2	30.7	66
		75-100	Count	0	13	29	47	89
			Expected Count	5.2	16.7	25.8	41.3	89
Chi-Square Test				DF		P	Significance	
				3		0.001	***	

Table 4.6: Chi-square test for farm size and farming income of non-organic farmers (Source: Author's questionnaire 2008)

Another possible explanation for this result is that organic farmers tended more than non-organic farmers to farm for non-financial reasons (see Section 4.4.3). Therefore, organic farmers were less likely to put more effort into their farms in order to earn money from farming and so depended less on farming income.

[8] ** $p \leq 1\%$.

A wide range of factors impacted on organic farm incomes, including the high cost of inputs (see Section 5.3.1) and a recent slowing in the growth of the organic market (FMMRs 2008). In addition, this study found that 45 organic farms were in conversion (Nieberg and Offermann 2003), which may have cancelled out the profits of these farms. As a result, it was no surprise to discover that organic farmers obtained less income from farming. Nevertheless, 27% of organic farmers, and 40% of non-organic farmers in Devon earned 100% of their total household income from farming, which may reflect the fact that the non-organic market is more stable (Helmberger and Chavas 1996). The remaining farmers drew income from other sources[9].

'Non-farming activity on the farm' can provide important sources of additional income and reflects the non-agricultural use of the farm's resources for commercial aims (Bailey et al. 2000; DEFRA 2008b). Diversification has been encouraged by a supportive policy environment (Turner et al. 2006). Here, it is important to note that diversification can include other distinct patterns of activity, such as off-farm work, (Andersson et al. 2003; CRR and RTRG 2003; Slee 2003; Meert et al. 2005). Both organic and non-organic farmers in this study were equally engaged in 'non-farming activity on the farm', and based on a chi-square test, no significant difference between farmer types was found (Table 4.7).

This is likely to be the outcome of the interaction between a number of factors, including farmers' ability and willingness to divert their agricultural resources. Ability to diversify tended to be similar, as both groups had some capital (see below) while willingness to set up non-farming activities on the farm could be driven by differing tourism and recreation

[9] Three organic and one non-organic farmer did not answer the question concerning other income sources, therefore figures in table 4.7 are percentages of 119 (organic) and 92 (non-organic) farmers.

	(%) of 119 Organic Farmers*	(%) of 92 Non-Organic Farmers*
Non-Farming Activity on the Farm	21	29
Off-Farm Business	23	30
Off-Farm Employment in Agriculture	4	4
Off-Farm Employment outside of Agriculture	50	32
Social Security and/or Private Payments	13	17

Table 4.7: Other income sources of organic and non-organic farmers
(Source: Author's questionnaire 2008)
* Figures were not mutually exclusive

sectors. The south west of England is one of the most vital UK regions for these sectors and they are particularly important for Devon, Cornwall and Dorset. (MAFF 2000; Winter 2002). The natural and environmental features of rural Devon, such as Dartmoor National Park, the Tamar Valley and the coastline (GOSW 2008), are key attractions in this respect (Winter 2002; DRN 2007). This, in turn, not only helps farmers to diversify into non-farming activities, such as setting up tea rooms and offering bed and breakfast (Ilbery 1991; Bailey et al. 2000), but also provides opportunities for others in rural areas to improve their incomes (MAFF 2000), which have been noted as being particularly low in Devon (Little and Morris 2004). Including more non-farming activities on farms in Devon means moving towards more strongly multifunctional agriculture (Wilson 2007; Marsden and Sonnino 2008). According to Marsden (2003), this trend may be reinforced by criticism of farming and its impacts on the environment by non-rural visitors and newer rural residents, who have moved to Devon to retire (CCD 2007). Therefore, a shift towards sustainable farming systems can be seen in Devon (see Section 3.8). This switch may also be affected by financial subsides, offered under CAP reforms, for all farmers in the UK (Lobley and Butler 2004). In addition, rural policies such as the Rural Development Programme for England 2007-2013 are likely to have a similar effect on both organic and non-organic farmers, as a number of actions are in place to enhance rural development, farming and the environment (see DEFRA 2008e).

Apart from the 'off-farm employment outside of agriculture' group, no significant difference was found, using chi-square test, between organic and non-organic farmers in terms of alternative sources of income. Since both organic and non-organic farmers were equally investing in, for example, machinery and property, this indicated that they had some capital (Brown and Taylor 2005), which may have been inherited or the result of well-paid work elsewhere. Further, there was no difference between farmer types in terms of household incomes supported by 'off-farm employment in agriculture'. According to the data collected in this research project, this type of work included agricultural work, agricultural consultancy or tree surgery[10]. Organic farm families tended not to engage in agricultural work. This is one of the outcomes of formal educational qualifications in agriculture that were being used off the farm by a number of the members of the organic family (see, for example, Box 4.4). The organic family, and similarly its non-organic counterpart in this study, also gained income from social security and/or private payments (Table 4.7). This suggests that both organic and non-organic farming families had equal access to benefit payments such as pensions credit.

The only significant difference between additional income sources and farmer status in this study was found in relation to the 'off-farm employment outside of agriculture' category ($p=0.008$, Table 4.8). More organic farmers received income from this category than their non-organic colleagues (see also Lockeretz 1995; Lobley et al. 2005). Here, it should be noted first that it is not possible to describe the exact nature of work within this category,

[10] Here, it is important to note that any member/s of the farming family might provide income to the household from off-farm work either in agriculture or outside of it, and also from social security and/or private payments.

as a number of non-specific answers, such as *"wife works"*, were given by questionnaire respondents. Organic farmers in this study were well-educated compared to their non-organic counterparts (see Section 4.3.3) and higher levels of formal educational attainment were obvious within organically farming families (see, for example, Boxes 4.4 and 6.1). This, in turn, explains why more organic farm households in this study were involved in 'off-farm employment outside of agriculture' compared to their non-organic counterparts, as a positive correlation is likely to be found between education and well-paid work (Weir 1999).

		Off-Farm Employment outside of Agriculture		Total
		No	Yes	
Organic Farmers	Count	60	59	119
	Expected Count	69.4	49.6	119
Non-Organic Farmers	Count	63	29	92
	Expected Count	53.6	38.4	92
Chi-Square Test		**DF**	**P**	**Significance**
		1	0.008	**

Table 4.8: Chi-square test for off-farm employment outside of agriculture, and farmer status
(Source: Author's questionnaire 2008)

In conclusion, this section has compared a sample of organic and non-organic farms in Devon in terms of their size, type and income. In this sample, non-organic farms were found to be larger than those operated by organic farmers. In terms of the classification of farm type, the majority of non-organic farms were classed as livestock farms, whereas the category 'others' involved more organic farms. Further, non-organic farmers depended more on farming for their household income compared to their organic colleagues.

A number of variables have been identified in the literature as key influences on farmer attitudes towards risk (see Section 2.2.2), and therefore, the next section will focus on organic/non-organic status and gender, age, formal education and years spent in farming. This, in turn, will allow conclusions to be drawn about farmers' perceptions of, and dispositions towards, risk.

4.3 Personal characteristics and organic/non-organic status

This section will compare the personal characteristics of farmers within the study sample, to assess whether there are any significant differences between organic and non-organic farmers in terms of their gender, age, formal education and years spent in farming. This comparison is important in that it will enable the role of these variables in influencing organic and non-organic farmers' attitudes towards risk to be tested in Chapter 5.

4.3.1 Gender spaces on organic farms

In order to fully understand the role of gender and other characteristics, it is important to reflect on the nature of the data gathered in this study. Questionnaire data was provided either by the sole decision-maker, or by one of the decision-makers on the farm (see Chapter 3). For farms with more than one decision-maker, questionnaire responses were of the one who answered the call or who was chosen by the individual who answered the call.

With regard to farming decisions, Table 4.9 shows that there is a significant difference between organic and non-organic farmers in terms of how farming decisions are made ($p=0.03$). Organic farmers were more likely to make joint decisions (see below). However, it is important to note here that joint decision-making was found to be complex and decisions were made by a combination of father, mother and son; husband and wife; and father and son, for example. The 'husband and wife partnership' was the most common decision-making mechanism for both organic and non-organic farmers. In percentage terms, this translates as 78% of organic farm decisions and 38% of non-organic farm decisions were made jointly by both partners. This is related to the fact that families farming organically were well-educated compared to their non-organic counterparts (see Section 4.2.3). In these families, there was acceptance of joint farming decisions between the husband and wife (Glaeser et al. 2007). Organic Farmer 168, for example, whose life story is presented in Box 4.4, said during the 'in-depth interview':

> *"Farming decisions are jointly made with my husband. As we share the general policy and the principles, we agree because they are the same. We have not had any disagreement".*

This, in turn, runs counter to the notion of farming as a male occupation (Gasson and Winter 1993; Pini 2002; Trauger 2004), which was more likely to be expressed by non-organic farmers from established farming families (see Section 4.2.1). Non-organic Farmer 147, for example, who had not studied beyond secondary education level, had farming origins and identified himself as the principal decision-maker on the farm, stated during the 'in-depth interview':

> *"I discuss decisions with the wife. I make day to day decisions. Big ones I discuss with the wife. I am responsible for farming decisions. Usually, we agree. When we do not, I do what I think is right".*

Although there is growing recognition within the literature of the role of different actors in farming decisions (Morris 2004), little work has focused on the farming decisions themselves, although there are a few notable exceptions (see, for example, Lockeretz 1995; Duram 1999; Wilson 2007).

		How Farming Decisions are Made		Total
		Individually	Jointly	
Organic Farmers	Count	123	45	168
	Expected Count	131	36.9	168
Non-Organic Farmers	Count	129	26	155
	Expected Count	121	34.1	155
Chi-Square Test		**DF**	**P**	**Significance**
		1	0.03	*

Table 4.9: Chi-square test for farming decisions and farmer status
(Source: Author's questionnaire 2008)

The results from this study revealed a significant relationship between gender and farmer status (p=0.001, Table 4.10). Amongst female farmers, more farmed organically (74%) than non-organically (26%). This outcome supports the findings of other studies such as Lockeretz (1995) and Burton et al. (1999), (2003), but it is also dissonant with some UK-based studies, such as those by Midmore et al. (2001) and Lobley et al. (2005), which found that gender did not play an important role in the adoption of organic farming practices.

		Gender		Total
		Male	Female	
Organic Farmers	Count	133	35	168
	Expected Count	143.6	24.4	168
Non-Organic Farmers	Count	143	12	155
	Expected Count	132.4	22.6	155
Chi-Square Test		**DF**	**P**	**Significance**
		1	0.001	***

Table 4.10: Chi-square test for gender and farmer status
(Source: Author's questionnaire 2008)

The results presented in Table 4.10 accord with women's identification of themselves as farmers rather than supporters, as many women contribute to the running of the family farm, not only in Devon, but also in other rural areas (Little and Morris 2004; Budak et al. 2005; Bjorkhaug and Blekesaune 2008; Reed et al. 2008; Trauger et al. 2008; Author's observations). In this study, whatever the identity of the respondent, the notion that farming is a male occupation was more likely to be challenged on organic farms (see above).

The idea that farm decision-making was solely a male domain was also challenged by the finding that female organic farmers who had become the sole decision-maker as a result of the death of the husband, for example, and those who were already one of the decision-makers on the farm, were more likely than their non-organic counterparts to assent to the notion of running the farm on their own account[11] (see also Lobley et al. 2005). Indeed, the organic sample contained more female respondents as a result of there being more female organic farmers than female non-organic farmers.

The attraction of organic farming systems in terms of the perceived environmental and health benefits may be a key influence in encouraging female farmers to enter into this type of farming. Since there is concern for family health, food and the environment amongst women (Braidotti et al. 1994; Padel 2001a; Hall and Mogyorody 2007), and organic farming is perceived by many women to offer such public goods (Inhetveen 1998; Padel 2001a), this may explain the association between women farmers and organic farming (Table 4.10). The 'in-depth interview' data supported this view. Organic Farmer 168, for example, who ran the farm with her husband (see above), revealed:

[11] In this study, 12 women from organic farms and 6 women from non-organic farms identified themselves as the only decision-maker on their farms.

> *"I grew up in Bristol. My parents were not farmers. We both [the farmer and her husband] did agricultural degrees. After that, I did some research, and then became an agronomist while my husband was a livestock advisor. In 1991, I had a scholarship to look at organic farming in the west of Europe. I went to Germany.....and Austria. Organic farming was very interesting. The system seems more sustainable and we are keen on the environment. We are concerned about what is happening in the countryside..... . After that, my husband went to farm management, and I went on to teach agriculture..... . We always wanted a farm, and it was difficult for us to get a tenancy because we did not have that farming background. And we moved to Devon and bought this farm in 1997".*

Box 4.4: Sally's life story [12]

On the other hand, Non-Organic Farmer 148, who was the sole decision-maker on her dairy farm, stated during the questionnaire survey: *"I do not believe in organic farming because I think it is a sham"* (See Section 4.6).

4.3.2 Are organic farmers younger?

Conditions linked to old age, such as physical difficulties, may prevent older farmers from taking up organic farming, which can be a labour intensive farming system (Fasterding and Rixen 2006; Trauger et al. 2008). This may explain why Lockeretz (1995) found that in Massachusetts, USA, the typical organic farmer is younger than his/her non-organic counterpart (see also Lobley et al. 2005). In contrast, McCann et al. (1997) suggested that there was no significant difference between organic and non-organic farmers in Michigan, USA, in relation to their age. McCann's findings are supported by the findings of this research project, in that there was no significant difference in terms of age structure between organic and non-organic farmers (p=0.103, Table 4.11).

[12] In this study, 18% of organic and 5% of non-organic farmers grew up in urban areas.

		Age			Total
		26-40	41-65	Over 65	
Organic Farmers	Count	19	138	11	168
	Expected Count	19.2	132.1	16.6	168
Non-Organic Farmers	Count	18	116	21	155
	Expected Count	17.8	121.9	15.4	155
Chi-Square Test		**DF**	**P**	**Significance**	
		2	0.103	N.S.	

Table 4.11: Chi-square test for age and farmer status
(Source: Author's questionnaire 2008)

Specifically, only nine non-organic farmers explicitly mentioned *"old age"* as one of the main reasons for not taking up organic farming. This result suggests that ageing was not a barrier which prevented entry into organic farming (see Cooper 1998; Mata et al. 2007). For example, when Organic Farmer 83 was 54 years old, he started with a very small-scale non-certified organic farm, in order to develop his organic farming skills. Then, when he was 62 years old, he registered the farm with the SAO.

> *"I was born in London in 1927. My father was a teacher. Also, I was teaching music and environmental studies before farming. I have always been interested in nature and farming without chemicals, so we moved to Devon. We started in 1981. The farm was, in principle, organic. In 1989, I registered the farm as organic. I had no experience in farming at first, only 2 cows, but we gradually built up the farm".*

Box 4.5: Matthew's life story[13]

Further, Simon entered into organic farming in old age (59 years) (see Box 6.1), and in order to cope with increasing physical limitations due to ageing, he made more use of his two workers (see Section 6.3).

[13] This life story came from the 'in-depth interview' with Matthew.

Table 4.11 shows that 89% of the farmers who participated in this study were aged 41 or over. Results from the 'in-depth interview' and questionnaire data (see Appendices One and Two) indicated that this was because the vast majority of older farmers wanted to continue farming for as long as possible, whether or not the farm would be passed on to the next generation (see also ADAS 2004; Lobley et al. 2005). Further, since young farmers in Devon tend to leave farming for financial reasons (CCD 2007; Butler and Lobley 2007), this is also likely to be reflected in the age profile for farmers in the county.

4.3.3 Organic farmers and formal education

The formal education profile varied significantly between organic and non-organic farmers in this study. Table 4.12 shows that organic farmers were well-educated compared to their non-organic counterparts (p=0.000). This result was anticipated, based on the literature (e.g. Lockeretz 1995; Duram 1999; Flaten et al. 2006; Lobley et al. 2005). According to the data from this study, more organic farmers held agricultural and/or non-agricultural degrees, compared to non-organic farmers (see, for example, Boxes 4.4 and 6.2).

		Formal Education			**Total**
		Full Secondary	Further	Higher	
Organic Farmers	Count	57	19	92	168
	Expected Count	79.1	24.4	64.5	168
Non-Organic Farmers	Count	95	28	32	155
	Expected Count	72.9	22.6	59.5	155
Chi-Square Test		**DF**	**P**	**Significance**	
		2	0.000	***	

Table 4.12: Chi-square test for formal education and farmer status
(Source: Author's questionnaire 2008)

Statistically, there was no apparent link between the adoption and non-adoption of organic farming systems and level of formal education (see Sections 4.5 and 4.6). Thus, these reasons cannot explain the findings presented in Table 4.12. Nevertheless, organic farming is knowledge intensive (Lockeretz 1991; Winter 1997; Wilson and Rigg 2003), and well-educated farmers are more likely to be open to new information and willing to learn new approaches (Gasson 1998; Weir 1999; Bak 2001). It should not be surprising, therefore, to find that better-educated farmers are more likely to be organic (see Boemgen and Bullock 2004; Genius et al. 2006; see also Table 4.12). The organic farmers in this study tended to make greater use of different information sources, such as the internet, books, extension services and other farmers.

More non-organic farmers indicated that they had grown up on family farms compared to their organic counterparts (see Section 4.2.1). Many of these individuals had left school early in order to gain more experience of farming. The life story of John, revealed during the 'in-depth interview', provides evidence of this trend (see also Box 4.1).

> *"My family has been in this area since 1664. I was born on my family's farm in 1930. I am 78 years old..... . In 1947, I finished my secondary education, and I was fully engaged in the work on my family farm. I have got three brothers. My father bought this farm for me in 1954..... . I have got two sons; they left school to help me. The oldest is 54 years old and the other is 51. Farming is in my blood. It is what I have been brought up on.... . I have been farming all my life. I do not know anything else."* (Non-Organic Farmer 149).

Box 4.6: John's life story

Consequently these farming origins, which affected the level of educational qualifications achieved for many rural residents in Devon (CCD 2007), partly explain why non-organic farmers had not studied beyond secondary level. This is in line with a Devon-based study by Reed et al. (2002) which examined farm household reaction to the economic decline in farming. In addition, Gasson (1998: 487) points out that "*historically, it has been assumed* *that if people are provided with land, they will know by instinct how to farm it. Many successful farmers are proud of the fact that they left school at 14 and never went to college"*. Nevertheless, Warren (1989) found that well-educated farmers in Devon and Cornwall were more proactive in taking actions to cope with farming difficulties.

4.3.4 Years spent in farming

According to Table 4.13, the mean duration of involvement in farming as helpers, workers and operators was 29 years for organic and 43 years for non-organic farmers in Devon. There was a significant difference between organic and non-organic status in terms of this aspect (p=0.000). As predicted (see Section 2.5.2), non-organic farmers had been engaged in farming for more years compared to their organic counterparts. This result provides compelling evidence to support the findings of other researchers (e.g. Murphy 1992; Egri 1999; McCann et al. 1997; CRER 2002; Lobley et al. 2005).

		Organic Farmers (N168)		**Non-Organic Farmers (N155)**
Years Spent in Farming	**Mean**	29		43
T-Test		**DF**	**P**	**Significance**
		321	0.000	***

Table 4.13: T-test for years spent in farming and farmer status
(Source: Author's questionnaire 2008)

Organic and non-organic farmers in Devon were similar in terms of their age (see Section 4.3.2), which indicates that other factors affected their length of involvement in farming. In this study, and similar to McCann et al. (1997) and Lobley et al. (2005), more organic farmers had at some time worked outside of farming than their non-organic counterparts

(40% of organic farmers compared to 8% of non-organic farmers). Accordingly, it is not surprising to discover that these farmers spent less time in farming[14]. However, based on 'in-depth interview' data, the reasons for work outside of agriculture were different (see, for example, Box 4.4). Non-Organic Respondent 104, who was not from a farming family, explained his reasons for working outside of agriculture:

> *"My parents were not farmers, but my grandparents had a farm near London.... . Because I wanted to be a farmer, I worked in finance and saved some money. After that, I bought the farm. Farming is something I always wanted to do".*

Another possible explanation for the findings shown in Table 4.13 is linked to the formal education profile of farmers. As the organic farmers in this study tended to be well-educated compared to their non-organic counterparts (see Section 4.3.3), they would have spent more time in formal education, at universities and colleges for example, and therefore had spent fewer years in farming (see also Lobley et al. 2005). In comparison non-organic farmers, who were more likely to be from farming families (Section 4.2.1), tended to have been involved in farming from a younger age (see, for example, Boxes 4.1, 4.3 and 4.6).

This section has compared organic and non-organic farmers in terms of their gender, age, level of formal education and years spent in farming, in order to provide a better understanding of the link between attitudes towards risk and the adoption of organic farming systems. Although there was no significant difference in age between organic and non-organic farmers in Devon, a higher proportion of female farmers were organic. Further, organic farmers were well-educated and had spent fewer years in farming compared to their non-organic counterparts. Section 4.4 now turns to an analysis of

[14] Roderick and Burke (2004) found that organic farmers in Cornwall have been farming on average for 23 years. This finding is, to some extent, supported by the present research, in which organic farmers spent on average 29 years in farming.

farming aims in order to enrich our understanding of attitudes towards risk in organic farming (see also Section 2.2.2).

4.4 Farming objectives

The questionnaire used in this study asked organic and non-organic farmers to indicate the key aims which drove their approach to farming. Whilst the relationship between farming goals and attitudes towards risk will be analysed in Sections 5.7.1 and 5.7.2, this section will compare the aims of organic and non-organic farmers. In this respect, it is important to note that 'No' in Tables 4.14-4.19 refers to the fact that the relevant farming aim was not mentioned in response to the question: *"could you please describe the most important objectives in your approach to farming?"*.

4.4.1 The aim of creating public goods

Table 4.14 shows a significant relationship between willingness to create public goods, which include protecting the environment, producing healthy and safe food and ensuring animal welfare; and farmer status (p=0.000). This result supports earlier studies (e.g. McCann et al. 1997; Koesling et al. 2004) which found that organic farmers ranked the generation of such public goods as a primary aim compared to their non-organic counterparts.

		Creating Public Goods		Total
		No	Yes	
Organic Farmers	Count	66	102	168
	Expected Count	88.9	79.1	168
Non-Organic Farmers	Count	105	50	155
	Expected Count	82.1	72.9	155
Chi-Square Test		**DF**	**P**	**Significance**
		1	0.000	***

Table 4.14: Chi-square test for creating public goods and farmer status
(Source: Author's questionnaire 2008)

Many factors contributed to organic farmers' desire to generate different public goods (see Section 4.5). Accordingly, it is possible to speculate that organic farmers differ from non-organic farmers in their attitudes towards their ecological and social responsibilities (Beus and Dunlap 1990; Maybery et al. 2005; Stock 2007). Further, ideological differences between farmers concerning a number of issues involving animal welfare and food quality (Ilbery and Kneafsey 2000; Kling-Eveillard et al. 2007) may be reflected in their farming systems (Lockie and Halpin 2005). This was supported by the 'in-depth interview' data. For example, Non-Organic Farmer 73, running a mixed farm, argued that:

> *"I am not convinced that organic is any better than conventional, especially now when we will be asked to produce more to feed the population. My main aims in farming are to improve the farm, to sustain the land but produce more, better returns. The environment will take care of itself. We need something more than the environment to live on".*

On the other hand, an organic farmer (see Box 4.5) explained:

> *"My philosophy is to protect the environment and not to use chemicals, working with nature. For example, a part of my land is a butterfly reserve with 30 different species. We should work in sympathy with the natural order"* (Organic Farmer 83).

In addition, as well-educated individuals are more likely to have better access to information sources, such as the internet (Genius et al. 2006; Warren 2007), this may increase their awareness of the importance of, and concern for, various public goods (Gasson 1998; Rahman 2003). Accordingly, farmers who have achieved a higher level of formal education are more likely to be willing to create different public goods from farming (see Lien et al. 2006a). This is supported by the finding that, for organic farmers, there was a significant relationship between the level of formal education achieved and the desire to 'create public goods' (p=0.000; Table 4.15,). This, in turn, is a possible explanation for the significant difference between organic and non-organic farmers in this study in terms of their desire to generate public goods through their approach to farming. Here, it is important to note that no significant association was found between the level of formal education achieved and the desire to 'create public goods' for non-organic farmers (see Section 4.3.3).

<table>
<tr><th colspan="4" rowspan="2"></th><th colspan="3">Formal Education</th><th rowspan="2">Total</th></tr>
<tr><th>Full Secondary</th><th>Further</th><th>Higher</th></tr>
<tr><td rowspan="4">Organic Farmers</td><td rowspan="4">Creating Public Goods</td><td rowspan="2">No</td><td>Count</td><td>33</td><td>9</td><td>24</td><td>66</td></tr>
<tr><td>Expected Count</td><td>22.4</td><td>7.5</td><td>36.1</td><td>66</td></tr>
<tr><td rowspan="2">Yes</td><td>Count</td><td>24</td><td>10</td><td>68</td><td>102</td></tr>
<tr><td>Expected Count</td><td>34.6</td><td>11.5</td><td>55.9</td><td>102</td></tr>
<tr><td colspan="3" rowspan="2">Total</td><td>Count</td><td>57</td><td>19</td><td>92</td><td>168</td></tr>
<tr><td>Expected Count</td><td>57</td><td>19</td><td>92</td><td>168</td></tr>
<tr><td colspan="4" rowspan="2">Chi-Square Test</td><td>DF</td><td>P</td><td colspan="2">Significance</td></tr>
<tr><td>2</td><td>0.000</td><td colspan="2">***</td></tr>
</table>

Table 4.15: Chi-square test for formal education and creating public goods for organic farmers
(Source: Author's questionnaire 2008)

4.4.2 The aim of making a profit

Table 4.16 shows that non-organic farmers in Devon mentioned the aim of 'making a profit' as first among their other primary farming aims, while their organic counterparts stated it second. Table 4.16 shows also that organic and non-organic farmers are equally interested in making a profit from farming ($p=0.918$). This result does not support the findings from other studies, which have suggested that non-organic farmers tend to be more focused on making a profit from farming than their organic counterparts (e.g. McCann et al. 1997; Koesling et al. 2004; Lockie and Halpin 2005).

		Making a Profit		Total
		No	Yes	
Organic Farmers	Count	92	76	168
	Expected Count	91.5	76.5	168
Non-Organic Farmers	Count	84	71	155
	Expected Count	84.5	70.5	155
Chi-Square Test		**DF**	**P**	**Significance**
		1	0.918	N.S.

Table 4.16: Chi-square test for making a profit and farmer status
(Source: Author's questionnaire 2008)

The predominance of productivist attitudes may provide an explanation for the results shown in Table 4.16 (Maybery et al. 2005; see also below). The desire to make a profit from farming may be related to the fact that non-organic farmers have been asked to maximize production for many years (Wilson 2007; see also the comments made by Non-Organic Farmer 73, above). This does not mean, however, that organic farmers are immune to such ideology (Nowak 1987; Marsden 2003); they may have been engaged in non-organic farming systems before taking up organic farming. Based on the 'in-depth interview data', this study found considerable evidence of this:

> "*Before running this farm, I worked for other people. I worked on farms, some of them were organic, and others were not. The first farm I worked on was not organic.....The most important objective in my approach to farming is to run a business within the confines of organic farming. If our farm is going to be organic, I want it to be profitable*" (Organic Farmer 12).

> "*I was brought up on the same farm. I helped my parents from an early age. The farm was conventional, and we converted in 1998.... .The most important objective in my approach to farming is to make a profit*" (Organic Farmer 39).

Further, for some organic farmers, the concept of profit-making was connected with their views about farming. Organic Farmer 61, for example, who had not been involved in farming before starting to farm organically in 2006 (see Chapter 6), seemed to see organic farming simply as a way to make a profit. This explained why he left farming when the price of organic pigs decreased (see Section 4.5).

Besides ideology, farmers may be driven to make a profit because of their need for money (Austin et al. 1996; Wilson 1997a). A number of organic and non-organic farmers in this study indicated that they were keen to make a profit from farming in order to meet financial challenges, such as rising inflation, farm expansion, and improving buildings. This finding suggests that such needs, which are highly likely to affect farming behaviour (Roccas et al. 2002; Schoon and Te Grotenhuis 2000), may interact with farmers' ideology (Maybery et al. 2005) and result in the inclusion of more traditional orientations within organic farming practices.

The findings in Table 4.16 suggest that organic farming may in fact mimic non-organic farming systems for the reasons listed above. Accordingly, this would suggest that organic farming is not necessarily moving away from the productivist agricultural regime (Wilson 2001; Marsden 2003; Wilson and Rigg 2003; Potter and Tilzey 2005; Marsden and Sonnino 2008). If the primary aims of organic farming resemble other farming systems (Best 2008), this raises concerns about its identity and core values (Lockie and Halpin 2005; see also Section 4.5).

4.4.3 The aim of making a living

The data in Table 4.17 shows that the objective of making a living from farming is associated with both organic and non-organic farmers ($p=0.002$)[15]. However, more non-organic farmers than organic farmers mentioned this objective as one of their key aims. This finding concurs with the findings of other studies such as Koesling et al. (2004), for example.

		Making a Living		Total
		No	Yes	
Organic Farmers	Count	144	24	168
	Expected Count	132.6	35.4	168
Non-Organic Farmers	Count	111	44	155
	Expected Count	122.4	32.6	155
Chi-Square Test		**DF**	**P**	**Significance**
		1	0.002	**

Table 4.17: Chi-square test for making a living and farmer status
(Source: Author's questionnaire 2008)

Non-organic farmers who indicated that making a living from farming was important, elaborated on their reasons for doing so: *"not profitability, but making a living"*; *"just making a living"*; *"feeding my family"*; and *"to survive"*. Accordingly, it seems that these farmers differed from their organic counterparts in terms of their needs as well as their philosophy and ideology about farming as a production system (see also Section 6.5). This, in turn, may explain the results shown in Table 4.17.

The relative importance of making a living from farming as expressed by farmers in this study suggests that this aspect of farming should receive more attention from researchers examining farming goals (Ilbery 1983). It should also be borne in mind, however, that

[15] 'Making a living' means having enough money for basic needs, which may vary from one person to another (Swindell et al. 1999).

farmers may also be driven by non-financial objectives (see below). Theories based on analyses of individual behaviour, such as 'cost-benefit analysis' (see Button and Barker 1975; Little and Mirrlees 1974; Gittinger 1982; Hanley and Spash 1993), may therefore need to be adjusted to take into account all possible aims (Flaten et al. 2005).

