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UNIVERSITY OF Southampton

Faculty of Business, Law and Art

Southampton Business School

"Islamic religiosity and Entrepreneurial Risk taking"

The Influence of Gender, Education and Income:

The Case of Saudi Arabia

By:

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Thesis for the degree of Doctor of Philosophy

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Thesis Abstract

The Kingdom of Saudi Arabia, as one of the most dominant Islamic countries, faces major difficulties in divesting its economy, creating employment opportunities and maximising involvement in entrepreneurship. One explanation offered for the Kingdom's economic underdevelopment is that Islam is intrinsically anti-developmental and that Islamic law (*Shar'aiah*) is one of the foremost obstacles to economic development. The aim of this research is to examine the influence of religion on some aspects of economic performance from an Islamic perspective. While copious literature has been written in developed countries identifying the elements that influence economic development, very little is known about the characteristics and the role of religion in the Islamic world. This thesis draws on the existing literature on the psychology of economics to explore the relationship between *Shar'aiah* and two aspects of economic growth, namely risk-taking propensity and individual income, in the context of Saudi Arabia.

The research is presented in the form of three component studies. The first explores whether *Shar'aiah* has an influence on Muslims' risk-taking propensity, a neglected area in the economic and social sciences literature. Gender and education

have received intensive research attention in this literature, to which the second study contributes by examining the roles of gender and educational attainment in the relationship between religion and risk taking. The third study then seeks to elucidate the interrelationships among Islamic religiosity, risk-taking propensity and Muslims' income.

Following the positivist paradigm, a quantitative approach was taken to collect data on religiosity and risk-taking propensity amongst Muslim adherents in Saudi Arabia. The key finding is that religion has a significant U-shaped effect on Muslims' attitudes towards taking risky decisions. In particular, the results suggest a U-shaped relationship between Islamic religiosity and risk-taking propensity, whereby highly religious and non-religious Muslims are more tolerant towards risky decisions than those of moderate religiosity. Gender and education were also found to influence the religiosity-risk taking relationship. There was a significant U-shaped relationship between Islamic religiosity and risk-taking propensity amongst men and non-university educated Muslims. Finally, there was a positive association between Muslims' income and their risk propensity as affected by Islamic religiosity. These empirical findings provide evidence of the effects of Islamic religiosity on the relationship between risk taking and income.

The general conclusion of this thesis is that Islam is not, as has been hypothesised, detrimental to the economic growth of Islamic countries. The thesis makes a novel contribution by deepening understanding within an Islamic context of the influence of religion on a characteristic of the economic process, risk taking, and on one of its outcomes, individuals' monthly income. Finally, it generates new avenues of research on the intersection between religion and economic development.

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Declaration of authorship

I, Abdulaziz D. Aldhehayan, declare that this thesis, entitled:

“Islamic religiosity and Entrepreneurial Risk taking” The Influence of Gender, Education and Income: The Case of Saudi Arabia.

and the work presented in it is my own and has been generated by me as the result of my own original research.

I confirm that:

1. This work was done wholly or mainly while in candidature for a research degree at this University;

2. Where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated;

3. Where I have consulted the published work of others, this is always clearly attributed;

4. Where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work;

5. I have acknowledged all main sources of help;

6. Where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself;

7. Parts of this work have been discussed or presented at:

- The IRES - 124th International conferences on Economics and Social Sciences (ICESS). 19 Jan 2017, London, UK.
- Southampton Business School, PGR Conference and Research Support Fund 2016–17. Southampton Business School, University of Southampton, UK.
- The 4th Interreg conference- Doctoral Colloquium, 5th of November 2014, the Schools of Management, Law and Art, University of Southampton, UK.
- 8 Seminar Series, Department of Strategy, Innovation and Entrepreneurship, Southampton Business School, University of Southampton, UK.

Signed: Abdulaziz D. Aldhehayan

Date: 10th January 2018

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Chapter 1

Introduction to the Research

1.1. Introduction

This chapter provides an introduction to the entire thesis. It begins by presenting a brief summary of the background to the research, defining the research problem and explaining the importance and significance of the study. It next sets out the aims and objectives of the research, states the research questions and highlights the gap in knowledge that the research is intended to bridge. The chapter concludes by setting out the structure and content of the remainder of this thesis.

1.2. Research background and statement of the problem

The majority of the countries which constitute the Islamic world are relatively impoverished and not highly developed economically (Kuran, 1997, Noland, 2005). Figures issued by the United Nations (UN) comparing Muslim countries with other parts of the world indicate that they should be described in economic terms as developing, less developed or underdeveloped. Economic parameters based on rates of growth of gross domestic product (GDP) for Arab Muslim countries are disappointing, even when predicting future trends. Expected future economic improvement for the majority of these countries, including countries rich in resources, is characterised by low investment in people, a steady reduction in productivity, lower employment opportunities, an inadequate level of quality education and the looming problem of dependence on non-renewable natural resources, which are ultimately likely to cause more problems than they solve (Bhalla, 2002; Kuran, 2008).

Western experts in economics and politics have tended to propound or follow theories of modernisation which suggest that there is a negative link between religion

and development in Muslim countries, using this alleged association to explain both the slow progress and the counterproductive actions of regimes by criticising the religion itself. They view Islam as resistant to developmental progress, claiming that adherence to this religion is the primary cause of the lack of economic development in many Muslim countries. They argue that Muslims are intrinsically inefficient and that their value system resists modernisation, which is regarded as necessary for economic development. Muslims, from the perspective of these commentators, is fundamentally unable to be modern. Critics of Islam have listed what they claim to be the drawbacks of the religion, which they assert have resulted in an inability to remodel society and create prosperous economic systems. Amongst the claims that such critics often raise about the obstructive effects that Islam may have on development is that the nature of Islamic law or *Shar'aiah* predetermines a restricted level of freedom and limited property rights (Zelekha *et al.*, 2014), inadequate institutions (Kuran, 2008) and low participation of women in the labour force (Perkins, 2003). Moreover, they assert that the application of Islamic law discourages vital business traits such as the propensity to take risks (Bartke and Schwarze, 2008) and that it tends to externalise the locus of control of its adherents (Arslan, 2001).

In Saudi Arabia, unlike in most Islamic countries, the state religion of Islam plays a predominant role in directing the behaviours not only of individual people and their society but of the government and the judiciary (Williams and Zinkin, 2005; Zinkin, 2007). The government has embraced *Shar'aiah* laws as the country's official laws. The Holy Quran was declared to be the country's constitution, and the judicial and administrative systems are wholly based on the body of Islamic law, which is in turn derived from four sources: the Quran, the *Sunna*, *qiyas* and *ijma.* These sources are

explained in detail in Chapter 3; it is worth briefly noting here that the Sunna constitutes the words and deeds of the Prophet Mohammed (peace be upon him [pbuh]), that qiyas refers to the process of analogical reasoning by religious scholars to confront new issues and that ijma is the consensus of experienced jurists on various subjects. Thus, Islam is the source not only of the spiritual and moral codes of Saudi society but also of its institutionalised values and norms.

It is also of particular significance that the Kingdom of Saudi Arabia (KSA) has undergone a remarkable rate of economic growth within the last two decades. The Kingdom derives very considerable revenues from the production of 12 million barrels of oil per day, which makes Saudi Arabia the largest exporter of oil in the world (Dev, 2016). However, these huge oil revenues have not yet helped the country to achieve the necessary development. Economic diversification and investment in various areas are now essential for the future of the Kingdom. Therefore, Saudi Arabia's policymakers have implemented many very large infrastructure projects in both the private and public sectors, including the construction of healthcare centres, educational facilities, communication technology and many other schemes. However, the modernisation and development carried out by the Saudi government has not fully succeeded in creating enough employment opportunities for young Saudis, whether male or female.

Despite Saudi Arabia's undoubted global economic status as a major oil producer, its per capita domestic product ranks 19th in the world (IMF, 2013) and its unemployment rate is high, two factors which make observers perceive that much of the human capital of the country has not yet been fully or efficiently utilised. The Saudi Press Agency (2014) cites the minister for labour as reporting that around 300,000 Saudi

citizens were unemployed in that year, constituting nearly 9.7 per cent of the total Saudi workforce aged 15 years or older. Many of these unemployed people are college graduates who have obtained bachelor's degrees. However, a weak consensus on the unemployment rate in Saudi Arabia has frequently been reported, with a number of studies having found different figures. For example, Ghaban (2002) earlier reported a 27 per cent rate of unemployment in the country, which they tentatively ascribe to the reluctance of companies to recruit large numbers of young Saudi citizens with bachelor's degrees. Bourland (2002) calculated a rate of unemployment of around 11.9 per cent among Saudi males (328,286 unemployed men), concluding that if females available for work were included, the figure would be much higher. In fact, the report found that unemployment among Saudi women aged between 20 and 24 years old was 33 per cent, falling to 18 per cent among those aged from 25 to 29 years. These widely differing figures have led Ghaban (2002) to reach the conclusion that reports of unemployment in Saudi Arabia are inaccurate and unreliable. This problem, according to Ghaban, is mainly a result of the paucity of precise and up-to-date demographic statistics available in the Kingdom. The other critical difficulty concerning economic development in the KSA is that two thirds of Saudi citizens are under 30 years old and that every year many more are graduating and joining the country's workforce (Sullivan, 2012). A particularly important aspect of this challenging issue for the government is that there are around 145,000 Saudi students studying abroad under government scholarships, of whom 40,000 are female. All or most of these centrally funded overseas students, both men and women, will expect to be offered jobs with the help of the government after they finish their foreign studies.

Given the above facts, the focus of this research is on identifying some of the initiatives that might assist in reducing the size of the unemployed Saudi population. These include the promotion of the concept of entrepreneurship among young Saudi graduates. ACS (2006) affirms that entrepreneurship is one of the most successful instruments that has been found to assist in promoting economic growth in developing countries by creating new businesses. A central characteristic of the entrepreneurial process is risk taking (Locke and Collins, 2003), since an entrepreneur is by definition one who is willing to take risks in making decisions; for example, entrepreneurs risk losing the money that they invest in order to begin a new business, doing so before knowing whether it will ultimately be successful. Indeed, risk taking is central to business activities, both for organisations and for individual ventures. However, research on entrepreneurial risk taking has largely ignored the possible influence of religion, despite an increasing interest in religion in a few studies (Dana, 2009) and the discussion in the sociological literature of the link between religion and risk propensity (Miller and Hoffmann 1995). This study examines theories of religion to improve the understanding of risk taking among Muslims. In particular, it seeks to analyse the relationship between Islamic religiosity and the propensity to take risky decisions among Muslim adherents. Recent economic literature has recognised the role of risk-taking propensity for many of the most important economic processes. This conception can be seen to reflect the central role played by risk propensity in determining individuals' income (Hopland *et al*., 2016). This research therefore extends its scope to include the influence of Islamic religiosity on Muslims' income. The findings reported in this thesis will assist in identifying some of the conditions that may assist in promoting opportunities for entrepreneurship to flourish in the Saudi economy.

1.3. Research aims and objectives

The main starting point for this study is that entrepreneurship is a major generating factor that increases employment and maximises economic growth. In order to promote the participation of Saudi youth in all economic sectors through entrepreneurship, there is a need for a more definitive understanding and more accurate information regarding variables of several kinds, such as religious and demographic factors that relate to the prevailing lack of native Saudi participation in the formal production of the Saudi economy. Such factors are fundamental to positive change with a straight path for potential business owners to start ventures, create new job opportunities and improve the socioeconomic conditions of the Saudi Arabian population. In emerging markets, an entrepreneurial atmosphere is a precondition to dealing with unemployment and improving the economy of a nation (Nkechi, *et al*., 2012).

Therefore, this study sets out to provide new and in-depth information concerning the influence of Islamic law and of religious beliefs on the behaviour of Saudi Muslims related to their participation in economic development. The aim of this research is to explore and explain the factors that may influence the atmosphere of Saudi participation in entrepreneurship by directly addressing the relationship between Islamic religiosity (in other words, adherence to *Shar'aiah*) and the economic phenomenon of the propensity to take risks. In doing so, it explores the channels by which Islamic religiosity influences Muslims' income. The main objectives of the study are as follows:

- To identify and examine the relationship between Islamic religiosity and risk-taking propensity among Muslim adherents.
- To assess the influences of sociocultural factors such as gender and educational attainment on the relationship between religion and risk-taking propensity.
- To examine the indirect influence of Islamic religiosity on Muslims' income though the channel of risk-taking propensity.

A review of the existing literature on economic activity in Muslim countries suggests that this study will contribute to the literature on economics and psychology and that it will lead to further research into issues such as the influence of religion on economic processes and thus on entrepreneurial practices, particularly in the Kingdom of Saudi Arabia. The study has as its final objective to make recommendations for ways in which decision makers might develop and strengthen the environment for entrepreneurship in both the private and public sectors of the economy of Saudi Arabia, in accordance with the requirements of Islamic law.

1.4. Research questions

In order to address and fulfil the aims and objectives set out above, the present study seeks answers to the following research questions:

Table 1.1: Research objectives and questions

Research Objectives	Research Questions
RO1: To identify and examine the relationship between Islamic religiosity and risk-taking propensity among Muslim adherents.	RQ1: How does Islamic law shape economic behaviour by influencing risk-taking propensity?

RO2: To assess the influences of sociocultural factors such as gender and educational attainment on the relationship between religion and risk-taking propensity.	RQ2: What are the social variables that are associated with this relationship?
RO3: To examine the indirect influence of Islamic religiosity on Muslims' income though the channel of risk-taking propensity.	RQ3: Does the influence of Islamic religiosity go beyond risk-taking propensity to affect the income of Muslims?

1.5. Research gap and significance

The purpose of this research is to investigate the influence on economic processes and outcomes of the risk-taking propensity of economic actors within a context of Islamic dominance. Within this field of research, it is timely and necessary to contribute to academic understanding of the overall relationship between religion (in this case, Islam) and economic development by methodically examining the existing literature on the subject. A review of this body of work reveals that the existing academic research into the relationship between religion and economic development is largely focused on the economies of Western countries such as the USA and the United Kingdom (UK), whereas, very little research appears to have been undertaken concerning the religion of Islam in general and in countries dominated by Muslim adherents, such as the KSA, in particular (Alturki and Braswell, 2010; Gallant *et al.*, 2010).

Past research on the linkage between Islam and economic development has two broadly opposing viewpoints. On the one hand, a number of scholars assert that adherence to Islamic law is to be considered the main reason behind the economic stagnation of Muslim countries. They claim that the nature of Islamic law procures a low level of freedom, limited property rights, inadequate institutions and weak participation

of women in the labour force, adding that it discourages vital business traits such as risk taking and an internal locus of control. On the other hand, there are some who argue that Islamic teachings span different economic dimensions such as business ethics, freedom and justice or problem solving. However, this literature reveals an incomplete picture of the ways in which Islamic religiosity actually influences economic processes. Given that there has so far been insufficient empirical research to confirm or contradict the claim that Islamic law amounts to a constraint on economic activity and development, studying the relationship between Islam and economic growth is a worthwhile endeavour. Therefore, the main purpose of this study is to investigate the relationship between Islamic religiosity in the form of adherence to *Shar'aiah* on one hand and two of the main elements of the economic system on the other: risk-taking propensity and personal income.

1.6. Thesis structure

This thesis comprises six chapters and is structured as follows. Chapter One has provided an overview of the study, identified the research problem and the research gap, then stated the aim, objectives and research question. Chapter Two sets the research in geographical, cultural, political, economic and religious context by describing the relevant aspects of life in the Kingdom of Saudi Arabia. Chapter Three presents the first of three component empirical studies, on Islamic religiosity and risk taking. It first reviews the literature relevant to the relationship between religion and risk-taking propensity, then reports the empirical examination of how Islamic law shapes Muslims adherents' propensity to take risks in the context of financial decisions. Chapter Four follows a similar pattern in presenting the second component study, on the impact of

two important sociocultural variables, gender and educational attainment, on the relationship between Islamic religiosity and risk taking. The third study, reported in Chapter Five, builds on the findings of the other two by investigating the indirect influence of Islamic religiosity on Muslims' income via the channel of risk-taking propensity. Chapter Six concludes the thesis by summarising the work reported in the earlier chapters, drawing overall conclusions from the research and identifying its contributions to knowledge. It acknowledges some limitations of this study, then considers implications for practice, for policy and for future research.

Chapter 2

Research Context:

The Kingdom of Saudi Arabia

2.1. Introduction

In order to begin to tackle a research problem it is important to understand the particular context in which the problem and exists and in which its elements interact. This chapter provides a description of the country where the present research was conducted, namely the Kingdom of Saudi Arabia, which is one of the most dominant of the states in which the Muslim religion is practised. It offers a profile of the system of governance, an outline of the religion and details of the location of the country, the population and its culture, then deals with the Saudi economy and ends by assessing the environment in which entrepreneurship operates. It thus seeks to provide readers with the basic facts that are necessary to develop an understanding of the social and economic environment of the field of study. After an overview of the governance of the Kingdom in Section 2.2, explaining the constitutional centrality of *Shar'aiah*, Section 2.3 deals with the location, population and typography of the KSA. Section 2.4 then examines the relevance of the religion and culture of the country, before Section 2.5 turns to the structure and development of the Saudi economy. The chapter ends with Section 2.6, which outlines the recent economic reforms undertaken by the Saudi government in its attempts to enhance the country's economic development, considering the resultant environment for the operation of entrepreneurship.

2.2. Governance of the Kingdom

In 1932, King Abdulaziz bin Abdulrahman Al-Saud established the Kingdom of Saudi Arabia and decreed that the constitution must be founded on adherence to *Shar'aiah* law, the Holy Quran and the Sunna of the Prophet Mohammed (pbuh) as the

central elements of the system of government. All members of Saudi society accept that Islam provides a framework for the law and government of the state. Islamic law is thus the basis of the Saudi legal system, while the government derives its power from *Shar'aiah* (Ansary, 2008).

The Arabic word *shari'ah* means 'the way', and is closely identified with the Holy Quran and with knowledge of the Sunna of the Prophet Mohammed (pbuh). The Quran and Sunna are used to identify specific aspects of Islamic law. According to the Quran, God Almighty says:

> ***"And We have sent down to you (O Mohammed) the Book (this Qur'ân) in truth, confirming the Scripture that came before it and Mohayminan (trustworthy in highness and a witness) over it (old Scriptures). So judge between them by what God has revealed, and follow not their vain desires, diverging away from the truth that has come to you. To each among you, We have prescribed a law and a clear way."*** (Al-Ma'idah' 5:48)

Article 1 of the constitution of Saudi Arabia asserts that "the Kingdom of Saudi Arabia is a sovereign Arab Islamic state with Islam as its religion; God's Book [the Holy Quran] and the Sunna of His Prophet, God's prayers and peace be upon him, are its constitution, Arabic is its language and Riyadh is its capital", while Article 7 states: "Government in Saudi Arabia derives power from the Holy Quran and the Prophet's tradition" (Royal Decree A/90, 27th Sha'ban 1412 AH [1st March 1992]).

The Kingdom's system of governance is dependent primarily on two resources, the first of which is the corpus of religious sources in general and the second of which is the more specific set of contemporary theories of administration (Ansary, 2008). Al

Saggaf (2004) further notes that religious significance has the ability to impact on both culture and society in Saudi Arabia. Thus, laws and regulations must not conflict with these sources and must be placed in a strict order of priority. Ansary (2008) states that the general sources are in the following order of priority, from highest to lowest:

The Holy Quran is believed to be composed of the exact words of God Almighty, as revealed by the angel Gabriel to the Prophet Mohammed (pbuh). The text of the Quran covers all aspects of human existence, including the relationship between God and His creations, as well as those between individuals and society, such as morals, righteousness, law, jurisprudence, social relations, politics, integrity, business and commerce.

The Sunna is the second source of the Saudi legal system. It is a complementary source to the Holy Quran. It helps to explain and interpret the Quran, but it may not be interpreted or applied in any way which is inconsistent with the Quran. The Sunna includes everything, other than the Quran, which has been transmitted from the Prophet Mohammed (pbuh): what he said, did and agreed to. When the Quran is silent regarding any specific matter or general topic, the *ulama* (the body of religious scholars) resorts to the Sunna.

Ijma refers to the consensus of learned opinions and is the third source of law. It is a way of discovering the law by resorting to the general consensus of opinion among the ulama or *Shar'aiah* scholars of a particular era. Within this, the Prophet (pbuh) has decreed that the specific resolution of an issue cannot be incorrect when all Muslims agree on it.

Qiyas is resorted to when the ulama fails to find a resolution from the Quran, from the Sunna or by ijma. Qiyas means the use of analogical reasoning from the principles established in the Quran or Sunna. For example, modern recreational drugs are not explicitly mentioned in the Holy Quran or in the Sunna. However, alcohol is mentioned and is prohibited because of its effects on the body and mind, in that it impedes a person's ability to perform his or her religious obligations. The same risk of harm is at issue in the case of drug taking as of drinking; thus, the same prohibition is ruled to apply.

Since the foundation of the state, the Saudi Arabian government has upheld its monarchical system, which was predominantly inherited by King Abdulaziz's sons. One of these sons, King Salman bin Abd Al-Aziz Al Saud, came to the throne in January 2015 on the death of his elder brother and retains both the post of Prime Minister and the official title of Custodian of the Two Holy Mosques, although because of ill health he has been succeeded in power as First Deputy Prime Minister by his son, Crown Prince Mohammed bin Salman Al Saud.

In addition to being one of the most influential of the countries in the Islamic world as a founding member state of the Congress of the Islamic World and a leader among the Arab nations as a founding member of the Arab League, the Kingdom has maintained a respected and influential position in the international community, with active membership of the United Nations, the Gulf Cooperation Council (GCC), the International Monetary Fund and the G20 (SAMA, 2008). Administratively, the KSA comprises 13 regions, each of which has a deputy governor and a governor drawn from the members of the royal family, the House of Al Saud. Each of the provinces has its own

council, which has the role of advising the governor and dealing with the province's development. In 2005, municipal elections were held with the aim of electing half of the members of each of the Kingdom's 178 municipal councils. The remaining members, along with the mayors of all of the municipalities, were appointed by the government.

In order for a government to be legitimate in Islam, it must be based on Islamic principles. Consultation is considered one of the most important of Islamic principles; therefore, the Saudi government seeks to encourage consultation and enforce the rule of consultation at every level of governmental operations. Constitutionally, the government is obliged to consult the citizenry on public affairs and to abide by all agreements made in consultation. In March 1992, the then monarch, King Fahd, announced thirty articles governing the Consultative Council (CC) and it was apparent in his speech that this newly established Council was an extension of the existing system. The Consultative Council represents the parliamentary body of the country. The CC started with 60 members (Art. 3), which was later extended to 91 members, including the Speaker of the Council, and it now consists of 150 members. In August 1993, the King appointed members of the Council and the Speaker: members are selected and appointed from different sectors based on their experience, knowledge and specialisations to reflect all professional groups in the country and to reach a balance that mirrors Saudi society as a whole. The CC discusses what is sent to it by the King and makes recommendations. It has the ability to initiate laws if ten of its members suggest an idea to the King, which may be pursued further on his request.

2.3. Location, population and typography

The KSA's total population is estimated to be in excess of 29 million, comprising around 20.5 million Saudi Arabian citizens in addition to an estimated nine million resident foreigners (GAS, 2018, Kingdom of Saudi Arabia, 2013). A little less than a quarter (24 per cent) of the entire populace lives in Riyadh, which is the capital of the KSA and by far the largest city in the country (World Population Review, 2014). According to the 2013 census, there were at that time 4.5 million people living in the eastern region (GAS, 2013). There appears to be an almost equal balance between Saudi males and females (50.9 per cent and 49.1 per cent, respectively), with 29.4 per cent being younger than 14 years and three per cent being over 65 years old. The majority of the Saudi Arabian population, however, falls between the ages of 15 and 64. The same source of demographic data indicates that the median age of the whole population is 25 years, broken down to 26 years for males and 24 years for females.

As noted above, foreign migrants make up a significant proportion of the Kingdom's population. These belong to a large number of different nationalities; among those composing only a small percentage of the total population are Westerners, including an estimated 60,000 American individuals and 30,000 British citizens, while larger numbers are from countries to the east of Saudi Arabia, including India, Indonesia and the Philippines, for example. The largest migrant groups currently residing in Saudi Arabia, however, include groups from Egypt, Jordan, Lebanon and Syria. Many individuals have migrated from these places into Arabia over a prolonged timescale, due to the similarities in culture and religion between their homelands and their migratory destination. Overall, the composition of the population by ethnic group is believed to be

90 per cent Arab and only ten per cent from all other ethnicities combined (CIA World Factbook, 2014).

The largest country by area in southwest Asia, Saudi Arabia forms approximately two-thirds of the Arabian Peninsula, covering 868,730 square miles (The World Fact Book, 2010). Its topography is composed of mountains, grasslands, valleys and deserts, in a varied landscape stretching from the shores of the Red Sea in the west to the Arabian Gulf coast in the east. Thus, the territory can be divided topographically into four distinct regions, which are the central Najd plateau, the Tehama plains in the southwest, the mountains of the north and the Rub' al Khali desert or Empty Quarter to the south and southeast.

Figure 2.1: Location of Saudi Arabia on the world map (Source: World Fact Book, 2005)

While the viability of studying the economic structure of the Kingdom of Saudi Arabia is clear, there are several distinct features that should be considered. For example, it is imperative that religion, the legal system and all entry requirements are fully understood by all parties involved. This may also include managerial inclinations and geopolitical/cultural distinctiveness. Dadfar *et al*. (2003) have rightly identified

three conflicting systems as predominantly influencing the culture of Saudi Arabia, these being Islam, tribalism and Westernisation. It is these systems that will be reviewed in the following section, in regard to the major constructs of the religion, culture and society of Saudi Arabia.

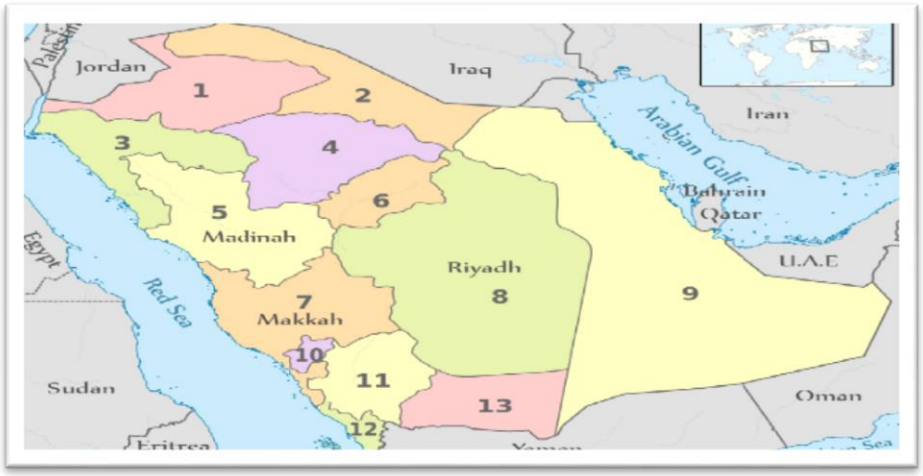

Figure 2.2: Map of Kingdom of Saudi Arabia (Source: CIA World Fact Book, Brdesee, 2013)

2.4. Religion and culture in Saudi Arabia

This section focuses on defining religious and cultural values, as well as the links between the two and how these interrelations impact on the economy of Saudi Arabia. The published literature offers a large number of theories and definitions concerning religion, all of which touch upon a similar interpretation. However, as religion is open to elucidation on an individual basis, it is important that only reliable arguments are focused on in this brief review of that literature.

From a definitional point of view, religion is said to be constituted not only by the set of beliefs held by the adherents of any given faith, such as Hinduism, Buddhism, Islam and Christianity, but also by the set of shared practices which those groups

perform or aspire to (Idinopulos and Wilson, 1998). Interestingly, Yinger (1970, p.33) describes religion in the following terms:

> Where one finds awareness of and interest in the continuing, recurrent, permanent problems of human existence – the human condition itself, as contrasted with specific problems; where one finds rites and shared beliefs relevant to that awareness, which defines the strategy of an ultimate victory; and where one has groups organised to heighten that awareness and to teach and maintain those rites and beliefs – there one has religion.

According to Weber (1905), religion should primarily be studied in relation to the social interactions between its adherents' understanding and their engagement in specific meanings. Thus, it is imperative to note how religion impacts on society as a whole and on the beliefs that people exhibit. The extent to which religion affects society and lifestyle, however, can be difficult to determine, particularly when looking at interactions of one area with another, between one country and others or among the different social classes in those places. Hence, religious belief is seen more as a state of mind, in that it does not require proof and has the ability to change over a person's lifetime in response to external and political stimuli (Douglas and Wykowski, 2010).

Given the validity of the above arguments, it is clear to see that religious beliefs will tend to vary strongly in relation to culture and that indeed each of these systems of thought and practice has the power to influence the other. For instance, the behavioural laws of society exhibit ways in which religion can affect culture, particularly when determining which celebrations or rituals should be performed and the implications of

doing so. A similar effect can be seen when culture imprints onto a religion, allowing for religious beliefs to be adopted across multiple cultures.

Contributors to the literature including Esteban (1990) identify two distinct types of value system, which are objectivism and subjectivism. Objectivism comprises the set of values which arise from truth perceived as fixed and unarguable in a given context, such as the moral values by which the members of a given population are ethically and/or socially bound at all times. Subjectivism, on the other hand, refers to values which arise from or are embodied in the personal behaviour, opinions and attitudes of an individual or group in relation to a specific culture. With this in mind, it can be suggested that religious beliefs have the ability to affect culture, primarily when all or almost all members of a group share an acceptance of similar concepts. Interestingly, this identifies how cultural and personal values are an influential force behind the beliefs that classify individuals as members of such a group. When a shared belief is acquired by a culture, it thereby gains the ability to impact on attitudes to work, to individual behaviour, to culturally related entrepreneurship and to the regulations employed within workplaces and working environments across a nation.

Islam, whose adherents are now considered to constitute one of the largest religious groups in the world (Grimm *et al*., 2015), dates back to the early years of the 7th century of the Common Era (CE), when it was predominately founded by the Prophet Mohammed (pbuh). At the time of his birth in 570 CE, the Kaba in Mecca was a shrine to a number of idols. This remained the case when the Prophet reached the age of 40, the time at which he experienced his first revelation from Allah, prompting him denounce idol worship and declare the Oneness of Allah. Mohammed's followers grew

quickly in number, but at the same time his disapproval of idolatry led many others to display their antagonism and resentment, mainly because the idols were seen as a source of faith for the Arab tribes. This led to Mohammed and his followers moving from Mecca to Medina, where they stayed for eight years, until the year 630 CE, when they openly declared Islam to be the only true religion.

From the time of this declaration, Islam was considered to be a religion of peace, involving five primary beliefs: testimony, prayer, fasting, almsgiving and pilgrimage. Inspired by the teachings of the Holy Quran and of the Prophet Mohammed (pbuh), such beliefs can now be seen in laws and practices, denoting that believers must confess their relationship to Islam. This ensures that Islam remains a way of life, as codified in the *Hadith* (accounts of the words and deeds of the Prophet), and that it forms the basis of behavioural guidance for the Muslim community. The Quran itself is also used in numerous social and economic functions, such as the exercise of political and public authority (Bouzenita, 2012; Brown, 2015), environmental preservation (Mangunjaya, 2011) and legal action related to business activities (Zubair Abassi, 2014). Tayeb (1997, p.355) notes that "Islam, unlike many other religions, is an all-encompassing creed; it governs every aspect of life, public and private, political and economic, and as such is relevant to business activities. In other words, when it comes to Islam there is no separation between worldly and religious aspects of life". However, according to Parrillo (2008), there is no standardisation of Islam and some commentators consider it to be a particularly heterogeneous set of religious beliefs and practices, driven by the involvement of the conflicting tendencies of traditionalism and reformism. Thus, the understanding and interpretation of the Quran can differ significantly among the various schools of Islam.

However, Saudi Arabia itself has a "fairly homogeneous" culture (Idris, 2007, p.37), which has been described as being collectivistic and adhering strictly to Islamic principles and teachings. As an Islamic theocracy, Saudi Arabia is primarily ruled in conformity to Islamic beliefs and the constitution of the state is seen to be derived directly from *Shar'aiah* (Ansary, 2008). With this in mind, Islam can be described as a way of life, according to which both individual and group behaviour must conform to the norms and principles set down in the Holy Quran (Khimish, 2014). The dominance and local invariability of Islamic culture also has significant career implications in Saudi Arabia, because the influence of the religion extends to all decisions, including those related to work and personal matters (Idris, 2007; Zamberi Ahmad, 2011). Consequently, the acceptable bounds of any and all economic activities in the Kingdom of Saudi Arabia, formal or informal, are delineated clearly by *Shar'aiah.*

Notwithstanding the dominance of Islam, Westernisation began in the nineteenth century to have a significant influence on culture, society and politics in most countries of the Muslim world. Of note here is that among its effects on life in general, a particularly strong influence can be seen in the codification and practice of law in many Muslim countries. Interestingly, however, Westernisation did not arise as a major force in certain of these countries until the second half of the 20th century and it can be seen to have had a relatively weak overall impact on the legal system of Saudi Arabia, where the supremacy of Islamic law has, therefore, never been seriously challenged by the growing influence of Western legal codes (Rudolph, 2005).

2.5. The national economy

When the KSA was founded, the national economy depended primarily on the income derived from the presence of the Muslim pilgrims who arrive in large numbers each year to visit Mecca and Medina. Income also came from agriculture (Champion, 2003) but this was limited to coastal settlements situated close to the coasts of the Rea Sea and the Arabian Gulf.

All of this changed when oil was discovered in 1936, in the eastern region of the KSA. In 1938, when commercial production of crude oil commenced, the country began to progress economically. Over 90 per cent of export earnings in Saudi Arabia now come from oil (Ramady, 2005) and in recognition of this predominance, a petrochemical sector was developed in coastal cities such as Jubail and Yanbu, with appropriate infrastructure to support further development of this venture. Major religious sites have likewise been developed in order to increase the number of foreign pilgrims visiting the land. To prevent non-religious tourists from being excluded, additional areas of the country have also been invested in.

In recent years, the KSA has not been exempt from the impact of globalisation on its increasingly knowledge-based economy. As part of this development in 2005, Saudi Arabia acceded to the World Trade Organisation (WTO) to improve the country's integration into the world economy and identified one key obligation: the General Agreement on Tariffs and Trade (GATT).

In line with the 1970-1975 development plan, one of the three objectives identified by the Saudi Arabian government was "diversifying sources of national income and reducing dependence on oil by increasing the share of other productive sectors in

gross domestic product" (Ministry of Economy and Planning, 2017). With further development, ten plans have since been proposed, the most recent of which outlined improvements that the government planned to instigate between 2015 and 2019. While the objectives of each plan have differed slightly, economic diversification has remained the principal target set by the government in its quest for additional growth (Albassam, 2015).

For the second half of 2012, the General Authority for Statistics (GAS) identified a 12 per cent unemployment rate in Saudi Arabia, the highest rate in recent years. From a survey carried out in 2013, it was found that approximately 652,001 people over the age of 15 were unemployed, accounting for six per cent of the whole country. Roughly 30 per cent of this figure was comprised of 15-29 year olds (Table 2.1) and 60 per cent of the total were females (GAS, 2012). Despite this, the Labour Force Survey (2013) identified an increase in the number of unemployed females over the age of 15, with 75 per cent currently out of work. This, in turn, showed a slight increase in unemployment rates for women in Saudi Arabia (Table 2.1).

Table 2.1: Unemployment by age group and gender

Age	Employed			Unemployed			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
15-19	47,998	6,162	54,160	17,552	7,359	24,911	65,550	13,521	79,071
20-24	483,516	86,739	570,255	126,004	110,225	236,229	609,520	196,964	806,484
25-29	1,201,068	206,341	1,407,409	83,456	149,074	232,530	1,284,524	355,415	1,639,939
30-34	1,696,114	313,326	2,009,440	31,340	74,334	105,674	1,727,454	387,660	2,115,114
35-39	1,842,956	348,168	2,191,124	11,411	26,023	37,434	1,854,367	374,191	2,228,558
40-44	1,476,437	214,216	1,690,653	4,764	6,174	10,938	1,481,201	220,390	1,701,591
45-49	1,117,831	88,210	1,206,041	1,294	852	2,146	1,119,125	89,062	1,208,187
50-54	710,128	33,650	743,778	1,368	0	1,368	711,496	33,650	745,146
55-59	415,678	15,522	431,200	421	360	781	416,099	15,882	431,981
60-64	184,562	6,654	191,216	0	0	0	184,562	6,654	191,216
65+	137,094	2,363	139,457	0	0	0	137,094	2,363	139,457
Total	**9,313,382**	**1,321,351**	**10,634,733**	**277,610**	**374,401**	**652,011**	**9,590,992**	**1,695,752**	**11,286,744**

Source: Central Department of Statistics & Information (2013), *Labour Force Survey 2013 (round 1)*.

An additional statistic of note is that GDP was also found to increase by 97 per cent between 2009 and 2012, rising from $369 billion to $727 billion per annum (GAS, 2012). Simultaneously with this dramatic increase, the unemployment rate continued to rise (Aluwaisheg, 2013), which gives an indication of how small an effect the rapid growth of economic activity has had on high unemployment rates in Saudi Arabia, notwithstanding the government's efforts at promoting Saudisation, i.e. the preferential employment of Saudi citizens rather than foreigners wherever possible.

Given that unemployment rates in Saudi Arabia are persistently high, it has been suggested that citizens lack the skills and knowledge required by employers (Yamani and Allen, 1996). A supplementary explanation that has been proposed is that the KSA's educational system fails to meet the needs of its economy, with only 12 per cent of students graduating in science or other related disciplines. In fact, a very large proportion (42.2 per cent) of students in the Saudi Arabian tertiary education system graduate with degrees in social or religious studies (Diwan and Girgis, 2002), leaving many with unsuitable qualifications. There is also evidence to support the notion that the attitudes of workers in Saudi Arabia makes them less favoured when compared to those working in foreign markets (Ramady, 2010).

As explained above, Saudi Arabia's economy is primarily driven by its role in the exportation of oil, with the country holding approximately one quarter of global oil reserves. By improving entrepreneurship, Saudi Arabia has the ability to alleviate the consequences of this imbalanced economic development, caused above all by high oil revenues. In fact, divergence through entrepreneurship may provide Saudi Arabia with a beneficial alternative means of developing and growing its economy, aiding its ability

to overcome short- and long-term difficulties, both predicted and unanticipated. Overall, entrepreneurship can be considered to make a positive contribution to addressing the challenges faced during economic expansion and to have the potential to provide an effective method of overcoming high levels of unemployment, primarily by increasing the number of new businesses. The following section offers a detailed examination of the entrepreneurial environment in Saudi Arabia.

2.6. Entrepreneurship in Saudi Arabia

As part of the development of entrepreneurship in the KSA, numerous proposals have been made to aid in the diversification of the economy. Small and medium enterprises (SMEs) contribute only about twenty per cent of Saudi GDP, compared to as much as 70 per cent in the case of some other economies. Despite efforts to improve the quality of the business environment, small enterprises in the Kingdom continue to be stifled by the complexity of the regulatory and administrative procedures, by slow growth in capacity, by a relative inability to attract talent and by difficulty in obtaining funding. The proportion of financial resources available to small and medium enterprises is only about five per cent of total funding, which is a small proportion compared to global rates. The initiatives discussed here seek to help the enterprises to obtain more funding and urge financial institutions to increase their available funding to 20 per cent by the year 1452 AH (2030 CE).

A good example of this is the periodic issuing of official national economic development plans, which helps to develop and support small businesses within the area and aids in entrepreneurship. With an increasing interest in SMEs and entrepreneurship, following the implementation of the 4th Development Plan (1985-

1990), the 7th Development Plan (2000-2005) and the 9th Development Plan (2010-2015), the country can be seen to have been seeking to establish the right conditions to support SMEs. By doing so, the authorities are improving the prospects of achieving all of the strategic aims outlined within these plans, such as increasing foreign investment and non-oil exports, in order to effectively distribute development-based activities across the entire country.

As well as paying attention to entrepreneurship, the Saudi government has employed several mechanisms designed to strengthen all of the economic activities undertaken by Saudi businesses. For instance, the Saudi Chamber of Commerce and Industry (SCCI) was established to support SMEs and entrepreneurship through the improvement of sponsorship by the Saudi Industrial Development Fund. Saudi commercial banks have also been encouraged to help provide loans to SMEs (Ministry of Economy and Planning, 2017) for further development. A related initiative by the government of the KSA has seen a focus on university research centres, promoting co-financing between industry and public sector institutions. At the same time, business incubators have been employed for the purpose of transforming research (Ministry of Economy and Planning, 2017).