In the context of this thesis, both the aims of making a living and of making a profit from farming highlights the existence of financial orientations in farmers' approaches to farming and which may or may not be combined with non-financial ones (see also Fairweather and Keating 1994; Greiner et al. 2009). According to the results shown in Table 4.18, and as expected, farming for financial reasons was mentioned by more non-organic than organic farmers in the study sample (p=0.005). This concurs with the findings of other studies (e.g. Lockeretz 1995; Sullivan et al. 1996). More organic farmers than non-organic farmers cited non-financial aims, such as 'enjoying the lifestyle' and 'creating public goods', as the most important objectives driving their approach to farming (see also Kaltoft 1999; Stock 2007). This, in turn, supports the argument that farming goals affect the adoption of particular farming systems (Morris and Winter 1999; Koesling et al. 2004; Wilson 2007; among others).

		Financial Orientations		**Total**
		No	Yes	
Organic Farmers	Count	68	100	168
	Expected Count	56.2	111.8	168
Non-Organic Farmers	Count	40	115	155
	Expected Count	51.8	103.2	155
Chi-Square Test		**DF**	**P**	**Significance**
		1	0.005	**

Table 4.18: Chi-square test for financial orientations and farmer status
(Source: Author's questionnaire 2008)

4.4.4 The aim of enjoying the lifestyle

Table 4.19 suggests that organic and non-organic farmers in Devon equally view the lifestyle aspects of farming as one of the most important aims in their approaches to farming (p=0.425). This result strongly supports the findings from other studies (e.g. Lockeretz 1995; Koesling et al. 2004). This assertion was based on responses such as *"I enjoy being independent"*; *"living in the countryside"*; *"working with plants and animals"*; and *"way of life"*.

		Enjoying the Lifestyle		Total
		No	Yes	
Organic Farmers	Count	131	37	168
	Expected Count	128	40	168
Non-Organic Farmers	Count	115	40	155
	Expected Count	118	37	155
Chi -Square Test		**DF**	**P**	**Significance**
		1	0.425	N.S.

Table 4.19: Chi-square test for enjoying the lifestyle and farmer status
(Source: Author's questionnaire 2008)

Based on the results shown in Table 4.19, farm lifestyle did not appear to have affected the type of farming system adopted (see also Bergevoet at al. 2004). In other words, whichever system was chosen, farmers enjoyed being independent, working in the countryside, etc. This finding was supported by 'in-depth interview' data. For example, the wife of Non-Organic Farmer 147 said:

> *"We like the way of life. We like the countryside. We like livestock, dealing with them, horses.............although we do not earn enough. It would not matter if we were organic or not".*

It is therefore unsurprising to find that there was no significant relationship between 'enjoying the lifestyle' and farmer status in this study. Indeed, both organic and non-organic farmers appeared to enjoy farming. For example, although Non-Organic Farmer 147 suffered from a bad knee, he was enthusiastic and happy to check on his sheep, which were lambing. Further, Organic Farmer 78 was laughing and making jokes whilst she was repairing a gate in the rain. This reflects the importance of a high quality of life amongst farmers (Austin et al. 1996), which is more likely to be based on a variety of different values and ideologies (Beus and Dunlap 1990; Maybery at al. 2005). Consequently, it should not be surprising that a desire to enjoy the farming lifestyle played an important role in decisions surrounding entry into farming in general (see Section 6.4).

This section has shown that organic and non-organic farmers in Devon farmed for a variety of reasons. Further, these farmers were similar with regard to their willingness to make a profit from farming, and in their desire to enjoy the lifestyle aspects of farming. On the other hand, making a living out of farming was mentioned by more non-organic than organic farmers. In contrast, organic farmers farmed to create different public goods compared to their non-organic counterparts.

The next two sections will focus on the main reasons for adoption or non-adoption of organic farming systems. These sections will in turn contribute, in Section 5.7.4, to a suggested key conclusion on the importance of farmers' attitudes towards risk in organic farming in relation to their decision on whether or not to farm organically.

4.5 Main reasons for the adoption of organic farming systems

This section will analyse and interpret the responses from organic farmers to the question: *"Could you please tell me the main reasons for organic farming adoption?"* As noted in Section 3.5, it is important to emphasise that responses to this question, and to others which also concerned farmers' beliefs and perspectives, were difficult to code because many of them had multiple meanings, and published coding methodologies are rare (see below). This, in turn, limits the degree to which comparisons can be made with other research. However, Figure 4.1 suggests that reasons for the uptake of organic farming in Devon fall within six main categories.

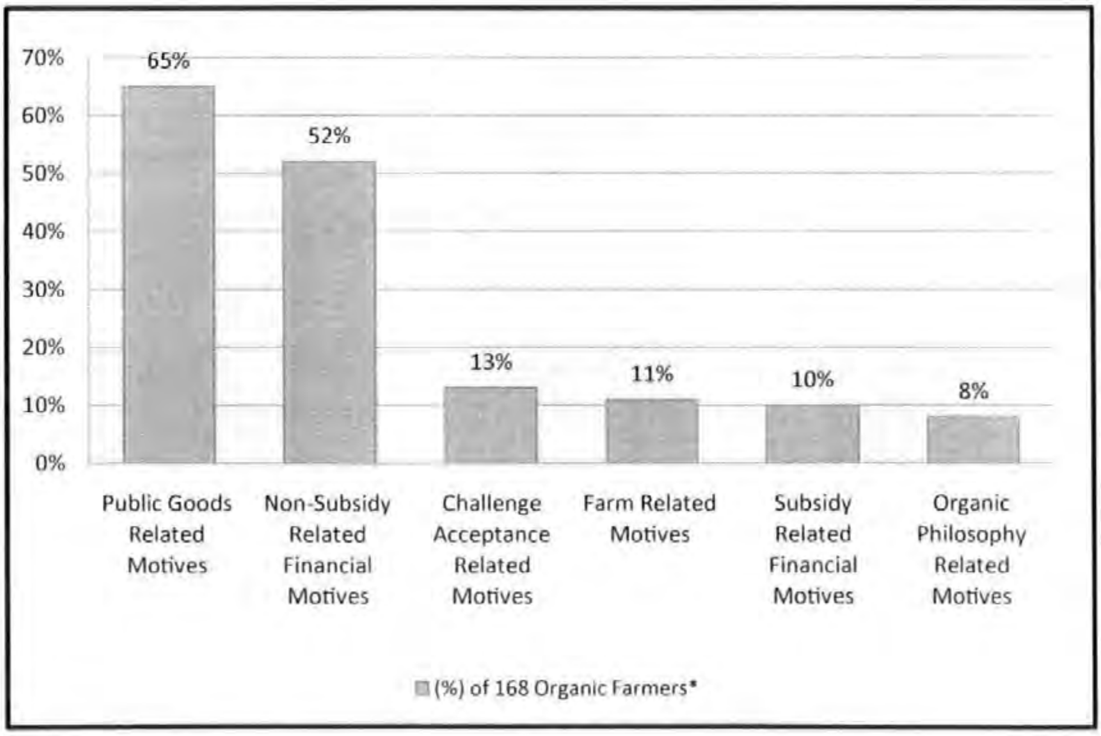

Figure 4.1: Main reasons for the adoption of organic farming systems (Source: Author's questionnaire 2008)

* Responses were not mutually exclusive

Figure 4.1 shows that for 65% of organic farmers 'public goods related motives' were one of the main reasons for adopting organic farming systems. This category is related to farmers' perceptions of the positive effects of organic farming on the environment, food quality and safety, and animal health and welfare. Statements which characterised this category included *"I do not like chemicals"*, *"my philosophy is to protect the environment"*, *"animal welfare"*, *"better for our health"*, *"caring for God's world"* and *"ethical reasons (i.e. healthy animals and things like this)"*. Further, this category can be seen as a reflection of the environmental and social benefits delivered by organic farming (Ilbery et al. 1999; Stockdale et al. 2001; Pretty 2002; Bartram and Perkins 2003; Vogl et al. 2005; Topp et al. 2007). These benefits are based on the physical, mechanical and biological methods of organic farming, which limit the use of chemicals. Heavy use of agricultural chemicals damages such goods and results in 'public costs' (Pretty et al. 2000; Parris and Yokoi 2003).

The results shown in Figure 4.1, which point to the importance of the environmental and social benefits of organic farming, concur with those of other studies such as Vine and Bateman (1981), Egri (1999), Burton et al. (2003), McEachern and Willock (2004), Flaten et al. (2006), Toma and Mathijs (2007) and Best (2008). According to the data gathered from both questionnaire responses and 'in-depth interviews' (see Section 6.5 and Box 4.4, for example), many organic farmers expressed awareness of, and concern for, the human, ecological and social environment. These attitudes were related to awareness of the environmental impact of pollution and over-use of chemicals and the role that organic farming techniques could play in mitigating such impacts (see also Lockeretz, 1995; Fairweather and Campbell 1996).

> *"I was farming and supplying food with a view to conservation, but there was pressure from a company to spray more more more. I said 'enough'; I am going to grow organic. ...... Also, one day, my wife was coming back from a local farm where they were spraying the corn, and she felt ill.... . Chemicals are poison. Health comes first. ..... "* (Organic Farmer 116)[16].

Further, the willingness of many organic farmers to create public goods from farming stemmed from a sense of responsibility as stewards of their land. In addition, it reflected their concern for the welfare of their livestock, their ideology about farming and/or a sense of justice stemming from religious conviction (see also Sullivan et al. 1996; McCann et al. 1997; Stock 2007; van Huik and Bock 2007; Schader et al. 2008; Greiner et al. 2009; Section 4.4.1). Among organic farmers, a willingness to create public goods from farming appeared to be a long-term objective which extended beyond individual generations. For example, during the 'in-depth interview', the daughter of Organic Farmer 78 expressed views on organic farming similar to those of her mother:

> *"I have studied theatre and drama, and now I am doing horticulture to understand soil and the environment more. I went to Tanzania and worked with children, and I went to Australia and worked on an organic farm. Then, I came back to help my mother and to take the farm over in the future. I am also looking for quality rather than quantity. I want to work with nature"* (Daughter of Organic Farmer 78).

Comments which related to the category of 'non-subsidy related financial motives' included: *"Financial"*; *"if we are not organic, we will get lower prices"*; *"growing for a niche market"*; *"low start up costs"*; *"save on chemical bills"*; *"making money"* and *"economic reasons"*. Figure 4.1 shows that 52% of organic farmers cited financial motives other than farm payments as one of the main reasons for their adoption of organic systems. This finding reflects a number of recent adoption studies, in particular McEachern and Willock (2004) and Koesling et al. (2005), but is contrary to others. Tranter et al (2007a), for example, found that these motives were the most important (in Great Britain), while they were less frequent in the past (in England and Wales) (see Vine and Bateman 1981).

[16] This quote came from the 'in-depth interview' with Organic Farmer 116.

Further, organic farmers in Massachusetts, USA, considered the financial advantages of organic farming to be small because of a lack of support from supermarkets (see Lockeretz 1995). The present research contributes to the literature on organic farming and supports recent studies which suggest that financial considerations are more apparent now in organic farming adoption decisions than they were in the past. This, in turn, is related to several factors which have encouraged entry into organic farming.

The organic market in the UK has grown over a number of years (OCW 2007; FMMRs 2008). Growth in the organic market can be connected with economic growth, low inflation and food safety scares (Ilbery and Kneafsey 2000; Padel and Foster 2005). Public demand for locally produced food and drink can also stimulate growth (Morris and Buller 2003; Ilbery et al. 2000), particularly in places such as Devon, which has a well-developed local food system (Winter 2003a; Ricketts Hein et al. 2006), and is an area in which organic farming is well-established (Ilbery et al. 1999; Lobley et al. 2009c). Many respondents in this study recognised the potential increase in demand for organic products and, as a result, had engaged in organic farming (see also below). The 'non-subsidy related financial motives' were strengthened further by existing difficulties within the non-organic sector, linked to agricultural crises and the high cost of inputs. As a result, several organic farmers sought alterations to their previous farming systems (see also Reed et al. 2002 for the reaction of family farms in Devon to the economic downturn). During the mid 1990s and again in early 2000s, BSE and Foot and Mouth Disease (FMD) affected farms in the UK. Devon was particularly badly affected by FMD, resulting in widespread losses (Winter 2003b: Parry et al. 2005). In response to this, there was tendency to take up conservation approaches such as organic farming methods. Sharp rises in chemical prices, for example the cost of nitrogen rose 81% between 1997 and 2007 in the UK (DEFRA 2008a), further encouraged the adoption of organic farming systems (see also Fuller 2003).

The survey data showed that 50% of farmers who had been farming extensively before registration, wanted to be able to sell their goods to supermarkets as organic. In other words, non-subsidy related financial motives encouraged 12 out of 24 un-registered organic and integrated farmers to register their farms with a certifying body. However, farms with extensive techniques are more likely to remain un-registered for a variety of reasons, such as having a direct link with consumers and/or being free from inspection (see Burton et al. 1999). This was the case for 3 out of 5 un-registered organic farmers in this research. The other two farmers had not registered their farms for different reasons; in one, the farmer felt that he was too old and the other farmed organically for conservation reasons, both were selling their goods to the conventional market.

'Challenge acceptance related motives' were cited by 13% of organic farmers, ranking it as the third main reason for their adoption of organic farming techniques (Figure 4.1). Comments linked to this category included: *"it is a challenge to farm properly without chemicals"*; *"taking risks in organic farming would be more interesting than the other options"* and *"it is a fresh challenge"*. In other words, organic farming satisfied 22 organic farmers who were content to seek out more risk in farming. This result is consistent with studies by Duram (1999) and Midmore et al. (2001), but opposes the findings of others such as de Lauwere et al. (2004), Koesling et al. (2005) and Flaten et al. (2006). Whereas this element ranked as the most important driver in some studies (e.g. de Lauwere et al. 2004), it was of secondary importance in others (e.g. Koesling et al. 2005; Flaten et al. 2006). Searching for a more challenging approach to farming (such as that offered by organic farming; see Section 5.6) poses the question 'which risks were perceived by organic farmers when their adoption decisions were made'? (this question will be addressed in Chapter 7, Section 7.3). Section 5.7.1 will show that 78% of organic farmers were, to varying degrees, willing to take risk in organic farming. This result and the finding that 13% of the organic farmers who took part in this study were in the 'challenge acceptance related motives' group will both contribute to a fundamental conclusion concerning the importance of willingness to take risk in organic farming in farmers' adoption decisions (see Section 5.7.4). However, the relatively low percentage of organic farmers who took up organic farming because they were looking for more challenges in farming is related to the fact that many of them did not have this desire (see also Darnhofer et al. 2005). 63% of organic farmers considered organic farming to be riskier than other farming systems (see Section 5.6), but only 13% of organic farmers sought out ways to increase their risk in farming because they enjoyed taking more risk.

The fourth category which describes the main reasons for the adoption of organic farming methods related to individual farm conditions. Examples of comments related to this category include: *"the farm was unofficially organic so it was easy for us"* and *"our small farm is well suited to organic farming, and we were running it using a small amount of fertilizers before conversion"*. It is important to note here that conversion to organic farming is likely to be easier for farms which are already using extensive methods, as substantial changes in techniques such as animal husbandry, for example, are not needed (Pagiola et al. 2005; Gay and Offermann 2006). Therefore, it was not surprising that 11% of organic farmers in Devon cited this key reason (Figure 4.1). This relatively low percentage may be explained by the fact that extensive techniques had already been used on some organic farms, and that other motives were more significant in driving adoption decisions. Similar motivations have also been found, with less frequency, in other adoption studies (e.g. Duram 1999).

Subsidies, improving farm incomes (see, for example, Lobley et al. 2009b), forms the fifth strongest set of motives for the adoption of organic farming in this study (10% of organic farmers cited these motives; see Figure 4.1). This result parallels other studies concerning organic farming payments (e.g. Koesling et al. 2005; Flaten et al. 2006). Further, as such financial motives do not contribute significantly to the farming income (Zander et al. 2008), this may explain why a relatively low share of organic farmers mentioned subsidies as a main reason for organic adoption. Despite this share, subsidies contribute to the development of the organic sector (Gay and Offermann 2006; Marsden and Sonnino 2008). This sector has received direct government payments since the early 1990s (see Section 2.5.2). Although direct financial support for organic farming was started under OASs (Organic Aid Schemes) in 1994 in the UK (Winter 2000), it seems that higher subsidies are likely to encourage more farmers to adopt organic farming (see Section 2.5.2). This is supported by the fact that 69% of organic farmers in this study, stating subsidies as a main reason for the uptake of organic farming, adopted this system in 2002 or later. This can be seen as a reflection of the fact that in 2005, for the first time, ongoing government financial support for organic farming was offered in the UK under a new scheme called OELS (Organic Entry Level Stewardship) (Tomlinson 2008). Further, this support – in England, under an action plan to develop and promote the organic sector – was also introduced in 2002 (DEFRA 2002a). In addition to these direct government payments, in 2005 SFP was introduced in the UK as a result of the 2003 reform of the CAP (Butler and Lobley 2007). This has offered indirect government financial support for organic farming as it targets agri-environmental measures and cuts the link between subsidies and production (Winter 2005; Gay and Offermann 2006).

Both subsidy and non-subsidy related financial motives were evident in this research (57% of organic farmers mentioned these key reasons). As mentioned above, the visibility of these drivers is related, for example, to a number of changes in agri-environmental policy in the UK. It is also consistent with the general shift in the willingness to practise organic farming highlighted in a number of recent studies (see Midmore et al. 2001; see also Section 2.5.2). However, according to Flaten et al. (2006) and Best (2008), financial incentives to enter organic farming have become more significant for Norwegian and German farmers who had previously shown little concern for the environment. This may mean that organic farming could be in danger of losing its identity, as ethical attitudes may become less important in driving decisions to adopt organic farming (see McEachern and Willock 2004). An example of this tendency is the case of Organic Farmer 61 who, when contacted for the purpose of arranging an in-depth interview, stated that he was leaving farming because of the collapse of the organic pig market. This farmer had been financially motivated to take up organic farming and accepted risk in organic farming (see also Section 4.4.2). Accordingly, possible future change in the financial returns of organic farming may affect attitudes towards risk in organic farming, stimulating widespread changes in the organic sector (Chapter 7 will explore this issue in greater depth). The literature shows that adopting conservation methods has resulted in changes in the environmental attitudes of farmers in Devon, amongst other places (Wilson and Hart 2001; Wilson 2004). However, potential changes in attitudes towards risk in organic farming in the future have been less well-documented.

The philosophy of co-operation between the environment and farmers (Scofield 1986; Stockdale et al. 2001; Vindigni et al. 2002; see also Section 2.3.1) was cited less often by organic farmers in this study than other sets of motives (8% in Figure 4.1). This finding is consistent with the findings of others such as Fairweather and Campbell (1996), de Lauwere et al. (2004) and Darnhofer et al. (2005). Comments concerning 'organic philosophy related motives' included: *"organic farmers like the concept, idea, methodology, whole ethos etc. of organic farming"* and *"less pressure on the grass, farm and farmer"*. The lower prominence of this set of motives further justifies the concern about the identity and core values of organic farming (see above). If financial incentives for organic farmers increase, many non-organic farmers may choose to take up organic farming (see Section 7.2). In other words, many non-organic farmers may adopt organic farming because of financial incentives rather than because they accept its philosophy.

This section has analysed and interpreted the responses of organic farmers in relation to their main reasons for the uptake of organic farming. Key motives were grouped into six categories, which ranged in prominence from 65% down to 8%. 'Public goods related motives' were cited by the highest number of farmers, 'organic philosophy related motives' by the least. This, then, poses a question about the main reasons for the non-adoption of organic farming methods. Section 4.6 will show that decisions to reject organic farming methods were, to a large extent, related to attitudes towards a variety of risks in organic farming.

4.6 Main reasons for non-adoption of organic farming systems

Using empirical data gathered from questionnaires and 'in-depth interviews' (see Appendices One and Two), this section will examine why the non-organic farmers within the study sample had chosen not to convert to organic farming systems.

As can be seen from Figure 4.2, the reasons given for non-adoption could be grouped into five main categories. The avoidance of risks associated with production was cited as one of the strongest main reasons for non-adoption (39% of respondents cited this as a key reason). The types and sources of production risks cited included problems controlling weeds, pests and diseases, difficulties in maintaining soil quality, difficulties in maintaining livestock quality, potentially lower yields, unsuitable farm characteristics and undesirable weather. Within the literature, a number of adoption studies have reported similar risks as barriers preventing the uptake of organic farming (e.g. Fairweather and Campbell 1996; Schneeberger and Kirner 2001; Midmore et al. 2001; Baecke et al. 2002). Chapter 5 will examine this issue in detail, comparing organic and non-organic farmers in terms of their perceptions of, and attitudes towards, risk in organic farming.

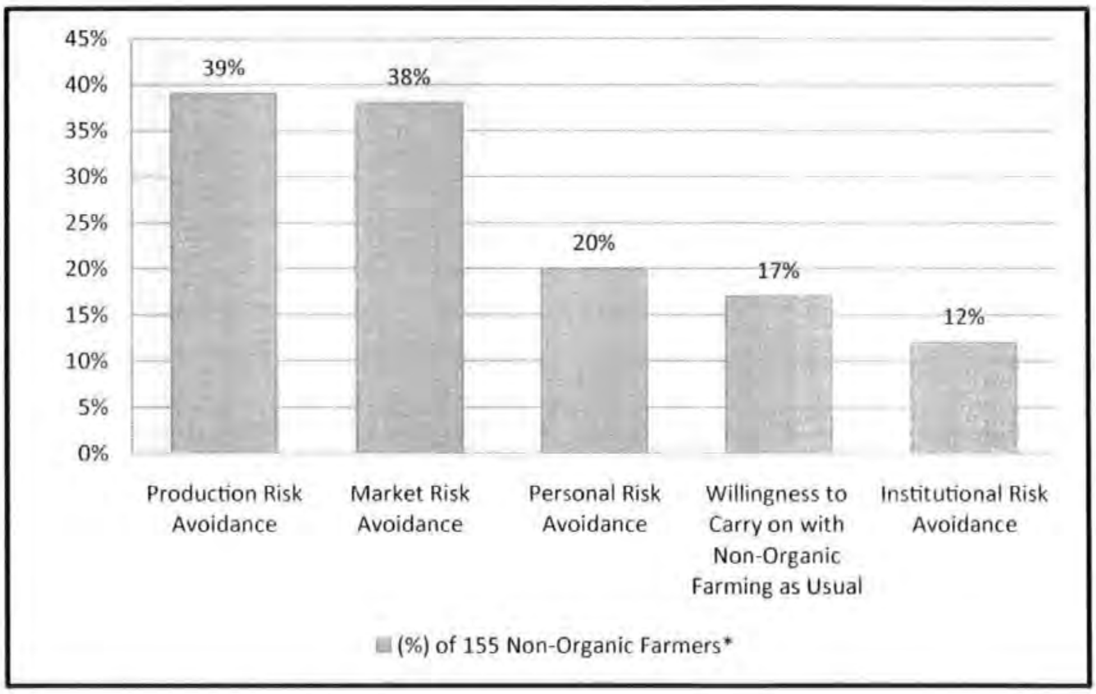

Figure 4.2: Main reasons for the non-adoption of organic farming systems (Source: Author's questionnaire 2008)
* Responses were not mutually exclusive

The survey data revealed that many non-organic farmers felt that crop rotation, green manure, compost, biological pest control, cultivation, mulching and limited use of chemicals were complex, difficult and/or ineffective (organic) farm management practices (CRER 2002; Lampkin 2002; Hanson 2003; Guan et al. 2005). Non-Organic Farmer 44 (see Box 4.2), for example, argued during the 'in-depth interview' that:

> *"Because of the huge number of worms in our own livestock, we cannot do it organic. The antibiotic......we cannot give them if we are organic to cure the animals. Organic methods cannot keep the weeds under control. They are too complicated".*

Another non-organic farmer mentioned during the 'in-depth interview' lower yields as an issue:

> *"I have looked at the possibility of becoming organic. I have reduced the use of chemicals, but I do not see the advantage of being fully organic. I do not think it will ever be adequate to feed the world. I trust in organic. I just do not think it is the way for the future for me and the nation. There are a lot of good things in organic, a lot of good principles. To be purely organic, that would cause some problems for our fields, livestock, and grass"* (Non-Organic Farmer 104).

Organic farming techniques were therefore not adopted because of unwillingness to take production related risks. Another argument used against the adoption of organic farming methods related to farm characteristics. Non-Organic Farmer 140, for example, stated that the low quality of his soil played an important role in his decision not to convert to organic farming methods (see Section 5.2.2). This decision was also related to the potential influence of bad weather on the productivity of organic methods (see Section 5.2.3).

Alongside the avoidance of production-related risks, avoidance of market-related risks was also a strong deterrent preventing organic adoption. As can be seen from Figure 4.2, 38% of non-organic farmers in Devon expressed concern over the organic market. Issues cited included: *"cost and availability of feeds and/or workers"*; *"niche market"*; *"as living costs rise, less people will pay for organic"*; *"unstable premium"* and *"if we went organic, we would face low returns"*. Several studies have recognised the essential role played in adoption decisions by market risks associated with organic farming (see, for example, Schneeberger and Kirner 2001; Baecke et al. 2002; de Lauwere et al. 2004; Gundogmus 2007).

According to questionnaire and 'in-depth interview' data, many non-organic farmers in Devon were pessimistic about the organic market. A number of these farmers mentioned, for example, *"increased demand"* and/or *"rise in costs"* as reasons for difficulties in finding organic inputs at reasonable prices and, as a result, they remained non-organic. Further, since organic systems tend to be more labour intensive (Fasterding and Rixen 2006), this results in higher production costs (Gil et al. 2000). A number of non-organic farmers in this study, who were more strongly financially-orientated (see Section 4.4.3), preferred not to adopt organic farming because they felt that *"not many people would be available to be employed"*, or they *"could not afford to employ anyone"*. Although some have argued that recent food supply chains – albeit heterogeneous – are quality guided (e.g. Marsden 2000; Evans et al. 2002; Ilbery and Maye 2005; Mikkola 2008; Jarosz 2008), many non-organic respondents did not believe that this demand would result in higher net financial returns (see Jarosz 2008) as they saw it as *"too small"* or not *"enough"* (see Ilbery et al. 2004; Wilson 2007). Other non-organic farmers did not convert to organic systems because they felt that the purchase of organic food was strongly related to food safety crises and/or the financial security of consumers (see Hinchliffe 2001; Hallam 2003; Padel and Foster 2005). In other words, *"in times of down-turn in the economy, people will not be able to afford organic"*[17] (Non-Organic Farmer 132; see also Section 8.4). Further, recent high adoption rates and/or increases in imported organic produce were seen to result in an *"oversupply"* that was more likely to reduce the organic premium (see SAO 2004), and that demand could not absorb this oversupply (see Smith and Marsden 2004). As the organic premium was seen as *"uncertain"* (see also Lien et al. 2006b; Acs et al. 2009), a number of traditional farmers in this study did not wish to forgo some of their farming income (see also Flaten et al. 2005) and would not therefore switch to organic systems (see also McCann et al. 1997).

[17] This quote came from the 'in-depth interview' with Non-Organic Farmer 132.

The third key set of deterrents mentioned by farmers in this study as preventing them from adopting organic techniques were based on the avoidance of personal risks. Comments included: *"organic farming needs very high standards of management"*; *"it is more technically demanding"*; *"organic is a con, swindle, etc."* and *"no faith in organic farming"*. Avoidance of personal risks was cited by 20% of non-organic farmers as a key reason for non-adoption (Figure 4.2). The issue of personal risks has been addressed in several organic adoption studies, including Lockeretz (1995), Midmore et al. (2001) and Darnhofer et al. (2005).

According to Ajzen (2002), individuals hold various levels of self-capacity, which play an important role in determining their willingness to embark on an activity (McGinty et al. 2008). Therefore, it was no surprise to find that a number of non-organic farmers in this study did not trust their skills sufficiently to enable them to adopt organic farming systems (Padel 2001b; Genius et al. 2006). This, in turn, may indicate that organic farming requires additional skills (Mackay et al. 2002) which non-organic farmers may be unwilling to learn. These farmers may be hesitant to accept advice and training from consultants and specialists because they may have been farming for many years (de Buck 2001). In addition, they may find it difficult to learn higher skills with which they are not familiar (McEachern and Willock 2004). This difficulty is more likely to be overcome if farmers have a positive image of organic farming, and accept the likely benefits of conversion (Kaltoft 1999; Baecke et al. 2002). A number of non-organic respondents, who did not want to convert to organic farming because they were not convinced of its principles and philosophy, displayed imperfect knowledge of organic policy:

> *"I do not believe in organic farming. Organic farming is a farce. They are not supposed to use non-organic materials, but if they are in trouble, they can get food from non-organic sources.....they can get drugs if their animals are ill"*[18] (Non-Organic Farmer 114).

Further, and as suggested by Beus and Dunlap (1990) and Burton and Wilson (2006), several non-organic farmers in this study were against organic farming because they felt that organic methods were trying to replace their more traditional farming systems (see Section 4.4.1). Another possible explanation for opposition to organic farming is related to the media, in which organic farming is often depicted as 'good' and more conventional (non-organic) farming as 'bad'. In 2005 and 2007, for example, it was asserted that *"organic farms are best for wildlife"* and *"organic food is better for your heart"* (see BBC news 2005b; BBC news 2007). This type of media pressure pushed a few non-organic farmers in this study to become more entrenched in their opposition to organic farming techniques (see Section 5.5.2). However, it should also be borne in mind that media pressure may also encourage the adoption of organic systems (Gardebroek 2006).

Another set of main reasons preventing the adoption of organic methods was based around a desire to continue to run the farm unchanged. As can be seen from Figure 4.2, 17% of non-organic farmers expressed this desire. This outcome is consistent with the findings of Lockeretz (1995) and de Lauwere et al. (2004). Typical views expressed by farmers in this study included: *"we just carry on as we are"*; *"I am happy as I am"* and *"I am near the end of the road"*. This category ranked fourth among the key reasons for non-adoption of organic systems. It is also likely to be connected to the ideologies of non-organic farmers about their farming systems (Bell et al. 2004; Lockie and Halpin 2005) and/or with relevant production trajectories (Burton and Wilson 2006). Non-Organic Farmer 149, for example, stated during the 'in-depth interview':

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[18] These qualitative data were collected in the course of the 'in-depth interview' with Non-Organic Farmer 114.

"We are happy to farm in the same way as we always have. I do not think there is anything wrong with conventional farming. Our system has survived for 300 years".