As part of the same broad strategy to diversify and strengthen entrepreneurship in the country, the Saudi Arabian General Investment Authority (SAGIA) was founded in 2000 to help develop national and foreign investment inside the country. Charged with issuing investment licences, with recommending policies in relation the improvement of investments and with the promotion of investment opportunities, SAGIA was predominantly required to make investment decisions within a thirty day period.

In 2007, the King Abdulaziz City for Science and Technology was established to aid in the development of applied research within Saudi Arabia. In the same year, a national programme designated by the acronym BADIR was launched to develop, activate and promote technological incubators. What should be noted here is that BADIR is commonly used in aspects of biotechnology, nanotechnology, energy and ICT, and that it has engaged in collaboration with the Riyadh Chamber of Commerce and Industry (RCCI) to target young entrepreneurs in the technological industry. Overall, BADIR is beneficial for incubators and offers practical support to RCCI staff during development (King Abdulaziz City for Science & Technology, 2013).

Bab Rizq Jameel (BRJ), a programme similar to BADIR, was established in Jeddah in 2007 to help young Saudi entrepreneurs interesting in founding their own SMEs. As an initiative of the Abdul Latif Jameel Community Services Programme, BRJ has successfully helped to finance 5,110 projects and created approximately 41,000 jobs in 2009 alone. More recently, the BRJ programme has been substantially expanded to 18 branches across Saudi Arabia. The projects on offer from the BRJ include occupation training, taxi and truck proprietorship, micro-project financing, SME sponsoring and self-employment programmes. Of the 5,110 projects funded in 2009, the majority involved either salons, bakeries, event planning businesses or technology distributorships (Bab Rizq Jameel, 2013). The Productive Household programme was also set up to help support women in making perfumes and handmade craft items, through the use of an interest-free loan of up to 5,000 Saudi riyals (SR). Through the taxi and truck proprietorship programme, 762 trucks and 322 taxis were provided to males looking to start SMEs in Saudi Arabia.

In line with the above, it has been suggested that franchising is the most efficient method for establishing jobs and businesses globally. By means of the BRJ scheme, new opportunities can be created for young unemployed citizens to operate franchises of their companies. To do so, the BRJ offers interest-free loans that can be repaid within a period of five years. At this current time, approximately 400 people are employed by BRJ to ensure that loan payments are collected on time.

Given that the unemployment rate among Saudi women is significantly higher than that of men, there is an increasing importance in establishing schemes to help in the development of the entrepreneurial skills needed by young girls in Saudi Arabia. To this end, the Prince Mohammed bin Fahd Leaders Preparation Centre was founded in 2009 for girls between the ages of six and 25 years, who were invited to register with one of two programmes depending on their age: the Promising Leaders Programme for six to fifteen year olds and the Young Leaders Programme for those aged sixteen to twenty five years.

Another important initiative was the founding of 25 chambers of commerce and industry to help support innovation and entrepreneurship, whereby each chamber was made responsible for providing financial advice and investment opportunities wherever these were needed. Within the Arabian Gulf region, the women's section of the Riyadh Chamber of Commerce and the Al-Sayedah Khadijah bint Khuwailid Businesswomen Centre (AKBK) are now considered to be two of the most prominent institutions offering support for women's entrepreneurship, thus encouraging further innovation in business.

Amongst the 25 chambers, the three largest are located in Riyadh (62,000 members), Jeddah (41,000 members) and the Eastern Province (39,000 members). Hosting both yearly and early stage entrepreneurs, the SCCI founded the Development Centre for SMEs and Entrepreneurship in 2003, for the purpose of aiding the country's economic development. This was pursued through economic diversification and the creation of new opportunities in employment. The aims of this centre involved educating the young regarding the importance of entrepreneurship and the role of chambers of commerce in the funding of SMEs. The centre also provides information on finance for those starting up businesses and the exporting capability of entrepreneurship when liaising with the Saudi Exports Development Centre. The Riyadh Chamber of Commerce reports that more than 500 consultations have been held and that more than 100 citizens have registered for training sessions in Saudi Arabia.

Finally, a more recent addition to these important entrepreneurial initiatives in Saudi Arabia is the establishment in October 2015 of the Small and Medium Enterprises Authority, known as Monshaat. The purpose of setting up Monshaat was so that it would assist in removing barriers, reviewing regulations and facilitating access to finance. Monshaat also helps to ensure that the ideas and projects conceived and initiated by Saudi citizens are promoted, particularly when pursuing incubators for the development of their skills and business concepts. As a beneficial method, Monshaat guarantees that SMEs are able to export products and services to foreign markets and international bodies.

In summary, with SMEs making up 92 per cent of all Saudi Arabian businesses and employing more than 80 per cent of the labour force, development plans can be

used to support the initiatives established by governmental and private sector employees. Doing so will not only improve economic development but will also ensure that the country attains global competitiveness and that it improves the employment prospects of its citizens, thus allowing for the diversification of income and underlining the importance of assisting the nationalised economy.

This concludes the examination of the background to the present research. The following three chapters present the empirical studies on which its findings are based.

Chapter 3

Religiosity and Risk taking:

Evidence from the Islamic Religion

Religiosity and Risk Taking:

Evidence from the Islamic Religion

Abstract

Most research in the field of religion and economy has ignored the impact of religion on economic processes, while some of this work has suggested a negative linear relationship between religion and risk taking amongst individuals. In the study reported in this chapter, we revisit this argument by examining the influence of Islamic law on Muslims' propensity to involve themselves in taking financially risky decisions. Based on the analysis of data gathered from a sample of 638 Muslims from the Kingdom of Saudi Arabia, this study finds that *Shar'aiah* is a significant determinant of Muslims' risk-taking propensity. In particular, the results suggest a U-shaped relationship between Islamic religiosity and the propensity to take financial risks. Muslims with both high and low religiosity were found to be more tolerant towards risky decisions. Thus, the empirical evidence provides a novel link between Islam and risk preferences.

3.1. Introduction

Although a few scholars have shed some light on the fundamental role that religions play in shaping economic activity, little research has been conducted to explain the mechanism of such relationships. From Adam Smith's *The Wealth of Nations* in the mid-eighteenth century and Max Weber's *The Protestant Ethic and the Spirit of Capitalism* in the early twentieth, to more recent works (e.g. Miller, 2000; Audretsch *et al.*, 2013), the argument as to how religion might influence the economy is still under development. Furthermore, while much of the existing literature has examined the relationship between religion and economic development in a Western context, few studies have investigated the way in which Islamic law may have influenced economic development, whether in the Arab world or elsewhere. Such research as there has been into the linkage between Islam and economy takes two broadly opposing standpoints. On one hand, a number of scholars claim that *Shar'aiah* appears to be the main factor behind the economic stagnation of Islamic countries around the world. They claim that the nature of Islamic law imposes a low level of freedom and limits property rights (Zelekha *et al.*, 2014), that it leads to inadequate institutions (Kuran, 2008), that it minimises the participation of women in the labour force (Perkins, 2003) or that it discourages vital business traits such as risk taking (Bartke and Schwarze, 2008) and the adoption of an internal locus of control (Arslan, 2001). On the other hand, some scholars argue the opposite, saying that Islamic teachings span a range of economic dimensions such as business ethics (Graafland *et al.*, 2006), freedom and justice (Ahmad, 1995) or problem solving (Fontaine, 2008). However, this literature reveals an incomplete picture of the extent to which Islamic religiosity influences economic process and of the

mechanisms by which it does so. As Zelekha *et al.* (2014) affirm, there is a lack of empirical research to confirm or contradict the claim that Islamic law constrains or discourages economic development, which leads to the conclusion that the relationship between Islam and economic growth remains a field of study ripe for further endeavour.

The purpose of the present study is thus to investigate the relationship between religiosity and economic development by examining one main component of the economic process: risk-taking propensity. While a number of scholars assert that Islam is a religion which encourages risk taking (e.g. Audretsch *et al.*, 2013; Gümüsay, 2014), others claim the opposite (e.g. Miller, 2000; Jiang *et al.*, 2015). Because the available literature on the relationship between religion and risk propensity is contradictory in this way, it is fruitful to shed some light on the interaction of Islam with attitudes to risk taking. The investigation of this relationship could raise questions such as the following: (1) What is the relationship between Islamic law, reflecting the precepts of one of largest religions worldwide, and economic development? (2) How does Muslims' religiosity empirically measure up against their risk-taking propensity when involved in financial activities? Thus, the present research takes advantage of a fertile opportunity to explore such relations in one of the most dominant Islamic countries, namely Saudi Arabia. It aims to bridge an evident gap in knowledge by using quantitative research methods and by employing detailed measures of religiosity and risk taking to gain a deep understanding of the relationship between *Shar'aiah* and business risk. In doing so, it takes an empirical approach to the exploration of the relationship between Muslims and their propensity to take risks within economic settings, which is for the most part empirically untested in previous research.

The remainder of this chapter is divided into four sections. The first of these, Section 3.2, starts by addressing the theoretical arguments concerning religion and economic development, with particular emphasis on the context of the Muslim religion. It reviews the extant literature relevant to the interrelationship between risk taking and religious belief and practice, especially that of Islam. Section 3.3 next explains the research methodology adopted and presents the dataset, then Section 3.4 discusses the data analysis, the empirical findings and the testing of the research hypothesis. The chapter concludes with a discussion and summary. In particular, this section highlights some research limitations and suggests directions for further research.

3.2. Literature review

3.2.1. Religion and risk-taking propensity

Initiating any study of the relationship between religious adherence and economic processes involves the making of assumptions about the psychological characteristics of individuals. A concept frequently cited in the economic literature is that of risk-taking propensity (Lumpkin and Dess, 1996). Peter Drucker is cited in Mintzberg (1973, p.45) as follows: “Central to business enterprise is .... an act of economic risk taking”. Dohmen *et al.* (2011, p.522) assert the importance of risk taking in economics: “Risk and uncertainty play a role in almost every important economic decision”. Noussair *et al.* (2013) consider risk propensity to be a mechanism that performs an essential role as mediator between religion and economic behaviour. The existence of this relationship is asserted in earlier contributions to the research literature, whose authors hypothesise a negative linear correlation between risk-taking propensity and religion or religiosity (Miller and Hoffmann, 1995; Miller, 2000; Dohmen

et al., 2011; Noussair *et al.*, 2013). For example, Noussair *et al.* (2013) explored the relationship between financial risk propensity and religiosity at an individual level using a sample from the Dutch population. The authors set out to determine whether religiosity has an influence on the attitude to risk of individuals, to identify any differences in propensity for risk taking amongst the various Christian denominations and to understand what drives this relationship. Their findings indicate clear support for the notion that religious people within Christianity are more likely than their non-religious peers to be averse to risk taking. Noussair *et al.* also report that adherents of the Catholic denomination were more inclined to take risks than Protestants and that the link between being risk averse and religiosity was reflected in social behaviour such as church attendance, rather than in different religious teachings.

Hilary and Hui (2009) investigated whether the relationship between religiosity and the risk taking of individuals had any influence on organisational behaviour in the United States and, more precisely, how religiosity influenced firms' investment decisions. The authors confirm the mainstream suggestion in the literature that religiosity is negatively associated with risk taking. Their analysis of data collected from a number of US firms revealed that those individuals who exhibited high religiosity were ranked lower in terms of risk exposure. Similarly, Miller and Hoffmann (1995) investigated the effects of risk preferences related to differences in gender and religiosity among American high school students. They report that those with a high level of religiosity among both genders were less likely to have a high risk preference. More recently, using data from the 2010 Baylor Religion Survey, Ferguson *et al.* (2014) explored the relationship between the orthodoxy of Christians and their risk-taking propensity in a sample of entrepreneurs within American firms. The study findings

indicate that in the entrepreneurial context, religious orthodoxy has a negative association with risk-taking propensity. However, a major limitation of this study is that the researchers gathered all of their data on this relationship from a single location, in this case the USA. A better understanding would be achieved by undertaking an examination of the influence of religiosity on risk propensity in diverse settings. One of the relatively few such studies set in Asia was that of Liu (2010), who explored the impact of religiosity on the attitude to risk of Taiwanese subjects, using the Taiwan Social Change Survey 2007. The outcome of the data analysis was again consistent with the mainstream conclusion reported elsewhere in the literature that religion has a negative effect on individuals' risk-taking propensity.

Having discussed how religions influence the attitudes of individuals towards risk taking, the following section of this study addresses this relationship from an Islamic perspective, as Tracey (2012, p.88) stresses that "the existing [management] literature focuses overwhelmingly on Western Christianity, and seldom examines other faiths or parts of the world."

3.2.2. Islam and risk-taking propensity

Accepting Weber's thesis of an interrelation between religion and economy, Dana (2009) goes on to contend that religious beliefs affect individuals' values and behaviours in different ways. He claims that different religions yield different patterns of values and ethics that may encourage or, in contrast, discourage economic activities. This view is consistent with the argument of Phelps (2007) that values and attitudes are as much a part of the economy as institutions and policies are. Some impede, others enable (Phelps, 2007). However, while a few attempts have been made to explore the

relationship between religion and economic activity, there has until recently been a scarcity of research on the impact of religiosity on the process of making economic decisions in general, and amongst Muslims in particular.

Islam is growing fast as a global religion (Tlaiss, 2013). Muslims, after Christians, comprise the second largest faith group, with 1.6 billion adherents in 2010, constituting 23 per cent of the world's population. The number of followers of Islam is expected to increase in the next decades and to reach around 2.8 billion by 2050, amounting to 30 per cent of the projected global population (Grim and Karim, 2011). Muslim markets are growing and developing to meet demand among Muslims. Recently, a number of global economic meetings, such as the World Islamic Economic Forum and the Global Islamic Economy Summit, have raised awareness of the role of Islam in national economies and in global trade. Gümüsay (2014) indicates that while Muslim consumption is rising and that Muslims therefore need new products and services, understanding the relationship between Islam and the economy should be seen as part of the response to meet Muslims' particular needs. The steady growth of Islam around the world compels contributors from many different disciplines, including economists in particular, to pay further attention to this field of study. This subsection provides a brief overview of the relationship between religion and attitude to risk in an economic context, then goes on to illustrate the forms that this relationship can take from an Islamic perspective.

Islam is a monotheistic religion whose adherents declare their belief in only one God and affirm that Mohammed (pbuh)[1] is his last messenger. Islam is built around five

[1] The abbreviation 'pbuh' stands for "peace be upon him", an honorific formula used by Muslims when they mention the prophet Mohammed.

[2] In this Thesis, we use the English translation of the Holy Quran from (Al-Hilali and Khan, 1996), an authorised translation by King Fahad Galerius Quran Printing Complex, Kingdom of Saudi Arabia.

pillars that present the minimum obligations of all Muslims. The version of the Hadith (the collected sayings of the Prophet Mohammed [pbuh]) edited by Al-Bukhari, an Islamic scholar of the ninth century CE, lists the five pillars as follows:

> The archangel Gabriel asked the Prophet Mohammed (pbuh) "What is Islam?" The messenger replied, "To worship God alone and none else, to offer prayers (Salat) perfectly, to pay the compulsory charity (Zakat) and to observe fasts (Sawm) during the month of Ramadan and make pilgrimage (Hajj) if you are able to (Bukhari, 1987).

The primary sources of Islamic law (*Shar'aiah*) are the Quran, believed to be God's words, and the Sunna, comprising the deeds, sayings and tacit approvals of the Prophet Mohammed (pbuh). God Almighty says in the Holy Quran: ***"O you who believe! Obey God and obey the Messenger (Mohammed), and those of you (Muslims) who are in authority"*** [An-Nisa' 3:59].[2] When Muslims struggle to find a direct answer to a religio-legal question in the Holy Quran or the Sunna, they resort to the secondary sources of *Shar'aiah*, namely ijma (consensus among religious scholars) and qiyas (the drawing of analogies to decisions previously accepted by religious scholars). These pillars of Islam and sources of *Shar'aiah* shape all aspects of Muslims' lives, covering both spiritual affairs and material ones. Like other religions, Islam maintains the validity of seeking prosperity in one's life. Islamic jurisprudence acknowledges self-dignity as stipulated by the assertion that everyone is entitled to observe their beliefs and practices in the society in which they live. However, Islam commands Muslims to practise their rights within the bounds of Islamic law. Islam is not just a religion; it is a way of life (Wong,

2007; Vargas-Hernández *et al*., 2010; Tlaiss, 2013; Ullah *et al*., 2013; Aminuddin *et al*., 2014).

Islamic law asserts that Muslims have the right to be involved in all economic activities that are not prohibited by *Shar'aiah* (e.g. usury, gambling or trading in prohibited substances such as alcohol). Provided that these constraints are observed, *Shar'aiah* encourages Muslims to trade, own property and increase their wealth. The Holy Quran commands Muslims to ***"seek your provision from God"*** [Al-Ankabut 29:17]. A number of studies confirm the positive correlation between Islam and economic growth (Essers and Benschop, 2009; Tlaiss, 2013; Gümüsay, 2014). On the one hand, as the Prophet Mohammed (pbuh) was a merchant himself (Nadiri, 2009), Muslims are urged to make him a role model in all aspects of their lives. Beekun (2012, p.1005) affirms that Muslims should always consider the Prophet as the ''character-centric exemplar''. *Shar'aiah* commands Muslims to act in all things in accordance with the Prophet's (pbuh) deeds, sayings and unspoken permissions or disapprovals. God Almighty says in the Holy Quran: ***"And verily, you (O Mohammed) are on an exalted standard of character"*** [Al-Qalam 68:4]. Similarly, Surat Al-Ahzab states: ***"Indeed in the Messenger of God (Mohammed) you have a good example to follow for him who hopes in (the Meeting with) God and the Last Day and remembers God much"*** [Al-Ahzab 33:21]. On the other hand, Islam is considered to have vital codes of conduct that urge economic development, such as social responsibility (Graafland *et al.*, 2006), the work ethic (Ali and Al-Owaihan, 2008), entrepreneurial motivation (Hassan and Hippler III, 2014) and risk taking (Nadiri, 2009).

From an Islamic perspective, a handful of studies affirm the notion that Muslims favour risk taking in their businesses. Audretsch *et al.* (2013), for instance, indicate that the principle of risk sharing in Islamic banking models indirectly provides incentives for risk taking. Gümüsay (2014, p.5) argues that Islam should be considered to be an "entrepreneurial religion", because it encourages entrepreneurial traits such as innovation, the pursuit of opportunity and risk taking. Further, as Hassan and Hippler III (2014) observe, Muslims are often motivated to take riskier decisions in order to maximise their profits. However, these conclusions are not without opponents. A number of scholars claim that Muslims are less willing to take risks than non-Muslims. Bartke and Schwarze (2008), for example, studied religion as a possible determinant of risk taking and found that religiosity was a significant determinant of risk attitude amongst individuals. They found that Christians and, to a lesser extent, Muslims were less willing risk takers than atheists (Bartke and Schwarze, 2008). Jiang *et al.* (2015) investigated whether religion had an influence on risk taking among Chinese family firms. The authors found a positive correlation between religiosity and risk aversion among adherents of the three monotheistic religions of Christianity, Judaism and Islam. It has also been asserted that Muslims are more conservative toward risk taking in their businesses than the generality of people operating in capitalist markets (McManus *et al.*, 2007). Kuran (2008) argues that the factors underlying the relative economic underdevelopment of Muslims countries can be seen to include inadequate institutions, lack of creativity, excessive risk aversion and hostility to innovation. These findings are in line with those of Miller (2000), who surveyed approximately 5000 people from five countries differing in their social and religious structures, namely the USA, Italy, Turkey, India and Japan. He found that being religious and attending religious services was

positively correlated with a risk averse preference among Muslim and Christian societies. However, findings regarding the extent to which Islamic religiosity is associated negatively with risk taking are unreliable, because most of the research on Muslims' propensity to take economic risks looks at the phenomenon without much attention to the context. One main problem is that the societies under study have comprised a mixture of both Muslims and non-Muslims, such as in Pakistan (Roomi, 2013) and Egypt (McManus *et al.*, 2007), or have been characterised by the embedding of Muslim social groups within other dominant cultures, such as in Germany (Bartke and Schwarze, 2008), while others have been set in a number of countries of both types (Miller, 2000). These works on the relationship between Islam and economic development are of limited relevance when trying to understand the contextual influence of Islamic identity and law on Muslims' economic milieu.

In contrast to the research reviewed above, the present study is set in Saudi Arabia, a country dominated by almost universal adherence to Islam, with a narrow twofold focus on the relationship between Islamic religiosity and risk taking and on how Islamic law shapes Muslims' propensity to be involved in taking risky decisions within their economic activities. As scholars debate whether *Shar'aiah* encourages or discourages such risk taking amongst Muslims, it seeks to illustrate how Muslims are involved in risk-taking activities from an Islamic perspective. The following subsections review the available Islamic literature in order to construct a reasonable research hypothesis by addressing the question of how the requirements of Islamic law conceptualise and determine the propensity of Muslims to take risks in business.

3.2.2.1. Islamic religiosity, trust in God and risk-taking propensity

Toakul, or trust in God, is an Islamic tenet which refers to Muslims' belief that they should place their trust in God Almighty alone in all aspects of their lives. According to Possumah *et al.* (2013), the relationship between God and life on earth relies on trust. Humans should believe that God Almighty alone takes care of the results of their actions. Thus, the Holy Quran instructs believers ***"… when you have taken a decision, put your trust in God, certainly, God loves those who put their trust (in Him)"*** [Al-Imran 3:159]. Similarly, ***"…whosoever puts his trust in God, then He will suffice him. Verily, God will accomplish his purpose. Indeed, God has set a measure for all things"*** [At-Talaaq 65:3]. In a highly respected ninth-century exegesis, *Tafsir AlTabari*, this verse is interpreted as meaning that whosoever trusts God to guide him in the conduct of his life will find that God fulfils his promise to do so (al-Tabari, 2005). The Holy Quran goes further in another verse, insisting that toakul is not an option for Muslims, but rather is required: ***"… and put your trust in God if you are believers indeed"*** [Al-Ma'idah' 5:23]. The Prophet Mohammed (pbuh) asserted that true toakul is an essential principle that benefits all Muslims and said: "If only you relied on God [with] a true reliance, He would provide sustenance for you just as He does the birds: they fly out in the morning empty and return in the afternoon with full stomachs (Al-Tirmidhi, 1986). However, although trust in God and dependence on him are essential preconditions for achievement, they do not mean that it is not also necessary to work hard and strive in this life for progress, provisions and sustenance. As reported by Anas Ibn Malik, a man asked the Prophet Mohammed (pbuh) "O Messenger, should I tie my camel and trust in God, or should I untie her and trust in God?" The Prophet (pbuh) said: "Tie your camel and trust in God"

(Al-Tirmidhi, 1986). The Permanent Committee for Research and Verdicts in Saudi Arabia has ruled on this matter as follows:

> Toakul in reality does not deny actually working and striving for provision, for God Almighty has decreed that humans should work and it is from His ways that He gives people when they strive. In fact, God Almighty ordered all Muslims to both depend upon Him and at the same time to work hard and take the necessary steps needed to achieve future goals. The act of striving for human sustenance is an act of physical worship, while trusting and depending upon God is faith in Him (Ibn-Bāz *et al.*).

Indeed, the position of toakul in Islam is strongly reinforced by the fact that the Holy Quran shows that God Almighty associates it with worship, saying: ***"So worship Him (Alone), and He is the Wakîl (Trustee, Disposer of affairs, Guardian, etc.) over all things"*** [Al-An'am 6:102]. A second verse confirms this: ***"So worship Him and put your trust in Him"*** [Hood 11:123]. Ibn Alqayyim, a respected Muslim scholar, affirms that Muslims who exhibit true toakul possess half of the religion of Islam (al-Qayyim, 1955). Therefore, Muslims who practise toakul by putting their complete trust in God are to be considered true believers who exhibit strong Islamic religiosity. In an economic context, Gümüsay (2014) argues that in Islam, the concept of *rizq* (sustenance of wealth) is similar to that of risk and that Muslims believe that rizq is eventually granted by God. The term 'rizq' also connotes future projections (Faizal *et al.*, 2013) where uncertainty is applied. Thus, Muslims need to have toakul in their future actions in the sense that God Almighty has control over the future consequences of their risk taking (Gümüsay, 2014). However, as noted above, the Prophet Mohammed (pbuh) commanded all Muslims to trust in God

while simultaneously taking all necessary measures of security. From the preceding discussion we can argue that Muslims who apply toakul to their conduct of economic activities are considered to be obeying *Shar'aiah* and thus to be displaying strong religiosity. Therefore, it is reasonable to hypothesise that Muslims who trust in God are highly religious and that this religiosity is positively correlated with a strong propensity to take risks.

3.2.2.2. Islamic religiosity, trade and risk-taking propensity

Islamic law considers the conduct of business to be a very important aspect of life (Graafland *et al.*, 2006). All economic activities should be performed and managed within the bounds of the overall objectives of *Shar'aiah*. Muslims must exercise their economic functions within their rights and within certain limits. For example, Muslims have the right to trade, own property, increase their wealth and involve themselves in all economic activities that are not prohibited by *Shar'aiah*. Four citations from the Holy Quran are relevant here: ***"God has permitted trading and forbidden Ribâ (usury)"*** [Al-Baqarah 2:275]. ***"And say (O Mohammed) "Do deeds! God will see your deeds, and (so will) His Messenger and the believers"*** [Al-Taubah 9:105]***. "… so [Muslims] seek your provision from God"*** [Al-Ankabut 29:17]. ***"Then when the (Jumu'ah) Salât (prayer) is finished, you may disperse through the land, and seek the Bounty of God"*** [Al-Jumu'ah 62:10]. Engaging in business activities in order to earn a living (rizq) according to the principles of Islam is considered to be a very important aspect of life. In the above verses, God Almighty is seen to command Muslims to engage in economic activities and earn their living by either employment or self-employment. In this context, two distinct types of risk can be identified: commercial risk on one hand and gambling or *maiseer* on the

other (Ibn Taymiyyah, 1996). Commercial risks are those financial risks arising when traders buy commodities in order to sell them at a profit. This type of risk is an essential and inevitable part of doing business, in that any commercial venture may turn out to make a profit or sometimes to lose money.

However, Muslims must also be aware that whatever is valuable and fair for a person or society is permissible, whereas whatever is harmful and unjust is prohibited. Thus, the Holy Quran instructs Muslims: ***"… do not throw yourselves into destruction, and do good. Truly, Allah loves Al-Muhsinoon (the good-doers)"*** [al-Baqarah 2:195]. In the exegesis of this verse, a number of Islamic scholars have agreed that it should be quoted as evidence that Muslims are forbidden to harm themselves or to throw themselves into excessive risk by any means (Ibn-Baz, p.194; Al-Baghawi, 1989, p.215; Al-Shawkani, 2000, p.349; al-Tabari, 2005, p.523). This interpretation would appear to signify that involvement in high-risk tasks is one of the major sins in Islam. Sadi (2002) identifies two types of problem that arise here. The first is the requirement to stop doing things which God has commanded Muslims to do if to continue would put a person's body or soul at high risk. The second type of problem arises from doing something that would lead to very risky situations which could result in harm to a person's physical body or to his/her soul. Therefore, the Holy Quran prohibits consenting to one's own destruction or that of others in any aspects of life, whether involving a person's soul, body or financial wellbeing. *Shar'aiah* accepts risk tolerance in economic activities, but at the same time, it prohibits engagement in any actions that involve excessive amounts of risk. Thus, we can argue that Muslims should be willing to take risks in their economic activities such as trade, but that they must also obey the *Shar'aiah* prohibition against participating in any actions that might place them in excessively risky situations. It

follows that it is reasonable to propose that there is a relatively weak relationship between moderate Islamic religiosity and risk-taking propensity.

3.2.2.3. Islamic religiosity, gambling and risk-taking propensity

The association of risk taking with gambling is widely discussed in the economic literature. Gambling involves risky choices that result in uncertain and harmful outcomes (Spurrier and Blaszczynski, 2014) and there is consensus that various forms of risky behaviour co-occur with gambling (Mishra *et al.*, 2010). In general use, the word 'gambling' represents any decision to execute a transaction or engage in a pursuit involving risk and uncertainty (Salamon *et al.*, 2015). More specifically, the *Dictionary of International Insurance and Finance Terms* defines gambling as being "applied figuratively to the commitment of money on any venture with a high degree of risk" (Clark, 2001, p.159). In other words, gamblers tend to take risky decisions when they are exposed to potential gain or loss in uncertain situations.

In Islam, individuals have the right to trade, own property and manage their business affairs within the constraints of *Shar'aiah*, but any activity involving maiseer is prohibited by Islamic law for the following reasons. First, societies prior to Islam recognised the presence of social problems caused by gambling and their potential detriment to individuals and society (Parhami *et al.*, 2012). Another reason is that gambling can cause addictive and compulsive behaviours that might result in bankruptcy (Al-Qaradawi, 1999). Furthermore, gambling is a risky activity which when successful results in the acquisition of wealth with the expenditure of little or no effort (Al-Suwailem, 2011). All such activities involve taking excessive risk based on speculation and uncertain outcomes. Any action or deed that leads Muslims to put themselves in a

position where they might harm themselves by any means, spiritually, socially or economically, is strictly forbidden in Islam. As noted above, the Holy Quran commands Muslims not to throw themselves ***"…into destruction* [but to] *do good"*** [al-Baqarah 2:195]. In an economic context, Muslims can interpret this verse as a religious admonition to avoid destroying their property by involvement in high-risk activities such as gambling. It can be also interpreted as guidance which encourages hedging and considering safety issues in all situations and all areas of life. Hedging is used generally to denote the neutralisation and minimising of risk.

As gambling was very common prior to the founding of Islam, the prohibition of maiseer in *Shar'aiah* was revealed gradually, in two stages. Implicitly, God Almighty says in Surah Al-Baqqarah: ***"They ask you (O Mohammed) concerning alcoholic drink and gambling* [Maiseer]*, Say: In them is a great sin, and (some) benefit for men, but the sin of them is greater than their benefit"*** [Al-Baqarah 2:219]. After this verse was revealed, some of the Prophet Mohammed's (pbuh) companions refrained from drinking alcohol and gambling while others persisted, as they claimed to obtain the benefits from doing so. The explicit prohibition of gambling in Islam was revealed through Surah al-Ma'idah', which states: ***"O you who believe! Intoxicants (all kinds of alcoholic drinks), gambling* [Maiseer] *… are an abomination of Shaitân's (Satan's) handiwork. So avoid (strictly all) that (abomination) in order that you may be successful"*** [al- Ma'idah' 5:90]. The Prophet Mohammed (pbuh) confirmed the prohibition of gambling when he said: "Whoever plays games of dice has disobeyed God and His Messenger" (Muslim, 1984). Playing dice for money is a form of gambling and the element of chance involved in the game is considered to entail that it is forbidden in Islam. Parhami *et al*. (2012) state that the majority of Islamic authorities consider

gambling to be an unacceptable and sinful economic activity. Ghoul (2010) affirms that any business activities involving alcohol, drugs, riba (usury), prostitution or gambling are strictly prohibited by *Shar'aiah*. Thus, it can be argued that Muslims who participate in any gambling activity are considered to be disobeying *Shar'aiah*. Therefore, it is reasonable to propose that Muslims who gamble have low Islamic religiosity and that this is positively correlated with their risk-taking propensity.

3.2.3 Hypothesis

Based on the above review of the literature on toakul, trade and maiseer, it is reasonable to suggest a curvilinear relationship between Islamic religiosity and risk taking, as expressed by the following hypothesis:

The relationship between Islamic religiosity and risk-taking propensity amongst adherents of Islam is curvilinear (U-shaped).

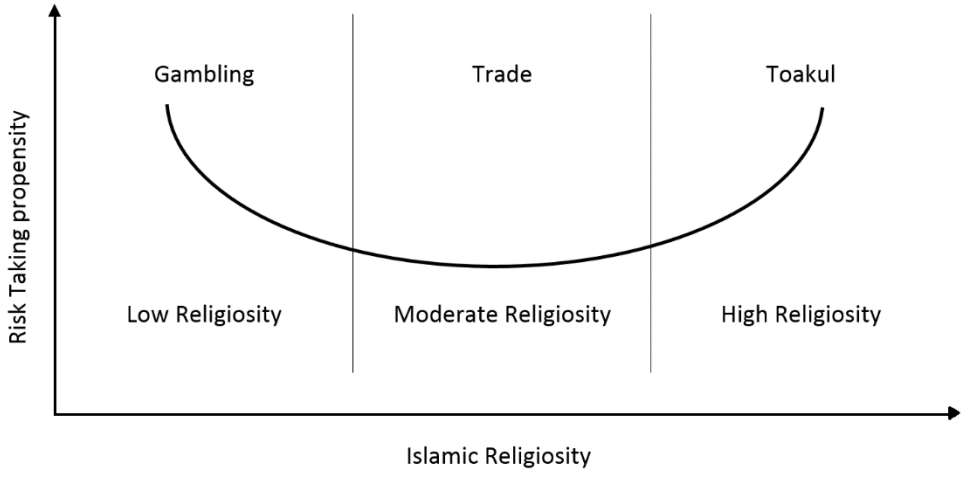

Figure 3.1: The proposed relationship between Islamic religiosity and risk-taking propensity compiled by the author

3.3. Methodology

3.3.1. Research design

The preference for a research approach is not only grounded in the research philosophy chosen, but is also affected by how the research questions are set out (Yin, 2009). Every research approach has its strong and weak points (Taylor and Bogdan, 1984). Flick (2002) also believes that both good and bad research occurs on both sides of the quantitative/qualitative distinction. No approach is equally appropriate and well suited for all studies. Therefore, the selection of an appropriate approach should be based on the nature of the research and the sort of questions it addresses.

Whether to take a qualitative or quantitative research approach is widely discussed among researchers. Although there is divergence over the precise formation of these methodologies, there is consensus on the critical implications and their practical consequences. Quantitative methods are considered more suitable when the research seeks to assign numerical values to observations or to make a collective statement (Brynard and Hanekom, 1997), whereas the qualitative approach is appropriate when qualitative data from sources including interviews, documents and observations are used to understand and pronounce on social phenomena (Myers, 1997). The key differences between qualitative and quantitative data as a basis for research are listed in Table 5.1 below.

Table 3.1: Qualitative and quantitative approaches to research

Quantitative Data	Qualitative Data

Data are articulated in numerical form.	Information is expressed in words and/or images that relate to feelings, processes, actions and meaning.
Analysis of a limited number of variables.	Analysis of significant themes that are suggested by a range of sources.
Data are collected in a way that could be generalized to a wider population.	Data collection is a form of social interaction involving the researcher and the respondents.
Concern to establish significant and separate relationships between restricted numbers of variables.	Concern to understand the interrelationships between different factors.
Variables are articulated in the language of the investigation.	The presumptions of the researcher are suspended, while the language of informants is valued and utilised.
Seeks to achieve abstraction from repeated observations.	Seeks to find out how people comprehend a situation and how their understanding effects their actions.
Data must be valid, reliable and independent of the research setting and process.	Researcher's interpersonal skills are critical to the understanding of the information.

Source: adapted from Neuman (2006)

Quantitative research adopts various methods where homogeneous categories are prearranged and methods are formulated in such a way that respondents' changing viewpoints and experiences are coded to these categories as numeric responses (Patton, 2002). Quantitative methods allow the researchers to validate wide range of variables in depth, which means that fewer variations in response can be allowed for. The data used in the present research is quantitative rather than qualitative, having been gathered by the use of survey methods (Bhattacherjee, 2012) and representing values and levels of theoretical constructs.

The literature reviewed in the preceding section has suggested a bilateral relationship between Islam and risk taking. Building on the findings of this review, the

present study proposes a research design to test the hypothesis of a U-shaped relationship between Islamic religiosity and risk-taking propensity within the Kingdom of Saudi Arabia, a country dominated by Islamic belief and practice. The conceptual framework of this study involves two independent variables, namely religiosity and religiosity squared, one dependant variable, i.e. risk-taking attitude, and six control variables. Figure 3.2 outlines the study framework.

It is very important to understand the research process, including the theoretical and philosophical considerations that underpin research methodologies. Collis and Hussey (2013) believe that a positivistic approach should be followed in the study of human behaviour, in the same way as in studies involving the natural sciences. In other words, positivism involves the implementation of scientific methods to investigate social phenomena. The current study is designed to investigate human behaviour in the context of religion and economics; more specifically, the effect of religiosity on risk-taking propensity among adherents of Islam. Therefore, applying quantitative approach using the positivist philosophy is considered appropriate for conducting this study.

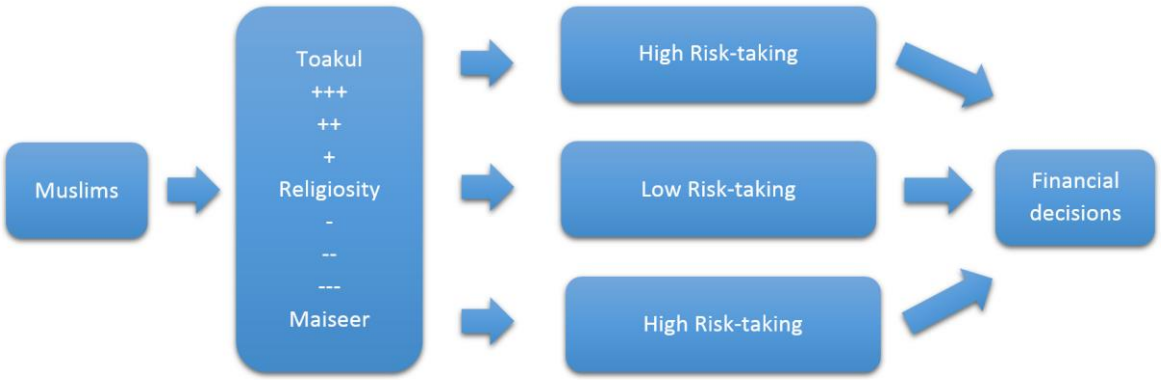

Figure 3.2: Theoretical framework compiled by the author

3.3.2. Method

Among the various possible ways of collecting the necessary data for the purpose of examining the relationship between Islamic religiosity and risk-taking propensity, the survey method, using a questionnaire, was considered the most appropriate for this study. This conclusion was reached because this research involves formulating and testing hypotheses derived from well established theories (Choudrie and Dwivedi, 2005) and because it explores situations, events, beliefs or attitudes held by individuals with common interests (Singleton and Bruce, 2005; Bhattacherjee, 2012). Paper-based and online questionnaires were considered preferable as data collection instruments. The original version of the questionnaire was developed in English. Then, because the first language in the Kingdom of Saudi Arabia is Arabic and the majority of potential respondents would be unable to understand English, the questionnaire was translated into Arabic. Accuracy was ensured by using the mechanism of forward and backward translation performed by a professional translator, following the procedure recommended by Graham *et al.* (1994).

Before administering the questionnaire to the final sample, the researcher conducted a pilot test to evaluate its feasibility. This involved circulating the questionnaire to twenty-three Muslim individuals resident in the Kingdom of Saudi Arabia. Their feedback was positive, stating that they found the questionnaire generally clear and easy to understand. However, the pilot test identified a few confusing statements and errors, especially in the process of translating the questionnaire into Arabic. The questionnaire was finalised by taking the comments of the pilot test participants into consideration, then the final version was distributed to 1000 Muslims

in Saudi Arabia. The questionnaires which were returned underwent several steps of data cleaning, as a result of which a total of 638 questionnaires were deemed fit for inclusion in the analysis, corresponding to a final response rate of 63.8 per cent. The data were analysed using the STATA (version 14) software package. The use of STATA is appropriate because it allows the examination of squared values of nonlinear regression and more than one variable at the same time.

3.3.3. Survey and Sample

The survey method involves the use of homogeneous questionnaires or interviews to collect data about people and their likings, thoughts and behaviours in a systematic way. This is a very popular way of conducting quantitative research in the social sciences. It can be used for descriptive, exploratory and explanatory research and is most appropriate for studies that have individuals as the unit of analysis. Based on the way the data are to be collected, surveys can be divided into two major categories: questionnaires (e.g. postal, group-administered or online surveys) and interviews (e.g. personal, telephone and focus group interviews).