This non-organic farmer expressed a degree of commitment to conventional farming methods (see Box 4.6). This commitment, which does not necessary reflect a stance opposing organic farming, highlights a range of different attitudes and values held by non-organic farmers. For example, these farmers may think that nature should be under their control (Beus and Dunlap 1990). Further, this commitment may also indicate that such farmers may convert to organic farming when the environment of their farming system changes (see Chapter 7). However, another implication of the propensity of 17% of non-organic farmers to maintain their existing farming systems was related to the retirement age of the respondent. Altering the current farming system was seen as unlikely or unwise, given their proximity to retirement age (Feder and Umali 1993):

"Well, I am 60 years old, so I am not going to alter; I think I will retire after five years. If we had done it [organic farming] 10 years ago, we might have been slightly better off. The market is more stable now"[19] (Non-Organic Farmer 147).

The least important category of main reasons preventing farmers in this study from adopting organic farming methods was centred on the avoidance of institutional risks. The results in Figure 4.2 show that 12 % of non-organic farmers in Devon did not want to take risks associated with organic regulations, bureaucracy and certification. This relatively low percentage is related to low levels of knowledge of organic policy amongst non-organic farmers (see, for example, the comments made by Non-Organic Farmer 114, above). Further, a number of the production and market risks mentioned above may be implicitly related to undesirable organic policy. However, and as stated in a radio broadcast by key stakeholders from two UK certification bodies on the 12th of October 2008 (see BBC Radio Four 2008), standards-based organic farming regulations are necessary to reassure

[19] This quote came from the 'in-depth interview' with Non-Organic Farmer 147.

consumers. Further, these regulations provide detailed guidance on agricultural inputs and methods, which must be adhered to in order to achieve organic certification (Lampkin 2002). A few non-organic farmers in this study saw these standards as *"difficult"* or *"restricted"* and felt that there were *"too many of them"*. Also, registration, inspection and certification, which require additional paperwork and effective record keeping (Roderick et al. 2004), were considered to be overly bureaucratic and registration fees were felt by some farmers to be prohibitive:

> *"I could get certification if we wanted to, but the cost of the licence, which is about 500 pounds, would take a percentage of the income. Also, all the red tape which surrounds organic agriculture can potentially put a stranglehold around my neck"*[20] (Non-Organic Farmer 104).

This section has emphasised the importance of attitudes towards different risks associated with organic farming (see Sections 1.5, 5.7.4 and 8.2.1). Non-organic farmers did not convert to organic farming primarily because they wanted to avoid what they perceived to be the production, market, personal and institutional risks associated with organic farming. Only 8% of non-organic farmers in this study cited a desire to carry on as they were as the only major reason why they had not adopted organic farming methods.

4.7 Conclusions

This chapter has analysed and interpreted the different characteristics of a sample of organic and non-organic farmers in order to understand the importance of their willingness to take risk in influencing organic adoption decisions. Both groups of respondents were similar in terms of their age profiles, but the organic sample included more female farmers

[20] This quote came from the 'in-depth interview' with Non-Organic Farmer 104.

than did the non-organic sample. Further, organic farmers tended to be better educated and had spent less time in farming compared to their non-organic counterparts. Organic farms were also generally smaller, produced less income and were more likely to fall within the 'others' category. The 'livestock' category in this study included more non-organic than organic farms.

With regard to farming goals, willingness to make a profit out of farming and willingness to enjoy the farming lifestyle were important to both organic and non-organic farmers in Devon. Organic farmers wanted to generate various public goods from farming, compared to their non-organic counterparts who were more willing to make a living out of farming.

Organic farmers took up organic farming for several main reasons. The production of public goods associated with organic farming played an essential role, while only 8% of organic farmers in Devon mentioned the importance of the organic farming philosophy. As both subsidy and non-subsidy related financial motives were highly visible, this suggests that the loss of belief in core organic values among farmers may therefore become a risk in the future. For the vast majority of non-organic farmers, their lack of willingness to take what they perceived to be risks associated with organic techniques was a dominant factor in preventing them from converting to organic agriculture.

The similarities and differences between organic and non-organic farmers have been shown in this chapter to be based on a range of different drivers. This finding confirms the assumption that more than one factor controls individual decision-making. Chapter 5 will now focus on farmers' perceptions of, and attitudes towards, risk.

Chapter Five: Farmers' perceptions of, and attitudes towards, risk

5.1 Introduction

Having examined in Chapter 4 several socio-economic characteristics associated with organic and non-organic farmers in Devon, and identified the main reasons for their adoption or non-adoption of organic farming techniques, this chapter will focus on farmers' perceptions about types and sources of risks in organic farming, and their attitudes towards risk. Section 5.2 will compare organic and non-organic farmers in terms of their perceptions of production risks in organic farming. Section 5.3 will then focus on market risks in organic farming. The institutional risks associated with organic farming will be the subject of Section 5.4. Section 5.5 will analyse and interpret organic and non-organic farmers' perceptions of the personal risks associated with organic farming and Section 5.6 will compare risks in organic farming with those in other farming systems. Section 5.7 will discuss the willingness of both organic and non-organic farmers to take risk. This section will also assess the importance of farmers' willingness to take risk in terms of their decisions about whether or not to take up organic farming. Section 5.8 concludes this chapter.

5.2 Production risks

The purpose of this section is to describe and analyse farmers' perceptions of production risks in organic farming. To this end, previous experience in different farming systems will be taken into account. Technical risks, farm-related risks and weather-based risks associated with organic farming methods will also be examined. Each of the perceived risks examined in this chapter (Sections 5.2, 5.3, 5.4 and 5.5) were identified by organic farmers in response to the question: "*Which risks in organic farming are of concern to you now?*" and by non-organic farmers, who were asked: "*In your opinion, which risks do organic farmers face now?*". As in Chapter 4, 'no' in Tables 5.2–5.10 refers to the fact that the relevant risks were not cited in response to these questions.

According to Weber and Milliman (1997), practical experience of a specific activity, such as the stock market, affects perceptions of risks associated with that activity. Therefore, in order to understand non-organic farmers' perceptions of organic farming risks in this study, it is important first to briefly discuss whether or not these farmers had any prior involvement in the organic sector. Table 5.1 shows that a very low proportion of non-organic farmers in this study (2%) had any previous practical experience of organic farming[1]. Non-organic farmers' perceptions of risks in organic farming were therefore not related to any previous involvement in organic farming.

(%) of 153 Non-Organic Farmers*	Conventional	Integrated	Organic	Conventional and Organic
	95%	3%	0%	2%

Table 5.1: Non-organic farmers' experience of farming systems
(Source: Author's questionnaire 2008)

* Out of 155 non-organic farmers, only two had not been involved in any other type of farming before operating their current farms

[1] A large number of non-organic farmers identified farming systems in which they had been involved as conventional, although IFS was described by the researcher – on request – and these farmers stated that these systems had, to some degree, reduced the use of chemicals.

5.2.1 Technical risks

The technical risks associated with organic farming are related to problems with control of weeds, pests and diseases; difficulties in maintaining good soil quality; difficulties in maintaining enough livestock; and low yields. The 'technical risks' category did not significantly affect the status of farmers in this study. Both organic and non-organic farmers had fairly similar thoughts about the technical risks associated with organic farming (p=0.675, Table 5.2). This result agrees to some extent with Lockeretz (1995), who found that in Massachusetts, USA, non-organic farmers shared their organic counterparts' perceptions of the difficulties in controlling insects and diseases.

		Technical Risks		Total
		No	Yes	
Organic Farmers	Count	59	109	168
	Expected Count	57.2	110.8	168
Non-Organic Farmers	Count	51	104	155
	Expected Count	52.8	102.2	155
Chi-Square Test		**DF**	**P**	**Significance**
		1	0.675	N.S.

Table 5.2: Chi-square test for technical risks and farmer status
(Source: Author's questionnaire 2008)

As discussed in Section 2.6.1, organic management brings with it a variety of technical concerns (see also Lee 1992; Strange 1993; Vaarst et al 2003; Park and Lohr 2005; Olesen et al. 2007; Gardebroek et al. 2010). Therefore, it should not be surprising that 65% of organic farmers in this study were facing a range of technical risks. These farmers saw organic production, for example, as "*complex*" and/or "*much more technically difficult*". Further, it was stated during an 'in-depth interview', for example, that "*with non-organic farming systems, the farmer can rectify his mistakes with sprays and fertilizers, but this is not so in the case of organic farming*" (Organic Farmer 22). Such technical risks were also perceived by 67% of non-organic farmers as being a concern in organic farming. These farmers cited their practical experience of farming, and knowledge of organic farming techniques, to express the existence of these risks. Non-Organic Farmer 104, for example, who had tried to farm organically but did not continue to do so as he faced technical difficulties (see Section 4.6), stated during the 'in-depth interview' that: "*Weed and pest control are problems for organic farmers…… .Organic is too difficult*". Also, Non-Organic Farmer 103, who was the fourth generation of his family to farm non-organically, stated during the 'in-depth interview':

> *"Once or twice I have missed spraying arable. If that is my impression of organic, that is enough for me……. I think organic farmers face problems with weed control with grass and arable".*

5.2.2 Farm-related risks

Farm-related risks refer to a range of farm characteristics, which were perceived to have an impact on ability to farm organically. Examples of these risks are; poor quality soil, small farm size and/or intensity of farming system. Table 5.3 shows that in this study there was a significant relationship between farm-related risks and farmer status (p=0.000). Non-organic farmers tended to mention these risks more than their organic counterparts did (see also Midmore et al. 2001).

		Farm-Related Risks		**Total**
		No	Yes	
Organic Farmers	Count	166	2	168
	Expected Count	151.4	16.6	168
Non-Organic Farmers	Count	125	30	155
	Expected Count	139.6	15.4	155
Chi-Square Test		**DF**	**P**	**Significance**
		1	0.000	***

Table 5.3: Chi-square test for farm-related risks and farmer status
(Source: Author's questionnaire 2008)

The results shown in Table 5.3 are explained by direct or indirect exposure to farm-related risks (see Pennings and Wansink 2004). As a few of the organic farmers in this study were facing problems caused by their farms (see, for example, Section 4.5), it is not surprising to discover that only 1% of these farmers mentioned farm-related risks (Table 5.3). On the other hand, non-organic farmers often linked their main reasons for not taking up organic farming (see Section 4.6) with their perceptions of the risks faced by organic farmers (see Pietola and Lansink 2001). For example, a 60 year-old non-organic respondent said during the 'in-depth interview':

> *"I did not convert to organic farming because the land has low fertility; it is grade four and five. It is poor quality; we could not produce anything here using organic methods. If I have another farm with high quality soil, I would not go organic as I would get less produce..... . Organic farming requires good quality land"* (Non-Organic Farmer 140).

As some non-organic farmers in this study did not convert to organic systems because of their farm characteristics (see Section 4.6), the existence of farm-related risks in organic farming was cited by 19% of these farmers. This, in turn, may explain the results shown in Table 5.3.

5.2.3 Weather-related risks

According to the results from this study, there was no significant relationship between farmer status and perceptions of weather as a source of production risk in organic farming ($p=0.817$, Table 5.4). Weather-related risks were mentioned by 9% of organic farmers and 10% of non-organic farmers. Some of these farmers pointed to their concern about the negative influence of unfavourable climate on agricultural production, irrespective of the applied farming system (Hall et al. 2003; Hanson 2003; Lee et al. 2008). Further, others suggested that unexpected weather conditions would be of greater concern to organic farmers than to non-organic farmers (Spoolder 2007). During the 'in-depth interviews', Non-Organic Farmer 103, for example, argued that:

> *"Organic farming……is dependent on good weather. If you are growing a crop, you hope the crop will grow fast. If you have a summer like last summer [2007], which was very wet, weed will take over the crop since you cannot use extra fertilizer and herbicide when necessary".*

Similarly, an organic farmer suggested that:

> *"You are very dependent on the weather, more so than with conventional farmers. If you have got a field of corn, and it goes all yellow with mildew, you do not intervene; you have to be patient and allow nature to heal the damage"* (Organic Farmer 38).

		Weather-Related Risks		Total
		No	Yes	
Organic Farmers	Count	153	15	168
	Expected Count	152.4	15.6	168
Non-Organic Farmers	Count	140	15	155
	Expected Count	140.6	14.4	155
Chi-Square Test		**DF**	**P**	**Significance**
		1	0.817	N.S.

Table 5.4: Chi-square test for weather-related risks and farmer status
(Source: Author's questionnaire 2008)

Accordingly, this study suggests that specific weather conditions can have a more negative effect on organic farming, which mainly depends on cultural methods and on minimising the use of chemicals, than on other farming systems (see also de Buck et al. 2001). Here, it is important to note that the literature on organic farming suffers from a lack of possible explanations for this effect.

This section has shown that in this study, farm-related risks associated with organic production were perceived to be of concern by more non-organic than organic farmers. Both groups, however, cited the existence of technical and of weather-related risks associated with organic farming. As the existence of technical risks was mentioned by 65% of organic farmers and 67% of non-organic farmers, these risks were perceived as the greatest risks in terms of organic production. This finding reflects a growing consensus among farmers about the difficulties in implementing organic farming techniques, particularly when chemical use is limited. Having analysed and explained farmers' perceptions of production risks in organic farming, this raises the question about farmers' perceptions of other types and sources of risk. Accordingly, market risks associated with organic farming will be the focus of the next section.

5.3 Market risks

Market risks, which reflect the characteristics and power of the organic market, will be described and analysed in this section. Section 5.3.1 will focus on risks related to production inputs and facilities and Section 5.3.2 will investigate risks associated with financial returns.

5.3.1 Risks related to production inputs and facilities

The results of a chi-square test, shown in Table 5.5 indicate that risks in organic farming related to production inputs and facilities are not associated with farmer status (p=0.090). The organic and non-organic farmers in this study expressed similar views about the costs and availability of organic feed, fuel, labour and organic slaughter (see also Lockeretz 1995).

		Risks Related to Production Inputs and Facilities		Total
		No	Yes	
Organic Farmers	Count	116	52	168
	Expected Count	122.7	45.3	168
Non-Organic Farmers	Count	120	35	155
	Expected Count	113.3	41.7	155
Chi-Square Test		**DF**	**P**	**Significance**
		1	0.090	N.S.

Table 5.5: Chi-square test for risks related to production inputs and facilities, and farmer status
(Source: Author's questionnaire 2008)

According to the results from this study, non-organic farmers relied heavily on their practical experience of farming, talking to organic farmers and/or observations, to assess the risks related to organic production inputs and facilities (see Section 5.4). Non-Organic Farmer 114, for example, stated during the 'in-depth interview': *"Organic farmers now have very high feed costs because organic cereals have gone up. These farmers cannot get enough organic cereals to feed their livestock"*. The findings shown in Table 5.5 are closely tied to interactions between supply and demand, as well as inflation (Helmberger and Chavas 1996; Ilbery et al. 2004; DEFRA 2008c; Lobley et al. 2009c). These elements seem to strongly influence the cost and availability of organic feed, which was the main concern raised by both groups. Imported organic feed is not always available at reasonable prices. Organic farms in the UK cannot keep pace with growing demand since, for example, many specialist farms have begun to adopt organic farming techniques (see, for example, Section 4.2.2). This was also the view broadcasted, for example, by a number of key stakeholders, including Lawrence Woodward, on the 'Food Programme', 12th of October 2008 (see BBC Radio Four 2008)[2]. Having more livestock than the farm is capable of growing feed for is also a key factor here. 'In-depth interview' data provided evidence of this issue:

[2] Mr. Woodward is the director of EFRC (Elm Farm Research Centre) which is a centre for research and promotion of organic agriculture.

> "*I face problems getting winter fodder. I do not want to reach a point where I am no longer self- sufficient. For my farm, I should have a base of 8 cows, but at the moment I have 14 cows. That means I have to buy in winter fodder. It is very expensive and not easy to find. It is also against organic principles. I should be self-sufficient*" (Organic Farmer 83).

Further, at the time of the questionnaire survey (i.e. early 2008), prices of organic feed had risen. This was raised as an issue by many farmers during the 'in-depth interviews'. Richard, for example, who had not been involved in farming before (see Box 6.2), said:

> "*The price I paid for feedstuffs for sheep was £210 per ton last year; they are £380 this year [2008]. I think I will pay more in the future*" (Organic Farmer 43).

Growing concern about prices, in particular for organic feed and fertilisers, was partly related to inflation (see also, for example, Sections 4.5 and 4.6). This economic phenomenon decreases purchasing power, brings a high level of uncertainty and affects economic activity (Hayford 2000; Wu et al. 2003). High inflation may force farmers to pass on these additional costs to consumers, who may then choose not to buy expensive organic produce and the net financial returns of organic farming are therefore likely to suffer.

5.3.2 Risks related to financial returns

Risks to financial returns refer to farmers' perceptions of elements which negatively affect the price of organic produce. Risks associated with financial returns were seen as more of a problem by non-organic farmers than their organic counterparts in this study (p=0.000, Table 5.6). This finding is consistent with some studies, such as Lockeretz (1995), but it runs counter to other studies. A Norwegian-based study by Flaten et al. (2005), for example, found that more organic than non-organic farmers perceived instability in organic premiums as a source of financial risk. In Flaten et al.'s (2005) work, it was suggested that non-organic farmers had less knowledge of the unsteady organic market.

		Risks Related to Financial Returns		Total
		No	Yes	
Organic Farmers	Count	101	67	168
	Expected Count	84.3	83.7	168
Non-Organic Farmers	Count	61	94	155
	Expected Count	77.7	77.3	155
Chi-Square Test		**DF**	**P**	**Significance**
		1	0.000	***

Table 5.6: Chi-square test for risks related to financial returns and farmer status (Source: Author's questionnaire 2008)

The result shown in Table 5.6 can be explained by an association between farm size and perception of risk related to the financial returns from organic farming (Meuwissen et al. 2001). In this study, a significant relationship was found between farm size and perception of risk in the non-organic sample, but not in the organic sample (p=0.037, Table 5.7). Risks associated with potentially lower financial returns from organic farming were cited by non-organic farmers with farms over 99 hectares (it should be noted here that there were more non-organic farmers in this category compared to organic farmers (see Section 4.2.1)). This may be a reflection of the higher sensitivity to risks of these individuals, as large farms are more likely to produce higher quantities of products (Barrett 1996; Assuncao and Ghatak 2003; Sarker and Itohara 2010; see also Section 4.2.3). In other words, non-organic farmers with large farms would be subject to higher financial pressures than smaller non-organic farms. This, in turn, partly explains why several factors negatively affecting the price of organic farm produce were mentioned by non-organic farmers in Devon.

				Farm Size		Total (155)
				1-99 (hectares)	Over 99 (hectares)	
Non-Organic Farmers	**Risks Related to Financial Returns**	No	Count	39	22	61
			Expected Count	32.7	28.3	61
		Yes	Count	44	50	94
			Expected Count	50.3	43.7	94
Chi-Square Test				**DF**	**P**	**Significance**
				1	0.037	*

Table 5.7: Chi-square test for farm size and risks related to financial returns for non-organic farmers
(Source: Author's questionnaire 2008)

The results of chi-square tests did not suggest a significant relationship between either dependency on farming income or the aim of 'making a profit' (see Sections 4.2.3 and 4.4.2), and organic and non-organic farmers' perceptions of risks related to financial returns of organic farming. Nevertheless, the result shown in Table 5.6 can be explained by non-organic farmers' interpretations and good knowledge of several factors, including niche markets, rise in prices, unstable organic premiums, oversupply, imports, low production, regulations and organic husbandry, which can all have a potentially negative influence on the financial returns of organic farming (see also Darnhofer et al. 2005). For example, Non-Organic Farmer 73 argued during the 'in-depth interview' that: *"to be organic, you have got to lower your stock rate. And I do not think it is worth it. The extra money you get on the organic side would not save that. I do not think there is strong demand to reduce the stock and to appreciate the financial returns you get with it. The only risk I can see is the niche market"*. Further, Non-Organic Farmer 140, who was operating a dairy farm, stated during the 'in-depth interview': *"I think people will not be able to buy organic food. Food, in general, is going to be in short supply"*. It should be reiterated here that the avoidance of potentially poor financial returns from organic farming played a key role in preventing farmers from converting to organic methods (see Section 4.6). On the other hand, the lower level of concern expressed by organic farmers over these risks is a reflection of their optimism, based on what they perceived as a growing organic market (see also Midmore et al. 2001 in contrast with Flaten et al. 2005). This optimism played a key role in their decision to adopt organic farming systems (see Section 4.5). Further, and as will be shown later in Chapter 7, the 'pragmatic organic farmers' in this study tended to be satisfied with their financial returns from organic farming. However, the results shown in Table 5.6 may be subject to change if farmers' perceptions of risk are assessed in times of recession. This is related to the fact that the organic market was perceived to be negatively affected by the recession which happened in the UK after the completion of the questionnaire survey (see Section 8.4).

The analyses above have shown that organic and non-organic farmers had similar perceptions of organic market risks, which were related to the availability and costs of production inputs and facilities. In contrast, the two groups differed in terms of their perceptions of the risks associated with the potential financial returns from organic farming. This is partly attributed to their sensitivity to, and interpretations of, these risks. Perceptions of the institutional risks associated with organic farming are the subject of the next section.

5.4 Institutional risks

This section will examine the perceptions of organic and non-organic farmers in this study in terms of risks related to the institutional context of organic farming.

The statistical analysis in Table 5.8 shows that there are no significant differences between organic and non-organic farmers in terms of their perceptions of institutional risks ($p=0.282$). This finding concurs with other studies (see, for example, Midmore et al. 2001).

		Institutional Risks		Total
		No	Yes	
Organic Farmers	Count	119	49	168
	Expected Count	123.3	44.7	168
Non-Organic Farmers	Count	118	37	155
	Expected Count	113.7	41.3	155
Chi-Square Test		**DF**	**P**	**Significance**
		1	0.282	N.S.

Table 5.8: Chi-square test for institutional risks and farmer status
(Source: Author's questionnaire 2008)

Organic farming regulations, agricultural policy, relevant bureaucracy and certification costs – with which organic farmers should comply – are subject to change and debate (Mansfield 2004; Vaarst et al. 2004a; Gibbon 2008; SAO 2008). Therefore, it can be assumed that organic farmers who are directly exposed to this type of risk (see Section 4.6), are more likely to assign higher importance to these risks than other farmers (Koesling et al. 2004). However, it is interesting to note that no organic farmer mentioned information-related risks (see Section 2.6.3; see also Midmore et al. 2001). Stephen Roderick, the organic programme co-ordinator for OSC (see Table 3.3), commented in this respect:

> *"I am not surprised by this. I think there is more good general information about organic farming available through different sources like this centre. The Soil Association also provides quite a lot of practical information. I think that requests for information are now more detailed and more specific, ...a good example would be fertility building...... Farmers do pay for some information, but on a group basis we were able to provide some subsidised information, so farmers receiving commercial information can be subsidised at a certain level through the Regional Development Programme"*

Further, organic farmers were also satisfied with subsidies offered to them (see Section 4.5; see also Firth and Schmutz 2004; Padel et al. 2004). Consequently, it was no surprise to find that only 29% (i.e. 49 respondents) of organic farmers mentioned institutional risks with regard to organic farming regulations, policy, etc. (see Table 5.8). However, it is important to note that non-organic farmers in this study demonstrated imperfect knowledge of organic policy (see Section 4.6). It appears that the different sources which provide information about organic policies are neither sufficient nor efficient. Non-Organic Farmer 103, for example, stated during the 'in-depth interview':

> *"My knowledge of organic farming is mainly from what I hear really.....talking to people and organic farmers. What I know about organic farming regulations is just general. I know sorts of things like you need two years to be organic. They are just things you pick up from chatting".*

Accordingly, certification bodies in the UK, for example, should do more to disseminate information to both organic and non-organic farmers:

> *"In the standards department, we are regularly updating the standards, and we need to communicate this to our licensees. We do this by consulting by email and then telling all affected licensees when new standards have been passed. It is up to licensees to keep an eye on the certification website for updates, and we also inform licensees through our licensee magazine called 'Certification News'. Our inspectors also have a role to play in making sure that licensees are aware of new standards that may affect their business. Each licensee has a 'Committed Certification Officer', and they will also communicate anything they need to know to them"*[3] (Soil Association Organisation employee).

The low score for perceived institutional risks in the non-organic sample (24%, Table 5.8) can therefore be related to imperfect knowledge of organic policies.

This section has shown that few organic and non-organic farmers in this study perceived institutional risks to be an issue in organic farming. This was mainly related to organic farmers' satisfaction with the institutional context of organic farming, and to the imperfect knowledge of organic policy found within the non-organic sample. This enriches our understanding about farmers' perceptions of institutional risks in organic farming, but what

[3] This quote came from the 'in-depth interview' with a stakeholder from the SAO.

about personal risks? The next section will describe and analyse these risks from the farmer's point of view.

5.5 Personal risks

Risks related to farmers' skills and belief, and representations of personal risks in organic farming, will each be described and analysed in this section. Personal risks in organic farming are connected with risks arising in the personal context of the individual farmer (see Section 2.6.4).

5.5.1 Risks related to farmers' skills

The data in Table 5.9 suggests that risks related to farmers' skills are not associated with farmer status (p=0.212). In other words, not meeting the high level of skills required for organic farming did not seem to be a factor affecting organic/non-organic status.

		Risks Related to Farmers' Skills		**Total**
		No	Yes	
Organic Farmers	Count	163	5	168
	Expected Count	160.7	7.3	168
Non-Organic Farmers	Count	146	9	155
	Expected Count	148.3	6.7	155
Chi-Square Test		**DF**	**P**	**Significance**
		1	0.212	N.S.

Table 5.9: Chi-square test for risks related to farmers' skills and farmer status (Source: Author's questionnaire 2008)

According to Table 5.9, 3% of organic farmers acknowledged that their skills were not fully adequate for the requirements of organic farming. These farmers emphasised that organic farming was a continual learning process and they had been learning from the start (see also Winter 1997). However, the low level of risk expressed suggests that almost all organic farmers were able to acquire the skills that they needed for organic farming (see, for example, Box 4.5; see also Midmore et al. 2001).

The data from this study suggests that the risks in organic farming which non-organic farmers wanted to avoid by not converting to organic farming methods were often the risks which these farmers perceived to be of concern in organic farming (see also above). According to Section 4.6, lack of skills and/or inability to learn were the main reasons preventing some non-organic farmers from adopting organic farming methods. It is therefore not surprising to discover that only 6% of non-organic farmers in this study stated risks related to farmers' skills as a concern in organic farming. This percentage may also be attributed to the fact that the majority of non-organic farmers thought that organic farmers were learning by doing (de Buck et al 2001; Burton 2004b). Consequently, this can explain why organic and non-organic farmers shared the same views on the risks related to skills (Table 5.9).

5.5.2 Risks related to farmers' belief

Risks related to farmers' belief in organic farming are highlighted in the following quotes, *"I do not think organic is the best thing"*; *"I do not know if there are any true organic systems"* and *"I am not convinced about organic"*. In other words, these risks were connected with farmers' scepticism and criticism of organic farming philosophy and principles. They also significantly affected organic/non-organic status (p=0.004, Table 5.10). Non-organic farmers cited the existence of risks associated with organic farmers' belief in the philosophy and principles of organic farming more than did their organic counterparts.

		Risks Related to Farmers' Belief		Total
		No	Yes	
Organic Farmers	Count	166	2	168
	Expected Count	160.7	7.3	168
Non-Organic Farmers	Count	143	12	155
	Expected Count	148.3	6.7	155
Chi-Square Test		**DF**	**P**	**Significance**
		1	0.004	**

Table 5.10: Chi-square test for risks related to farmers' belief and farmer status (Source: Author's questionnaire 2008)

Organic farmers who did not mention these risks either believed in, or had neutral attitudes towards, the philosophy and principles of organic farming (see Section 4.5). However, organic farmers may either lose their organic convictions or become antagonistic towards organic farming under unfavourable circumstances (Schoon and Te Grotenhuis 2000; Lampkin 2002). Given that the proportion of organic farmers in this study who felt this was an issue was extremely low (1%, Table 5.10), the results suggest that the perceived risks in organic farming did not significantly affect organic farmers' attitudes towards organic philosophy and principles. This can be attributed to the fact that there was a gap between perceived and acceptable levels of risk in organic farming (see Section 5.7.1). Further, this gap tended to be wider for organic farmers who believed in organic farming (see 'committed organic farmers' in the typology discussed in Chapter 7; see also Darnhofer et al. 2005), where this belief was more likely to be based on ecological and social responsibility (Goodpaster 1978; Goodman and DuPuis 2002).

A number of non-organic farmers in this study argued against organic farming (see Section 4.6), and often repeated these attitudes when asked about risks in organic farming, and it is not surprising that this group demonstrated a higher score (Table 5.10). For example, Non-Organic Farmer 132, who thought that *"organic farming is a farce"*, stated during the 'in-depth interview':

> *"The organic system depends on such things as TV advertising to convince the public that organic is good. They say organic tastes better...not true. They say conventional farming pollutes the atmosphere...not true".*

This confirms that *"conversion of the farming system (i.e. to organic farming) has to begin with a personal conversion, in terms of attitude and approach..."* (Lampkin 2002: 526). This implies that the organic system is not a question of *"good"* or *"bad"* (Reed et al. 2008) although what is *"good farming"* differs among farmers (Burton 2004b; Wilson 2007).

Social risks (see Section 2.6.4) were not seen by either the organic or the non-organic farmers in this study as a concern in organic farming. This is likely to be because organic farming is well-established in Devon (see Section 4.2.2); the county has the highest number of organic farms in the UK that are not clustered in specific districts (see Section 3.2). Urban-rural migration and tourism in rural Devon (Winter 2002; CCD 2007) have helped to disseminate the concept of sustainable agriculture (Marsden 2003; Wilson 2007). These are key factors which have led to the acceptance of organic farmers among rural communities. Therefore, organic farmers in Devon are less likely to be isolated, in contrast, for example, to organic farmers in Flevoland, the Netherlands (see de Buck et al. 2001).

This section has discussed the personal risks associated with organic farming. Two types of personal risks were perceived by the organic and non-organic farmers in this study to be of concern. The first type (risks related to farmers' skills) was given equal weighting by both groups. The second type (risks related to farmers' belief) showed a marked difference. This difference was associated with farmers' convictions about the philosophy and principles of organic farming and possible changes in those convictions. Further, it has been shown that social risks in organic farming were not a concern. However, do the perceived risks in organic farming discussed in this chapter show that organic farming systems are riskier than others? This question will be answered in the next section.

5.6 Is organic farming riskier than other farming systems?

The nature and importance of farmers' perceptions of risk in organic farming will be highlighted in this section. These perceptions were expressed in response to a question which asked whether organic farming was riskier than other farming systems.

When risk is assessed through assigning its probability (Dinwiddy and Teal 1996; Wright 1984) by experts[4] (Hardaker 2004), this judgment is seen as 'objective' because it should rely on precise knowledge (Slovic 1987; Kraus et al. 2000). Although, Slovic et al. (2000d), for example, argued that this judgment is not immune to bias and so it should be

[4] *"An expert is a person who, because of training and experience, is able to do things the rest of us cannot; experts are not only proficient but also smooth and efficient in the actions they take. Experts know a great many things and have tricks and caveats for applying what they know to problems and tasks. They are also good at ploughing through irrelevant information in order to get at basic issues, and they are good at recognizing problems they face as instances of types with which they are familiar. Underlying the behaviour of experts is the body of operative knowledge we have termed expertise. It is reasonable to suppose, therefore, that experts are the ones to ask when we wish to represent the expertise that makes their behaviour possible"* (Waterman 1986: 5).

considered to be 'subjective', it is also the basis of a 'risk analysis' tool (Curry and Weiss 2000), based on 'sensitivity analysis' techniques (Fischhoff et al. 2000). Both analyses are used by 'cost-benefit analysis' theory to assess the merits of, for example, projects, and to serve descriptive and normative aims for individuals and society (Squire and Tak 1976; Stiglitz 1994; Temple et al. 2000). In 'risk analysis' techniques the views of experts on risk probability are sought using the 'Delphi method', which rely on a questionnaire (Florio et al. 1997).

This study uses, to some extent, tools which are similar to elements of the 'Delphi method' in that the questionnaire allowed farmers to express their views on the existence of risk in organic farming. A group of 'experts' can be identified amongst these farmers, as a number of them had been involved in farming for many years (see Section 4.3.4), and others had worked or were working in agricultural advisory and consultancy (see Section 4.2.3). Consequently, the risks perceived by this group can be considered as realistic (see Thompson and Mingay 1991; de Lauwere et al. 2004). Further, as a number of farmers in this study had only been involved in farming for a few years (see Section 4.3.4), and others were influenced by their sensitivity to financial loss and a lack of knowledge (see Section 5.3.2 and Section 5.4), these farmers' perceptions of risk can be thought of as subjective (see Padel and Lampkin 1994b).

Whether the perceived risks in organic farming discussed in this chapter are characterised as 'subjective' or 'objective', they have been found to be of importance in influencing farmers' decisions on whether or not to adopt organic farming methods (see Sections 4.5 and 4.6 and Section 5.7). This confirms that there is a need to consider farmers' beliefs, even though they may be fallible (Jacobsen 1994), to assess adoption decisions (see Adesina and Zinnah 1993; see also Section 8.2.1) and to inform existing theories, models and programmes (Attonaty and Soler 1991; Ohlmer et al. 1998; Kulak et al. 2003; see also Section 8.2.1).

Farmers in this study were asked the following question: *"would you say that organic farming systems are riskier than other farming systems?"*. Table 5.11 shows that of those who responded to the question, more non-organic farmers agreed with the statement than organic farmers (p=0.002).

		Is Organic Farming Riskier Than Other Farming Systems?		Total[5]
		No	Yes	
Organic Farmers	Count	62	105	167
	Expected Count	49.4	117.6	167
Non-Organic Farmers	Count	33	121	154
	Expected Count	45.6	108.4	154
Chi-Square Test		**DF**	**P**	**Significance**
		1	0.002	**

Table 5.11: Chi-square test for 'is organic farming riskier than other farming systems?' and farmer status
(Source: Author's questionnaire 2008)

This result was related to the fact that more non-organic than organic farmers identified higher levels of several risks and/or some unique risks associated with organic farming. Input prices and changes in consumers' preferences, for example, were seen to be of greater concern to organic farmers compared to other farmers. On the other hand, risks connected with those that mainly distinguish organic farming from other farming systems – less reliance on chemicals, the need for premiums and organic regulations and laws, for example (Flaten et al. 2005) – were reasons used by many non-organic farmers to argue that organic farming is riskier. Non-Organic Farmer 149, for example, whose life story is presented in Box 4.6, stated during the 'in-depth interview':

[5] One farmer in each sample said *"I do not know"*.

"Organic farming systems are riskier than other systems because organic farmers cannot use sprays on crops as they want, and we can. If everybody went organic, there would not be enough food to feed the country".

However, and as suggested by many researchers (e.g. Dinwiddy and Teal 1996; Pennings and Wansink 2004), the findings shown in Table 5.11 reflect the fact that a considerable number of non-organic farmers in this study were not risk-seekers, as they did not actively pursue exposure to risk (see Section 5.7.1). These findings also suggest that more non-organic than organic farmers perceived several of these risks associated with organic farming to be of concern (see previous sections in this chapter). Further, Table 5.11 implies that both risk attitudes and perceptions are correlated (see Sections 5.7.1; 8.2.1; see also Pennings and Leuthold 2000). It also provides empirical evidence, from the views of 70% of the farmers in this study, which supports the assumption that organic farming is riskier than other farming systems and that it is a 'risky activity' (see Section 2.6).

This section has shown that however farmers' perceptions of risk in organic farming are characterised ('subjective' or 'objective'), they are important for many reasons. The perceptions played an essential role in comparing risks in organic farming and other farming systems and concluded that organic farming was perceived to be riskier than other farming systems. This leads to the question 'why do some farmers adopt organic farming methods while others do not?' Accordingly, farmers' risk attitudes will be the focus of the next section.

5.7 Farmers' risk attitudes

This section will compare organic and non-organic farmers' attitudes towards risk in organic farming, risk in farming and 'playing it safe' respectively. The key implications of expressed attitudes will be discussed and the importance of farmers' attitudes towards risk in terms of their decisions whether or not to farm organically will be assessed.

5.7.1 Attitudes towards risk in organic farming

As this thesis argues that there is a link between farmers' attitudes towards risk in organic farming and their adoption decisions (see Section 2.2.2), the farmers in this study were therefore asked to indicate whether they agreed with the following statement: "*For me, taking risk in organic farming is exciting*". Here, it is important to note that, in retrospect, it may have been more appropriate to ask **non-organic** farmers whether *"For me, taking risk in organic farming **could** be exciting"*. I acknowledge that it may, therefore, have been difficult for non-organic farmers to have responded reliably to the original statement. Bearing this caveat in mind, Table 5.12 shows that in this study there was a clear relationship between willingness to take risk in organic farming and farmer status ($p=0.000$). 60 % of organic farmers who responded to the question agreed that they were willing to take risk in organic farming, while 68% of non-organic farmers who responded disagreed.

From the organic sample, and based on the stepwise model of multiple linear regression, no direct relationship was found between attitudes towards risk in organic farming and key independent variables that have been found to affect risk acceptance (see Section 2.2.2). These key variables are; farm size, farm type, farming income, gender, age, formal

		"For me, Taking Risk in Organic Farming is Exciting"					Total
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	
Organic Farmers	Count	4	15	18	100	31	168
	Expected Count	12.0	62.9	17.2	59.3	16.6	168
Non-Organic Farmers	Count	19	106	15	14	1	155
	Expected Count	11.0	58.1	15.8	54.7	15.4	155
Chi-Square Test		**DF**		**P**		**Significance**	
		4		0.000		***	

Table 5.12: Chi-square test for attitudes towards risk in organic farming and farmer status (Source: Author's questionnaire 2008)

education, years spent in farming and farming objectives (see Chapter 4). It can therefore be argued that these socio-economic variables may be less important in risk acceptance in organic farming although, for example, Darnhofer et al. (2005) found that 82% of organic farmers in the Weinviertel, Austria, were willing to take economic risks in order to produce environmental benefits from organic farming. In addition, as the socio-economic variables stated above did not significantly affect organic farmers' attitudes towards risk, it suggests that these variables may be weak direct predictors of tendency to take risk for organic farmers.

On the other hand, the farm size profile of the non-organic farmers in this study significantly affected their willingness to take risk in organic farming (p=0.031, Table 5.13). In this respect, risk acceptance decreased as non-organic farm size increased. This may be because non-organic farmers with large farms preferred not to risk their farm income (McEachern and Willock 2004). For example, the non-organic farmers in this study who operated farms over 99 hectares were unwilling to take market risks in organic farming (see Sections 4.2.1), and these farmers also identified the existence of risks related to the financial returns of organic farming (see Section 5.3.2).

	"For me, Taking Risk in Organic Farming is Exciting"	
	P	**Significance**
Farm Size	0.031	*
Adjusted Coefficient of Determination	0.024	
DF	1	

Table 5.13: Stepwise model of multiple linear regression for attitudes towards risk in organic farming and farm size for 155 non-organic farmers
(Source: Author's questionnaire 2008)

However, the results suggested above are of little help in explaining the variation in attitudes towards risk in organic farming between organic and non-organic farmers (Table 5.12). Nevertheless, the difference between perceived and acceptable risk levels (Fischhoff et al. 1978; Wright 1984; Slovic 1987; Gough 1990; Slovic 1996; Slovic et al 2000c; Fuller and Myerscough 2001), which could play an essential role in possible future changes in attitudes towards risk in organic farming (see Section 7.2), is one of the possible reasons for the findings shown in Table 5.12 (de Buck et al. 2001). In other words, when the levels of acceptable risk outweigh the levels of perceived risk in organic farming, individuals are more likely to be willing to take the risk. Here, it is important to note that levels of perceived and acceptable risk are affected by a variety of factors, including understanding of the severity of the risk and individuals' characteristics and views on risk probability (Fischhoff et al. 1978; Gough 1990; Slovic 1999; de Buck et al. 2001; Jenkin 2006; among others). Organic Farmer 9, for example, identified during the 'in-depth interview' a certain level of risk beyond which he was unwilling to go:

> *"We are taking risks in organic farming, but we do not tend to take high risks. So I would not say we strongly agree as we are not always prepared, but we agree, although we do not get a great premium".*

In contrast, the level of acceptable risk in organic farming of Non-Organic Farmer 140, for example, was below his level of perceived risk because of lack of familiarity and higher skills levels. These limitations, however, did not prevent him from being willing to take risk in the farming that he was practising:

> *"I agree to take risk in my business. I have been farming for about 60 years, so I am willing to take the risks in the farming that I know, but not in organic farming...... I disagree to take risk in organic farming as it is something I cannot do. Basically, I was trained to use non-organic methods, and I will find it difficult to change to organic farming"*[6].

Further, as the level of perceived risk in organic farming changes (CRER 2002; see also Sections 5.6 and 7.2), farmers may either regret or not regret taking up organic farming (Lockeretz 1995; Winter 2003a; Harris et al. 2008). In this study, 11% of organic farmers regretted, or had at some time regretted, adopting organic methods because of the associated perceptions of low net financial returns and high technical and institutional risks. On the other hand, regret about not switching to organic farming was expressed by 8% of non-organic farmers in this study. Only two of these farmers mentioned the high cost of inputs – particularly of fertilisers – as reasons for this regret, while the rest pointed to the role of financial motives in organic farming. Not surprisingly, therefore, two of these farmers were considering organic farming. This further supports the argument that the difference between farmers' levels of perceived and acceptable risk in organic farming plays a crucial role in their attitudes towards risk in organic farming, and in turn these attitudes may affect the type of farming system that they select (see Chapter 7; see also CRER 2002).

5.7.2 Attitudes towards risk in farming

Table 5.14 suggests that there was a significant difference between dispositions towards risk in farming between the organic farmers and the non-organic farmers in this study

[6] This quote came from the in-depth interview with Non-Organic Farmer 140.

(P=0.004). More organic farmers in this study tended to 'agree' that they were willing to take risk in farming compared to their non-organic counterparts.

		"In General, I am Willing to Take Risk in Farming"					**Total**
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	
Organic Farmers	Count	2	14	14	110	28	168
	Expected Count	2.1	26.5	15.1	99.3	25.0	168
Non-Organic Farmers	Count	2	37	15	81	20	155
	Expected Count	1.9	24.5	13.9	91.7	23.0	155
Chi-Square Test		**DF**		**P**		**Significance**	
		4		0.004		**	

Table 5.14: Chi-square test for attitudes towards risk in farming and farmer status (Source: Author's questionnaire 2008)

Although farmers' preferences in terms of risk were not derived in an economic context in this study, the economic literature has provided evidence that organic farmers are less risk averse than their non-organic counterparts (see, for example, Koesling et al. 2004; Flaten et al. 2005; Gardebroek 2006). In contrast, Serra et al. (2008) found that organic farmers and non-organic farmers are not risk takers. However, the result presented in Table 5.14 confirms the relationship between farmers' attitudes towards risk in farming and organic adoption (see also Greiner et al. 2009). Further, findings – from the economic literature – suggesting that farmers tend not to accept risk in farming (see, for example, Isik and Khanna 2003) are not in accord with the findings from this study, which showed that 59% of the farmers were willing to take risk in farming (Table 5.14). This suggests that farmers' disposition towards risk in farming varies, whether the context in which their responses are being elicited is economic or not.

However, of the variables mentioned earlier (Section 2.2.2), and based on the stepwise model of multiple linear regression, farm size and formal education together positively affected the risk preferences of organic farmers in this study (p=0.033 and p=0.035 respectively, Table 5.15). Increased organic farm size implied less risk-averse attitudes. This may be related to the fact that larger farms can afford higher financial burdens and so accept higher levels of risk in farming (Serra et al. 2008). As well-educated farmers seek out and use information, and are willing to learn new techniques (Gasson 1998; Lunneryd 2003), they are more likely to be proactive and to cope with problems in farming (see, for example, Warren 1989). This, in turn, can explain why more organic farmers in this study, who were well-educated (see Section 4.3.3), were willing to take risk in farming. This willingness was also found to be higher for younger, non-organic farmers in this study. This is based on the results of a stepwise model of multiple linear regression used to test correlations between a variety of socio-economic variables (see Section 2.2.2.) and non-organic farmers' dispositions towards risk in farming. For the non-organic farmers, there was an inverse relationship between age and attitudes towards risk in farming (p=0.015, Table 5.16). As age increased, risk acceptance in farming decreased. This may be attributed to the fact that farming is physically hard work, and older farmers with insufficient physical help are less likely to accept risk in farming (Pini 2002; Brandth 2006). In this respect, and as observed during the interviews, older non-organic farmers employed fewer workers compared to their organic counterparts.

	"In General, I am Willing to Take Risk in Farming"	
	P	**Significance**
Farm Size	0.033	*
Formal Education	0.035	*
Adjusted Coefficient of Determination	0.038	
DF	2	

Table 5.15: Stepwise model of multiple linear regression for attitudes towards risk in farming, farm size and formal education for 168 organic farmers
(Source: Author's questionnaire 2008)

	"In General, I am Willing to Take Risk in Farming"	
	P	**Significance**
Age	0.015	*
Adjusted Coefficient of Determination	0.031	
DF	1	

Table 5.16: Stepwise model of multiple linear regression for attitudes towards risk in farming and age for 155 non-organic farmers
(Source: Author's questionnaire 2008)

Despite the importance of the correlations found by the model in explaining the variation in attitudes towards risk in farming, the gap between perceived and acceptable levels of risk (see above) can also provide a reason for this variation. In this study, it seems that the level of acceptable risk in farming was above the level of perceived risk for more organic than non-organic farmers. This, in turn, meant that 65% of organic farmers and 52% of non-organic farmers were willing to take risk in farming, and is one of the possible explanations for the findings shown in Table 5.14. Organic Farmer 38, for example, who adopted organic methods in 1988, stated during the 'in-depth interview':

> *"I would not take extra risks in farming. Farming is a risk in itself. I just agree. Risk should be measured, and...... I think it is reasonable. I love the countryside, so I am prepared to take the risk in farming".*

Similarly Peter, who was managing a non-organic farm and whose life story is presented in Box 4.1, mentioned also during the 'in-depth interview':

> *"I am not a great risk-taker. I accept a degree of risk in farming. Every time you plan anything on the ground, you are taking a risk. Weather...... you might never harvest. I think farmers must accept risks because farming is a risky business"* (Non-Organic Farmer 142).

It is important to note here that during both the questionnaire survey and 'in-depth interviews' most farmers expressed and explained their attitudes towards risk in farming with an added comment, such as; *"farming is a gamble"*; *"every day is a risk in farming"* and *"farming is a risky business"*. This supports the argument that a variety of risks are associated with farming (Deary et al. 1997; Zentner et al. 2005; among others), and different types and sources of risks may vary based on the farming system adopted (see, for example, Morris and Winter 1999; Aerni 2002; Gardebroek et al. 2010).

5.7.3 Attitudes towards 'playing it safe'

As discussed in Section 3.5, the farmers who participated in this study were asked about their general attitudes towards risk in order to develop a better understanding about the role of risk in decisions to adopt organic farming systems. Table 5.17 shows the weakest correlation between willingness to take risk and farmer status ($p \leq 5\%$; see also Tables 5.12 and 5.14). Table 5.17 also shows that more organic farmers in this study tended to 'disagree' with the statement that they preferred to 'play it safe' than did non-organic farmers ($p=0.013$).

		"In General, I Like to 'Play it Safe'"					**Total**
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	
Organic Farmers	Count	15	95	26	27	5	168
	Expected Count	12.5	85.3	24.4	40	5.7	168
Non-Organic Farmers	Count	9	69	21	50	6	155
	Expected Count	11.5	78.7	22.6	37.0	5.3	155
Chi-Square Test		**DF**		**P**		**Significance**	
		4		0.013		*	

Table 5.17: Chi-square test for attitudes towards risk in general and farmer status (Source: Author's questionnaire 2008)

From the existing literature on this subject, it is hard to find any empirical evidence to compare with the results shown in Table 5.17. However, the finding that the farmers in this study tended to be unwilling to 'play it safe' (Table 5.17) is in line with Pennings and Leuthold's (2000) work. In this work, many Dutch hog farmers did not wish to 'play it safe'. Here, it is important to point out that the risks an individual may take can be divided into two distinct categories. The first includes risks such as firefighting, transportation and farming, which are more likely to be socially acceptable (see Lange et al. 2004; Chong 2005; Scholten 2006; Keraita et al. 2008). The second involves risks, such as HIV/AIDS (Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome), terrorism and smoking, which are unlikely to be socially acceptable (see Hall et al. 1992; Dewit et al. 1994; Lagarde et al. 1998; Carbone et al. 2005; Jenkin 2006).

In order to explain the results shown in Table 5.17, correlations were calculated between organic and non-organic farmers' preferences towards risk in general, and several independent factors. These factors – as suggested by the risk literature (see Slovic 1987; Adams 1999; Slovic 1999; Sjoberg 2000) – were income, age, gender, education and work experience. There was one statistically significant negative correlation between the willingness of organic farmers to 'play it safe', and their formal education (p=0.02, Table 5.18). This can be explained by the reasons mentioned in the previous sub-section (see also Slovic 1986), and enables well-educated people to understand many technical aspects of a technologically developed society, which brings with it many types and sources of risks (Rahman 2003; Boyne 2003). Further, such people are more likely to deal with risk differently, and so it is not surprising that many organic farmers in this study who were well-educated (see Section 4.3.3) responded negatively to the statement eliciting their willingness to 'play it safe'. Their responses were qualified with the added comment "*it should be a measured/calculated risk*".

	"In General, I Like to 'Play it Safe'"	
	P	**Significance**
Formal education	0.02	*
Adjusted Coefficient of Determination	0.026	
DF	1	

Table 5.18: Stepwise model of multiple linear regression for attitudes towards risk in general and formal education for 186 organic farmers
(Source: Author's questionnaire 2008)

On the other hand, for the non-organic farmers, no direct correlations were found. This suggests that the independent elements stated above may be less important in these farmers responses to risk in general, and are therefore weak direct predictors of attitudes towards 'playing it safe' for this group.

Nevertheless, the qualitative data collected in the course of the 'in-depth interviews' with twenty five farmers (see Appendix Two) have provided evidence for the gap between levels of acceptable and perceived risk in general. According to Table 5.17, 32% of non-organic farmers agreed that they were willing to 'play it safe'. This is more likely to be because their levels of perceived risk outweighed their levels of acceptability. Non-Organic Farmer 147 and his wife, for example, said:

> *"I want to be away from things I do not know [wife interrupted and added:] life is full of risks, we want to play it safe and simple. Life is complicated enough".*

Similarly, Non-Organic Farmer 104 reported:

> *"Anything you do is a risk on the farm. I am a risk-averse person. I am not that sort of person who wants to take risks to make more money, or climb a mountain or anything like that. I am conservative, and I want a safer route".*

Further, John, whose life story is presented in Box 4.6, mentioned:

> *"I agree. I play it safe. We do everything by the book as far as we can. I would not take a risk if I knew I could get out of it, if you know what I mean. I am not a risk-taker... I would not risk the farm or anything, like buying land or anything like that"* (Non-Organic Farmer 149).

In contrast, it seems that the level of acceptable risk was above the level of perceived risk for many organic farmers in this study, who disagreed that they were willing to 'play it safe' (Table 5.17). Organic Farmer 12, for example, who was running a 46 hectare organic farm, said:

> *"I am a calculated risk-taker. I like to think that I am a risk-taker, but I do not like to risk everything. I calculate the risk, and if it fails, it is okay as we do not risk everything".*

Also, Matthew, whose life story is shown in Box 4.5, stated:

> *"It depends what you mean by your question. I would not place us in a position where we might lose our house, for example.... . I have a positive attitude to life, so what may be seen risky to others is not a risk to me..... . In general, I do not like to play it safe"* (Organic Farmer 83).

Accordingly, it can be concluded that farmers, who are not willing to 'play it safe', are more likely to be prepared to take up organic farming, which was perceived to be riskier than other farming systems (see Section 5.6).

5.7.4 Key implications of farmers' risk attitudes

Speculation on farmers' responses to the statements regarding attitudes towards risk in organic farming, risk in farming and risk in general (see Sections 5.7.1, 5.7.2 and 5.7.3) supports assumptions associated with 'reasoned action' theory which forms the theoretical framework for this thesis (see Section 2.2.2). These responses, to a large extent, confirm the attitude-behaviour link where, for example, 74% of all farmers in this study were, to different degrees, willing to take risk in farming (Table 5.14). In other words, there was consistency between two cognitive elements expressed by these farmers (desire to take risk in farming and operating a farm)[7].

Attitudes towards risk can be collective rather than individual (Hillson and Murray-Webster 2005). In other words, farmers can be clustered based on their attitude towards risk. These attitudes may range between the two extremes of strongly risk averse and strongly attracted to risk, for example (Thurstone 1931). Chapter 7 supports this notion, where a typology is produced on the basis of similarity in farmers' attitudes towards risk in organic farming.

The final key conclusion drawn from a deeper analysis of farmers' attitudes towards risk in organic farming, risk in farming and 'playing it safe' (see Sections 5.7.1, 5.7.2 and 5.7.3) is that farmers who want to adopt organic farming should be willing to take risk in organic farming, no matter what the motives for adoption may be. In other words, risk acceptance in organic farming is a dominant precondition for the uptake of organic farming (see Figure 5.1)[8]. Here, it is important to note that this key conclusion is also based on other results from this study. However, the key findings which inform this key conclusion are:

- 13% of the organic farmers in this study said that seeking out more risk in farming was one of the main reasons why they adopted organic farming techniques (see Section 4.5).
- 92% of the non-organic farmers in this study did not convert to organic farming because they wanted to avoid at least one of the perceived risks associated with organic farming (see Section 4.6).

[7] Consistency between farming decisions and willingness to take risk in organic farming is also discussed in Section 7.2.
[8] The importance of willingness to take risk (i.e. attitudes towards risk) in individuals' decisions and behaviours under risk will also be subject of a deeper discussion in Section 8.2.1.

- Organic farmers in this study tended to 'agree' that they were willing to take risk in organic farming compared to their non-organic counterparts (see Section 5.7.1). Further, higher percentages of organic than non-organic farmers in this study tended to 'agree' that they were willing to take risk in farming and to take risk in general (see Sections 5.7.2 and 5.7.3). Accordingly, the three statements measuring farmers' risk attitudes (see Sections 5.7.1, 5.7.2 and 5.7.3) can be used for deriving general risk attitudes for organic farmers, but not for non-organic farmers. In other words, these statements cannot work as items measuring a single construct (general risk attitudes) for non-organic farmers (see also Heong and Escalada 1999 for unreliability of different indicators measuring attitudes towards the use of insecticides for stem borer control).
- Possible future changes in farmers' attitudes towards risk in organic farming may affect future conversion to organic farming and future reconversion to non-organic farming (see Section 7.2).

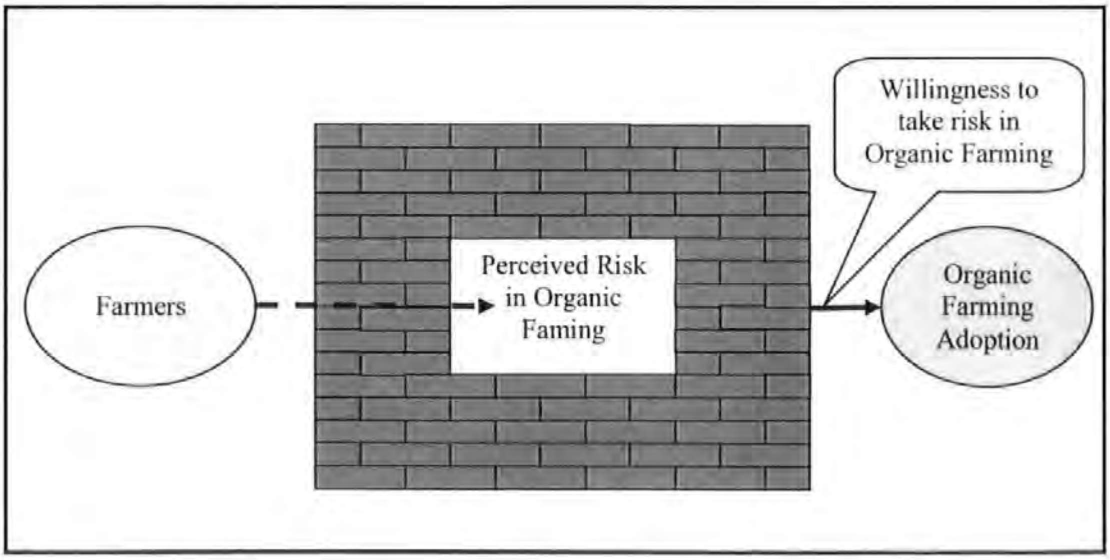

Figure 5.1: The importance of farmers' willingness to take risk in organic farming in relation to their decision to adopt organic farming systems
(Source: Author)

This section has shown that attitudes towards risk of organic and non-organic farmers varied significantly. Organic farmers tended to 'agree' that they were willing to take risk in organic farming, risk in farming and risk in general. This section has also shown that risk attitudes of farmers in this study, to a large extent, support the hypothesised link between attitudes and actions. Finally, this section has provided evidence that willingness to take risk in organic farming is a necessary precondition for the adoption of organic farming systems.

5.8 Conclusions

The purpose of this chapter was to analyse and explain the data on organic and non-organic farmers' perceptions of risk in organic farming, and on their attitudes towards risk. In this respect, organic and non-organic farmers who participated in this study were equally aware of the existence of technical and institutional risks associated with organic farming. Further, these farmers shared similar views about risks related to production inputs and facilities, and risks related to farmers' skills, as well as weather-related risks. Farm-related risks and risks related to farmers' belief were perceived to be of concern by more non-organic than organic farmers. Further, non-organic farmers mentioned risks related to financial returns of organic farming more often than their organic counterparts. The significant differences between non-organic and organic farmers in terms of their perceptions about types and sources of risks associated with organic farming were often related to the fact that non-organic farmers generally had good knowledge of the potential risks associated with organic farming, and these risks were often perceived to be of concern by this group. As a result, these farmers tended to view organic farming as riskier than did their organic counterparts.

Compared to their organic counterparts, non-organic farmers in this study tended to 'disagree' with the statement that they were willing to take risk in organic farming. Further, lower percentages of non-organic farmers tended to 'agree' that they were willing to take risk in farming and risk in general. According to the significant differences between non-organic and organic farmers in terms of their risk attitudes, and linked to other findings in this research project, it can be concluded that willingness to take risk in organic farming acts as a very important trigger for the uptake of organic farming.

The results discussed in this chapter suggest that the organic and non-organic farmers in this study did not have significantly different perceptions about sources and types of risks associated with organic farming. However, these farmers showed significant differences in terms of their willingness to take risk in organic farming, risk in farming and risk in general. As the organic sample included a number of organic farmers from NFBs, this raises questions about these specific farmers' perceptions of risk and about their attitudes towards risk. These issues are discussed in the next chapter.

Chapter Six: Organic farmers from NFBs: perceptions of, and attitudes towards, risk

6.1 Introduction

Chapter 5 assessed the first and second objectives of this thesis. This chapter will now address the third objective, which is to focus on organic farmers from NFBs, in order to analyse their risk perceptions, and their willingness to take risk in organic farming. To do so, it is important to examine a suite of variables associated with these organic farmers. These variables include farm size, farm type, farming income, gender, age, formal education, years spent in farming and farming objectives. It is important to examine these variables as they may have a significant influence on farmers' attitudes towards risk (see Section 2.2.2). Section 6.2 will analyse farm structure profiles of organic farmers from NFBs. Section 6.3 will then focus on gender, age, formal education and years spent in farming and Section 6.4 will examine the farming objectives of this group. The main reasons for the adoption of organic farming methods will be discussed in Section 6.5. Section 6.6 will then consider perceptions of different types and sources of risks in organic farming, whilst Section 6.7 will describe and analyse the risk attitudes of this group of organic farmers. Finally, Section 6.8 will conclude the chapter.

6.2 Farm structure profiles

This section will analyse farm size, farm type and the farming income of the organic farmers from NFBs who participated in this study. Analysis of these variables will help provide a better understanding of this group's risk attitudes (see Section 2.2.2). These variables will also be compared to the results from the sub-set of organic farmers from FBs who also participated in this study.