Survey research has a number of essential strengths in comparison to other methods. Firstly, it provides access to a wide range of factual information about respondents and of unobservable data including their preferences, traits, attitudes and self-reported behaviour. Secondly, it is quite appropriate for remotely gathering data about a population which is too large to observe directly. Data on a large area such as an entire country can be captured using careful sampling to ensure that the whole population is sufficiently well represented. Thirdly, survey research is inexpensive in terms of money and of the researcher's time and effort, compared with most other

methods, including case study and experimental research. However, this method is exposed to a number of biases, including non-response bias and sampling bias (Bhattacherjee, 2012).

Many researchers in the field of entrepreneurship have explored survey methods with diverse data collection techniques, including postal, paper-based, telephone, fax and Web-based surveys and interviews. Surveys can be used in exploratory, descriptive and explanatory research. The purpose of survey research is to discover situations, events, attitudes or opinions associated with a population, in order to test a theory and establish causal relationships (Bhattacherjee, 2012). There are two major types of research survey: questionnaires and interviews. The questionnaire is the most appropriate method when data are to be collected from a large number of respondents in a short time at low cost (Bhattacherjee, 2012). In addition, Saudi Muslims believe hypocrisy to be detestable and many may indeed consider it to be strongly prohibited. Therefore, it may be difficult for religious Muslims to present themselves as being in a position where they might reflect a high degree of religiosity as the means of avoiding hypocrisy. It is difficult to get Saudis to talk about their religiosity, because questions about religious positions are seen as a privacy violation. Saudis do not prefer to be explicit about their religious and cultural issues and matters' (interviewee) (Lily, 2016). Therefore, as the present research required data to be collected from Muslims individuals in Saudi Arabia, a questionnaire survey was deemed most suitable.

Sekaran and Bougie (2010) describe a research population as an entire group of people, events, or things of interest that the research aims to investigate. However, the study would be unable to collect data from the whole of this target population because

of feasibility and cost constraints. Bhattacherjee (2012) asserts that a correctly selected subset of data can be considered to truly represent the entire population. Thus, a sampling method, to select a sample which represents the population of the study, has been followed in the present research. The overall sampling process consists of a number of phases: defining the target population, selecting a sampling frame and then choosing a sample using well known sampling techniques. Since the focus of this study is on exploring the influence of Islamic religiosity on risk-taking propensity among Muslims, the sampling frame for the study consists of the population of Muslims resident in an Islamic country, the Kingdom of Saudi Arabia.

A twofold sampling technique was adopted here. The first technique is probability sampling using random sampling type, where every unit of the population is equally likely to be selected as part of the sample. In other words, none of the sample points will have a zero probability of not being included in the sample (Bhattacherjee, 2012). The second method used to collect data was non-probability sampling, specifically the snowball technique. According to Arber (2001), snowball sampling can be used only when the respondents are homogeneous and involved in some kind of network with others who share the same characteristics of interest. The most difficult question in sampling analysis is to decide what size the sample should be. According to Tabachnick *et al.* (2001), for quantitative research a sample size of 300 is assumed to be comfortable, 500 very good and 1000 excellent. Taking account of this advice, the final sample selected for the present study consisted of 638 Muslim adherents.

3.3.4. Site selection

The literature suggests that very little empirical economic research has been conducted in Muslim countries and only a handful of exploratory studies are available in the context of Saudi Arabia. Therefore, this study was undertaken in the Kingdom of Saudi Arabia. This choice of the particular Islamic country in which to conduct the study was based on a number of considerations. First, Saudi Arabia is closely identified with Islam; indeed, it has a distinct religious status in the Islamic world as the place where the religion of Islam was originally revealed and as the site of two of Islam's holiest mosques, at Mecca and Medina. Second, Islamic law is the foundation of the governance, constitution and legal system of the Kingdom. Article 1 of the Saudi Arabian constitution states: "The Kingdom of Saudi Arabia is a sovereign Arab Islamic state with Islam as its religion; God's Book [the Holy Quran] and the Sunna of His Prophet, God's prayers and peace be upon him, are its constitution, Arabic is its language and Riyadh is its capital", while Article 7 asserts that "Government in Saudi Arabia derives power from the Holy Quran and the Prophet's tradition" (Royal Decree N^{O} A/90, 27th Sha'ban 1412 AH [1 March 1992]). The Islamic religiosity of the Saudi people has created a suitable environment for the Saudi government to apply a restricted Islamic law among its inhabitants, from social and political perspectives. It is widely perceived and largely accepted that Saudi Arabia is the most traditional and sanctified Muslim country. Most of the inhabitants (90 per cent) are Arabs and almost 100 per cent are Muslims (Agency, 2013). Thus, it could be argued that the Kingdom of Saudi Arabia is the most fertile Islamic country in which to conduct research related to the practice of Islam and the influence of Islamic religiosity. Finally, the researcher has the advantage in this context

of being a citizen of Saudi Arabia and an alumnus of one of its universities, having worked with a number of local government institutions. Working with institutions and business communities is likely to help the researcher to obtain a favourable response (Creswell, 2013). Furthermore, given the researcher's experience in the Saudi Arabian market prior to conducting this study, his engagement with the labour market and his connections to the governmental institutions in the area, he can be seen to have the credibility necessary for conducting the study (Wolcott, 1994).

3.3.5. Variables

The survey instrument used in this study was developed using relevant items chosen as far as possible from the literature to analyse Muslims' religiosity (the independent variable) and their propensity to take risks (dependant variable) in the context of Saudi Arabia, a Muslim non-Western country.

3.3.5.1. Measures of Islamic religiosity (independent variable)

It is important here to clarify exactly what is meant by Islamic religiosity. In the present study, religiosity is a two-dimensional concept, defined in terms of a combination of elements which together comprise one religiosity measurement (Alsanie, 1989; Galbraith *et al.*, 2007). The first dimension is Islamic beliefs, composed of the elements of pillars and faith. The five pillars of Islam are the declaration of faith, prayer, charity, fasting and pilgrimage to Mecca, while the six pillars of faith are belief in God, in the Prophet Mohammed, in God's Angels, in the Books, the Messengers, the Day of Judgement, the Afterlife and Predestination. The second dimension is Islamic conduct, reflected in the daily behaviours and actions of Muslims, in which they should comply with Islamic law and avoid all forbidden behaviours or actions.

While the majority of the measurements of religion reported in the literature (Hill and Hood, 1999) are useful means of measuring religious psychology, most of the frameworks in which they have been developed reflect predominantly Christian beliefs or apply within some other non-Muslim context. McFarland (1984) asserts that scales specific to Christianity are inadequate for studying psychological aspects of Muslim belief and practice. Furthermore, Khraim (2010) notes that the available measures of Muslims' religiosity have tended to be merely translated from English originals and modified or adapted by non-Muslim scholars in the West. These instruments have been applied without any critical consideration of the realities of Muslims living in the Muslim world. When measuring religiosity, some studies apply a single dimension such as religious affiliation (e.g. Zelekha *et al.*, 2014), whereas other studies have used multidimensional measures of religiosity (e.g. Parboteeah *et al.*, 2015). Therefore, in order to test the research hypotheses, the present study used a combination of three mixed scales to measure Islamic religiosity. This is primarily based on a scale of religiosity comprising items that measure Muslims' beliefs and behaviours (Alsanie, 1989). Thirty-five of these items address the degree to which individuals commit to the five pillars of Islam, e.g. "I believe there is no God but Allah", their adherence to the six pillars of Islamic faith, e.g. "I believe in heaven" and the extent to which they obey Islamic law, e.g. "I recite the Holy Quran". In each case, the respondents are invited to rate their agreement or disagreement with the statement given. Seven more questions were adapted from The Muslim Religiosity-Personality Inventory (MRPI) and four from the World Value Survey (WVS) to capture other aspects of religious commitment among respondents. Scores on the three scales were combined into a composite mean score to measure the respondents' Islamic religiosity. They were asked to indicate their

religiosity beliefs and behaviours on 46 five-point Likert scale questions. The categories were: 1 = 'Strongly disagree' or 'Never'; 2 = 'Disagree' or 'Rarely'; 3 = 'Not sure' or 'Sometimes'; 4 = 'Agree' or 'Very often' and 5 = 'Strongly agree' or 'Always'. This scale has a score range from 46 to 230, where a higher score represents more Islamic religiosity. Some of the original items were modified to fit the context of this study. The reliability scale was calculated in terms of Cronbach's alpha for all constructs. The overall scale was found to have an alpha value of 0.89, where values between 0.50 and 0.70 indicate moderate reliability and a value greater than 0.70 is considered to represent high reliability (Hinton *et al.*, 2014).

3.3.5.2. Measures of risk-taking propensity (dependant variable)

This study uses the term 'risk' in the context of risk-return or trade-off, where individuals are considered to make a risky decision when they will probably lose or find that their decision has negative outcomes. In order to test the hypothesis set out in Section 3.2.3, this study distinguishes between different types of risk taking, in line with the assertion by Lumpkin and Dess (1996) of the importance of distinguishing between different types of risk when conducting economic research. For example, the questionnaire differentiates between the willingness to take financial risk and the propensity to take health and safety risks. As this study is concerned with the economic activity of Muslims, the instrument was designed to evaluate their attitudes to financial risk taking in particular. To measure this variable, the participants were asked to indicate their willingness to take risks by responding to a question which was adapted from the work of Block *et al.* (2015). This used an eleven-interval scale to measure risk-taking propensity by asking respondents to select an amount of money between zero and

100,000 Saudi riyals (in intervals of 10,000) that they would be willing to invest in an economic activity with a 50/50 chance of either getting back double the amount invested or losing half of it. Thus, the risk measurement was expressed as the amount of money invested, ranging from the lowest possible value of zero to the highest possible value of 100,000 SR. The choice of the 10,000 SR interval was made to allow a direct comparison between one participant and another as to how much more or less money they would be prepared to invest on the terms stated above (Bhattacherjee, 2012). It also allowed the questionnaire to be completed more rapidly than if respondents had been asked to freely specify any amount and finally, it made it possible to compare the results with those of prior research. The instrument used for testing risk propensity in this study had been validated in a field experiment (Dohmen *et al.*, 2011) and used in a number of published studies (Jaeger *et al.*, 2010; Dohmen *et al.*, 2011).

Appendix 1 reproduces exactly the questions of which the study questionnaire was composed. It was important to ensure that the study controlled for sociodemographic variables that might influence individuals' risk-taking propensity. According to the relevant empirical literature (Miller, 2000; Ferguson *et al.*, 2014; Jiang *et al.*, 2015), age, gender, level of education, work experience, entrepreneurship status and monthly income may affect the level of risk which individuals have the propensity to take. Therefore, the data analysis reported below controls for gender, level of education, work experience and entrepreneurship status by means of binary variables (0/1 values), while age was measured in years and monthly income data were collected by means of an interval scale. Table 3.2 profiles the sample of respondents in terms of these sociodemographic variables.

3.4. Results

3.4.1. Descriptive statistics

Table 3.2 lists the answers to sociodemographic questions given by the 638 respondents to the questionnaire survey in terms of percentages, means and standard deviations. It shows that almost three-quarters (72 %) of the respondents were male, while only 28 % were female. As to the age distribution of the sample, respondents ranged in age between 15 and 75 years, with a mean age of 35 and a standard deviation of 11 years. In terms of educational background, the majority (63 %) of the respondents held bachelor's or postgraduate degrees, while 37 % had obtained only a high school diploma or lesser qualification. The study controlled for the effect of entrepreneurship status, finding that 23 % of the sample were entrepreneurs (measured by their statement that they owned a business), whereas more than three quarters did not own businesses. Almost a third of respondents stated that they had no previous work experience, while among the 68 % who had worked, the mean length of their work experience was nine years. The data on respondents' income indicate that half earned 11,000 SR or more per month, while 28 % fell into the income range of 5000 SR to 11,999 SR and 22 % received a monthly income of less than 5000 SR.

Table 3.3 shows the distribution of respondents' risk-taking propensity and of their religiosity across the sample. On risk taking, the data show that of the eleven available investment opportunities on the scale, by far the strongest response was to the central value of fifty thousand riyals, chosen by a little over 40 per cent of the sample, while 25 % would have chosen to invest less than 50,000 SR and 35 % opted for more than 50,000 S.R. This indicates that the majority of Muslims in the sample were

found to prefer taking a moderate risk when they had the chance to invest money in a 50/50 win/loss financial opportunity. At the extremes of the investment opportunity scale, as many as 11 % of respondents made the highest risk choice, whereas only 12 respondents in total (2 %) would have chosen to avoid taking any risk at all. The overall mean response of the sample was 54,106 SR, with a standard deviation of 23,873 SR. The fact that the standard deviation value is relatively high as a proportion of the mean value for the total sample indicates that the responses tended to vary considerably from one participant to another. In other words, individual scores were relatively widely scattered around the overall mean value. This indicates that respondents' views diverged to a certain extent, in terms of their attitudes to taking risks in their investment decisions. The second variable for which results are given in Table 3.3, viz. Islamic religiosity, is classified on a five-point Likert scale. As explained in Section 3.3.5.1, religiosity was measured by the overall score on 46 questionnaire items. Table 3.3 shows that a strong majority (79 %) of respondents scored between 4 and 5 on this measure, which indicates that they had high Islamic religiosity, while a fifth scored between 3 and 4, only two respondents had a religiosity score below 3 and none of them scored as low as 1 on the religiosity scale. The overall mean religiosity score of the sample was 4.25, with a standard deviation of 0.34.

3.4.2. Empirical analysis

To test the study hypothesis, we performed a hierarchical regression analysis encompassing three models to capture the effects of the relationship between risk taking and religiosity amongst Muslims. In the first model, the effect of risk taking was isolated by controlling for a number of variables that were considered likely to influence

the probability of risk-taking attitude. For the second model, we entered the independent variable of Islamic religiosity into the equation using ordinary least squares (OLS) regression. However, the OLS method makes the assumption of a linear relationship between dependent and independent variables (Bhattacherjee, 2012). Therefore, in order to test the hypothesis that Muslims' risk taking has a U-shaped relationship with their degree of Islamic religiosity, we also had to include a third, quadratic linear model. The quadratic regression formula is:

$$\textit{Risk taking} = f(\textit{Religiosity} + \textit{Religiosity}^2 + \textit{Controls}) + \varepsilon.$$

$$y = \beta_1\chi_1 + \beta_2\chi_1^2 + \beta_3(\textit{Gender}) + \beta_4(\textit{Age}) + \beta_5(\textit{Education level}) + \beta_6(\textit{Work experience}) + \beta_7(\textit{Entrepreneurship status}) + \beta_8(\textit{Income}) + \varepsilon.$$

In the first model, the effect of risk taking is controlled by a number of control variables that are likely to influence Muslims' religiosity and risk taking, namely gender, age, education background, monthly income, entrepreneurship status and work experience. The results, tabulated in Table 3.3, show that the females in the sample (n=177) demonstrated a higher level of risk aversion than the males, with a p-value of <0.05. Among the control variables, age has a negative and not statistically significant effect on the likelihood of expressing a propensity for risky decisions, while university education (n=400) also does not show a significant effect on the propensity to take risky decisions. However, owning a business and monthly income were found to have strongly positive significant effects on participating Muslims' risk-taking propensity (p <0.01). In the second model, where we added the independent variable of Islamic religiosity to the regression equation, the results of the linear regression indicate a positive but not

significant relationship between risk taking and Islamic religiosity. The control variables were generally consistent with the first model. However, the linear regression of this model does not have additional variance explanation beyond that of the first model, explained by only the control variables. In the third model, we entered the squared term of Islamic religiosity into the regression equation.

As had been hypothesised, the evidence suggests a quadratic (U-shaped) relationship between risk-taking propensity and Islamic religiosity. The difference in the estimated regression signs between risk taking and Islamic religiosity on one hand and Islamic religiosity squared on the other indicates that the relationship between risk taking and Islamic religiosity takes a U-shaped form. The religiosity term is negatively significant at the significance level of $p<0.1$ and the religiosity-squared term is positively significant at the level of $p<0.1$, which suggests that the relationship is a non-linear one (see Table 3.5 for more details). Hence, at low level of religiosity, the slope of the relationship is negative until the point where the relationship reaches its minimum. This precisely states that overall risk taking decreases initially and then begins to increase. Furthermore, the U-shape remained statistically significant when we added the control variables into the equation. The relationship is further statistically significant regarding gender, where men were more likely to express a strong propensity for risk taking than women ($p< 0.05$). The results further suggest that the positive coefficient of the educational variable, higher level of education, was insignificantly related to risk taking. Muslims with a university degree were more likely to be involved in risky decisions than those with lower levels of educational achievement, but this difference was found not to be significant. The results also show a positive correlation between the high income of individuals and their propensity for risk taking, at a significance level of $p<0.01$. The

control variables are generally consistent with the first model. However, the linear regression of this model has an additional 0.05 % of variance explanation beyond the second model, which is explained by Islamic religiosity and the control variables. Table 3.5 shows the results of the three models in detail.

3.5. Discussion and Conclusion

The intersection between religion and economic growth is a domain of significant interest among scholars of economics and psychology. Most studies of this relationship have been applied to religions dominant in the Western hemisphere, namely Christianity and Judaism (Ayanian *et al.*, 2015; Adhikari and Agrawal, 2016), or have compared the followers of different doctrines among adherents of a single religion (Noussair *et al.*, 2013). However, the question remains as to how and why religion might influence economic growth and only a handful of studies have been conducted to explain how religions might influence economic processes. One of the main characteristics of such processes is the risk-taking attributes of individuals. The prevailing findings have suggested a negative linear relationship between risk taking and religion in general and between risk taking and Islam in particular. However, there has until recent years been a scarcity of empirical research on the impact of religiosity on economics in places where Islam is the dominant religion. In this study, we set out to investigate the non-linear relationship between risk-taking propensity and Islamic religiosity at an individual level in an Islamic country. To the best of our knowledge, this study is the first to demonstrate the effect of Islamic religiosity on attitudes to taking financial risks among Muslims in any country where Islam is dominant. To examine this relationship, a questionnaire was sent to 1000 Saudi Muslims in the Kingdom of Saudi Arabia, asking the participants about

two constructs, which were their Islamic beliefs and practices on one hand and their willingness to be involved in risky financial decisions on the other.

The findings of the linear regression model indicate that Saudi Muslims with stronger religiosity are likely to be less willing to take risky decisions when offered the choice of investing up to 100,000 SA in an economic opportunity. However, this relationship was not statistically significant and the finding of our study here is not consistent with that reported in the literature, i.e. that religion negatively influences Muslims' attitudes to risk taking (Miller and Hoffmann, 1995; Miller, 2000; Jiang *et al.*, 2015). The weakness of the correlation between Islamic religiosity and risk taking amongst Muslims suggests that this relationship may not necessarily be a linear one and thus may be U-shaped. Indeed, the results of the third model, in which we added a quadratic regression to the equation, confirm the study hypothesis that the relationship between Islamic religiosity and propensity for risk taking is U-shaped. Figure 3.5 represents this relationship graphically. Highly religious and non-religious Muslims are both more willing to be involved in taking risky financial decisions when compared to those of moderate religiosity. In other words, highly religious Muslim individuals and their non-religious counterparts are more likely to agree to put themselves in a position where they are uncertain of the outcomes. This finding indicates that religious Muslims who believe in toakul, in other words, those who put their trust in God Almighty to provide them with sustenance, might be willing to take risky decisions, because the Quran promises that ***"…whosoever puts his trust in God, then He will suffice him. Verily, God will accomplish his purpose. Indeed God has set a measure for all things"*** [At-Talaaq 65:3]. These results are consistent with findings reported in the literature that

Muslims are willing to take risks in their economic decisions (Audretsch *et al.*, 2013; Gümüsay, 2014; Hassan and Hippler III, 2014). On the other hand, Muslims who exhibit low Islamic religiosity might also be involved in risky actions, in this case activities such as gambling, which are prohibited by *Shar'aiah*. The relevant Quranic passage here is this: **"*They ask you (O Mohammed) concerning alcoholic drink and gambling* [maiseer], *Say: In them is a great sin, and (some) benefit for men, but the sin of them is greater than their benefit*"** [Al-Baqarah 2:219]. In general, the results from both models indicate that the same relationship between the dependent and independent variables remains true after controlling for gender, age, job status, monthly income and work experience. Females in all models appear to have less propensity to take financial risk than their male counterparts. These findings are in line with those given in the literature (Powell and Ansic, 1997). Furthermore, the results of the present study across all models confirm that Muslims with higher education qualifications, whether at graduate or postgraduate level, are more willing to take risks, although this difference is not statistically significant.