Of the 168 organic farmers who participated in this study, 15 (9%) were from NFBs in that they had not previously been involved in farming elsewhere[1]. Comparison of this result with similar studies elsewhere is problematic because of dissimilarities in definitions of 'NFBs' (e.g. McCann et al. 1997; Burton et al. 1999; Roderick and Burke 2004; see also Section 2.5.2). Nevertheless, Lobley et al. (2005) found that 31% of organic farmers in Northern England, Eastern England and Devon had not been involved in farming before running their current farms. According to Dr. Matt Lobley, there are some key reasons why there may be a difference between the findings in this research project and those found in other studies:

> *"Depends on where your sample came from. Recommendations might affect this. You had many established farmers who recommended other farmers.....people who they knew. They probably did not have contacts with newcomers. This might have skewed your sample. Also, some differences might have arisen through your focus on Devon only".*

Sizes of farms within this subset ranged from 1 to 72 hectares, with the average farm size being 19 hectares. In comparison, the typical farm size of organic farmers with FBs in this study was 95 hectares. This provides evidence that the farm profiles of organic farmers from NFBs and FBs were different. The organic farmers with NFBs were mainly from

[1] Of the 155 non-organic farmers who participated in this study, only two were from NFBs (see Table 5.2). This supports the idea that farmers with NFBs are more likely to be involved in sustainable agricultural models, such as organic farming (see, for example, Bohnet et al. 2003; see also Section 2.5.2).

urban areas (Table 6.1)[2] and had moved to rural Devon for a variety of reasons (see, for example, Boxes 6.1 and 6.2; see also Bolton and Chalkley 1990; Halliday and Coombes 1995). These individuals were not from farming families; they had not inherited large land holdings built up by previous generations. The size of these farms was also limited as a result of a lack of capital (see Padel 2001a). Organic Farmer 72, for example, who was running a 4 hectare organic farm, stated during the 'in-depth interview':

> *"Out of four hectares, one is cultivated..... This was what was here when we bought the house and land. This was just what we could afford. I mean, you know, that was the right decision. We bought this place with the money I inherited when my father died".*

Likewise, Simon, who moved to Devon and started to farm organically in 1998, was not able to buy more than 42 hectares:

> *"I studied civil engineering at Bristol University. I had a conventional career as a civil engineer for consulting engineers and international contractors. At the age of thirty I set up my own business as a consulting engineer, and that was set up in Bristol. I am now 70 years old, and I had that business until I was probably 66 years old. I have been farming for 11 years, so there was a short overlap of about 7 years when I was running down my business. I worked on construction projects in quite a lot of different countries, such as Saudi Arabia and Jordan. I bought the farm when I was 59 years old, in 1998, and I started the farming slowly. I enjoyed being a civil engineer, and I had a very successful business, but it required a lot of travelling around the world and, after 40 years, I wanted to give up. One day, I was going to Trinidad, and on the way to the airport I said to my wife, who is a doctor, I would not do this anymore........it was a 15 hour flight...... I was in Wiltshire for 5 years before moving to Devon. It was not a farm, but a small house right in the middle of the countryside near a tiny village. I wanted to farm. I tried, but it was very expensive to buy a farm there with the money I had. Eleven years ago Devon was much cheaper, and I was able to buy this farm"* (Organic Farmer 60).

Box 6.1: Simon's life story[3]

Accordingly, and consistent with a report by Dart (2009) in the Western Morning News, 21st January 2009, the rise in the price of land is likely to deter potential new entrants to the organic sector. Also, the closed nature of the Agricultural Tenancies Acts can make entry

[2] According to Table 6.1, 73% of organic farmers with NFBs were from urban areas. This was expected, based on the organic literature (see Section 2.5.2). It also affected a number of the other variables discussed in this chapter (see, for example, Section 6.4).
[3] This life story was told by Simon to the researcher during the 'in-depth interview'.

into organic farming difficult (see Whitehead et al. 2002). Therefore, the future of agriculture and the percentage of farmers with NFBs are likely to be influenced negatively (Gasson and Winter 1993; Williams and Farrington 2006).

Organic Farmers from NFBs (N15)	**Area of Origin**	
	Urban (N11)	Rural (N4)
Organic Farmer 14	Toronto, Canada.	
Organic Farmer 43	Manchester, Greater Manchester.	
Organic Farmer 46		Wiltshire.
Organic Farmer 51		Newton Abbot, Devon.
Organic Farmer 60		Outskirts of Leicester. Leicestershire.
Organic Farmer 61		Woolsey, Devon.
Organic Farmer 69	Exmouth, Devon.	
Organic Farmer 72	London.	
Organic Farmer 105	Wolverhampton.	
Organic Farmer 121	London.	
Organic Farmer 129	Potters Bar, Hertfordshire.	
Organic Farmer 130	Gillingham, Kent.	
Organic Farmer 150	Portsmouth, Hampshire.	
Organic Farmer 156	Exmouth, Devon.	
Organic Farmer 166	Exeter, Devon.	

Table 6.1: Area of origin of organic farmers from NFBs
(Source: Author's questionnaire 2008)

In addition to a lack of inherited land and financial limitations, the main reasons behind the uptake of organic farming techniques played an essential role in the farm size profile of organic farmers from NFBs. For example, 27% of these farmers adopted organic methods because of financial motives other than farm payments (see Section 6.5). All of these farmers were farming 21 hectares or less. This category of farm size included 71% of the 14 organic farmers who were from NFBs, and who were attracted to the various environmental and social benefits of organic farming[4]. Accordingly, it should not be surprising that the average farm size of organic farmers with NFBs was very small (see above), as the perceived benefits of organic farming were more likely to be attractive to those with a farm size of 21 hectares or less, rather than to those who were able to operate more than 21 hectares (see Bohnet et al. 2003; Lobley et al. 2009a).

Another distinctive characteristic of the farms in this group is farm type. Table 6.2 shows that the organic farmers from NFBs in this research project were mainly running mixed and horticulture farms. This was distinctly different from the typical farm type of organic farmers from FBs. For example, all of the organic dairy farms in this study (23 farms) were operated by organic farmers from FBs (see also Section 4.2.2).

	Farm Type				
	Grazing Livestock Lowland	Grazing Livestock LFA	Mixed	Horticulture	Specialist Pigs
(%) of 15 Organic Farmers from NFBs	7	13	33	40	7

Table 6.2: Farm type of organic farmers from NFBs
(Source: Author's questionnaire 2008)

As horticultural farms are usually smaller and cheaper, newcomers to farming with less available capital and resources are more likely to operate such farms (Padel and Lampkin 1994a). This trend was supported by the findings of this study, where all organic horticultural farms were 10 hectares or less (see also comments above made by Organic Farmer 72). As organic farmers from NFBs suffered from a lack of capital, and horticulture

[4] 93% of organic farmers from NFBs positioned themselves in the 'public goods related motives' category, which is one of two sets showing the main reasons for adopting organic farming systems (see Section 6.5).

farms were smaller and cheaper, it was no surprise to find that 40% of these organic farmers were operating horticulture farms (Table 6.2; see Smith 1972).

Another interpretation of the results shown in Table 6.2 is connected with the main reasons for adoption of organic farming techniques (see Section 6.5). Of the 14 organic farmers, who were from NFBs, and who entered organic farming because of their perceptions of produced public goods, 79% were operating horticultural and mixed farms. Further, 75% of the four organic farmers, who were from NFBs and who adopted organic farming because of financial motives other than farm payments, were managing horticultural and mixed farms. Consequently, and as assumed by Padel (2001b), the main reasons for the uptake of organic farming and farm type were somehow linked for newcomers to organic farming. This, in turn, partly explains why the organic farmers with NFBs in this study were mainly managing horticulture and mixed farms.

Demand for organically produced food in Devon also affected the farm type of organic farmers from NFBs. Richard, for example, whose life story is shown in Box 6.2, mentioned during the 'in-depth interview':

> "*My farm is mixed. I have got pigs, hens, sheep and grass..... I adapt to the organic market in selling. If the market changes, I have to change with the market*" (Organic Farmer 43).

This, in turn, provides a possible explanation for the high proportion of mixed farms operated by organic farmers with NFBs (Table 6.2). Further, it is possible that this proportion is a reflection of one of the key principles of organic farming, (running self-contained farms) which is more likely to be achieved by mixed rather than specialist farms, which depend on external inputs (Padel 2001b; Vaarst et al. 2004b).

Turning to farming income, the average dependency on farming income for organic farmers from NFBs was 21% and for those with FBs was 63%. This suggests that these groups varied in terms of their reliance on agricultural income, with income contributing less, in percentage terms, to the total household income of organic farmers from NFBs than those from FBs. As a result, it can be surmised that the market risks associated with organic farming would be of lesser concern to these farmers (see Section 6.6).

The average dependency on farming income for organic farmers with NFBs is partly attributed to the farm size profile. Of the 15 organic farmers from NFBs in this study only one, who was running the largest farm (72 hectares), gained all of his total household income from farming. On the other hand, 70% of the ten organic farmers who were from NFBs, and who were managing 21 hectares or less, earned less than 21% of their total household income from farming. Because of the very small average farm size of organic farmers from NFBs, the average reliance on agricultural income was very small.

According to Wilson (2007), entry into farming for non-financial reasons is often connected with a non-productivist approach to farming (see also Bohnet et al. 2003). The results from this study support that assertion. Of the 11 organic farmers who were from NFBs and who did not take up organic farming techniques because they wanted to make money from it, 73% earned less than 21% of their entire household income from farming. Consequently, it was no surprise to find that the average dependency on farm income for organic farmers with NFBs in this research project was very small. This average was also affected by a number of additional circumstances, such as inflation and being in the conversion period[5], which negatively influenced organic farm incomes in this study (see Section 4.2.3).

Based on the data collected in this research project, 14 organic farmers with NFBs had other sources of income, and only one farmer earned his total household income from farming. Table 6.3 shows that 'off-farm employment outside of agriculture' and 'off-farm business' were the most important sources of additional income for this group (see also Lockeretz 1995). These categories are likely to be a reflection of the need for well-paid work, not only to enable individuals to enter organic farming (see above), but also to remain within it. In this respect, it is important to note that organic farmers from NFBs will be identified as 'hobby' or 'lifestyle' farmers, as 73% of these farmers were motivated by their desire to produce public goods and did not mention any other key reasons for adopting organic farming methods (see Section 6.5). Further, as a high proportion of organic farmers from NFBs, and their families, had higher levels of education in subjects outside of agriculture (see Section 6.3 and, for example, Box 6.1), it is not surprising that these farmers received money from well-paid employment such as teaching, management, consultancy and medical work. This, in turn, partly explains why the highest percentage of organic farmers who were from NFBs, were in the 'off-farm employment outside of agriculture' category (Table 6.3).

This section has shown that organic farmers with NFBs mainly operated horticulture and mixed farms. It was also found that organic farmers from NFBs, on average, had very small farms and were less dependent on farm income than their counterparts with FBs. The main reasons for the uptake of organic farming systems affected farm structure profiles.

[5] The survey data showed that 27% of organic farmers with NFBs were in the process of shifting their farms to organic status.

	(%) of 14 Organic Farmers from NFBs*
Off-Farm Business	28
Off-Farm Employment in Agriculture	7
Off-Farm Employment outside of Agriculture	57
Social Security and/or Private Payments	14

Table 6.3: Other income sources of organic farmers from NFBs
(Source: Author's questionnaire 2008)

* Figures were not mutually exclusive

Further, the farm size, farm type and farming income of organic farmers with NFBs were also affected by interrelations between these variables. This section has analysed and interpreted the key characteristics of the farms of organic farmers with NFBs. The next section will focus on several dimensions of these farmers themselves.

6.3 What about farmer characteristics?

As gender, age, formal education and years spent in farming have been shown in the literature to have potential effects on farmers' risk attitudes (see Section 2.2.2) this section will examine these variables in relation to the organic farmers from NFBs who participated in this study. This section will also compare the profiles of organic farmers from NFBs with the profiles of organic farmers from FBs.

According to the results from this study, a higher percentage of organic farmers from NFBs were women, compared to organic farmers from FBs (27% versus 20%). All female organic farmers from NFBs had entered organic farming because they wanted to change their lifestyles, and because of their perceptions of the different public goods generated.

These decisions were made jointly with their husbands (see also Kaltoft 1999). It is therefore not surprising to find that the female organic farmers from NFBs were not the principle decision-makers on their farms. Organic Farmer 121, for example, who made farming decisions jointly with her husband, stated during the 'in-depth interview':

> *"The interest in organic farming appeared later in life. We [the farmer and her husband] wanted to change our lifestyle. I am a city person really. I was born in London... We wanted to move out somewhere quite remote. We lived in a semi-rural place before we came to Devon. I think if you live somewhere like north Devon, you become integrated into the community. In the city, if you want your children to go to a good school, you have to spend hours in traffic to get them there, things like that. I think we have a better quality of life and, in some ways, more choices...... I have personally been vegetarian for 20 years, so I do not agree with other farming techniques, neither does my husband. What we eat is very important, not just to physical health, but also to mental health. It is also important that animals live a good life and that.......the least amount of pollution. Organic farming is good for your health.....the countryside..."*.

In this study, 73% of organic farmers from NFBs were men, who alone made the decision to look for a better quality of life and enter into organic farming (see, for example, Boxes 6.1 and 6.2). These men, therefore, showed that they were the sole decision-makers on their farms. This, in turn, restricted the opportunities for the organic sample to contain more female organic farmers from NFBs (see above). These opportunities were also affected by the tendency that women from NFBs would not take up organic farming on their own account (see Slovic 1999). Organic Farmer 121, for example, said during the 'in-depth interview': *"If I was on my own, I do not think I would do organic farming. It is very difficult. I prefer not to be alone. I need my husband"*.

With regard to the age profile for organic farmers from NFBs, Table 6.4 suggests that these farmers are relatively old (80% were in the category 41+ years). Therefore, as 90% of organic farmers from FBs were in the category 41+ years, it is clear that organic farmers with NFBs were not necessarily older than their organic counterparts from FBs.

	Age		
	26-40	41-65	Over 65
(%) of 15 Organic Farmers from NFBs	20	67	13

Table 6.4: Age of organic farmers from NFBs
(Source: Author's questionnaire 2008)

As the majority of organic farmers from NFBs had changed their previous lifestyles and entered into organic farming later in life, for a variety of reasons, it is not surprising to find that the majority of organic farmers from NFBs were relatively old (see also Kaltoft 1999). Richard, for example, who was 65, mentioned:

> *"I was born in Manchester. My higher degree was in chemistry. I did it at Oxford. When I started work in the oil industry. I was a technical trainer, and that evolved over the years into general human resources management, training and development. I went all over the world. I have been in 30 or 40 different countries..... .When I was in my 30s, for a number of reasons....changing my lifestyle.....doing something more interesting, I decided that I would change my job when I reach the age of 50. Later, when I came back to the UK from Venezuela where I was teaching at a university, I did not know what I was going to do. Organic farming was always a possibility. Others were sailing around the world and running a hotel in Scotland, but I have chosen organic farming. I wanted a farm near mountains, the sea and a university where I could work [the farmer worked for Plymouth University], so I moved to Devon in 1996 and converted the farm"* (Organic Farmer 43).

Box 6.2: Richard's life story[6]

Also, when Simon was 59 years old, he changed his lifestyle and took up organic farming (see Box 6.1). At the time of the 'in-depth interview', Simon was a 70 year-old. His wife stated that Simon was making greater use of his two workers.

> *"I and my husband work together on the farm. Organic farming is hard work. The only thing I notice about my husband is that he is getting slower. My husband employs two workers, and he is gradually using them a bit more".*

Prior to embarking on organic farming, 87% of the organic farmers from NFBs in this study had achieved a higher level of formal education (see also Kaltoft 1999).

[6] In the course of the 'in-depth interviews', Richard told the researcher his life story.

Consequently, organic farmers with NFBs tended to be better educated than their organic counterparts from FBs, as only 52% of this group had obtained a higher level of formal education.

In addition to the reasons which explained why the organic farmers in this study were better-educated than their non-organic counterparts (see Section 4.3.3), it seems that the public goods that were perceived to be produced by organic farming played an essential role in the formal education profile of organic farmers from NFBs. Table 6.5 shows that 86% of the 14 organic farmers who were from NFBs and who adopted organic farming for its perceived public goods, had a higher level of formal educational. This is a reflection of the fact that education raises awareness of, and concern for, the public costs associated with farming (Rahman 2003), which is consistent with the uptake of organic farming (CRER 2002).

<table>
<tr><th colspan="4" rowspan="2"></th><th colspan="2">Public Goods Related Motives</th><th rowspan="2">Total*</th></tr>
<tr><th>No</th><th>Yes</th></tr>
<tr><td rowspan="6">Organic Farmer From NFBs</td><td rowspan="6">Formal Education</td><td rowspan="2">Full Secondary</td><td>Count</td><td>0</td><td>1</td><td>1</td></tr>
<tr><td>% within Public Goods Related Motives</td><td>0</td><td>7</td><td>7</td></tr>
<tr><td rowspan="2">Further</td><td>Count</td><td>0</td><td>1</td><td>1</td></tr>
<tr><td>% within Public Goods Related Motives</td><td>0</td><td>7</td><td>7</td></tr>
<tr><td rowspan="2">Higher</td><td>Count</td><td>1</td><td>12</td><td>13</td></tr>
<tr><td>% within Public Goods Related Motives</td><td>100</td><td>86</td><td>87</td></tr>
<tr><td colspan="3" rowspan="2">Total</td><td>Count</td><td>1</td><td>14</td><td>15</td></tr>
<tr><td>% within public goods related motives</td><td>100%</td><td>100%</td><td>100%</td></tr>
</table>

Table 6.5: Public goods related motives and formal education for organic farmers from NFBs
(Source: Author's questionnaire 2008)

* Percentages do not sum exactly to 100% due to rounding

As the vast majority of organic farmers from NFBs were well-educated, they would have spent many years in formal education. It should not be surprising, therefore, to find that the mean duration of involvement in farming was nine years for the organic farmers with NFBs in this study. This very small average was also affected by two facts. First, changing lifestyles and adopting organic farming did not happen in their earliest years (see above; see also Holloway 2002). Second, 93% of organic farmers from NFBs had at some time worked outside of farming (see, for example, Box 6.1). Since organic farmers from NFBs had been engaged in farming on average for nine years, these farmers had spent fewer years in farming than had their organic counterparts from FBs who had been involved in farming on average for 31 years.

This section has reported that a high proportion of organic farmers from NFBs in this research project were women, and that the majority of organic farmers from NFBs were relatively old. It has also shown that a higher level of formal education had been achieved by the vast majority of organic farmers from NFBs, who had spent on average fewer years in farming. These demographic profiles were attributed to, for example, changing lifestyles and taking up organic farming later in life. They were also different from organic farmers from FBs. This suggests that organic farmers from NFBs may be distinct in terms of their perceptions of risk in organic farming, and in terms of their willingness to accept risk (see Sections 6.6 and 6.7; see also Section 2.5.2). As farmers' attitudes towards risk may be affected by their farming objectives (see Section 2.2.2), the next section will focus on the farming aims of organic farmers from NFBs, in order to analyse and interpret their dispositions towards risk (Section 6.7).

6.4 Why farming?

This section will answer questions regarding the most important farming goals for the organic farmers from NFBs in this study. The aims of 'creating public goods', 'enjoying the lifestyle', 'making a profit' and 'making a living' will each be discussed.

The desire to generate public goods was the most significant aim in this group's approach to farming, and was mentioned by 87% of organic farmers in this study who were from NFBs (see Table 6.6). This desire stemmed from a number of sources, including parental influences.

> *"My family had a history of conscience. Quakers is a sect of Christianity. They do not drink.....anti alcoholic.... . This was my father's side, and my mother's side was liberal. My family was not that political. But I just think also, I grew up in London in the 1970s and 1980s, and that was a very political time. In the 1970s, there were many talks, but very little change. They used to burn and take nuclear waste to the sea. All these have affected my aims and needs. If you are a farmer and poisoning people and the countryside, you get persecuted"*[7] (Organic Farmer 72).

Also, Organic Farmer 46 stated during the 'in-depth interview':

> *"This is because of a mixture of things.... My mother was always very keen on sort of.....always wanted to grow our food purely because she did not like not knowing what farmers do. Also, from my travels......being in the USA and Europe.......just seeing how different people have different attitudes about intensive farming".*

It has been hypothesised that organic farmers with NFBs are more likely to be from urban origins and they therefore have a distinct interest in producing public goods from farming (see Section 2.5.2). This hypothesis was supported by the data from this research project, where willingness to generate public goods from farming was mentioned by 91% of eleven of these organic farmers from NFBs, who grew up in urban areas (see Table 6.1; see also Holloway 2002). This can be attributed to the fact that non-rural dwellers are more aware

[7] This quote came from the 'in-depth interview' with Organic Farmer 72.

of, for example, environmental problems (Wilson 1992; see also, for example, the comments made by Organic Farmer 72, above).

Since awareness of the importance of creating public goods from farming increases because of a higher level of formal education (Gasson 1998), it was not surprising that 85% of the thirteen organic farmers in this study, who were from NFBs and who were well-educated, wanted to create public goods from farming (see also Kaltoft 1999). This, in turn, partly explains the finding that 87% of organic farmers from NFBs in this study were willing to produce public goods from farming.

As with higher levels of formal education, previous work experience outside of farming also resulted in the desire among organic farmers from NFBs to create public goods from farming. In this respect, 86% of fourteen organic farmers who were from NFBs and who had at some time worked outside of farming, aimed to produce public goods from farming (see also report by Brown (2005) in The Independent, 18th of October 2005). This may be a reflection that these farmers missed the beautiful aspects of farming whilst they were involved in other industries such as construction (see, for example, Box 6.1).

From Table 6.6, it can be seen that the lifestyle facets associated with farming, such as being in the countryside and being independent, fulfilled objectives for a better quality of life for 60% of organic farmers from NFBs (see also Bohnet et al. 2003). Accordingly, the organic farmers from NFBs in this study stated the aim of 'enjoying the lifestyle' second among key farming objectives (Table 6.6). Since the majority of these farmers wanted to experience what they thought of as the 'good life' (farming) in their later years (see Section 6.3), relative old age resulted in a desire to enjoy the farm lifestyle. In this respect, 67% of the twelve organic farmers who were from NFBs and who were over 40 years old (see Table 6.4), wanted to live the lifestyle provided by farming.

This objective was also influenced by the area of origin of farmers, where 64% of the eleven organic farmers who were from NFBs and who grew up in urban areas (see Table 6.1), wanted to enjoy the lifestyle aspects of farming (see also Holloway 2002). This can be seen as a reflection of the need, for example, for the peace and quiet which accompanies farming, in particular by people from urban origins (Maybery et al. 2005; Wilson 1992; see also, for example, the comments made by Organic Farmer 121, Section 6.3).

	(%) of 15 Organic Farmers from NFBs*
Creating Public Goods	87
Enjoying the Lifestyle	60
Making a Profit	20
Making a Living	13

Table 6.6: Most important objectives in the approach to farming of organic farmers from NFBs
(Source: Author's questionnaire 2008)
* Responses were not mutually exclusive

Despite the notion that the main aim of farming is to produce food, few of the organic farmers from NFBs in this study needed to provide their household income from farming (see also Holloway 2002). Based on Table 6.6, only 20% of organic farmers from NFBs aimed to make a profit and 13% aimed to make a living from farming. These relatively low percentages resulted from the fact that the majority of organic farmers from NFBs chose the good life later in life and after working in other industries (see, for example, Boxes 6.1 and 6.2; see also Lockeretz 1995). However, organic farmers, who were from NFBs and who mentioned the objectives of 'making a profit' and 'making a living', had different needs as well as different philosophies and ideologies about farming as a production system. Organic Respondent 61, for example, who had another business, saw farming simply as a job to make a profit (see Section 4.5), while Organic Farmer 46, who wanted to make a profit from farming, said during the 'in-depth interview':

> *"At the moment I do lots of different things to make ends meet. I only make £3,000 from the farm, but the rest of my work makes £40,000 pounds. I would love to earn all my money from the farm, then I can give up the other work I do".*

On the other hand, one of two organic farmers, who were from NFBs, and who were keen to make a living from farming, stated during the 'in-depth interview':

> *"I have got six children. I want to have time with them. If you want to have more money, you must work more. If you work more, you will have less time for other things"* (Organic Farmer 72).

Altruistic, intangible and financial objectives have been shown in this section to be the most significant farming aims for organic farmers from NFBs. These goals were mainly based on the distinct nature of this group of organic farmers, breathing new life into farming and the countryside. They also differed from their counterparts from FBs. The aim of 'creating public goods', for example, was mentioned by more organic farmers from NFBs (87%) than organic farmers from FBs (58%). This poses the question about the main reasons for the uptake of organic farming systems by the organic farmers from NFBs in this study. The next section will therefore discuss the reasons why these farmers entered into organic farming.

6.5 Why organic farming?

The main reasons given by the organic farmers from NFBs in this study for their use of organic farming methods will be analysed in this section. Perceived incentives related to public goods and non-subsidy related financial motives will be the focus of the discussion.

Table 6.7 shows that there are only two categories which describe why the organic farmers from NFBs in this study entered into organic farming. The results show that the main reasons for adopting organic farming techniques varied based on whether or not the individual came from a farming background. The organic farmers from FBs in this research project mentioned reasons such as 'challenge acceptance related motives' (see Section 4.5). Further, although organic farmers from NFBs and their organic counterparts from FBs mentioned 'public goods related motives' first among reasons for the uptake of organic farming methods, a higher percentage of the former cited these motives (93% against 62%). In this respect, therefore, almost all organic farmers from NFBs were willing to protect the environment, to ensure animal welfare and to produce healthy and safe food. This desire was based on a variety of factors and was satisfied by the uptake of organic farming methods, which were perceived to deliver these public goods (see Section 6.4 and the comments made by Organic Farmer 121, Section 6.3; see also Kaltoft 1999; Padel 2001a).

Because 73% of organic farmers from NFBs in this research project mentioned 'public goods related motives' as the only main reason for the adoption of organic farming systems (Table 6.7), organic farmers with NFBs can, to a large extent, be identified as "*hobby*" or

	Public Goods Related Motives*	Non-Subsidy Related Financial Motives*
Organic Farmer 14	X	
Organic Farmer 43	X	X
Organic Farmer 46	X	X
Organic Farmer 51	X	
Organic Farmer 60	X	
Organic Farmer 61		X
Organic Farmer 69	X	
Organic Farmer 72	X	X
Organic Farmer 105	X	
Organic Farmer 121	X	
Organic Farmer 129	X	
Organic Farmer 130	X	
Organic Farmer 150	X	
Organic Farmer 156	X	
Organic Farmer 166	X	
(%) of 15 Organic Farmers from NFBs**	93	27

Table 6.7: Main reasons for the adoption of organic farming systems by organic farmers from NFBs
(Source: Author's questionnaire 2008)
* X means the farmer mentioned the relevant main reason
** Responses were not mutually exclusive

"lifestyle" farmers (Wilson 2007). This matches what was expected by Dr. Matt Lobley[8] who thought that organic farmers from NFBs reflect *"an increasingly popular lifestyle trend"* (BBC news 2005a). It may also explain why some people consider organic farmers from NFBs not to be *"real farmers"* (Lockeretz 1995). This, in turn, can be unfair because of a number of reasons. First, the organic farmers from NFBs in this study appeared to be working hard to achieve their objectives. For example, Simon (see Box 6.1) mentioned during the 'in-depth interview':

> *"If we face problems and need help, we consult people who have been farming for generations and have experienced all these problems before. When we started, there was one farmer who we used to ask for advice. But now we have enough knowledge ourselves to see that he was not a good farmer"* (Organic Farmer 60).

[8] See Sections 4.2.1 and 6.2.

Second, these farmers also tended, on a number of occasions, to speak like 'real farmers'[9] (see also Bohnet et al. 2003). Organic Farmer 72, for example, who had been farming for eleven years, stated during the 'in-depth interview':

> *"I am proud of being a farmer.... . We are locally and universally living unsustainably. We do not live in a way that........especially with the explosion of population. We have to be able to support ourselves...to feed ourselves".*

Third, the organic farmers in this research project who were from NFBs and who were unwilling to make money from organic farming, tended not to accept losing much farm income (see Section 6.6). This suggests that these farmers may be, to a specific extent, willing to take risk in organic farming (see Section 6.7).

Finally, organic farmers from NFBs have potential impacts on farming and rural areas (Bohnet et al. 2003). Organic farmers from NFBs are seen as driving agricultural change as they restructure organic farming (see Williams and Farrington 2006; Winter 2009). They also embed organic farming in a strong multifunctional agricultural model (see Potter and Burney 2002; Wilson 2007; Wilson 2010) through generating different public goods that are more likely to require sympathy towards, for example, society (Castle 2003). This, in turn, maintains the amenity and beauty of the countryside (Savills 2001). It is not surprising, therefore, that attractive farmhouses and gardens with ornamental plants were observed during interviews with a number of organic farmers from NFBs in this study. Further, the ideas about a life in contact with nature, farming in a healthy way and animal welfare, which are held by organic farmers from NFBs, are more likely to ensure the ethical base of organic farming (McEachern and Willock 2004). As migrants to rural areas, these farmers and their families may introduce different lifestyles which influence these

[9] Regardless of whether farmers are from FBs or not, it is very common to find that farmers hold multiple identities affecting their behaviours (Burton and Wilson 2006; Kaljonen 2006).

areas and may change the farming ideologies and philosophies of existing local farmers (Kaltoft 1999; Savills 2001; Winter 2003a; Stockdale 2006; Paniagua 2008).

According to Table 6.7, and compared to 'public goods related motives', financial motives other than farm payments were one of the main reasons for the uptake of organic farming techniques for a relatively low percentage of organic farmers from NFBs (see also Savills 2001). These motives were mentioned by 27% of organic farmers from NFBs; of these farmers, 25% did not cite any other main reason (see also Holloway 2002; Bohnet et al. 2003). This is closely related to the fact that few organic farmers from NFBs were willing to make money from farming (see Section 6.4), and that these farmers perceived the demand for organically produced food in Devon to be strong (see Sections 4.2.2 and 4.5). Accordingly, it should not be surprising that Richard (see Box 6.2), for example, who took up organic farming to make money, had changed his certification body in order to improve his management skills and farm income[10].

> *"The farm was registered with Organic Farmers and Growers. Later, I registered it with the Soil Association for two reasons. One was that the Soil Association gave much better technical support. And secondly, some of the standards for Organic Farmers and Growers were a lot worse than the Soil Association. For example, with Organic Farmers and Growers you could have a flock of hens, up to 5,000 birds, but with the Soil Association it is 500. So if you are looking for a premium on your eggs, you can say look, these are very good standards"*[11] (Organic Farmer 43).

According to the data from this study, 54% of organic farmers from FBs adopted organic farming methods because of 'non-subsidy related financial motives', while only 27% of organic farmers from NFBs mentioned these motives. It can therefore be argued that 'non-subsidy related financial motives' played different roles in the adoption decisions of the organic farmers from NFBs compared with those from FBs in this research project.

[10] Of the 15 organic farmers from NFBs in this study, 14 farmers (93%) were with the SAO, while only one farmer (7%) was with Organic Farmers and Growers.
[11] The source of these qualitative data is the 'in-depth interview' with Richard.

This section has shown that the organic farmers from NFBs in this study entered into organic farming for only two main reasons. 'Public goods related motives' were mentioned by almost all of these farmers, while 'non-subsidy related financial motives' were cited by few. Therefore, the adoption of organic farming methods for altruistic reasons associated with creating different public goods did not preclude the uptake of these methods for financial reasons.

So far, this chapter has highlighted and analysed a variety of socio-economic characteristics that may influence the risk attitudes of the organic farmers from NFBs in this research project. It has also identified the main reasons why these farmers adopted organic farming systems, in order to understand their tendency to take risk in organic farming. The next two sections will focus on the risk attitudes of the organic farmers from NFBs in this study, and their perceptions about the types and sources of risks in organic farming.

6.6 Risk perceptions

This section will present and analyse the risks in organic farming that were of concern to the organic farmers from NFBs in this research project. Technical, market and institutional risks associated with organic farming will all be discussed. This, in turn, will inform the literature, which currently suffers from a lack of empirical data specifically on the perceptions about the types and sources of risks in organic farming held by organic farmers' from NFBs. This section will also compare risks in organic farming with those in other farming systems from the viewpoint of the organic farmers from NFBs in this study.

The data from this study suggests that organic farmers from both NFBs and from FBs were, to a large extent, similar in relation to their concerns over the production risks associated with organic farming (see Section 5.2). In this respect, no-farm related risk (see Section 5.2.2) was mentioned by organic farmers from NFBs (see Serra et al. 2008), and only 7% of these farmers were concerned with weather-related risks. Technical risks associated with organic farming, on the other hand, were of concern to 60% of the organic farmers from NFBs (Table 6.8). Avoidance of the use of permissible chemicals is a possible explanation for this percentage. Organic Farmer 46, for example, who faced problems related to disease control, did not want to use any chemicals for two reasons:

> *"The Soil Association allows some chemicals for rust, but I prefer not to use any. This is because my farm is very small.....financially not worth doing. To save one tree that may give me 200 pounds, I have to spend 400 pounds on chemicals. Also, I just really do not like the risk associated with using chemicals"*[12].

Years spent in farming were also a factor, where 70% of the ten organic farmers who were from NFBs and who had been farming for less than 11 years, were concerned with technical risks. This can be attributed to their lack of practical experience of farming (Trauger et al. 2008; see also Section 2.5.2). However, the organic farmers from NFBs in this study seemed to use different sources of technical information (see, for example, the comments made by Organic Farmers 60 and 43, Section 6.5). As a result, it is not surprising that technical risks associated with organic farming were of concern to 60% of these farmers (Table 6.8). This, in turn, does not support the hypothesis that organic farmers from NFBs will have particular concerns associated with different production risks (see Section 2.7).

[12] This quote came from the 'in-depth interview' with Organic Farmer 46.

	(%) of 15 Organic Farmers from NFBs*
Technical Risks	60
Market Risks	53
Institutional Risks	27

Table 6.8: Risk perceptions of organic farmers from NFBs
(Source: Author's questionnaire 2008)
* Responses were not mutually exclusive

As with production risks, the market risks associated with organic farming were of equal concern to organic farmers from both FBs and NFBs. For example, 56% of organic farmers from FBs were concerned with market risks in organic farming, while these risks were of concern to 53% of organic farmers from NFBs.

Surprisingly, the data collected in this research project showed that the perceptions of market risks of organic farmers from NFBs were not affected by farm income (see Section 6.2) or willingness to make money from farming (see Section 6.4). However, a considerable number of these farmers had a positive attitude towards the organic market in the UK. Simon, for example, whose life story is shown in Box 6.1, mentioned during the 'in-depth interview' that:

> *"The demand is very good. It is easy now to find a market. When we started, the options for sale were narrow"* (Organic Farmer 60).

As a result, market risks associated with organic farming were not of great concern to organic farmers from NFBs (Table 6.8). However, the organic farmers in this study who were from NFBs and who were concerned with a variety of market risks associated with organic farming were mindful that the organic market in the UK remained unstable and was sensitive to a broad range of factors, including shortages of organic feed (see Sections 4.5 and 5.3.1). Although Organic Farmer 121, for example, did not enter into organic farming to make money, she did not accept losing much income as a result of the volatile nature of the organic market in the UK.

> "*It is difficult to make even a living from organic farming.... There is a risk that you are not going to get feed for animals at reasonable prices. They have increased........ The price you get is not guaranteed. You do not know the profit you can make*"[13] (Organic Farmer 121).

Similarly, Richard, whose life story is shown in Box 6.2 and who wanted to make money from organic farming, faced problems related to the high prices for organic feed (see the comments made by him, Section 5.3.1), and he was concerned with lower returns. It can therefore be argued that the volatile nature of the organic market in the UK played an important role, in that nearly half of the organic farmers from NFBs in this research project were concerned about the market risks associated with organic farming (Table 6.8).

From Table 6.8, it can be seen that the institutional risks associated with organic farming were of concern to 27% of the organic farmers from NFBs in this study. As these risks were of concern to 29% of the organic farmers from FBs in this research project, it is clear that organic farmers from both NFBs and FBs shared the same concerns over the institutional risks associated with organic farming.

According to the results from this study, there was relative satisfaction with the institutional context of organic farming among organic farmers from NFBs (see Section 5.4). Organic Farmer 72, for example, stated during the 'in-depth interview': "*I am okay with the Soil Association; they work very well..... If there is any problem, we ring the Soil Association; they are very good, very reasonable and very sensible*". It was therefore not surprising to find that only a few organic farmers from NFBs were concerned about the institutional risks associated with organic farming (Table 6.8). Here, it is important to note

[13] These qualitative data were gathered in the course of the 'in-depth interview' with Organic Farmer 121.

that the institutional context of organic farming, which includes policies and regulations, for example, (see Section 2.6.3), can cause different levels of concern to organic farmers (see McEachern and Willock 2004; Roderick and Burke 2004; Hampshire and Riggulsford 2006; Gibbon 2008; Harris et al. 2008). This argument was supported by key stakeholders from two certification bodies in Devon (Bio-Dynamic Agricultural Association and the SAO, Table 3.3), who agreed that organic farmers should accept the different institutional risks associated with organic farming (attitudes towards risk in organic farming will be discussed in detail in the next section):

> *"Our registration and inspection fees are expensive, but I trust the authority is not being greedy....... If you believe in the philosophy and knowledge of Bio-Dynamic, then you accept all the difficulties of organic regulations, bureaucracy..."* (Derek Lapworth).

> *"Some standards can be difficult but they are not impossible, and we would not publish them if our experts and our licensees didn't think they were achievable. Soil Association standards are the highest in the world and we pride ourselves on that. Also, organic farmers are required to complete paperwork, keep records, etc. This is part of the requirements of meeting the standards and ensuring that traceability and integrity are maintained"* (Soil Association Organisation employee).

Table 6.8 suggests that risks which are specific to organic systems, such as restrictions on the use of chemicals for example (see Section 5.6), were of concern to organic farmers from NFBs. This concern was a key reason cited by 53% of organic farmers from NFBs when arguing that organic farming is riskier than other farming systems. From the data, 88% of these farmers saw themselves as exposed to these additional risks when compared to other farmers. Although a lower percentage of organic farmers from NFBs in this study agreed that organic farming is riskier than other farming systems compared to those from FBs (53% versus 63%), there is little difference between these two groups (see also Section 6.5).

The analyses above have shown that organic farmers from NFBs were concerned with technical, market and institutional risks associated with organic farming. Farm-related risks, weather-based risks and personal and social risks associated with organic farming, on the other hand, were not of concern to these farmers (see Sections 2.5.2, 2.6.4, 5.2.2 and 5.2.3). As technical risks, for example, were not of particular concern, the survey data do not, to any great extent, support the hypothesis that organic farmers from NFBs will have distinct perceptions of risk in organic farming (see Section 2.7). This, in turn, poses a question about these farmers' willingness to take risk, which will be addressed in the next section.

6.7 Risk attitudes

Organic farmers from NFBs' attitudes towards risk associated with organic farming, risk in farming in general and 'playing it safe' will be discussed in this section. As with risk perceptions in the previous section, this can be seen as one of the unique contributions of this research project to the literature (see Section 2.5.2).

According to the results from this study, organic farmers from NFBs differed from their counterparts from FBs in terms of their disposition towards taking risk in organic farming. More farmers from NFBs (73%, compared to 58% from FBs) agreed that they were willing to take risk in organic farming.

	"For me, Taking Risk in Organic Farming is Exciting"				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
(%) of 15 Organic Farmers from NFBs	0	7	7	73	13

Table 6.9: Attitudes towards risk in organic farming of organic farmers from NFBs (Source: Author's questionnaire 2008)

The result, shown in Table 6.9, matches the expectations about attitudes towards risk in organic farming of organic farmers from NFBs (see, for example, Reed et al. 2008). It was also closely related to age, the aim of 'creating public goods' and formal education. 83% of the twelve organic farmers who were from NFBs and who were aged 41 years or more, accepted risk in organic farming. This can be attributed to the fact that these farmers had sufficient physical help (see, for example, the comments made by the wife of Organic Farmer 60, Section 6.3) and used the skills acquired through their long life experience. Richard, for example, who was willing to take risk in organic farming and whose life story is shown in Box 6.2, indicated during the 'in-depth interview' that his past experiences had helped him:

> *"My previous experience affects my management. I have worked in many countries; I have had to be very flexible. So I am flexible and willing to try new things on the farm. One year, I decided to keep pigs. I know nothing about pigs. I keep geese. I know nothing about geese, but I can learn"* (Organic Farmer 43).

According to McCann et al. (1997), achieving different altruistic farming objectives (see Section 6.4) does not require the avoidance of risk in sustainable agricultural models, such as the organic farming model, for example. It is therefore not surprising to find that 77% of thirteen organic farmers in this research project who were from NFBs and who were willing to create public goods from farming, accepted risk in organic farming. The acceptance of risk in organic farming was also affected by formal education. 77 % of the thirteen organic farmers who were from NFBs and who were well-educated, were willing to take risk in organic farming. This is explained by the fact that higher levels of formal education, for example, help in understanding the technical elements of organic farming and allow the management of relevant risks (Genius et al. 2006).

The survey data showed that 27% of organic farmers from NFBs regretted, or had at some time regretted, adopting organic methods. As a result of some early adoption difficulties, the level of perceived risk in organic farming of Organic Farmer 121, for example, was above her level of acceptable risk. This farmer, therefore, regretted entering into organic farming and was not willing to take risk in organic farming.

> *"I disagree to take risk in organic farming. We struggle; we have been organic for just one year. Weed control is the biggest risk...... The paperwork is also a pain. If we were not farming organically, we would not change very much what we do.... Oh yeah, I have regretted taking up organic farming. We do not have to stay organic although farming is practically difficult. We can change.......organic is a free choice so I agree to take risk in farming"*[14] (Organic Farmer 121).

It seems that the level of perceived risk in organic farming was below the level of acceptable risk for most of the other organic farmers from NFBs in this study, who agreed that they were willing to take risk in organic farming (Table 6.9). These positions are therefore one possible interpretation of the findings shown in Table 6.9.

As shown in some studies (e.g. Savills 2001; Reed at al. 2002; Mailfert 2007), but in contrast with others (e.g. Shrapnel and Davie 2001), the vast majority of organic farmers from NFBs in this research project were willing to take risk in farming (87%, shown in Table 6.10). Organic farmers from NFBs therefore differed from their organic counterparts from FBs in relation to their attitudes towards risk in farming, as only 63% of organic farmers from FBs in this study were willing to take risk in farming.

[14] This quote came from the 'in-depth interview' with Organic Farmer 121.

	"In General, I am Willing to Take Risk in Farming"				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
(%) of 15 Organic Farmers from NFBs	0	0	0	87	13

Table 6.10: Attitudes towards risk in farming of organic farmers from NFBs (Source: Author's questionnaire 2008)

The extreme skewness shown in Table 6.10 is partly related to the fact that the two organic farmers who were from NFBs and who were unwilling to take risk, or had a neutral attitude towards risk in organic farming (Table 6.9), accepted risk in farming. According to the comments cited and made by Organic Farmer 121 above, it appears that the difference between dispositions towards risk in organic farming and risk in farming in general was closely related to a variety of risks which were specific to organic farming. The results shown in Table 6.10, however, were also affected by other variables including the aim of 'creating public goods', formal education and age. 85% of the thirteen organic farmers who were from NFBs and who wanted to generate different public goods from farming, accepted risk in farming. This is connected with the fact that producing such goods entails exposure to high risk (Greiner at al. 2009).

The data collected in this study showed that 92% of the thirteen organic farmers who were from NFBs and who were well-educated, agreed that they were willing to take risk in farming. The data also indicated that all organic farmers who were from NFBs and who were aged 41 years or more, accepted risk in farming. These positive relationships between attitudes towards risk in farming, formal education and age not only explain the result shown in Table 6.10, but can also be attributed to a variety of reasons. For example, well-educated farmers are more likely to cope with the difficulties associated with farming and it was therefore not surprising that these farmers tended to be willing to take risk in farming (see also Section 5.7.2 and the discussion above about the positive relationship between age and willingness to take risk in organic farming).

In contrast to attitudes towards risk in organic farming and risk in farming in general, attitudes towards 'playing it safe' did not vary whether the farmer had a farming background or not. From Table 6.11, it can be seen that 53% of organic farmers from NFBs disagreed that they were willing to 'play it safe'.

	"In General, I Like to 'Play it Safe'"				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
(%) of 15 Organic Farmers from NFBs	7	53	27	13	0

Table 6.11: Attitudes towards risk in general of organic farmers from NFBs (Source: Author's questionnaire 2008)

Based on the survey data, the willingness of organic farmers from NFBs to 'play it safe' was influenced by farm income. Of the five organic farmers who were from NFBs and who earned more than 21% of their entire household income from farming, 80% were willing to take risk in general. This can be seen as a reflection of the fact that less mistakes and inappropriate practices in organic farming which is a 'risky activity' give confidence in ability to develop management skills that increase willingness to take risk in general (see Pennings and Wansink 2004). Accordingly, farming income partly explains the result shown in Table 6.11. This result also appeared to be related to the finding that the level of acceptable risk in general was above the perceived one. Due to his concern for his family, Organic Farmer 46, for example, had changed his attitude towards risk in general and became a risk-taker (see also Sjoberg 2000). In other words, the gap between acceptable and perceived levels of risk in general for Organic Farmer 46 became narrower:

> *"Although my wife does not want me to take risks in our life, I do because I have never been somebody else. I used to enjoy lots of dangerous sports.....canoeing and climbing, but I do not do these to any great extent now..... I still walk in the mountains. I will not do things that will risk my family. It is no longer just me who will be affected. I do not strongly agree about taking risk in my life; I just agree. Now, I have got children"*[15] (Organic Farmer 46).

This section has shown that the organic farmers from NFBs in this study tended to be willing to take risk in organic farming, risk in farming and risk in general. These desires, which varied in terms of their strength, were affected by a variety of factors including age and farm income. However, as a relatively low percentage of organic farmers from NFBs agreed strongly that they were willing to take risk in organic farming (13%, Table 6.9), they cannot necessarily be identified as 'committed organic farmers' (see Section 7.2). This is also because these farmers saw organic farming solely as a production system (see Section 6.5), rather than as a combination of a production system and a philosophy (see Section 7.2; see also Darnhofer et al. 2005). None of the organic farmers from NFBs in this study mentioned 'organic philosophy related motives' as a main reason for the adoption of organic farming methods (see Sections 4.5 and 6.5).

6.8 Conclusions

This chapter has shown the existence of a relatively small, but largely distinct group of organic farmers. As with the average farm size and years spent in farming, the average dependency on farming income for organic farmers from NFBs was very small. These farmers were mainly operating horticulture and mixed farms. Further, the vast majority of organic farmers from NFBs (87%) were well-educated, 73% of these farmers were male and 80% were aged 41 years or more.

[15] The source of these qualitative data is the 'in-depth interview' with Organic Farmer 46.

'Creating public goods', 'enjoying the lifestyle', 'making a profit' and 'making a living' were stated as the most important objectives for the organic farmers from NFBs in this research project. These farmers ranked the creation of public goods first, while 'making a living' was ranked last. These farmers also highly valued the altruistic and intangible aims of producing public goods and enjoying the farming lifestyle. The main reasons for the adoption of organic farming techniques fell within two key categories. Whilst almost all organic farmers from NFBs entered into organic farming because of their perceptions of this system's ability to deliver public goods, a relatively low percentage of organic farmers from NFBs (27%) adopted organic farming methods because of financial motives other than farm payments.

This chapter has also reported that the technical, market and institutional risks associated with organic farming were of concern to organic farmers from NFBs in this study. 60% of these farmers were concerned with technical risks and 53% were concerned with market risks, whilst 27% mentioned institutional risks. These results, to a large extent, run contrary to the hypothesis that organic farmers from NFBs will have distinct perceptions about types and sources of risks in organic farming. In contrast, this thesis has provided evidence which supports the hypothesis that organic farmers from NFBs have a distinct willingness to take risk in organic farming. Most organic farmers from NFBs (73%) agreed that they were willing to take risk in organic farming, while only 58% of organic farmers from FBs accepted risk in organic farming. Further, the vast majority of organic farmers from NFBs (87%) accepted risk in farming and nearly half (53%) accepted risk in general.

Nevertheless, according to the attitudes of organic farmers from NFBs towards risk in organic farming and qualitative data collected in the course of this study, organic farmers from NFBs cannot necessarily be identified as 'committed organic farmers'. This, in turn, raises a question about the typology generated by this research project in the next chapter. The next chapter also analyses possible changes in organic farmers' perceptions about the types and sources of risks in organic farming over time. Chapter 7 which is the last analytical chapter of this thesis, therefore, addresses the fourth and fifth research objectives.

Chapter Seven: Farmer typology

7.1 Introduction

The main purpose of this chapter is to produce a typology and to provide policy guidance that may help to increase future organic adoption. Based on the framework developed by Morris and Potter (1995), Section 7.2, will place surveyed eligible farmers in Devon on a 'risk-spectrum' according to their attitudes towards risk in organic farming and to qualitative information gathered mainly in the course of the 'in-depth interviews'. The findings from the application of this typology, which categorises farmers along a spectrum from 'resistant non-organic farmers' to 'committed organic farmers', will be used to derive a set of policy recommendations which, it is hoped, will contribute to the future development of the organic sector in the UK (Section 7.3). Section 7.3 will also analyse changes in organic respondents' perceptions of risks in organic farming over time (the fifth objective of this thesis). Section 7.4 draws this chapter to its conclusion.

7.2 Farmer types

In this section, 256 of the farmers who participated in this study will be categorised using Morris and Potter's (1995) typology. The spectrum of farmer types within this framework ranges from 'resistant non-organic farmers' to 'committed organic farmers'.

In an investigation into participation in agri-environmental schemes in the UK, Morris and Potter (1995) have suggested a typology in which adopters and non-adopters can be categorised. The 'participation spectrum' included types such as 'resistant non-adopters' who would not take part in agri-environmental schemes under any circumstances. On the other hand, and subject to possible future changes in different elements of these schemes, 'conditional non-adopters' might participate. Likewise, 'passive adopters', whose financial objectives took a front seat, might move across the spectrum as their attitudes change. Such changes in position were more difficult for 'active adopters' who reflected commitment to environmental principles.

As the 'participation spectrum' clearly and directly linked the attitudes and motivations which explained adopters' and non-adopters' existing behaviour with possible future changes in behaviour, a 'risk-spectrum' can be produced which can be used to help increase future organic adoption (Table 7.3). This spectrum is based on farmers in Devon who were operating organic/non-organic farms and were/were not, to different degrees, willing to take risk in organic farming (Tables 7.1 and 7.2). This is based on the fact that these farmers were consistent in terms of their farming system and their attitudes towards risk in organic farming (see Sections 2.2.2)[1]. Here, it is important to note that no statistical association was evident between the degree to which farmers were willing to take risk in organic farming (Tables 7.1 and 7.2) and other factors that were thought to have an influence on their attitudes to risk (see Section 2.2.2). A detailed discussion of farmers' attitudes towards risk in organic farming is included in Section 5.7.1.

[1] Accordingly, of all farmers in this study 79% were included in the 'risk-spectrum' while 21% were excluded. Data related to the latter were inconclusive with regard to the linkage between attitudes towards risk in organic farming and farming decisions (see also Darnhofer et al. 2005).

		"For me, Taking Risk in Organic Farming is Exciting"		Total
		Agree	Strongly Agree	
Organic Farmers	Count	100	31	131

Table 7.1: Favourable responses to risk in organic farming and organic farmers (Source: Author's questionnaire 2008)

		"For me, Taking Risk in Organic Farming is Exciting"		Total
		Strongly Disagree	Disagree	
Non-Organic Farmers	Count	19	106	125

Table 7.2: Unfavourable responses to risk in organic farming and non-organic farmers (Source: Author's questionnaire 2008)

The association between negative and positive attitudes towards accepting risk in organic farming and possible future changes in farming systems was discussed in detail with interviewees. Qualitative information derived from, for example, questions, such as *"would you continue to farm/farm organically/non-organically in the future"* and *"If the organic market decreases/increases in the future, would you change your attitude towards risk in organic farming"* (see Appendix Two), showed important dissimilarities (see below). This, in turn, allowed the respondents (presented in Tables 7.1 and 7.2) to be categorised into a typology (Table 7.3). In other words, the non-quantitative approach used by many researchers (e.g. Morris and Potter 1995; Fairweather and Campbell 1996; Darnhofer et al. 2005) was employed for clustering. Here, it is important to note that this approach, in contrast to multivariate statistical analyses, such as 'cluster analysis' (Everitt et al. 2001; Chan 2005; Schneider et al. 2009), can use both quantitative and qualitative information to classify respondents on the basis of their allegiance to the dimensions under consideration (Bailey 1983; Morris and Potter 1995).

(%) of 125 **Non-Organic Farmers**	(%) of 131 **Organic Farmers**
Resistant Non-Organic Farmers (15%)	Pragmatic Organic Farmers (76%)
Conditional Non-Organic Farmers (85%)	Committed Organic Farmers (24%)

Table 7.3: Typology of 256 farmers in Devon
(Source: Author)

Table 7.3 shows the breakdown of respondents (as a percentage of all respondents) within each category. The categories were taken from Morris and Potter (1995) and Fairweather and Campbell (1996). The latter has defined organic and non-organic farmers based on their positions to organic farming by applying a 'decision tree' (see Section 2.2.2). Taking the 'resistant non-organic farmers' first, this category represents 15% of the total number of non-organic farmers having unfavourable responses to risk in organic farming (Table 7.3). Strong aversion to taking risk in organic farming was expressed. In other words, the level of perceived risk in organic farming largely exceeded the level of risk that they were prepared to take for these farmers. These extremely negative positions to accepting risk in organic farming were also likely to be combined with stances opposing organic farming. Therefore, as Figure 7.1 shows, 'resistant non-organic farmers', characterised by the comment *"I would not ever go organic"* were adamant that they would not implement organic methods at any point in the future, regardless of the future conditions of the organic sector (see also Lockeretz 1995).

It is important to note here that imperfect knowledge about organic farming policy was noticeable amongst these farmers, although the majority of non-organic respondents in Devon were, as expected (see Section 3.2), well-informed about other aspects of organic farming (see Chapter 5). This, in turn, explained why most non-organic farmers became less committed to non-organic practices and techniques, as organic farming was a possible future option only for the 'conditional non-organic farmers' (Figure 7.1; see also Morris and Potter 1995).

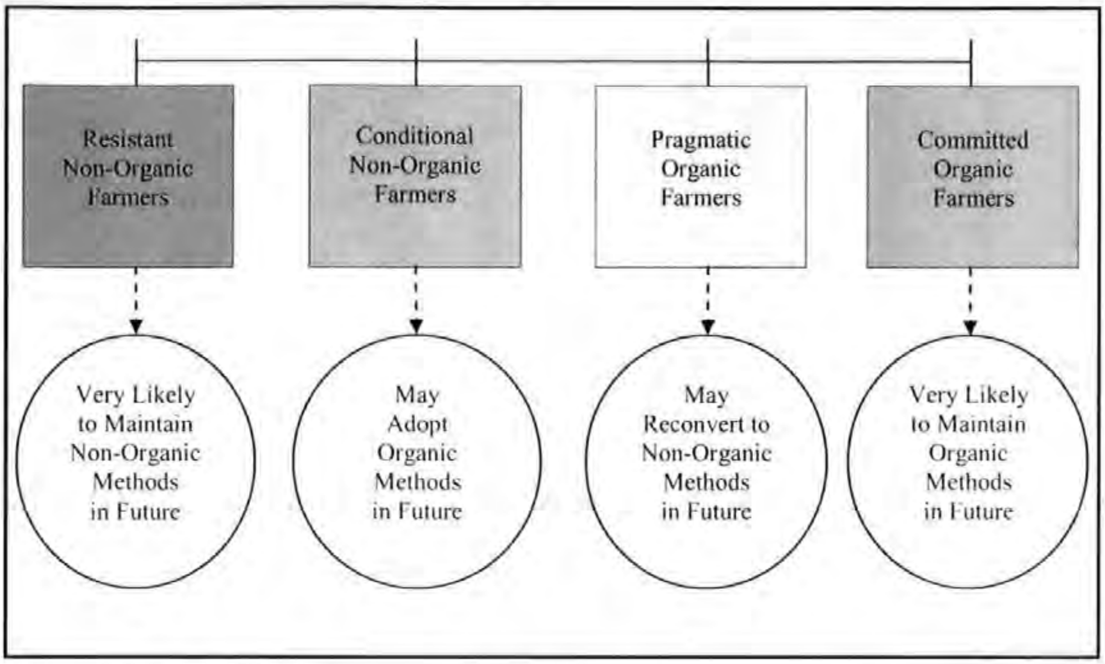

Figure 7.1: Typology of 256 farmers in Devon and expressed future farming options (Source: Author)

The 'conditional non-organic farmers' (representing 85% of the total non-organic farmers that expressed negative attitudes towards accepting risk in organic farming (Table 7.3)) were not strongly risk-avoidant; they merely chose not to take this risk in organic farming at this point in time. This changeable attitude was also reflected in a number of comments which pointed out that future conversion to organic methods would depend on changes in the future risky environment of organic farming (see also Darnhofer et al. 2005; Acs et al. 2009):

> "*I will not say I will never be organic, but at the moment we are not....... Organic farming is quite like a challenge. I may convert to organic if the fees of being organic are lower and regulations become less demanding..... I will consider it certainly*"[2] (Conditional Non-Organic Farmer 104).

[2] This quote came from the 'in-depth interview' with Conditional Non-Organic Farmer 104.

Also, another conditional non-organic farmer said during the 'in-depth interview':

> *"I am not against organic farming. I have not said I would never do it. I could be persuaded depending on prices and what we are going to have in the next few years. At the moment, changing to organic farming is not financially worth it, but maybe in the future"* (Conditional Non-Organic Farmer 103).

In other words, the 'conditional non-organic farmers' will not be eager to take up organic techniques and practices unless the level of perceived risk in organic farming drops below the level which is acceptable to them (Figure 7.2). This would allow them to achieve their farming aims through organic farming. Here, and similar to the 'conditional non-adopters' identified by Morris and Potter (1995), it should be noted that despite the existence of various farming objectives, economic objectives played an important role in future adoption decisions (see above).

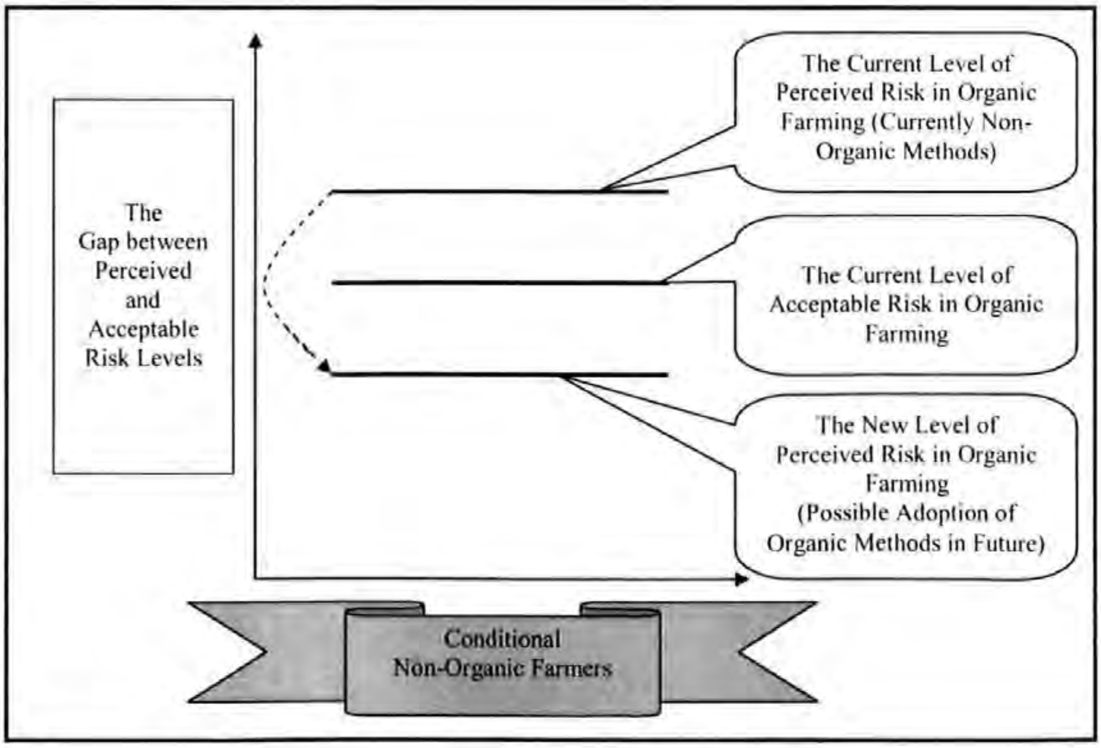

Figure 7.2: Levels of risk in organic farming and 'conditional non-organic farmers' (Source: Author)

Along with the 'conditional non-organic farmers', the 'pragmatic organic farmers' also appeared less than fully committed to their current farming systems. Even though economic considerations were not a significant element for the latter, they were, nonetheless, an important driver in shaping their future decision-making in organic farming (see also Lobley et al. 2005). In other words, belief in the principles of organic farming and its philosophy were not strong enough to prevent possible future reconversion to non-organic methods, although this was not a decision that would be made easily (see also Fairweather and Campbell 1996).