The present study is important in two main respects. First, it is the first to confirm the existence of a U-shaped nonlinear relationship between Islamic religiosity and risk taking. This finding raises the question as to whether such a relationship exists in the attitudes of adherents of other religions, given that this research was conducted in a specific Islamic country, Saudi Arabia. Second, in contrast to the available literature examining this relationship, this study is important because it sets out some different views of attitudes to risk taking among Muslims. Although little research has been carried out to connect the low level of development of Islamic countries with Muslims'

low risk propensity (McManus *et al.*, 2007; Kuran, 2008), a more comprehensive conclusion would include such a relationship.

It must be acknowledged that the present study has some limitations, the first of which is related to the selection of its participants, all of whom were recruited from the population of a single Islamic country, Saudi Arabia, a strategy which limits the generalisability of the findings. However, while this might be seen as restricting the sample size and as potentially causing common method bias, it does not diminish the significance of the findings of the study. Another possible shortcoming of the study is related to the difficulty of measuring Islamic religiosity. One problem here is the possibility of offending participants' sensitivity, in particular when they were asked to answer questions about their relationship with God Almighty. Another problem is that Muslims believe hypocrisy to be detestable and many may indeed consider it to be strongly prohibited. Therefore, it may be difficult for religious Muslims to present themselves as being in a position where they might reflect a high degree of religiosity as the means of avoiding hypocrisy.

Finally, this study creates new opportunities for further research. It might be fruitful for future researchers to consider the nonlinear relationship between religiosity and risk taking among members of other religions; more precisely, they might seek to determine whether the same U-shaped relationship applies to some other religion which differs from Islam in its doctrinal position on the conduct of economic activities. Alternatively, while the present study has investigated the relationship between Islamic religiosity and risk taking at the individual level, future research might usefully examine it at the macro level, thus enhancing the robustness of the current findings. A final

potential area for further research is to consider additional factors that might influence risk-taking propensity.

Table 3.2: Sociodemographic statistics

Variable	Observation	Percent	Mean	Standard deviation
Gender:		100		
Female	177	27.83		
Male	461	72.64		
Age:				
15 to 74 years	638	100	35.70	10.96
Work experience (years):		100		
No	203	31.77		
Yes	436	68.23	9.02	10.05
University education:		100		
University Education	400	62.70		
Below University Education	238	37.30		
Entrepreneurship status:		100		
Entrepreneurs	147	23.04		
Non-Entrepreneurs	491	76.96		
Monthly income (S.R.):		100		
Less than 1000	87	13.64		
1000 to 2999	33	5.17		
3000 to 4999	22	3.45		
5000 to 6999	62	9.71		
7000 to 8999	45	7.05		
9000 to 10999	73	11.44		
11000 to 12999	93	14.58		
13000 to 14999	59	9.25		
15000 or more	164	25.71		

Note: *N* = 638

Table 3.3: Risk-taking propensity and Islamic religiosity statistics

Variable	Frequency	Percent	Mean	Standard deviation
Risk taking Money investment (0 to 100,000 S.R.):				
0	12	1.88		
10,000	30	4.70		
20,000	20	3.13		
30,000	60	9.40		
40,000	38	5.96		
50,000	256	40.13		
60,000	47	7.37		
70,000	62	9.72		
80,000	32	5.02		
90,000	12	1.88		
100,000	69	10.82		
Total	**638**	**100**	**53,896**	**23,970**
Islamic Religiosity (1 to 5 Likert scale):				
<=1	0	0	0	0
>1 to =<2	1	0.15	1.52	0
>2 to =<3	1	0.15	2.52	0
>3 to =<4	133	20.81	3.77	0.18
>4 to =<5	503	78.71	4.38	0.22
Total	**638**	**100**	**4.25**	**0.34**

Note: *N* = 638

Table 3.4: Correlation and variance inflation factors (VIFs)

Variables	1.	2.	3.	4.	5.	6.	7.	*8.*	*9.*	*VIF*
1. Risk taking [a]	1.0000									
2. Islamic Religiosity	0.0170	1.0000								81.92
3. Islamic Religiosity^2	0.0252	0.9938	1.0000							82.29[b]
4. Age	0.1428	0.1257	0.1336	1.0000						1.56
5. Female	-0.1889	0.0607	0.0626	-0.2416	1.0000					1.32
6. University education	0.0390	0.0252	0.0210	0.0904	0.2246	1.0000				1.17
7. Work experience	0.1924	0.0288	0.0252	0.3895	-0.2757	0.0993	1.0000			1.52
8. Entrepreneurs	0.2132	0.0124	0.0116	0.1247	-0.2143	-0.1552	0.1740	1.0000		1.11
9. Income	0.2658	0.1010	0.1082	0.5878	-0.3718	0.1526	0.5680	0.2190	1.0000	2.17

Note: *N* = 638

[a] Dependent variable for the regression model.

[b] VIF is large between Islamic Religiosity and Islamic Religiosity^2 because of the square value.

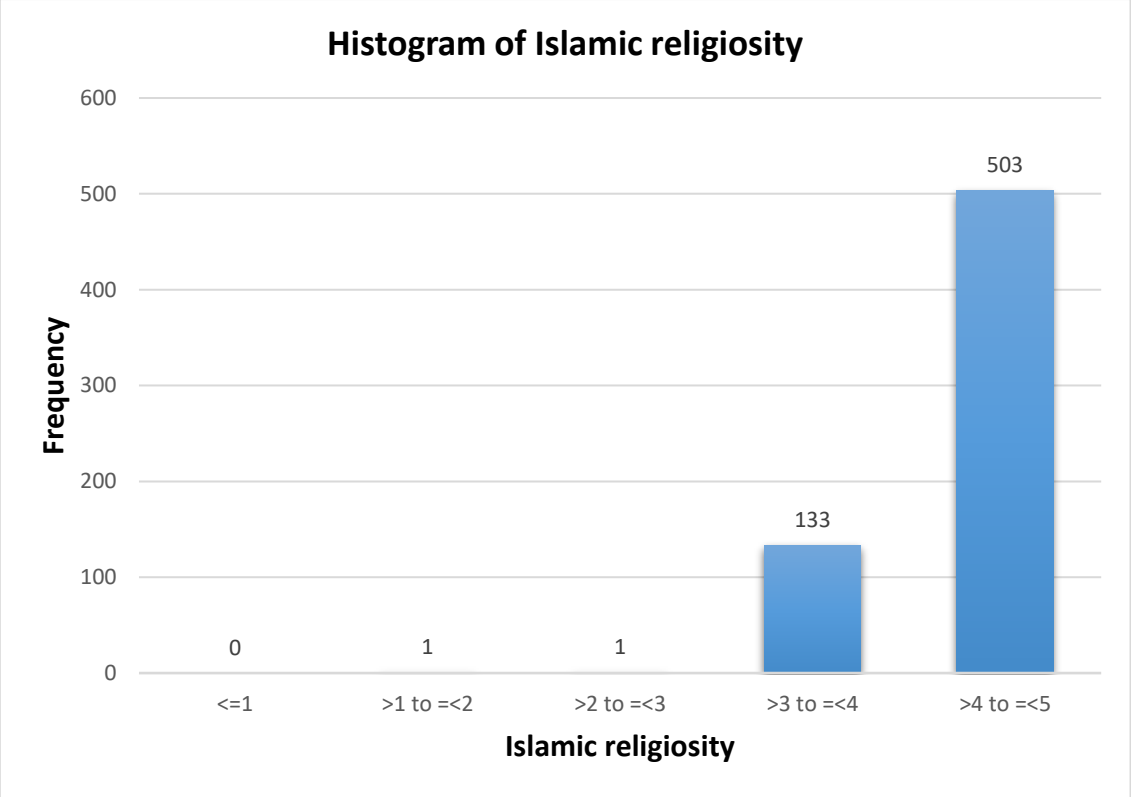

Figure 3.3: Histogram of Islamic religiosity

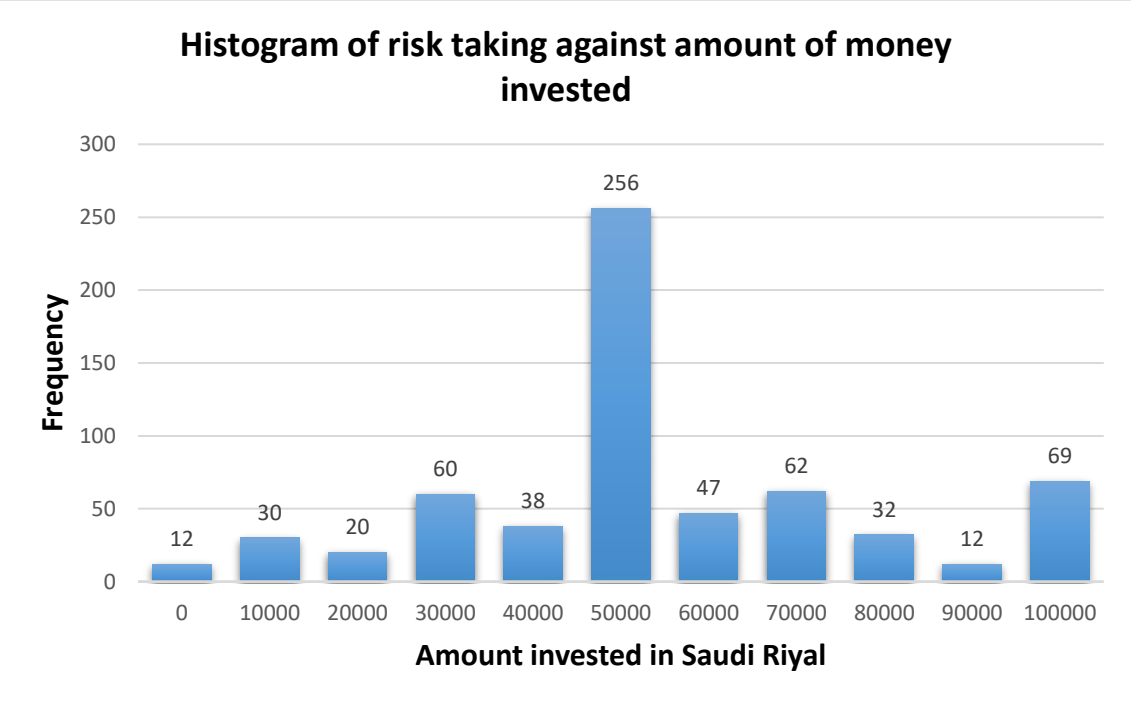

Figure 3.4: Histogram of risk taking with regard to amount of money invested

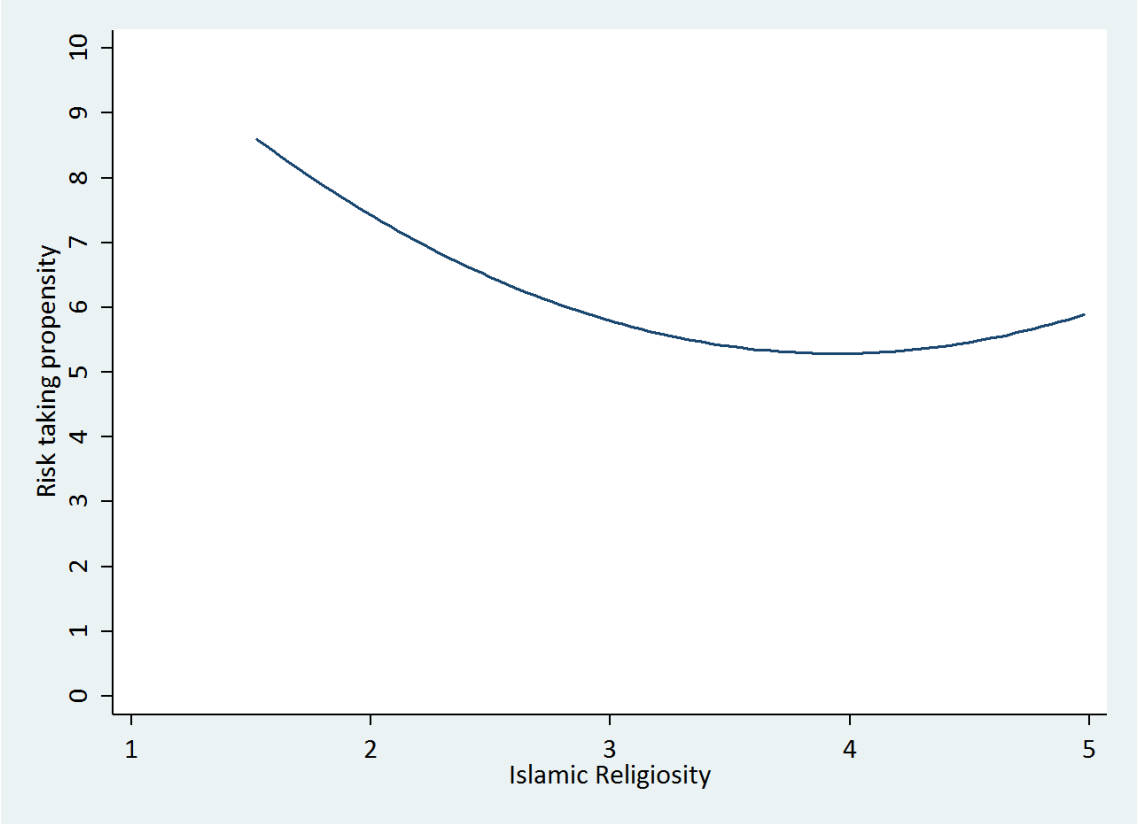

Figure 3.5: The U-shaped relationship of risk-taking propensity to Islamic religiosity

Table 3.5: The relationship between risk-taking propensity and Islamic religiosity

Variables	OLS Model 1 Risk taking	OLS Model 2 Risk taking	OLS Model 3 Risk taking
Religiosity		0.0252	-4.384*
		(0.263)	(2.338)
Religiosity square			0.546*
			(0.288)
Age	-0.00579	-0.00588	-0.00697
	(0.0102)	(0.0102)	(0.0102)
Female	-0.511**	-0.514**	-0.541**
	(0.229)	(0.230)	(0.230)
University education	0.277	0.277	0.303
	(0.200)	(0.200)	(0.200)
Work experience	0.213	0.213	0.251
	(0.236)	(0.237)	(0.237)
Entrepreneurs	0.896***	0.896***	0.906***
	(0.224)	(0.224)	(0.224)
Income	0.370***	0.369***	0.350***
	(0.114)	(0.114)	(0.114)
Constant	1.989**	1.892	10.88**
	(0.828)	(1.308)	(4.910)
Observations	638	638	638
R-squared	0.106	0.106	0.111

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Chapter 4

Islamic Religiosity and Risk taking:

The Impact of Gender and Education

Islamic Religiosity and Risk taking:

The impact of Gender and Education

Abstract

A growing body of literature has established a connection between religion and risk-taking propensity. In our previous work, we explored this association and found that Islamic religiosity influences risk-taking propensity in a U-shape relationship amongst Muslims. The aim of this study is to extend that work by investigating whether sociocultural factors such as gender and education affect the relationship between religiosity and propensity for risk taking. Using data gathered from a sample of 638 Muslims living in one of the countries most strongly dominated by Islam, the Kingdom of Saudi Arabia, this study uses ordinary least squares (OLS) regression to test two hypotheses. The results indicate a significant U-shaped relationship between Islamic religiosity and risk-taking propensity among men as well as poorly educated Muslims, confirming the influence of gender and educational attainment on this relationship. Limitations and directions for future research are discussed.

4.1. Introduction

It has been asserted in sections 2.4 and 3.2.2 of this thesis that Islam is considered to be not simply a religion but also a way of life. Previous work in economics (Ayanian *et al.*, 2015) and sociology (Miller, 2000) has examined the relationships of economic growth with the values and beliefs of adherents of a number of religions. While risk-taking propensity plays an important role in almost every economic decision (Dohmen *et al.*, 2011), few economic researchers have documented the influence of religious beliefs on risk taking at the individual level (Miller and Hoffmann, 1995; Miller, 2000; Dohmen *et al.*, 2011; Noussair *et al.*, 2013). The work presented in the previous chapter, on religiosity and risk aversion in Islam, examined this association and the findings confirm the determinant role of religion in risk-taking propensity. However, the existing literature that explains the intersection between religiosity and risk taking does not provide a complete understanding of how individual characteristics affect this association. Instead, the research reported in the literature focuses on the overall effect of religiosity on the propensity for risk taking , while largely ignoring the explicit role of other socio-cultural elements such as gender and education in mediating this relationship, although Dohmen *et al.* (2011) affirm that risk-taking propensity is correlated with other extrinsic factors, such as education, gender, age and parental background.

Scholars of religion have often argued that females are more likely to exhibit religious beliefs and behaviours than males (Stark, 2002; Roth and Kroll, 2007). The argument is built upon the differences between men and women in socialisation (Collett and Lizardo, 2009), social status (Baker and Whitehead, 2016) or risk-taking propensity

(Miller and Hoffmann, 1995). On the other hand, a handful of studies have also found that females are more risk averse than their male counterparts in social (Byrnes *et al.*, 1999) and economic (Eckel and Grossman, 2002) activities. The question remains as to how such gender differences might shape the relationship between religiosity and risk-taking propensity from an Islamic perspective. Furthermore, while the argument has not yet been settled and results remain inconsistent, a number of scholars argue that a second sociocultural factor, educational attainment, may have a role in this relationship. For example, being more highly educated will perhaps increase people's ability to analyse situations and their consequences rationally and therefore reduce their propensity to take risky decisions (Tihanyi *et al.*, 2000). Thus, we can ask whether the relationship between religiosity and risk-taking propensity will differ according to the level of an individuals' educational attainment. In the light of these considerations, the objective of this chapter is to analyse how these two constructs, gender and education, can elucidate the relationship between religiosity and risk-taking propensity amongst adherents of Islam.

Although a certain amount of research has been published on the influence of religion or religiosity on risk-taking propensity, there is within this literature a scarcity of empirical research into the impact of gender and education. As reported in Chapter 3, analysis of data collected from a sample of 638 Muslim adherents in the Kingdom of Saudi Arabia confirms that Islamic law shapes Muslims' propensity to take risks in a financial context. The study found that religiosity had a U-shaped relationship with risk-taking propensity. In particular, both highly religious Muslims and those exhibiting relatively weak religious adherence were found to be more willing to take risky decisions in their financial affairs than other participants with moderate religiosity. The research

detailed in the present chapter analyses data gathered from the same sample of Saudi Muslims to extend the earlier findings by testing the role of sociocultural factors that may influence this relationship. Instead of analysing the U-shaped relationship between religiosity and risk-taking propensity among Muslims in general, this study examines some factors that might explain this U-shape. It seeks to determine whether gender and education, at the individual level, can help to explain the association of Muslims' religiosity with their risk-taking propensity. The specific aim of the study is to explore this association in one of the most prominent Islamic countries, viz. the Kingdom of Saudi Arabia.

The findings of this second component study are consistent with those reported widely in the mainstream literature that gender and education each plays an essential role in predicting religiosity and risk-taking propensity. We found that among Muslim men, both those exhibiting a high level of religiosity and their non-religious counterparts showed a greater propensity to take risks in relation to their financial decisions than did the corresponding Muslim women, confirming the notion that gender is a strong predictor of the relationship between religiosity and risk-taking propensity. Interestingly, however, the analysis shows that the relationship of religiosity with risk propensity amongst Muslim women has a non-significant inverted U-shape. On the other hand, formal education appears to be a significant factor in the relationship between religiosity and risk taking. Muslims whose educational attainment is below the level of a university degree are more willing risk takers than those holding higher education degrees. These findings are consistent with social capital theory, as the educational dimension of social capital was found to be a strong and consistent predictor in this analysis.

The outline of the remainder of this chapter is as follows. Section 4.2 reviews the published literature on the association between gender and the two main constructs of interest to this research, religiosity and risk-taking propensity, beginning with gender. Subsection 4.2.2 then highlights the role of human capital in the form of educational attainment in shaping Muslims' propensity to involve themselves in risk taking. Next, Section 4.3 discusses the research methodology that was used to test the hypotheses. Section 4.4 then presents the results and their analysis. The final section discusses the main findings, before offering a brief overview of the limitations of the study and suggesting some future directions for research.

4.2. Literature review

4.2.1. Gender

4.2.1.1. Gender differences in religiosity

A number of contributors to the religious studies literature have reported finding that females are more religious than males (De Vaus and McAllister, 1987; Miller and Hoffmann, 1995; Stark, 2002; Roth and Kroll, 2007). Voas *et al.* (2013) explored the differences in religiosity between males and females using the European Social Survey and found that women were considerably more likely than men to be willing to be identified with a religion, to call themselves religious adherents and to participate in public and private religious activities. Collett and Lizardo (2009) had earlier identified a similar gender gap in religiosity and their results provide evidence that it is not reasonable to assert that socialisation has no impact on this phenomenon. These authors propose a number of plausible explanations for females having stronger religious beliefs and engaging in more explicit religious behaviours than males. The most

widely supported explanations for this gender gap fall into two categories: one is the assertion that females are likely to possess stronger socialisation traits such as submissiveness, passiveness and obedience than their male peers and the other is that the two genders are distinguished by their different responsibilities in society (Miller and Hoffmann, 1995; Cheah *et al.*, 2010). More recently, drawing on theories of intersectionality, Baker and Whitehead (2016) have argued that aspects of culture and social status such as education and political views are predictors of gender differences in religiosity. However, they warn that the fundamental assertion that females are essentially more religious than males has little empirical support and that it needs to be supported by more explanatory research (Miller and Hoffmann, 1995; Baker and Whitehead, 2016).

4.2.1.2. Gender differences in risk-taking propensity

Gender analysis has been explored in the literature in many fields, such as economics and psychology, to illustrate the variation in risk-taking propensity. In general, females perceive risk more strongly in all aspects of their lives and are thus less likely to participate in risky behaviours (Miller and Hoffmann, 1995). The literature suggests that females are less willing than males to take risks in many domains, including health and physical activity (Harris *et al.,* 2006), financial investment (Eckel and Grossman, 2002) and decision making at work (He *et al.*, 2008). For example, from an economic perspective, when Charness and Gneezy (2012) used a single investment game as a method to measure risk-taking propensity, they found a strong body of evidence that females will invest smaller amounts of money than males and are less willing to take risks in their investments. In addition, using a sample of 382 Bulgarian

entrepreneurs, Ivanova Yordanova and Ivanova Alexandrova-Boshnakova (2011) found that female business owners were likely to have a lower risk propensity than their male counterparts. From a psychological perspective, Byrnes *et al.* (1999) report having conducted a review of 150 studies, using a broad definition of risk, including those involved with the activities of cigarette smoking, car driving and recreational gambling, allowing them to analyse a broad corpus of self-reported, incentivised and observed choices from which to draw conclusions regarding the differences between males and females in risk-taking propensity. Byrnes and his colleagues found quite simply that males were more inclined than females to take risks in most of the categories of risky activities.

However, although the literature reflects a strong consensus that females are more risk-averse than males, the endeavours to investigate whether and how experimental methods play a role in shaping this finding have not yet been completed. Filippin and Crosetto (2016) argue that attitude to risk is a latent construct that can be measured only indirectly and imperfectly, and that this fundamental difficulty in obtaining empirically sound evidence of a gender gap in risk propensity makes it more likely that observers will perceive such a gap to exist or will inadvertently exaggerate its magnitude. An interesting and related deficiency of this literature is remarked upon by Charness and Gneezy (2012), who warn that there may well be a significant selection bias in the design of experiments seeking to identify or quantify differences between genders in risk-taking propensity, because it tends to be easier to publish the findings of research which confirm the existence or strength of a phenomenon than those which are neutral or negative (Charness and Gneezy, 2012). Furthermore, Maxfield *et al.* (2010) suggest that national and regional cultures may influence the propensity of

individuals to engage in risky behaviours. Thus, it is fruitful to investigate implicit factors such as religion, as a cultural construct, which may have a strong influence on the propensity of individuals to involve themselves in risky behaviour.

4.2.1.3. Gender and the relationship between religiosity and risk-taking propensity

Previous studies have shown that religion has effects on all aspects of life (Tlaiss, 2013; Ayanian *et al.*, 2015) and therefore that it is apt to influence the beliefs and behaviours of its adherents (Kumar *et al.*, 2011). However, any association that may be observed between religiosity and risk aversion does not constitute proof of causality. Furthermore, if there is causality, it need not be the case that it is religiosity which explains risk-taking propensity. On the contrary, one plausible explanation of the differences in religiosity between females and males is that religious beliefs themselves represent a form of risk aversion and that religious practices should thus be seen as risk-averse behaviours; therefore, the observed gender gap in religiosity can be explained by prior differences in risk preferences (Miller and Hoffmann, 1995; Stark, 2002; Roth and Kroll, 2007). Miller and Hoffmann (1995) explored gender differences in risk propensity and their relationship to individual differences in religiosity and found that risk preferences were strongly predictive of gender differences in religiosity. Later, Miller and Stark (2002) found that women were more religious than men, arguing that this could be explained by the extent to which being irreligious constitutes risk-taking behaviour.

However, when Roth and Kroll (2007) used data from both the General Social Survey and the World Values Survey to investigate this relationship, they found that risk preference was not a compelling explanation for the gender gap in religiosity. Moreover,

any argument in support of the gender gap in religiosity ignores the universality of religion and of gender effects, whereas Cornwall (2009, p.1) affirms that "the search for universal sex differences has been generally unproductive". Another weakness of this literature is in the instruments that have been used to measure risk preferences. For example, Miller and Hoffmann (1995) used a self-report questionnaire containing items about risk and danger, Sullins (2006) measured risk preferences by asking about the fear of walking alone at night and Roth and Kroll (2007) used questions about respondents' belief in the existence of an afterlife. The weakness of these measures is that risk preference is not a unitary construct but is operationalised in a variety of ways. On the other hand, the association between religiosity and gender differences in risk propensity is commonly related to Western countries, yet it is poorly understood (Walter and Davie, 1998). Therefore, arguments about the causality of these differences are still under development and need more attention, especially if we are interested in this relationship from an Islamic perspective.

While previous studies have focused on studying the effect of the level of risk propensity on the extent of religiosity among individuals, most of these findings concern Christian societies and do not focus on other religions such as Islam. As far as we are aware, there have been no empirical studies considering this association from the opposite direction, that is, where religion is treated as a predictor of risk-taking propensity, at least from an Islamic perspective. Consequently, it is an open question as to whether Islamic religiosity might affect Muslims' risk-taking behaviours or their willingness to involve themselves in taking risky decisions. This justifies the focus of the following subsection on an examination of ways in which gender differences in societies

dominated by Islam might influence the relationship between risk taking and Islamic religiosity and on how Islamic law may shape this gender-related phenomenon.

4.2.1.4. The Islamic perspective

The above review of the relevant literature has shown that there is a notable body of work which confirms the existence of a relationship at the individual level between risk propensity and religiosity. The aim of this section, however, is not to examine this relationship, but instead to extend this line of research by investigating a hypothesised mediator role of gender difference in this relationship in the context of an Islamic culture. This investigation takes as its point of departure the following two questions: First, is there a gender gap between men and women in Islam? Secondly, does Islamic law have a differential influence on the behaviours of Muslim men and Muslim women? To answer these questions, it is necessary first to establish an understanding of the similarities and differences between males and females as stated by the main sources of *Shar'aiah*.

Islam is a comprehensive religion (Tlaiss, 2013), meaning that Islamic law applies not only to the ways in which Muslims should worship God, but also to the ways in which they conduct themselves in all of life's activities, from spiritual affairs to more worldly ones. The belief in a fundamental equality between men and women is reflected in the teachings of many Islamic institutions. Islam indicates that men and women are equal in faith, in dignity (Yamani and Allen, 1996) and in the worship of God Almighty. Thus, the Holy Quran says: ***"And I (God) created not the jinns and humans except they should worship Me (Alone)"*** [Adh-Dhariyat, 51:56]. In this verse, the word 'humans' clearly denotes both men and women and confirms the equality of the sexes in terms of the

worship of God Almighty. Thus, Muslim men and women are assumed to be equal in their religiosity. In another verse of the Holy Quran, God's word is shown to express equality between men and women in many respects regarding the rewards and punishments arising from their good and bad deeds:

> ***"Verily, the Muslims men and women, the believers men and women, the men and the women who are obedient (to God), the men and women who are truthful, the men and the women who are patient, the men and the women who are humble, the men and the women who give Sadaqât (i.e. Zakât, and alms, etc.), the men and the women who observe Saum (fast), the men and the women who guard their chastity and the men and the women who remember God much with their hearts and tongues or praying extra prayers, God has prepared for them forgiveness and a great reward (i.e. Paradise)."*** [Al-Ahzab, 33:35]

Islamic law also declares that men and women are equal in their personal actions intended to achieve personal and social objectives. For example, women in Islam have the full right to acquire knowledge through education (Roomi, 2013), to own property (Graafland *et al.*, 2006) and to enter employment (Metcalfe, 2008).

However, while *Shar'aiah* fully guarantees the rights of all human beings of both genders, including the right to justice, this does not automatically mean that there is equality of responsibilities between men and women (Dastebala *et al.*, 2014). For example, Muslim scholars argue that men and women are different in their financial rights and responsibilities in Islam (Kazemi, 2000). Thus, Islamic law specifies that a where a woman and a man are related to a deceased person to the same degree, the woman has the right to a share of the inheritance that is only half of that to which the

man is entitled. This is in accordance with a direct instruction in the Holy Quran: ***"God commands you as regards your children's (inheritance); to the male, a portion equal to that of two females"*** [An-Nisa', 4:7]. This difference between men and women in inheritance rights reflects men's financial obligation to support their families (Gbadamosi, 2012), clearly expressed in another Quranic verse, which states that ***"the father of the child shall bear the cost of the mother's food and clothing on a reasonable basis"*** [Al-Baqarah, 1:233]. According to Tafsir Ibn Kathir, with regard to the responsibility of parents towards their children, a father has to take care of his wife and children by providing for all of their needs of food, drink, clothing and shelter, in accordance with his financial abilities (Kathir, 2000).

In another verse, women are advised to remain in their houses unless it is necessary to do otherwise: ***"And [the Prophet wives] stay in your houses, and do not display yourselves like that of the times of ignorance"*** [Al-Ahzab, 33:33]. Although this verse refers specifically to the wives of the Prophet, this verse is taken to have identified them as female role models, the inference being that God intends all Muslim women, then and now, to follow their example (Gharavi Naeeni, 2013). However, a number of scholars have criticised this view, arguing that the conservative cultural values of the Muslim world have created a discriminatory gender gap and have limited the role of the Muslim woman to that of a mother and housekeeper, while reserving the role of breadwinner for the man (Esposito, 1975, Tlaiss, 2013). According to this view, discriminatory practices against women in Muslim societies are driven by extreme or conservative interpretations of scripture (Madichie and Gallant, 2012, Syed 2008, Roomi 2013), or by the politicisation of Islam (Metcalfe, 2008), rather than by the requirements of *Shar'aiah* itself.

Shar'aiah asserts that Muslim men, rather than Muslim women, are responsible for earning the money required to spend on their families' sustenance (*rizq*) and this obviously requires their involvement in various economic activities. Indeed, the direct reason for Muslim men to engage in economic activities is to earn rizq for themselves and their dependants. Khalifa (2001) affirms that seeking rizq from God Almighty is imperative for all Muslim men. Gümüsay (2015) argues that the concept of risk is closely related to that of rizq and that the two terms are related not only by orthography but also by their meaning. Hamilton *et al.* (2007, p.146) state that "Webster's [College Dictionary] suggests the word 'risk' initially entered Greek from Arabic (*rizq*)". Muslims believe that the provision of rizq is ultimately in the hands of God Almighty and that it is predetermined and thus part of their predestination (Khalifa, 2001). Therefore, the Islamic legislators have determined that rizq is one of the essential obligations of men towards women and that this requires them to engage in potentially risky behaviour to sustain their earnings. Thus, we can argue that Muslim men have a greater propensity than women to take risks, leading to the following hypothesis:

H_{1a}: The relationship between Islamic religiosity and risk-taking propensity will have a significant U-shape among Muslim men.

H_{1b}: Muslim women will have insignificant relationship between Islamic religiosity and risk-taking propensity.

4.2.2. Education

4.2.2.1. The impact of educational attainment on religiosity

The argument that educational attainment has a significant effect on religion has been well established in the literature (Arias-Vazquez, 2012; Hungerman, 2014), where it is argued that human capital is expended in the construction of both educational and religious institutions. Human capital theory has shown that an increase in individual cognitive ability tends to lead to increased productivity and more efficient activities. Becker (2009, pp.15,17) asserts that education and training constitute "the most important investment in human capital", adding that "schooling, computer training courses, expenditures on medical care, and lectures on the virtues of punctuality and honesty" are also forms of human capital, "in the sense that they improve health, raise earnings, or add to a person's appreciation of literature over much of his or her lifetime". However, the body of evidence as to how and to what extent education influences religiosity is inconsistent: some empirical research indicates a positive relationship between education and religion, whereas other studies have found a negative effect.

A number of scholars of psychology and economics have argued that the higher the educational attainment of individuals, the more likely it is that their religious beliefs will weaken. As to causality, McFarland *et al.* (2010), for example, identify a twofold impact of education on religion. They argue that an individual's acquisition of more scientific knowledge and his or her increased exposure to secular beliefs will both influence that person's religious commitment negatively. According to this point of view, education will have the effects of increasing secularisation and of reducing the strength of religious beliefs and the frequency of religious behaviour. Arias-Vazquez (2012)

examined two sources of social survey data in the USA, the Mirroring the Future Survey and the General Social Survey, arguing that the positive relationship between education and religiosity previously asserted in the literature was a result of endogeneity, rather than having a causal explanation, and concluding that on the contrary, education has a negative relationship with religiosity. McCleary and Barro (2006) suggest that additional educational attainment in sciences may give the misleading view that religious scripts are not literally true. Furthermore, some research has found that education has the effect of reducing religiosity and the belief in God (Johnson, 1997), reducing belief in the Bible (Sherkat, 1998) or reducing the amount of time spent in prayer (Baker, 2008).

In contrast, a host of studies of the influence of education on religiosity conclude that there is a significant positive relationship between the two constructs. The argument runs that a higher level of educational attainment is important for understanding religious teachings and traditions. In other words, education gives a person the necessary tools to analyse religious beliefs as they relate to their lives. Iannaccone (1998, p.1470) claims that religion is "not the province of the poor or uninformed. In numerous analyses of cross-sectional survey data, rates of religious belief and religious activity tend not to decline with income, and most rates increase with education." In a study using British National Child Development Study data, Brown and Taylor (2007) found that church attendance had a positive correlation with education. Likewise, Brañas-Garza and Neuman (2004) investigated the relationship between education and religiosity and found that women with a higher level of educational attainment were more likely to participate in religious activities than highly educated men and that the latter were more frequent churchgoers than their counterparts, confirming the positive relationship between education and religion. In

the USA, Glaeser and Sacerdote (2008) used data from the General Social Survey 1972-1998 to explore this relationship and found that people's religiosity in terms of church attendance was raised by a higher level of education at the individual level. The common explanation for these findings is that people with higher educational attainment thereby gain increased social capital. However, the literature that explores the relationship between education and religion does not successfully identify the effect of education as distinct from other variables that influence religiosity; as McCleary and Barro (2006, p.167) note, there is a great need to be "cautious about causal inferences".

4.2.2.2. The impact of educational attainment on risk-taking propensity

The correlation between educational attainment and risk-taking propensity at an individual level has been well documented in the literature. This body of work has shown that increasing their education level gives individuals the ability to elucidate and analyse information, implementing the most appropriate decisions (Tihanyi *et al.*, 2000) and that it reduces curiosity and decreases risk-taking propensity (Nabi *et al.*, 2011). Furthermore, a study by Sychareun *et al.* (2011) found that educating adolescents to a high level protects against multiple risks to health such as alcohol abuse, smoking, use of illegal drugs and risky sexual activity. From an economic perspective, Wang *et al.* (2013) state that education determines the risk choices of individuals. Using a sample of Chinese companies, Wang and his colleagues found that corporations where decisions were taken by well educated managers seemed to have less influence and lower earnings, confirming the negative relationship between risk propensity and formal education. As risk propensity is associated with entrepreneurship, Wu and Wu (2008) found that people educated to diploma and undergraduate level showed greater

interest in business start-ups than those educated to postgraduate level. Moy and Lee (2002) argue that educational attainment could enable workers to obtain well paid employment, along with improved career development pathways, which in turn would tend to weaken the aspiration to start a business. Likewise, Audretsch *et al*. (2007) examined the influence of religion on the decision for people to become entrepreneurs and conclude that increases in educational attainment tend to reduce the probability of self-employment in the Indian context.

However, other researchers argue the opposite, asserting that educational attainment has a positive influence on risk-taking propensity. Laukkanen (2000) argues that business schools traditionally teach their graduates to be overanalytical, aware of pitfalls and risk-averse. Ding *et al*., (2010) found that general risk awareness matches the attitude to chance in careers, education and finance. Black *et al*. (2015) discovered that each extra year of education increased involvement in the stock market and that greater educational attainment resulted in individuals owning more financial assets, both in stocks and in other more risky financial schemes. Although these research findings are conflicting, there seems to be a strong argument in the literature that educational attainment may one way or another influence individuals' risk-taking propensity. While there is a sizable body of literature concerned with the effects of the educational attainment of individuals on their propensity to be involved in risky decisions, the impact of specific factors such as religion needs further investigation. In particular, despite the strong evidence for relationships between education and religiosity and between education and risk taking, this literature does not consider specifically the tripartite relationship in which education plays a mediating role between religiosity and risk-taking propensity.

4.2.2.3. Educational attainment and the relationship between religiosity and risk-taking propensity

There has been a small amount of research regarding the impact of religion on attitudes to risk taking, but the influence of education as a mediating construct in this relationship still requires more attention. In a study investigating the relationship between religiosity and risk preference using a cross-national survey, Miller (2000) found that educational attainment in a Turkish sample had a strongly negative impact on the relationship between risk taking and religiosity as measured in terms of four parameters: affiliation, comfort, importance and attendance. Ferguson *et al*. (2014) explored religious orthodoxy and its relation to one aspect of the entrepreneurial process, namely risk taking within existing businesses, and found no evidence of the role of education as a control variable in this relationship.

While a handful of studies have illustrated the relationships of education with both religion and risk taking (Glaeser and Sacerdote, 2002, Brown and Taylor, 2007, McFarland *et al*., 2010, Ertuna and Gurel, 2011, Black *et al*., 2015), there is a scarcity of research into either of these associations from an Islamic perspective. However, references to the topics of education and knowledge are well documented in the Islamic literature that has been published in the Arabic language. The main sources of Islamic orthodoxy, the Holy Quran and the Sunna, contain many examples of passages that encourage the seeking of knowledge and place great importance on education. The Islamic principles to which these texts refer not only encourage Muslims to acquire religious knowledge; they urge them to obtain all types of knowledge that may help humankind to develop and contribute to the quality of life. Kaur (2013) states that new

developments in both the humanities and the sciences oblige Muslim scholars to deal with life's challenges by implementing appropriate Islamic solutions. The importance of education and knowledge in Islam is evident from the fact the exhortation to read is made by very first word of the Holy Quran as revealed to the Prophet Mohammed (pbuh). The sacred text begins thus:

> ***"Read! In the Name of your Lord, Who has created (all that exists), [Who] Has created man from a clot (of coagulated blood), Read! And your Lord is the Most Generous, Who has taught (the writing) by the pen [the first person to write was Prophet Idrees (Enoch)], [Who] Has taught man that which he knew not."*** [Al-Alaq 96:1-5].

The importance of learning and knowledge is also very clear when God Almighty urges the Prophet Mohammed (pbuh) to pray for the seeking of knowledge in the following passage of the Holy Quran: ***"[O Mohammed] say: My Lord! Increase me in knowledge"*** [Ta-Ha 20:114]. These verses indicate that whatever human beings know in this world is still limited and that they are therefore in need of ways to increase their knowledge. The Prophet Mohammed himself (pbuh) is seen as having embodied the ideal of a teacher, by teaching his companions the right way to practise true religion and to observe *Shar'aiah* in the conduct of their lives. The Prophet (pbuh) encouraged all Muslims to search for knowledge by saying: "Seeking knowledge is an obligation upon every Muslim." He also said "He who goes forth in searching for knowledge is in the way of Allah till he returns" (Al-Tirmidhi, 1986). As a number of scholars affirm, Islam is not just a religion, but is a way of life (Wong, 2007; Vargas-Hernández *et al*., 2010; Tlaiss, 2013; Ullah *et al*., 2013; Aminuddin *et al*., 2014). Islamic law requires every Muslim to

know how to adhere to *Shar'aiah* in all aspects of life, including what to eat and drink, how to dress and behave (Adeleye, 1983). It is apparent that Islamic laws provide the basis for education by encouraging Muslims to increase their knowledge. In other words, education and the acquisition of knowledge are central tenets of the Islamic view of life (Khan and Sheikh, 2012).