> *"I do not know.......I will not know....If there is no strong organic market, no point. I should not have said that, should I? because I do believe in organic farming..... . Ohhh, if I have to pay too much to the Soil Association to be organic, and I cannot sell the stock as organic, then maybe I have to go"*[3] (Pragmatic Organic Farmer 78).

During the 'in-depth interview', Pragmatic Organic Farmer 116 expressed a similar view:

> *"I also farm as a business. I am not here for a holiday. If I suddenly decide it is not feasible to be organic any longer, for example, if there is no organic market, I will farm in the same way that I have farmed before (non-organically). When I am not comfortable with organic, I will change the way I am farming".*

Undoubtedly, the 'pragmatic organic farmers' were willing to take a considerable amount of risk in organic farming (Tables 7.1 and 7.3) and yet they still might take the decision to leave organic farming at any point in the future if the level of perceived risk was to change beyond their individual level of acceptability (Figures 7.1 and 7.3).

In contrast, changes in the future risky environment of organic farming was less likely to push the 'committed organic farmers' to revert to non-organic methods. In other words, perceiving more risk in organic farming in the future, these farmers would not apply non-

[3] These qualitative data were collected in the course of the 'in-depth interview' with Pragmatic Organic Farmer 78.

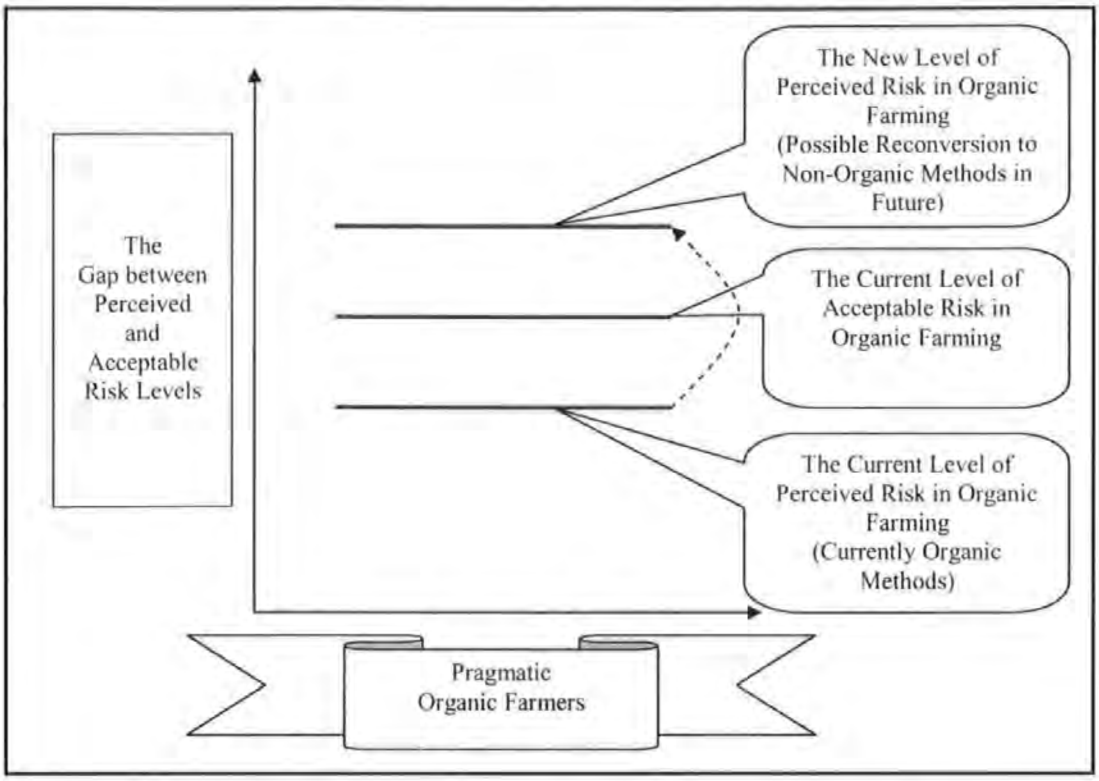

Figure 7.3: Levels of risk in organic farming and 'pragmatic organic farmers' (Source: Author)

organic techniques and practices to manage their farms at any point in the future (Figure 7.1):

> *"I will not change. I will risk some of my farming income if the premium decreases in future..... . If regulations become more difficult, ... maybe I will cancel my registration, and I do it unofficially. To be honest, I think you need to be organic if you want to change the way farming practices are done. There is no other way"*[4] (Committed Organic Farmer 46).

Similarly, Committed Organic Farmer 38, who was running a mixed farm that was registered with the SAO since 1988, stated during the 'in-depth interview':

> *"For me taking risk in organic farming is very exciting; I strongly agree. I very much believe in organic. I would still do it even when it does not go very well. When I was a student... a young man, I thought organic farming is the only way I want to farm"*.

[4] This quote came from the 'in-depth interview' with Committed Organic Farmer 46.

In total, 24% of the organic farmers mentioning favourable responses to risk in organic farming (Table 7.3) strongly accepted this risk. In the future, the 'committed organic farmers' would adapt their approach to farming as necessary to cope with a more high risk environment. Seeing organic farming as an agricultural system delivering public goods and a philosophy took a front seat in this segment's attitude to its future in organic farming (see also Fairweather and Campbell 1996; Darnhofer et al. 2005). However, it is tempting to speculate that the absence of more individuals who were resistant to a shift away from organic techniques and practices could, as argued by Winter (2003a), be related to the important role played by financial motives in adoption decisions (see Section 4.5).

In line with Morris and Potter's (1995) study, this section has used a set of qualitative survey data to categorise farmers' attitudes towards risk in organic farming in Devon. These attitudes were heterogeneous and were linked to their individual farming system. The 'conditional non-organic farmers' and 'pragmatic organic farmers' were open to future adoption of organic/non-organic methods, subject to possible changes in the future risky environment of organic farming. On the other hand, 'resistant non-organic farmers' and 'committed organic farmers' were very likely to maintain their current farming systems; they were opposed to a shift between organic and non-organic techniques and practices in the future. The application of this typology therefore provides an insight into farmer attitudes towards risk in organic farming, which may help policy-makers to increase future organic adoption not only in Devon, but in the wider context of agriculture within the UK.

7.3 Policy implications

This section will discuss the policy implications of the findings from the previous section. The discussion will focus on the risky environment of organic farming and the variation in this risk environment over time.

It has been assumed (see Section 2.6) that farmers' perceptions of risk in organic farming may change over time. Therefore, organic farmers in Devon were asked *"which risks in organic farming were concerning you when the adoption decision was made?"*. Answers to this question were compared with responses to a similar question which asked farmers which risks in organic farming were of concern to them now (see Chapter 5).

From Table 7.4, it can be seen that apart from personal risks, production, market and institutional risks confronted organic farmers in 2008 (the time of the questionnaire survey). When compared with the percentages of farmers concerned about similar risks at the point of conversion, it is clear that perceptions of risk in organic farming had increased over time. This was affected by the overall recent risky environment of organic farming which can be perceived to include higher levels of risks (see, for example, Tranter et al. 2007b; FMMRs 2008; Gibbon 2008)[5]. 'In-depth interview' data provided evidence for this assertion. For example, Organic Respondent 39, who converted his conventional farm in 1998, said: *"In the 1990s, there were no problems at all in the market. It was new and more stable"*. Also, the organic farmer whose life history is presented in Box 4.3 indicated: *"We were allowed to use some non-organic feed, but the Soil Association has changed its regulations. Now, I can only use organic concentrates"* (Organic Farmer 10).

[5] Years in which the adoption decisions were made ranged between 1968 of an unofficial organic farm and 2007 of a registered one.

	(%) of 168 Organic Farmers*	
	"Which risks in organic farming were concerning you when the adoption decision was made?"	*"Which risks in organic farming are of concern to you now?"*
Production Risks	34	70
Market Risks	26	55
Institutional Risks	7	29
Personal Risks	16	4

Table 7.4: Changes over time in organic farmers' perceptions of risk
(Source: Author's questionnaire 2008)
* Responses were not mutually exclusive

Further, it should be noted that lack of knowledge about potential risks in organic farming, such as when the adoption decisions were made, also helps to explain why perceptions of risk have changed over time. This is supported by the fact that only 36 out of 168 organic respondents in Devon (21%) had prior practical experience of organic methods when they embarked on organic techniques and practices on their current farms. This, in turn, suggests why only personal risks in organic farming were of greater concern at the time of taking up organic farming on these farms:

> *"When I converted the farm, I did not know as much as I know now. I was aware of some of the problems, but, for sure, I was not aware of all of them...... Actually, the main concern was whether or not I would be able to farm organically.....to produce enough food for my animals"*[6] (Organic Farmer 116).

Table 7.4 thus provides evidence that farmers' perceptions of risk in organic farming are subject to change over time. Farmers' perceptions of future risk in organic farming in Devon are the core of a clear recommendation for policy-makers in the UK which arises from this thesis. This recommendation, based on the results of this study may help to expand the future uptake of organic farming, and suggests that a targeted approach of policies supporting the organic sector is needed. In this respect, it is important to highlight

[6] The source of this quote is the 'in-depth interview' with Organic Farmer 116.

that DEFRA (see Table 3.3) equally targets all farmers and is open to the possible need to adapt its policy in the future:

> *"DEFRA provides considerable support for the organic sector.......... It is open to all farmers so DEFRA does not target specific groups of farmers. The mechanism for supporting organic farmers is under regular review and if it is decided that more targeted support to specific groups of farmers would be more effective, DEFRA would consider this"* (Organic team, DEFRA).

A similar suggestion has also been made by Kourouxou et al. (2008) in Greece, where it has been suggested that organic farmers in southern and northern Thassos should be guided by different policies. Further, Morris and Potter (1995) have advocated that 'passive adopters' could be specially targeted by policy-makers to move them to the active end of the 'participation spectrum' (see Section 7.2). On the other hand Wilson (1996), expanding this spectrum, has recommended that policy-makers specially target the 'conditional non-adopters', 'passive adopters' and 'conservation oriented farmers on holdings of marginal ESA eligibility' for inclusion and continued participation in the Environmentally Sensitive Area (ESA) scheme.

This research (see Figure 7.4) suggests that the 'resistant non-organic farmers' and 'committed organic farmers' should not receive special attention by policy-makers in the UK, as they are very unlikely to leave their current farming systems (see Section 7.2). Thus, these two clusters ensure the existence of different farming systems that are actually needed. Awareness and support of this issue by policy makers can be seen, for example, through the identification of a specific quantitative target for the national area of land under organic cultivation (see Section 2.3.2). Indeed, since organic farming is unlikely to produce the same yields as other farming systems, particularly conventional farming, and to meet the needs of a growing global population, not all farmers should go organic (Nieberg and Offermann 2003; Kirchmann et al. 2008; see also Section 2.6.1). Further, it is important to remember that organic farming cannot alone satisfy all consumers, given that they are not homogenous in terms of their purchasing attitudes and abilities and, therefore, markets should provide food and drink produced using a variety of farming methods (see Section 2.4).

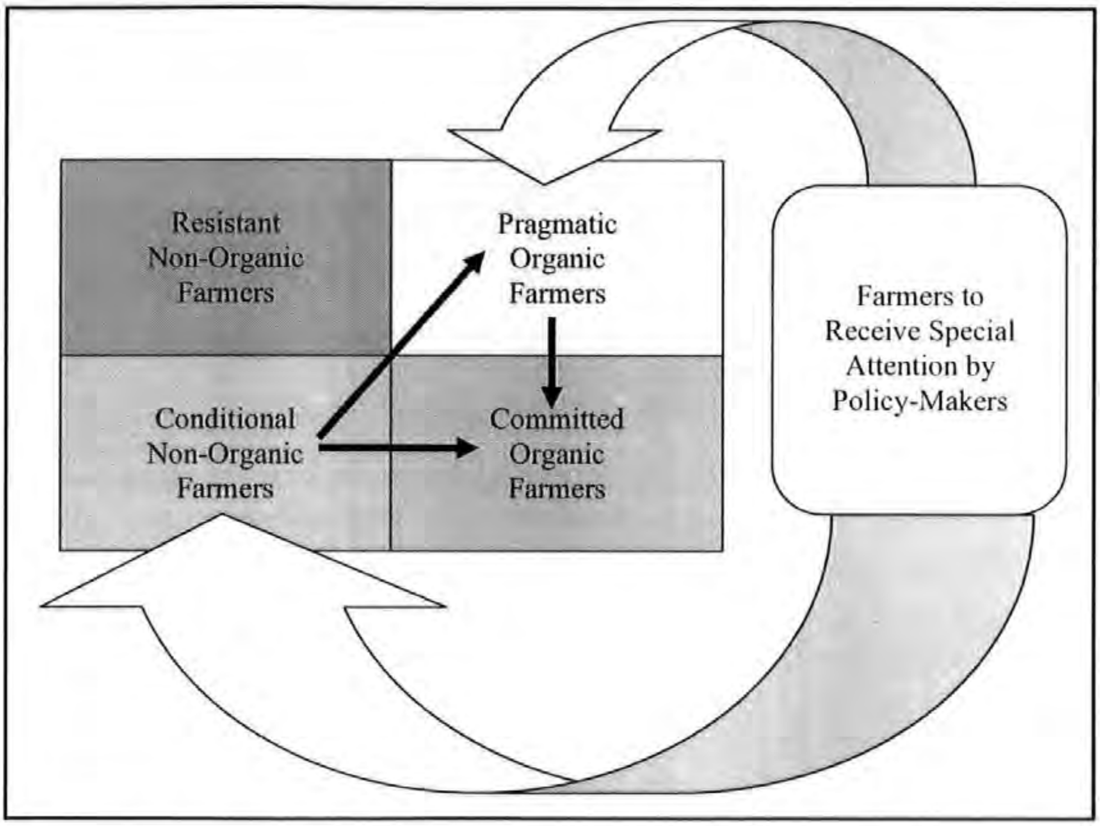

Figure 7.4: Farmer types to be specially targeted by policy-makers
(Source: Author)

This thesis also recommends that policy-makers in the UK should particularly focus on the 'conditional non-organic farmers' and 'pragmatic organic farmers' to support the organic sector. As the 'conditional non-organic farmers' may enter into organic farming when more net financial returns are seen (see Section 7.2; see also Acs et al. 2009), they should be specially made aware of policies which aim to improve current perceptions of the financial performance of organic farming. This reflects the fact that these farmers, who may become either pragmatic or committed organic farmers due to their stances to organic farming after adoption, need strong efforts from policy-makers wishing to expand the organic sector (see Figure 7.4). However, and compared to the 'conditional non-organic farmers', the 'pragmatic organic farmers' do not need the same encouragement to maintain organic farming methods in the future (see Figure 7.4), given that they may stay in this system as long as current seen financial viability remains the same (see Section 7.2). Therefore, these farmers should specially be supported by policies which aim to sustain this viability. This, in turn, may result in more committed organic farmers in the future as the 'pragmatic organic farmers' continue to farm organically (see Figure 7.4).

Policies which are aimed at maintaining and improving the perceived current financial performance of organic farming in the future, should further exploit research on risks which influence this performance from the point of view of farmers (ESG 2001). Here, this thesis suggests that models from economic psychology such as van Raaij's (1981) model, for example, could be used to address farmers' perceptions of risk in organic farming in an economic context (see van Raaij 1981; Flaten et al. 2005; Lien et al. 2006a). Identified risks should then be subject to thorough analyses and evaluations (see Casley and Kumar 1987), and action taken to mitigate these risks (Hardaker 2004). Thus, policy-makers in the UK can encourage future conversion to, and continued adoption of, organic farming. Here, it is expected that promotion and information campaigns about organic products targeted at consumers will be particularly important. This expectation is related to current changes in demand for organic food and drink, as well as the recent recession, which are assumed to have had a negative effect on the financial viability of organic farming (see Sections 6.6 and 8.4). Further, it is also based on the issues that Stolze et al. (2007) and Schmid et al. (2008) have highlighted, namely that organic farming policy instruments in the UK suffer from a lack of consumer promotion and knowledge campaigns about organic products (see also Section 2.4).

It is essential to note that the message delivered by this thesis is based on the assumption that the organic sector would continue to be of particular interest to policy-makers in the UK. This assumption, based on the 'in-depth interviews' (see Table 3.3), has been found to be true:

> "DEFRA believes that organic farming and food can make a significant contribution to helping it achieve its sustainability objectives and is committed to supporting the development of a strong sustainable and viable organic sector...... . DEFRA continues to support and maintain an interest in the development of the organic sector. It frequently liaises with stakeholders in the organic sector and continues to support its expansion and development" (Organic team, DEFRA).

Nevertheless, it should be borne in mind that policies supporting organic farming may be limited in future as different factors, such as farmers' aims and budget (e.g. current discussions about budget cuts to DEFRA), affect these policies (see, for example, CRER 2002; Tomlinson 2008; Reed 2009; Stolze and Lampkin 2009). Further, as the priorities of agricultural policy change over time (Winter 1996), possible future changes in the level of government interest and intervention in the organic farming sector in the UK should be kept in mind. Whatever the level of and obstacles to policies supporting the organic sector in the UK are, they should be regularly evaluated and analysed, as this can only improve their performance (see, for example, Wilson 1997b; Winter 1997; CRER 2002; Whitehead et al. 2002).

The risky environment of organic farming as perceived by organic farmers and documented in this section has been shown to be subject to change over time. For example, despite rapid growth, the volatile nature of the organic market has resulted in an increase in perceived risk by farmers at the time of the questionnaire survey, compared to the point at which they made their adoption decisions. In this section, and based on the generated typology, policy guidance has been suggested to help increase future levels of organic adoption. Policy-makers in the UK should not specially focus on 'resistant non-organic farmers' and 'committed organic farmers' in their support for the organic sector. The 'conditional non-organic farmers' and 'pragmatic organic farmers', in contrast, should receive particular attention. As the perceived financial performance of organic farming takes a front seat in these farmers' attitudes to their future in organic farming, a clear picture of future organic adoption behaviour can be drawn.

7.4 Conclusions

This chapter has thrown new light on the literature concerning the future uptake of organic farming. Possible future changes in attitudes towards risk in organic farming, based on its future risky environment which may be subject to changes over time, may be fundamental driving forces in this respect. This was expressed by 'conditional non-organic farmers' and 'pragmatic organic farmers'. While the former might adopt organic farming when more net financial returns are seen, the latter would not leave organic farming as long as its current financial performance remains favorable. Therefore, these farmers should particularly be targeted by policy-makers in the UK looking to support a well-developed organic sector. It is also suggested that more research is needed to encourage continued adoption of organic farming methods and organic conversion. These policy implications are based on a typology developed from Morris and Potter's (1995) notion of a 'participation spectrum' which also included 'resistant non-organic farmers' and 'committed organic farmers'. These two farmer types are very likely to resist leaving their current farming systems and it is, therefore, recommended that policy-makers in the UK should not especially focus on them to support organic farming.

Chapter Eight: Conclusions

8.1 Introduction

This thesis aimed to analyse the importance of farmers' willingness to take risk in organic farming in their decisions whether or not to farm organically. It had five specific objectives:

1. Using Devon, to assess non-organic and organic farmers' perceptions about sources and types of risks associated with organic farming.

2. To assess the importance of willingness to take risk with regard to non-organic and organic farmers' decisions to farm/not to farm organically or to consider conversion to organic farming.

3. To analyse risk perceptions and willingness to take risk in organic adoption of organic farmers from NFBs.

4. Based on Morris and Potter's (1995) notion of a 'participation spectrum', to categorise farmers into a typology based on a 'risk-spectrum' in order to help increase future organic adoption and to provide policy guidance.

5. To analyse possible changes in risk perceptions over time once farmers have entered into organic farming.

Section 8.2 will discuss the key conclusions of this study linked to risk theory and how evidence from organic farming adoption in Devon can be used to improve theorizations of individuals' risk attitudes. Section 8.3 will then re-engage with the important issue of positionality of the researcher in the context of this study, while Section 8.4 will discuss how this thesis can be used as a platform for future research, with specific emphasis on future research that could be conducted in Syria (the home country of the researcher).

8.2 Theorising individuals' risk perceptions and attitudes: evidence from organic farming adoption in Devon

This section will discuss the key conclusions that emerge from the analysis of data collected in this thesis, with a specific focus on how this thesis has highlighted issues linked to risk theory in the context of organic farming adoption. More generally, the key contributions made by this research project on organic farming will also be discussed.

8.2.1 Contributions of this study to debates on risk theory

One of the key theoretical findings from this study relates to the important distinction between 'risk attitudes/willingness to take risk' and 'risk perceptions' (see Chapter 2). Some commentators have argued that "*risk attitude and risk perception are two different concepts*" (Pennings and Wansink 2004: 699; see also Curry and Weiss 2000; Pennings and Leuthold 2000; de Buck et al. 2001; Serra et al. 2008), and this statement was endorsed by the results of this thesis. Results on organic farming adoption and non-adoption highlighted in this study have particularly shown that *risk attitude/willingness to take risk* can be defined as a chosen response to risk (see, for example, Pennings and Wansink 2004; Hillson and Murray-Webster 2005), while *risk perception* only reflects an individual's view on the existence of risk (see, for example, Slovic 1987; Curry and Weiss 2000; de Buck et al. 2001; Saba and Messina 2003; Hardaker 2004: Pennings and Wansink 2004; Röhr et al. 2005; Jenkin 2006). Based on evidence from this study, Figure 8.1 highlights that *risk attitudes and risk perceptions* are intricately linked, as *"risk must first be perceived before a farmer is able to respond to it"* (Pennings and Leuthold 2000: 910). Further, *"whether perceived risks have an important impact on switching decisions of individual farmers ... depends on the risk attitudes of farmers"* (Gardebroek 2006: 486). The results of this study (discussed in particular in Chapters 5 and 6), therefore, suggest that a focus on *risk perceptions* alone is a relatively unreliable indicator of the influence of risk on people's decisions and behaviours in relation to a 'risky activity' such as organic farming (Fishbein and Ajzen 1975; de Buck et al. 2001). Indeed, only by understanding individuals' *willingness* to take risks – as highlighted in Chapters 5 and 6 – does a full picture of the risky nature of an activity (e.g. organic farming adoption) emerge.

Evidence from this study further suggests that the role of risk in individuals' decisions and behaviours can best be understood by adopting an analytical framework linked to 'reasoned action' theory, which was the basis of the conceptual framework of the present research. 'Reasoned action' theory, based on Fishbein and Ajzen's model (1975), assumes that *attitudes* and *behaviours* are linked and that such behaviours are directly related to attitudes. It also argues that attitudes work as a latent variable (as they are not directly observed) and that attitudes are driven by beliefs.

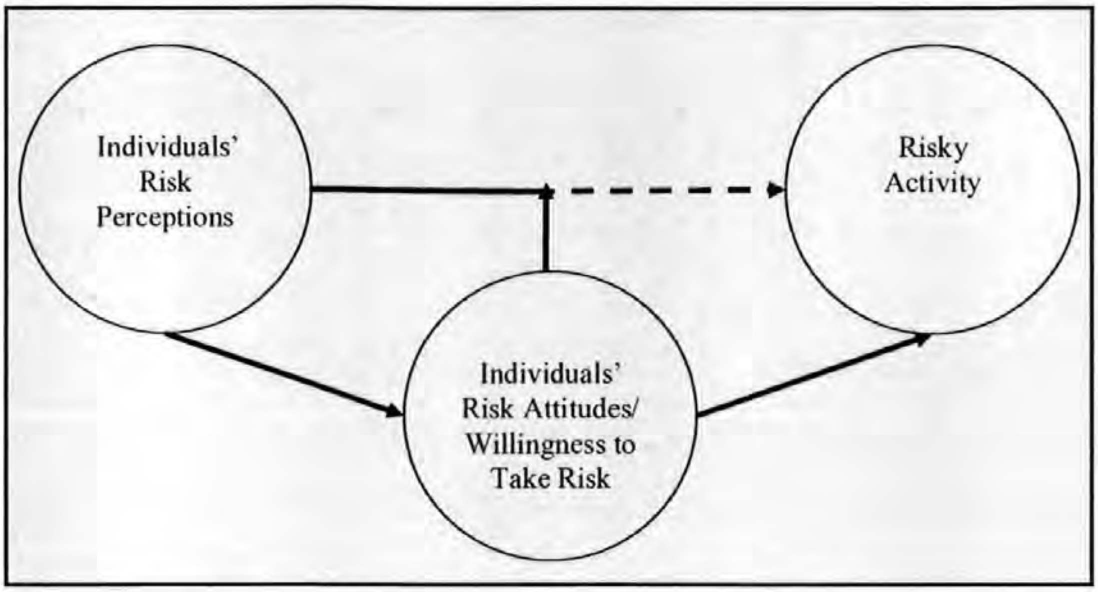

Figure 8.1: Interactions between individual risk perceptions, risk attitudes/ willingness to take risk, and risky activities
(Source: Author)

Nevertheless, Selfa et al. (2008: 263) argued that *"the linkages between attitudes and behaviours are complex"* (see also Ajzen and Fishbein 2008; Khanna et al. 2009), and findings from this study also confirm this. In other words, it may be difficult always to accurately explain the association between attitudes and behaviours since many factors are at play (Flaten et al. 2005; Bergfjord 2009). Further, Sjoberg (2000) suggested that attitudes are determinants of beliefs, while Festinger (1957) argued with reference to what has been termed 'cognitive dissonance' theory that attitudes and behaviours are not always linked. For example, results in Chapters 5 highlighted that if a farmer accepts risk in organic farming, this does not necessarily mean that the farmer is running an organic farm. As a result, as 'reasoned action' theory takes into account only one of the decisive factors (attitudes), it may not always help in understanding and explaining people's actions (Wilson 1996). This study argues, therefore, that future studies on, for example, understanding and explaining individuals' decisions and behaviours under risk, should take into account not only risk attitudes but also individuals' *ability* to implement change under risky conditions (Morris and Winter 1999). This suggests that while *'reasoned action'* theory continues to provide a robust analytical framework for future studies on farmers' (and other actors') risk behaviour, it also has some disadvantages that were evident when this study's data were being analysed (see Chapters 5-7). Nonetheless, as Chapter 2 highlighted 'reasoned action' theory has been applied successfully in many different domains (see, for example, Pennings and Leuthold 2000; Khanna et al. 2009), and this study suggests that, on the whole, reasoned action theory provides a robust conceptual/framework that could be used in future studies on risk perceptions and attitudes.

With these caveats in mind, the main findings of this thesis related to risk theory are as follows:

(1) *Willingness to take risk in organic farming* is a dominant precondition for the uptake of organic farming. Thus, understanding farmers' willingness to take risk is crucial for understanding farmers' decisions under risky conditions – a key issue that future studies on risk should take into account.

(2) Non-organic and organic farmers were different in relation to their *willingness to take risk associated with organic farming*. This has partly explained the complex organic adoption processes witnessed in Devon.

(3) *Attitudes* towards risk in organic farming varied, although non-organic and organic farmers were similar in terms of their *perceptions* about risks associated with organic farming. This reinforces the point made above about the crucial need for

understanding both attitudes towards risk and risk perceptions as two separate, but interrelated, processes explaining risk behaviour.

(4) Organic farmers' *perceptions* of risk in organic farming were subject to change over time (i.e. views on the existence of risks in organic farming changed). This was a key explanation for changes observed on farms that had been organic for a long time.

What implications do these key findings have for wider academic debates on risk theory and individuals' risk behaviour? As highlighted, this thesis has found that *willingness* to take risk in organic farming is an important precondition for the adoption of organic farming methods. This key conclusion re-emphasises findings in the risk literature that suggest that attitudes towards risk in an activity considered 'risky' play a central role in understanding and explaining people's decisions and behaviours in relation to this activity (see, for example, Sjoberg 1999b; Hardaker 2004; Serra et al. 2008). This study, therefore, contributes to debates in the wider literature on risk concerning (a) factors affecting individuals' decisions and behaviours under risk, for example with regard to the willingness to take risk in certain professions in general (e.g. farming) or for understanding farmers' uptake of IFS or organic farming more specifically; and (b) this study has shed further light on the importance of each of the different and complex factors influencing risk behaviour (see Salamon et al. 1997; Morris and Winter 1999; Lange et al. 2004; Hattam 2006; Scholten 2006; Selfa et al. 2008; Ahnstrom et al. 2009). On the basis of these results and building further on work by de Buck et al. (1999), Morris and Winter (1999), Serra et al. (2008) and Gabriel et al. (2009), it is recommended, therefore, that investigations into, for example, farmers' decisions whether or not to farm sustainably should particularly take into account farmers' *dispositions* towards risk. This study, therefore, suggests that such investigations should not rely on farmers' *perceptions* of types and sources of risks associated with specific sustainable farming systems, and that such investigations should be particularly careful not to use risk perceptions as an *alternative* or *surrogate* for understanding farmers' risk attitudes, as is still often the case in existing literature on organic farming adoption and risk (e.g. Lockeretz 1995; Midmore et al. 200; Schneeberger and Kirner 2001; de Lauwere et al. 2004).

This study has also shed important light on different *attitudes* towards risk in organic farming between organic and non-organic farmers. It particularly highlighted that organic farmers tended to 'agree' that they were willing to take risk in organic farming when compared to their non-organic counterparts. This different willingness to take risk associated with organic farming was, thus, a key explanation why some farmers were willing to take up organic farming while others were not. The analysis of *perceptions* of types and sources of risks associated with organic farming (views on the existence of risks in organic farming) of both organic and non-organic farmers also showed that more non-organic than organic farmers cited the existence of farm-related risks, risks related to farmers' beliefs, and risks related to financial returns (see also Midmore et al. 2001; Darnhofer et al. 2005). As a result, the sub-hypothesis suggesting that risks associated with organic farming will be differently perceived by non-organic and organic farmers was accepted (at least for some types of risks) (see Section 1.6.1). On the other hand, and consistent with other studies (e.g. Lockeretz 1995; Fairweather and Campbell 1996), weather-related risks, risks related to production inputs and facilities, and risks related to farmers' skills, as well as technical and institutional risks, were assigned equal weighting by both non-organic and organic farmers. Findings from this study also suggested that a more nuanced approach is needed to fully understand farmers' risk behaviour, as many non-organic farmers both showed imperfect knowledge of organic policy and had high sensitivity to financial loss. Ultimately, the complex combination of available knowledge and risk attitudes/perceptions highlights that we need to better understand farmers' individual circumstances in order to fully grasp farmers' risk behaviour.

Finally, the sub-hypothesis that organic farmers' perceptions about types and sources of risks in organic farming will be *subject to change* across time (see Section 1.6.1) was supported in this research project. For example, production and market risks associated with organic farming were of particular concern to organic farmers at the time of the questionnaire survey (2008) but not at the time of (earlier) adoption. Further, at the time of the questionnaire survey more organic farmers were concerned with institutional risks, but not with personal risks, than at the time of uptake of organic farming. This could be explained through recent changes in the 'risky environment' of organic farming, especially current concerns over the instability of the organic market (see, for example, Tranter et al. 2007b; FMMRs 2008; Gibbon 2008). Lack of practical experience of organic practices and techniques when organic farmers started to farm organically was also a key explanation in changing risk perceptions. This thesis, therefore, also suggests that risk perceptions should be analysed over longer time periods (i.e. not just as a snapshot in time), in order to provide a full picture of farmers' perceptions of risk (see also CRER 2002; Röhr et al. 2005).

8.2.2 Towards a typology of risk and organic farming adoption

A main outcome of this study was the creation of a typology of farmers based on above-mentioned findings related to farmers' risk attitudes/willingness to take risk. In accordance with Morris and Potter's (1995) work, this thesis has, therefore, created a *typology* based on attitudes towards risk in organic farming. This was based on 79% of the farmers who participated in this study and who provided consistent information on risk that could be used for the typology (see Chapter 7) and on quantitative information showing these farmers' stances to their future in organic farming in relation to their willingness to take risk in organic farming. This typology can be used to provide policy guidance that may help increase future organic adoption. The typology not only supported the sub-hypothesis suggesting that farmers can be grouped into specific 'clusters' on the basis of their risk attitudes (see Section 1.6.1), but may also be seen as a unique contribution towards better understanding of different types of risk attitudes among farmers (organic and non-organic).

The typology consisted of 'resistant non-organic farmers' who were very likely to maintain non-organic methods in the future. These farmers were unwilling to take risk in organic farming and were against organic farming as a production system and a philosophy. 'Conditional non-organic farmers', on the other hand, were generally unwilling to take risk in organic farming but might adopt organic methods in the future if conditions related to financial returns of organic farming change. Likewise, 'pragmatic organic farmers' were not entirely committed to their farming system and might cease organic practices and techniques in the future if the financial performance of the organic market becomes unfavorable. These farmers merely 'agreed' that they were willing to take risk in organic farming. 'Committed organic farmers', meanwhile, 'strongly agreed' that they were willing to take risk in organic farming, non-financial aims took a front seat for them, and they were also very likely to resist leaving organic farming in the future.

According to the typology, a number of *policy recommendations* were suggested. For example, as the 'conditional non-organic farmers' and 'pragmatic organic farmers' can be seen as a pool of farmers who may expand and maintain the organic farming sector in the

UK in the future, Chapter 7 recommended that policy-makers should specially target these two clusters. Policies improving the perceived financial performance of organic farming should be particularly targeted towards 'conditional non-organic farmers', while policies aimed at sustaining the current financial viability of organic farming should specifically target 'pragmatic organic farmers'. However, at this juncture it is also important to emphasise that, although this research project delivered a clear message to policy-makers in the UK looking to support a well-developed organic sector, this message is contingent upon the willingness of both society and policy-makers to continue support for an expansion of the organic farming sector in the UK (see Winter 1996; Winter 2002; Whitehead et al. 2002; Tomlinson 2008; Stolze and Lampkin 2009). Indeed, the currently precarious financial position of the UK and of many of its citizens may mean that the near future may necessitate entirely different pathways for organic farming in the UK – policy pathways that may mean a reduction in organic farming in the long term (see also Section 8.4).

8.2.3 Organic farmers from NFBs: an 'untypical' sub-group of organic farmers?

Building on UK-based studies such as Bohnet et al. (2003) or Lobley et al. (2005), a key hypothesis in this study was related to the question whether farmers from NFBs had different approaches – and indeed risk perceptions and attitudes – towards organic farming than farmers from NBs. Interestingly, but not entirely unexpected, 9% of the 168 organic farmers who participated in this study had not had previous practical experience of farming (see Lobley et al. 2005). This points towards the growing interest among individuals from NFBs in 'going back to the land' in search of the good life and in creating public goods from farming later in life (sees also Bohnet et al. 2003). Farmers from NFBs, therefore, can be seen to inject new life into the countryside and farming (see also Kaltoft 1999; Savills 2001), and can be labeled "hobby" or "lifestyle" farmers (Wilson 2007) with distinct socio-economic profiles (see also Padel 2001a). The typical farm size of organic farmers from NFBs in Devon was very small (19 hectares), while their organic counterparts with FBs on average managed 95 hectares. Similarity, whereas the average dependency on farming income for the former was only 21%, for the latter it was 63%.

The data collected in this study showed that a higher percentage of organic farmers with NFBs (73%) than organic farmers from FBs (58%) accepted risk in organic farming (see Section 8.2.1). This, in turn, supported the sub-hypothesis that organic farmers with NFBs have a distinct willingness to take risk in organic farming (see Section 1.6.1). With regard to risk perceptions (views on the existence of risk, see Section 8.2.1), technical, market and institutional risks associated with organic farming were of concern to organic farmers from NFBs. However, personal and social risks associated with organic farming were not of concern to these farmers, and organic farmers from both NFBs and FBs also had, to a large extent, similar perceptions of risks in organic farming. The latter suggests that the sub-hypothesis that organic farmers with NFBs will have distinct perceptions about the types and sources of risks in organic farming was not, to any great extent, supported (see Section 1.6.1).

Overall, these findings suggest subtle differences with regard to risk perceptions and willingness to take risk in organic farming across both organic/non-organic farmer clusters and within the group of organic farmers investigated in this study. This suggests that future work on farming and risk will need to investigate in more detail these subtleties, especially in view of the fact that many studies on farming and risk still tend to brand individual farmer groups/clusters as having relatively 'homogenous' risk perceptions and attitudes (see Chapter 2).

8.3 Researcher's positionality

Chapter 3 already highlighted that positionality is a particularly important issue to consider in this thesis, as the researcher is from Syria which has a very different socio-economic, political and agricultural/rural structure to that of the UK. In the following, I will, therefore, focus first on what it meant doing research in the UK as a Syrian PhD student (Section 8.3.1) and, second, on the possible role that 'Syrian factors' may have played in understanding and interpreting research results from Devon (Section 8.3.2). Section 8.3.3 will then briefly discuss implications of this for researcher-farmer interactions, while Section 8.3.4 will highlight what effects my Syrian background may have had for the interpretation of UK-based research data.

8.3.1 Doing research in the UK as a Syrian PhD student

"*Recognising your positionality and being reflexive*" (Valentine 2005: 113) is crucial in any research about human subjects, and especially involving issues such as organic farming that can be deeply laden with political and moral baggage. In this respect, England (1994: 82) defines reflexivity as "*self-critical sympathetic introspection and the self-conscious analytical scrutiny of the self as researcher*". In the context of this study, reflecting critically on issues linked to my positionality was particularly important as I came to the UK from a developing country (Syria) and with limited English skills and limited knowledge and experience of research (see Section 3.9). I started working on my thesis three days after arrival when I felt lost due to 'culture shock' and needed to attend a foundation programme. All these limitations, which, at several times, prevented good progress to be made, resulted in stress and trepidation particularly at the onset of my research (Valentine 2005; Watt 2007). They also meant that the challenge of doing my PhD in the UK would be more difficult than, for example, for a native English-speaking student. Although conducting research in the UK had been my choice from the start, at many times I felt that this decision (taken back in Syria) may have been over-ambitious, and that I should have prepared myself more. However, despite all difficulties, my ambition, confidence and notion that 'the biggest risk in this life is taking no risk' (i.e. linked to the theme of this PhD) drove me from the beginning. Reflecting critically – particularly from the onset – on my limitations particularly helped me develop strategies to minimise negative impacts on my thesis (Hoggart et al. 2002).

In this context, it may be useful to note some of the key steps undertaken (see also Chapter 3). Not long after my arrival in the UK, for example, I used pre-existing relationships with other Syrian PhD students to find my way around and to familiarise myself with the new culture. Through these relationships I obtained access to different social networks including UK people. I also spent as much time as I could socialising in leisure time activities, talking to academic and postgraduate research staff and housemates, and observing people (see Section 3.9). However, despite all my efforts to overcome my limitations, I am aware of the fact that, for example, my knowledge of the culture of the UK and of the farming culture of Devon (the study area) is not perfect and whole (Hoggart et al. 2002; Valentine 2005) – even after nearly 6 years spent in the UK.

This lack of knowledge, as well as being a Syrian PhD student, of course, have posed a number of questions and raised other challenges. On the whole, doing my PhD in the UK has been an unforgettable and challenging experience culturally as well as academically. The rewards of this experience are many and diverse. My efforts have been worthwhile, and my confidence and my ability to overcome many challenges have been strengthened. It is, nonetheless, important to ask in the following section how the 'objectivity' of my thesis might have been influenced by my background.

8.3.2 'Syrian factors' and the 'objectivity' of my research

Having grown up in a developing country (Syria), and having studied agriculture and agricultural economics for five years in my undergraduate study at Damascus University, clearly shaped my views and thoughts about factors affecting farmers' decisions and behaviours in risky environments. On the whole, farmers in Syria have low living standards and lack subsidies and opportunities for diversifying their income sources available to UK farmers (see Section 8.4). Therefore, as an agricultural economist with a Syrian background, brought up in a relatively poor country, I incorrectly assumed that farmers are *always* driven only by profit maximisation. This assumption – especially prominent at the onset of my PhD – made it difficult (at least initially) to understand the intangible factors in farmers' decisions and behaviours (see Chapter 2). For a long time, I also resisted accepting the idea that, for example, philosophical and altruistic elements may take a front seat in farmers' decisions to adopt organic farming and, thereby, possibly to forego income maximisation (see also Valentine 2005). The one-sidedness of my economistic assumptions became particularly obvious when I started to critically read about organic farming adoption (see Chapter 2), and I started to become acutely aware of the need to recognize the importance of non-financial drivers in farmers' decisions and behaviours (see also Neuman 2006; Valentine 2005; Crang and Cook 2007).

In order to familiarise myself with UK rural and farming culture, I took as many opportunities as I could to be in the UK countryside, to talk to farmers, and to read books and articles on rural issues, particularly before data collection and analysis began (see, for example, Sections 3.6 and 3.9). Overall, I tried my best to keep my Syrian views and thoughts 'outside' of my research project process, although this was not always possible. All these actions played a crucial role in maximising my understanding and acceptance of the intangible signs and information provided by farmers who participated in my PhD. Being aware of my positionality also helped with regard to interpreting my PhD results as objectively as possible (see also Section 8.3.4). Thus, my thesis has changed my preconceived views and thoughts about factors influencing farmers' decisions and behaviours, which, in itself, provides an interesting agenda for future work on risk and organic farming in my home country of Syria (see Section 8.4).

8.3.3 Researcher-farmer interaction

Linked to issues of my positionality discussed in Sections 8.3.1 and 8.3.2, researcher-farmer interaction was an important aspect that needed to be taken into consideration due to my less conventional background as a Syrian researcher. According to Schoenberger (1992), there are many factors, such as gender, race and nationality, influencing relationships between the researcher and people to be studied (see also Parfitt 2005; Neuman 2006). Lack of confidence in these relationships may result in low response rates and poor quality research, as respondents may limit information they give (see Valentine

2005). As a result, it was important for me to gain the confidence of the farmers whom I asked to contribute to my PhD when I first contacted them, since I may have been perceived as a 'strange Syrian'. In this respect, I, for example, ensured these farmers' rights, such as their right to withdraw from the study at any time (see Appendix One) – actions that were also linked to my ethical approach, which also necessitated the revealing of my positionality (Neuman 2006). Therefore, I also introduced myself to all respondents as a Syrian PhD student at the University of Plymouth (see, for example, Appendix One). This introduction was, therefore, essential not only for ethical reasons, but also for putting the targeted farmers at comfort about the telephone contact and the questionnaire.

Contrary to my expectations, I was not treated negatively because of my identity, and I did not receive any offensive reactions and/or responses during initial telephone contact and subsequent data collection from the farmers who took part in my research project. At many times, I was surprised how positively these farmers reacted to my identity. For example, when Organic Farmer 121, whom I visited in person, completed the questionnaire, she said: *"If you do not have enough people, then e-mail me and let me know....I will try to help. I have been in your position"*. Further, Peter (see Box 4.1) asked me for advice in relation to his two small olive trees, as I told him – in response to a question about farming in Syria – that my family has an olive farm (see Section 8.4). Many farmers, who gave me guided tours of their farms, mentioned explicitly that they wanted all people to know what they are doing. I was also, at many times, told that I was welcome to *"call again"* and/or to *"revisit"* if I needed further information.

Of the 323 farmers who participated in the questionnaire survey 7% asked me about myself, my country and/or its agriculture sector, and 2% said explicitly that they would like to know more about, for example, myself when I visit them to collect qualitative data.

Questions frequently asked by the twenty five farmers I visited personally (see Section 3.9) related to information about my Christian background (in a Muslim part of the world) and about the fact that many Syrian farmers can be considered as organic (see Section 8.4). This not only satisfied the curiosity about myself and/or my country, but also might have changed many pre-existing ideas and opinions by the farmers themselves.

Although May (1998) suggested that strangers as researchers may not connect well with participants, I think that my identity may have *positively helped* with farmers' participation and data provision (see also Rose 1997). My identity may, therefore, have contributed to the high response rates for the study (see Section 3.8). However, the possibility should also be considered that farmers may not have always have told me their *actual* thoughts and beliefs in order to maintain an image of the UK as a cultural and economic 'power' while speaking to me as a person from a developing country (Syria). England (1994) and Valentine (2005) have highlighted how such factors can skew research data (especially qualitative interview data), although it is argued here that this did not greatly influence the 'objectivity' of my PhD (see also Section 8.3.4). Ultimately, it is impossible to gauge whether the same questions asked by another researcher (say, a white male from the UK) would have been answered differently by my respondents. With these caveats in mind, the next section will briefly discuss how my positionality may have affected interpretation of (some of) my PhD results.

8.3.4 My Syrian background and implications for the interpretation of research results

Interpretation of results contained in this study should provide an important platform for knowledge sharing with the wider academic and farming communities associated with this research (see, for example, Section 8.2). Nevertheless, it should be acknowledged that the 'objectivity' in social science research is not easy or even possible to be actually achieved (England 1994; de Vaus 2002; Parfitt 2005; Valentine 2005; Crang and Cook 2007). This is because *"we are people doing research and that questions of gender, class, race, nationality, politics, history, and experience shape our research and our interpretations of the world, however much we are supposed to deny it. The task, then, is not to do away with these things, but to know them and to learn from them"* (Schoenberger 1992: 218; see also England 1994; Neuman 2006; Valentine 2005; Watt 2007; Zagefka 2009).

According to Watt (2007: 82), *"each project is unique and ultimately it is up to the individual to determine what works best"*. This implies that I, in some way, influenced the interpretation of my PhD findings linked to my personal background (see above) and, consequently, through selected methods for data analysis (see Section 3.11). Thus, researcher impact on the interpretation of his/her research findings is probably inescapable as the researcher's knowledge, thoughts, views, etc. can play a role in reducing the 'objectivity' of the interpretation of the research results (Schoenberger 1992; England 1994; Valentine 2005; Zagefka 2009). As a result, I adopted an approach to maximise the chances of maintaining this objectivity in my thesis. I, for example, tried my best to keep my views and thoughts – regardless of what they are based on my socio-cultural background (see Section 8.3.2) – out of the interpretation process, to take a neutral stance, and, most importantly, to familiarise myself with the farming culture of Devon (see Sections 3.6 and 3.9). While interpreting my PhD findings, it was, therefore, very important to remind myself continuously that my thesis should not be based on my preconceived desires and agendas. Yet, despite all my efforts, I am aware that, at times, I in one way or another may have affected 'objective' interpretation of my research results. This became particularly evident during the writing up stages of my thesis, when I had to acknowledge that my knowledge of the farming culture of Devon remains imperfect and incomplete compared to the knowledge held by 'local' or more 'culturally embedded' researchers (see also Hoggart et al. 2002; Valentine 2005). This, of course, influenced my research project conclusions in some way, especially with regard to what have inevitably been, at times, relatively simplistic interpretations of complex culturally embedded processes linked to Devon farmers' approaches to risk in organic farming. In this respect, I probably have to acknowledge that if someone else was to interpret my PhD findings, conclusions may, at times, be slightly different. As Schoenberger (1992) and England (1994) emphasised, this is because the impacts of the individual's identity, culture, race, etc. on the interpretation of research results cannot be fully removed. However, as the final section will highlight, it is nonetheless assumed that general conceptual and theoretical questions related to 'risk' are applicable in any cultural context and by researchers from varied cultural backgrounds, wherever their case studies are located.

8.4 How this thesis can act as a platform for future research

This thesis has already pointed towards several topics for future research in general (see, for example, Chapters 2 and 7). In this concluding section, I wish to highlight two further arenas for research based on findings from this study about understanding farmers' behaviour under risk in organic farming: the first relates to the possible impacts that the recent/current economic recession (both in the UK and beyond) may have on changing the risk environment for farmers; the second relates to how I myself as a researcher could use this study as a platform for further work in the context of my home country Syria.

As Chapter 3 highlighted, the cut-off point for quantitative data collection for this study was just before the recent recession began affecting the UK (see below). How could the recent/current economic recession, therefore, affect patterns of risk perceptions, attitudes and behaviour with regard to organic farming adoption beyond those factors analysed in this study? According to Gardebroek (2006), demand for organic produce is likely to be reduced by recessions. A 'recession' in this context is defined as two consecutive quarters of fall in businesses activities (Childe 2008), often caused by inadequate policies that fail to regulate markets (Honkapohja et al. 1999), and resulting in several undesirable outcomes such as high unemployment and bankruptcy (Khang et al. 2005; Martikainen et al. 2007). Recessions, thus, are likely to result in more consumer caution about expenditure, which will directly affect organic farming as it produces 'luxury' premium products (Lien et al. 2006b; Childe 2008). This affect was supported by the 'in-depth interview' data, where a number of organic farmers mentioned a decline in their net financial returns after the onset of the UK's recession in 2008[1]:

> "*We are a niche market. People now do not have much money to spend, and this has a direct effect on any product I might make then. Actually, we are feeling the pinch. I think I am affected by the credit crunch......yeah*" (Organic Farmer 9).

In contrast, some non-organic farmers stated:

> "*Now, we are not making as much money as in previous years. We see just sort of........steady increase in demand. You know, you get a lot of money from your cattle, but also a lot of money is going out on fertilizers; that is the main cost really*" (Non-Organic Farmer 103).

It could be hypothesised that this recession, starting after the completion of the questionnaire survey (see Section 3.8), could be one of the major future market risks

[1] The UK was officially in recession between November 2008 and March 2009 (BBC news 2009), which was the worst recession (globally) since the early 1930s, with after-effects possibly lasting for over 15 years (Morris and O'Grady 2009). Since late 2009, UK economic recovery has been sluggish and there is a distinct possibility of a 'double-dip- recession' which could further affect UK consumers' organic produce purchasing patterns.

affecting the financial vitality of organic farming, especially if weak economic performance of the UK continues. This highlights that studying the impact of the recession on farmers' risk behaviour with regard to organic farming could be an interesting subject for further research. This may, in turn, help answer the key question about what the future holds for the organic sector in the UK (FMMRs 2008). Previous research points to the fact that that farmers and consumers vary in terms of their sensitivity and reaction to recessions (Whitehead et al. 2002; Winter 2003a; Childe 2008). Indeed, some key stakeholders, such as Peter Melchett the Soil Association policy director, have doubted that the UK's credit crunch/recession will severely affect the organic market (Stocks 2008).

Yet, opportunities for conducting further research on this subject in the UK are limited for me, as I am sponsored by Damascus University and have to go back to my home country (Syria) when I finish the thesis. This may, however, open up new opportunities for myself for using this present study as a platform for future work in Syria. Thus, an investigation into risk and farmers' decisions whether or not to take up organic farming in Syria appears an attractive topic, especially as there is at present no information at all on this topic in my home country. This topic is particularly likely to enrich our understanding of the importance of risk in farmers' behaviours in relation to organic farming adoption in an environment that is very different from the UK and other advanced economies. Indeed, Syria, as a developing country, does not have a specific policy directly or indirectly supporting its organic sector (Malki 2007; Santucci 2010). Organic farming in Syria can, thus, be seen as an infant industry (Willer and Yussefi-Menzler 2005; FiBL Survey 2008), and many key questions regarding the willingness of Syrian farmers to convert to organic farming are still unanswered. Despite the essential role of foreign certification bodies, many farmers in Syria farm 'organically' but do so unofficially since they have been used to farming this way for generations. My family, for example, has an inherited 'organic' olive farm, but although we cultivate the area, apply manure and harvest the olives, we have not yet attempted to implement (accredited) organic farming principles associated with those analysed in this thesis. Our 'organic' oil and olives are sold for an additional premium with difficulty as our customers cannot always pay a higher premium. Overall, the distinct social, economical and political Syrian context surrounding the organic sector forms an interesting background for future research on the relationship between risk and famers' adoption decisions – a relationship that is likely to vary between countries (see, for example, Padel 2008).

The methodologies I have adopted in the course of this thesis will, therefore, form the basis for research about risk and Syrian farmers' decisions to adopt organic farming. A key 'learning outcome' from this study (for myself) is that data source triangulation techniques will be particularly useful, as they will enable the gathering of broad-based data where the strengths of one methodology can outweigh the weakness of another (see Section 3.4). Building on my personal specialist academic training, I plan to use 'cost-benefit analysis' approaches to describe observed behaviours under risk in relation to the adoption of organic farming methods in Syria. However, it is likely that the cost-benefit analysis will not lead to a full description of behaviours under risk – a problem already reported in several studies (see Section 2.2.1). This means that other approaches and models based on this study will have to be used. For example, both 'reasoned action' theory (the conceptual framework of this study) and van Raaij's (1981) model on adoption behaviour in risky environments will further help understand the importance of risk in Syrian farmers' decision-making processes (see, for example, van Raaij 1981; Flaten et al. 2005). In conclusion, it is hoped, therefore, that future work in Syria will help both better understand the complex interactions of factors affecting organic farmers' risk behaviour in general, and that it will, more specifically, also help me critically reflect on the findings from this PhD study.

Appendix One: Questionnaire survey used in this thesis

Risk and Farmers' Decisions to Farm Organically: The Case of Devon (UK)

Questionnaire about Organic Farming Adoption

Saer Barhoum

Geography School

Faculty of Social Science and Business

Plymouth University

Farmer ....

Identification number ....

Source ....

Serial number ....

Date ....

Time ....

❖ **Introduction:**

Good morning / afternoon. Sorry to bother you. I am calling from the University of Plymouth. Could I please speak to the farmer, manager or anyone else who is concerned with the running of the farm?

- If **no,** thank you and close.
- If **yes**, read.

I am Saer Barhoum a Syrian postgraduate student, and I am doing my Ph.D. on risk and farmers' decisions to adopt or not to adopt organic farming. The basis of this research is my interest in factors affecting uptake of organic farming. Investigating these decisions might help me to understand the limited use of organic farming methods in my home country.

I would be very grateful if you could participate in this study and spare about 10 minutes of your time to answer some questions.

- If **yes,** your answers will remain confidential and anonymous and will be recorded if you have no objection otherwise notes will be written down. It will not be possible to identify your responses in any published material. You have the right to withdraw at any time. **Go to Q1**.
- If **yes but not now**, when would it be more suitable to call you back?
- If **no,** thank you for your time and close.

1. Are you the principal decision-maker on this farm?

☐Yes ☐No

If **no,** please specify ....

2. Where did you grow up?

☐Urban Area ☐Rural Area ☐Other (please specify)..........................

Could you please tell me the name of the city/ the rural area?

....

3. 3.a) Is your farm a Registered Organic Farm?

☐Yes ☐No

3.b) If **no,** is your farm using Organic methods even though it is not officially registered as an organic farm?

☐Yes ☐No

3.c) If **no,** is you farm using Integrated Farming methods?

☐Yes ☐No

3.d) If **no,** how would you describe the methods that are being used by your farm?

(please specify)..

4. How many years have you been farming the present farm system?
.... Years

5. How many years have you been involved in farming?
.... Years

6. **If answers on Q4 and Q5 are different, this question should be asked.**

   Would you mind telling me about the farming system/systems practised before running the present farm system?

....
....
....

7. Have you been farming for all your life?

   ☐Yes ☐No

8. What is the total area of your farm? .... Hectares

   Has your farm size changed over the past 20 years?

   ☐Yes ☐No

   Please tell me more (reasons, how, etc.):

....
....
....
....
....
....
....
....
....
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....
....
....
....

9. Which category best describes your farm type?

☐Cereals ☐General Cropping ☐Horticulture

☐Specialist Pigs ☐Specialist Poultry ☐Dairy

☐Grazing Livestock (LFA) ☐Grazing Livestock (Lowland) ☐Mixed

☐Others, including non-classifiable (Please specify)

....

Part A

Organic Farmers[1]

1. **For Registered Organic Farms only**:

   When did you register your farm? ……………… (Year)

   What is your certification body?

……

2. Could you please tell me the main reasons for organic farming adoption?

……
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……
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……

3. Please indicate your opinion about the following statement?

   ➢ For me, taking risk in organic farming is exciting:

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	2	3	4	5
☐	☐	☐	☐	☐

4. Have you ever regretted taking up organic farming?

   ☐Yes ☐No

   Why?

[1] This part is designed for farmers answering yes on Q3.a or Q3.b.

5. Which risks in organic farming are of concern to you **now**?

6. Which risks in organic farming were concerning you **when the adoption decision was made**?

....
....
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7. Would you say that **Organic Farming Systems** are riskier than other farming systems?

☐Yes ☐No

Why?

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8. Please indicate your opinion about the following statements:

➢ In general, I am willing to take risk in farming:

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	2	3	4	5
☐	☐	☐	☐	☐

➢ In general, I like to 'play it safe':

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
5	4	3	2	1
☐	☐	☐	☐	☐

9. Could you please describe **the most important objectives** in your approach to farming?

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10. Please indicate the level of formal education you have received:

☐ Full Secondary Education (up to 16 years old)

☐ Further Education (16 years old plus) (BTEC, City and Guilds, NVQ 3+ or HNC)

☐ Higher Education (18 years old plus) (HND, NDE, Degree, Masters and PhD)

11. In which age band do you fall?

☐18-25 ☐ 26-40 ☐41-65 ☐Over 65

12. How much does your farming income contribute to the household income?
.... Percent

If there are other income sources, could you please describe them?
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13. Could you recommend any other organic farmers in this county who would be interested in taking part in my survey?

☐Yes ☐No

If **yes,** I would be grateful if you could provide me with details:
Name: ....
Farm Name: ....
Phone: ....

Name: ....
Farm Name: ....
Phone: ....

14. Would you like to make any additional comments on any of the issues mentioned above?

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15. Would you agree to being contacted by the researcher in order to take part in a personal interview in the next few months (interviews will take about 60 minutes of your time)?

☐Yes ☐No

If **yes**:
Name: ....
Address: ....
Postcode: ....
Phone: ....

The researcher is interested in familiarising himself with the farming culture and in collecting notes on the subject at hand, so would it be possible to spend a day on the farm at the time of the interview?

☐Yes ☐No

16. Would you like to receive a summary of my research results?

☐Yes ☐No

If **yes,** how should I send the results?

☐Post

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☐E-mail

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17. Farmer's gender: ☐Male ☐Female

Thank you very much for your co-operation, time and efforts in completing this questionnaire. The results will help me to have a better understanding of farmers' decisions on organic adoption.

Part B

Non-Organic Farmers[2]

1. Please give the main reasons for not converting to organic farming?

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2. Please indicate your opinion about the following statement?

   ➢ For me, taking risk in organic farming is exciting:

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	2	3	4	5
☐	☐	☐	☐	☐

3. Have you ever regretted not converting the farm to organic?

   ☐Yes ☐No

   Why?

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[2] This part is designed for farmers answering **no** on Q3.a and Q3.b.

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4. In your opinion, which risks do organic farmers face **now**?

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5: Would you say that **Organic Farming Systems** are riskier than other farming systems?

☐Yes ☐No

Why?

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6. Please indicate your opinion about the following statements:

➢ In general, I am willing to take risk in farming:

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	2	3	4	5
☐	☐	☐	☐	☐

➢ In general, I like to 'play it safe':

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
5	4	3	2	1
☐	☐	☐	☐	☐

7. Could you please describe **the most important objectives** in your approach to farming?

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8. Please indicate the level of formal education you have received:

☐ Full Secondary Education (up to 16 years old)

☐ Further Education (16 years old plus) (BTEC, City and Guilds, NVQ 3+ or HNC)

☐ Higher Education (18 years old plus) (HND, NDE, Degree, Masters and PhD)

9. In which age band do you fall?

☐18-25 ☐ 26-40 ☐41-65 ☐Over 65

10. How much does your farming income contribute to the household income?

.... Percent

If there are other income sources, could you please describe them?

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11. Would you like to make any additional comments on any of the issues mentioned above?

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12. Would you agree to being contacted by the researcher in order to take part in a personal interview in the next few months (interviews will take about 60 minutes of your time)?

☐Yes ☐No

If yes:
Name: ....
Address: ....
Postcode: ....
Phone: ....

The researcher is interested in familiarising himself with the farming culture and in collecting notes on the subject at hand, so would it be possible to spend a day on the farm at the time of the interview?

☐Yes ☐No

13. Would you like to receive a summary of my research results?

☐Yes ☐No

If yes, how should I send the results?

☐Post

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☐E-mail

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14. Farmer's gender: ☐Male   ☐Female

Thank you very much for your co-operation, time and efforts in completing this questionnaire. The results will help me to have a better understanding of farmers' decisions on organic adoption.

Appendix Two: Listed Themes Covered by Farmers during In-Depth Interviews:

- Farmer's family background (e.g. parents, their work, etc.)
- Farm family (e.g. spouse and children, their education, involvement in farming activities, interest in taking over the farm in the future, etc.)
- Farmer's life story
- Farm history
- Farming decisions (e.g. jointly, individually, factors and actors effecting farming decisions, etc.)
- Farming aims
- Information sources (e.g. internet, extension services, other farmers, etc.)
- Farmer's perceptions of types and sources of risks in organic farming
- Risks in organic farming and those in other farming systems
- Farmer's risk attitudes
- Farmer's attitudes to his/her future in organic farming
- Possible future changes in the current farming system and risks in organic farming
- Inputs, outputs and prices
- Farmer's participation in schemes (e.g. schemes encouraging more sustainable land use, such as Single Farm Payments and/or Organic Entry Level Stewardship)

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