It is clear that Islamic legislation urges Muslims to increase their knowledge and acquire new life skills, as has been discussed in the previous section. These capabilities help individuals to think clearly and to distinguish between right and wrong, furnishing them with the knowledge required to be able to analyse and make decisions. Moreover, having a high level of education increases the understanding of religious texts and gives individuals the ability to appreciate the consequences of their decisions. This analytical capability in turn reduces religious Muslims' willingness to take risks in their economic decisions. Therefore, it can be argued that Muslims with a higher level of religiosity who obtain a high level of education will be involved in relatively few risky decisions, from which they are protected by their skill at understanding consequences. On the other hand, the impact of religion on the economy usually relates to the restriction of certain activities; thus, in the case of Islam, its adherents are not allowed to accept usury, to gamble or to drink alcohol (Lam, 2007). Importantly, gambling motivation and behaviour changes significantly across demographics including age, education and level of income. Muslims who have a low level of education find their analytical ability to understand *Shar'aiah* texts is inadequate and this in turn may reflect on their participation in activities prohibited in Islam, such as gambling (Fam at al., 2002). Thus, Muslims who participate in gambling activities are considered relatively irreligious. Previous studies have proven that people with a lower level of educational attainment become are more

likely to become involved in gambling activity than those with a higher level of education. Lam (2007) studied the impact of gambling behaviour and the attitudes of both adults and young people in America, and found that the frequency of gambling appeared to increase with age and to reduce with increasing educational level. Lottery involvement was also shown to be negatively correlated with education (Herring & Bledsoe, 1994; Brown, Kaldenberg, & Browne, 1992). According to the literature, the level of educational attainment may affect the relationship between individuals' religiosity and the risk-taking propensity of Muslims. There proposed mechanism is that Muslims with higher levels of religiosity and of education have the ability to understand Islamic law and are thus better equipped to avoid making decisions that might negatively affect their lives. We can therefore propose the following hypothesis:

H_{2a}: The relationship between Islamic religiosity and risk taking will have a significant U-shape amongst Muslims with low levels of education.

H_{2b}: Muslim with high levels of education will have insignificant relationship between Islamic religiosity and risk-taking propensity.

4.3. Methodology

4.3.1. Research design

It is vital to understand the research process, including the theoretical and philosophical elements that underpin research design and the selection of methodologies. Collis and Hussey (2013) believe that a positivistic approach should be taken to the study of human behaviour in the same way as research in the natural sciences. Positivism in this context involves using scientific methods to investigate social

phenomena. The current study is designed to examine human behaviours in a modern society, specifically the effect of gender and education on the relationship between the religiosity of Muslim adherents and their risk-taking propensity. Therefore, positivism is clearly the appropriate philosophical approach to adopt here.

The literature reviewed in the preceding section of this chapter has suggested a tripartite association whereby sociocultural factors have a moderating effect on the relationship between Islamic religiosity and the propensity for risk taking. Building on the above discussion, the present study proposes a research design to test the two hypotheses set out above, among Muslims within the Kingdom of Saudi Arabia, a country dominated by adherence to Islam. The conceptual framework for this study comprises an independent variable, namely religiosity, the single dependant variable of risk taking and six controllers. Figure 4.1 illustrates the said framework.

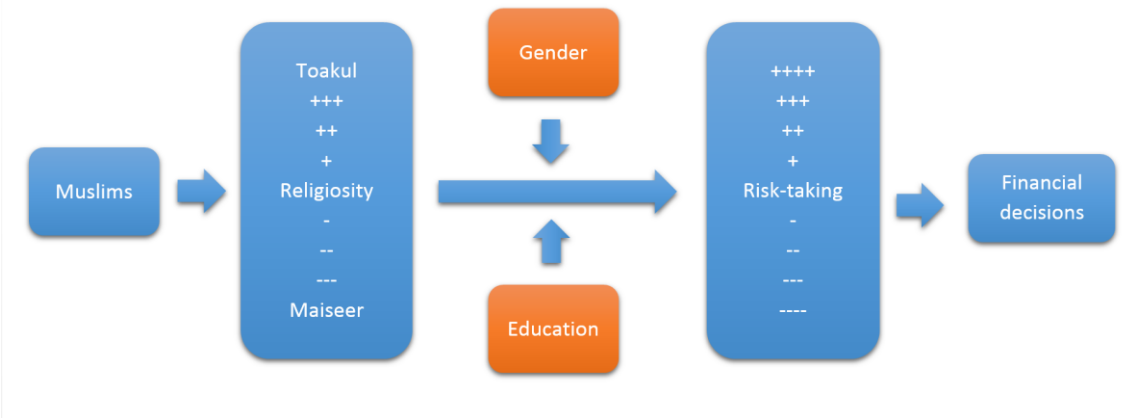

Figure 4.1: Theoretical framework compiled by the author

4.3.2. Method

While there are numerous ways in which data could have been collected for the purpose of examining the study hypotheses, the most appropriate was considered to be

the survey method, utilising a questionnaire as the data-gathering instrument. This choice is justified by the fact that the present research involves formulating and testing hypotheses from well-established theories (Choudrie and Dwivedi, 2005) and that it explores circumstances, occasions, principles or attitudes held by individuals with common interests (Singleton and Bruce, 2005; Bhattacherjee, 2012). A paper-based questionnaire, together with an online survey, was considered preferable in this case. The original questionnaire was developed in English. However, as the first language in Saudi Arabia is Arabic and most of the respondents were not expected to be fluent or accurate users of English, the questionnaire was translated into Arabic by a professional translator, using the mechanism of forward and backward translation, in accordance with the procedure recommended by Graham *et al.* (1994).

A pilot test was performed before circulating the questionnaire, to evaluate its feasibility. The pilot questionnaire was circulated to twenty-three Muslim individuals resident in Saudi Arabia. Their feedback was positive, declaring that on the whole, they found the questionnaire clear and easy to understand. However, the pilot test revealed that a few of the items were confusing to some readers and that a small number of errors had been introduced during the process of translation into Arabic. The questionnaire was finalised, taking these comments into consideration, then the survey in its final form was distributed to 1000 Muslims in Saudi Arabia. After several steps of data cleaning, a total of 638 questionnaires were received and included in the analysis, which corresponds to a response rate of 63.8 per cent. The data were then analysed using the STATA (version 14) software package. The use of STATA was considered appropriate for this type of research because it allows the examination of nonlinear regression and more than one variable at the same time.

4.3.3. Sample

Sekaran and Bougie (2010) describe a preferred research population as consisting of the entire group of people, events, or items of interest that the research aims to investigate. However, no social science study is likely to be able to collect data from the complete target population, due to feasibility and cost constraints. Bhattacherjee (2012) asserts that this does not prevent the conduct of valid research, because data gathered from a correctly selected subset of participants can be considered to accurately represent the entire population. Thus, a sample method, which represents the population of the study, has been utilised here. The overall sampling process consisted of a number of phases: defining the target population, selecting a sampling frame and then choosing a sample using established techniques. Since the focus of this study is to test the influence of Islamic religiosity on risk taking propensity among Muslims, the sampling frame for the study consists of the Muslim population of an Islamic country; the Kingdom of Saudi Arabia.

The technique then adopted in this project was to use two types of sampling. The first was probability sampling, a method whereby every unit of the population is equally likely to be selected as part of the sample. In other words, none of the sample points will have a zero probability of being included in the sample (Bhattacherjee, 2012). The second technique used was snowballing, a non-probability sampling method. According to Arber (2001), the snowball technique can be used only in cases where the sampling frame is homogeneous and its members are involved in some kind of system with others who share the same concerns. The most difficult question in sampling is to decide what size the sample should be. According to Tabachnick *et al.* (2001), a sample size of 300 is

assumed to be comfortable, 500 very good and 1000 excellent. Taking account of this advice, the size of the final sample of the present study, which as noted in Section 4.3.2 consisted of 638 Muslim adherents, can be considered very good.

4.3.4. Site selection

A search of the literature suggests that very little empirical economic research has been conducted in Muslim countries and that only a handful of exploratory studies are available in the context of the Kingdom of Saudi Arabia. The choice of the Kingdom as the country in which to undertake this study was based on a number of considerations. First, Saudi Arabia is widely identified with Islam and it has a distinct religious status in the Islamic world for being both the site of the revelation of the religion to the Prophet Mohammed and the location of two of Islam's holiest mosques, at Mecca and Medina. Second, the constitution and governance of Saudi Arabia are founded on Islamic law. Article 1 of the national constitution states:

> The Kingdom of Saudi Arabia is a sovereign Arab Islamic state with Islam as its religion; God's Book [the Holy Quran] and the Sunna of His Prophet, God's prayers and peace be upon him, are its constitution, Arabic is its language and Riyadh is its capital.

Article 7 adds that "government in Saudi Arabia derives power from the Holy Quran and the Prophet's tradition" (Royal Decree No. A/90, 27th Sha'ban 1412 AH [1 March 1992]). The Islamic religiosity of the Saudi people has created a suitable environment for the Saudi government to apply a highly restrictive interpretation of Islamic law among its inhabitants, from both social and political perspectives. It is widely perceived and largely accepted that Saudi Arabia is the most traditional and sanctified

Muslim country. More than 90 per cent of its inhabitants are Arabs and almost 100 per cent are Muslims (Agency, 2013). Therefore, it could be argued that if elementary research is to be conducted, then the Kingdom of Saudi Arabia would be the most obvious country to study. Finally, there is the advantage of the researcher being a Saudi Arabian citizen. He is an alumnus of a Saudi Arabian universities and has worked for a number of local government institutions in the Kingdom. Working with such institutions and with members of the business community is likely to help an academic investigator to generate a favourable response to requests for research access (Creswell, 2013). Furthermore, the researcher's experience in the Saudi Arabian market prior to the study, his various engagements with the indigenous labour market and his connections to the governmental institutions in the area may be seen as granting him the credibility necessary for conducting the study (Wolcott, 1994).

4.3.5. Variables

The survey instruments used in this study were developed using relevant items chosen as far as possible from the literature, to quantify Muslims' religiosity (the independent variable) and their propensity to involve themselves in risk (the dependant variable) in the context of Saudi Arabia, a Muslim non-Western country.

4.3.5.1. Measures of Islamic religiosity (independent variable)

It is important here to clarify exactly what is meant by Islamic religiosity. In the present study, religiosity is defined in terms of a combination of two-dimensional concepts that comprise one religiosity measurement (Alsanie, 1989; Galbraith *et al.*, 2007). First, there are the beliefs which comprise the Islamic pillars and faith pillars, which are belief in God, in the Prophet Mohammed, in God's Angels, in the holy books,

in God's messengers, in the day of judgement, in the afterlife and in predestination. Secondly, Islamic conduct is reflected by the daily behaviours and actions of Muslims, by which they should practice obedience and compliance with Islamic law and avoid forbidden behaviours or actions.

While all measures of religiosity that are reported in the literature (Hill and Hood, 1999) are useful means of measuring religious psychology, most of the frameworks to be found there have been developed for use in predominantly Christian societies or within a smaller, non-Muslim context. McFarland (1984) asserts that scales specific to Christianity are inadequate in studying psychological aspects of the religious adherence of Muslims. Furthermore, Khraim (2010) criticises existing instruments for measuring Muslims' religiosity as having merely been translated from original English versions developed by non-Muslim scholars in the West and adopted without adequate modification. These measurements have been applied, in other words, without any critical consideration of the spiritual or day-to-day practical realities of Muslims living in the Muslim world.

As to the complexity or dimensionality of the chosen instrument, some studies have measured only a single dimension of religiosity such as religious affiliation (e.g. Zelekha *et al.*, 2014), whereas other researchers have preferred to apply a multidimensional measure of religiosity (e.g. Parboteeah *et al.*, 2015). In order to benefit from as many as possible of the advantages of these pre-existing approaches when examining the study hypotheses, the religiosity measure used in this study is a combination of three scales. The majority of items come from a scale of religiosity designed to quantify Muslims' beliefs and behaviours (Alsanie, 1989). These thirty five

items examine the degree to which individuals are committed to the five pillars of Islam and to the six pillars of Islamic faith by asking them to rate the extent of their agreement with statements such as “I believe there is no God but Allah” and “I believe in heaven”; and to rate their obedience to Islamic law with such items as “I recite the Holy Quran”. Seven other questionnaire items were adapted from the Muslim Religiosity-Personality Inventory and a further four from the World Value Survey, to capture the extent of religious commitment among respondents. The results of the three scales were then combined into a composite mean score designed to measure the magnitude of each respondent’s religiosity. Each of the 46 items in the questionnaire asked participants to indicate how strongly they agreed with a statement of their religious beliefs or how often they engaged in the behaviours concerned, using a five-point Likert scale whose response categories were: 1 = ‘Strongly disagree’ or ‘Never’; 2 = ‘Disagree’ or ‘Rarely’; 3 = ‘Not sure’ or ‘Sometimes’; 4 = ‘Agree’ or ‘Very often’ and 5 = ‘Strongly agree’ or ‘Always’. The total individual score on this scale ranged from 46 to 230 points, where a higher score represents stronger Islamic religiosity. Some of the original items were modified to fit the context of this study. The reliability of the scale was tested in terms of Cronbach’s alpha for all constructs. An alpha value between 0.50 and 0.70 is considered to indicate moderate reliability, while a value greater than 0.70 is considered to represent high reliability (Hinton *et al.*, 2014). In the present study, the overall scale was found to have an alpha value of 0.89, making it highly reliable on that measure.

4.3.5.2. Measures of risk-taking propensity (dependant variable)

This study uses the term ‘risk’ in the context of risk-return tradeoff, where individuals are held to have made risky decisions in cases where they are likely to lose

or where their actions may have negative outcomes. Lumpkin and Dess (1996) emphasise the importance of distinguishing between different types of risk when conducting economic research. Accordingly, in order to test the hypotheses H_1 and H_2 stated in Sections 4.2.1 and 4.2.2 respectively, this study distinguishes between different types of risk taking. For example, the questionnaire differentiated between the willingness to take financial risks on one hand and propensity to take health or safety risks on the other. As this study examines the economic activity of Muslims, it was appropriate to measure their propensity for taking financial risks.

The instrument used to measure participants' willingness to take risks comprised a single question, adapted from the work of Block *et al.* (2015) and requiring participants to respond on an eleven-interval scale. They were asked how much money they would be prepared to invest in an economic activity where they had a 50/50 chance either of achieving a return of double the amount invested or of losing half of it, on a scale from the lowest possible value of zero to the highest possible value of 100,000 SR, in intervals of 10,000 SR invested. This interval was chosen for three reasons: because it allowed the study to compare one participant with another in terms of how much more or less money would be invested (Bhattacherjee, 2012), because it reduced the time needed to respond to the questionnaire and because it made the responses comparable with the findings of prior research. This question is very similar to the items used in the German Socio-Economic Panel Survey (Block *et al.*, 2015). The instrument for measuring risk-taking propensity in this study has been validated in a field experiment (Dohmen *et al.*, 2011) and used in a number of published studies (Jaeger *et al.*, 2010; Dohmen *et al.*, 2011).

Appendix 1 reproduces in full detail all of the items included in the study questionnaire. It shows that the study controlled for sociodemographic variables that might influence individuals' responses. Consistent with the published literature (Miller, 2000; Ferguson *et al.*, 2014; Jiang *et al.*, 2015), it was assumed that the extent of participants' risk-taking propensity might be affected by factors such as their age, job status, monthly income and work experience. Therefore, the data analysis reported in the following section controls for the variables of gender, level of education, entrepreneurship status and work experience by means of dummy variables (1 = yes, 0 = no), while age was measured in years and monthly income on an interval scale.

4.4. Results

4.4.1. Descriptive statistics

4.4.1.1. Gender

This study was conducted to explore the role of gender and education in the relationship between risk-taking propensity and Islamic religiosity. Alongside other control variables, it included questions on participants' gender and their educational level. Table 4.1 lists the age, work experience, education level, entrepreneurial status and monthly income of participants by gender, giving frequencies, percentages, mean values and standard deviation for each statistic. It shows that 72 per cent of participants were in the male subgroup (n = 461) and that their ages ranged between 15 and 68 years with a mean value (M) of 35 years and a standard deviation (SD) of 11 years. The ages of the female subgroup (n = 177) ranged between 16 and 74 years (M = 31, SD = 9 years). Just over half of the males (56 %) and four fifths of the females (80 %) had been awarded a university degree or higher qualification, indicating that females had been significantly

better educated than males, whereas the picture for business ownership showed a strong imbalance in favour of males, 28 per cent of whom were entrepreneurs, compared with only 8 per cent of females. Consistent with this result, three quarters of males had work experience, with a mean duration of over ten years, whereas rather fewer than half of females (47 %) had been employed and their average length of time in work was under five years. The entrepreneurship and work experience results were reflected in the income figures, which show that two thirds of male respondents reported earning 9000 SR or more per month, compared with fewer than half (44 %) of the females.

Table 4.3 gives the responses of the gender subgroups to the question about their willingness to take a risk in investing, thus quantifying the dependant variable of risk-taking propensity. In both of the gender subgroups, the strongest response was for the median figure, so that close to 40% chose to take a moderate risk by investing 50,000 SR. However, there was a major disparity between males and females in the distribution of the remaining responses, whereby 40 % of the male respondents chose to invest more than 50,000 SD and only half of that number preferred to invest less than 50,000 SD, whereas these percentages were almost exactly reversed in the female cohort, only 21 % of whom selected options above the mid-level and none of whom were prepared to invest the full 100,000 SD available. These findings are consistent with reports in the literature that men have a higher risk propensity in financial decisions than women (Neelakantan, 2010).

The independent variable, Islamic religiosity, was measured by the mean score of respondents on items rated using a Likert scale of 1 to 5 points. Table 4.3 shows that

the mean score for male respondents (*M* = 4.23) was very close to that of the female subgroup (*M* = 4.28). None of the females and only 0.3 % of men recorded a religiosity score below 3, while more than three quarters of each gender cohort (77 % of males and 81 % of females) can be considered religious adherents, having scored between 4 and 5 on the religiosity scale.

4.4.1.2. Education

The descriptive statistics in Table 4.2 show that 62 % (*n* = 400) of the total sample had obtained at least a bachelor's degree and that almost two thirds of these were male, while of the remaining 38 % of the total sample whose educational attainment was below university level, a much higher proportion (85 %) were male. This reflects the fact that males were much more numerous in the sample overall but were considerably less likely than females to have received a university education, as noted above. The age distribution of the university educated subgroup was between 15 and 74 years, with a mean of 36 years (SD = 10 years). The mean age of those who had not attained a university qualification was only slightly lower at 34 years. Only 18 % of the more highly educated respondents were entrepreneurs, whereas almost double this proportion (31 %) of those whose highest qualification was below degree level stated that they were business owners. As to the distribution of work experience, those with a degree-level qualification were more likely to have worked (72 %) than those with lower academic attainment (62 %), while the length of the work experience of the two subgroups was almost identical in range (1 to 38 years and 1 to 40 years respectively) but differed in mean values, at M = 10 (SD = 10) and M = 7 (SD = 10) respectively. Finally, the two education subgroups differed in income distribution, with respondents who had at least

a bachelor's degree tending to have higher earnings. Seventy per cent of these graduates stated that they earned 9000 SR or more per month, while only 45 % of the less well educated subgroup claimed to earn as much as this.

Table 4.4 shows how the two educational attainment subgroups differed in their propensity to involve themselves in risky investment opportunities. As with the gender subgroups, roughly 40 % of each chose to invest 50,000 SR, although here there was a slight difference between the two (39 % of the graduates versus 42 % of non-graduates). Unlike the gender subgroups, however, there was no remarkable difference in distribution of the remaining choices by educational attainment. Thus, approximately 25 % of each subgroup chose to invest less than 50,000 SR. The clearest difference between the graduates and non-graduates was in their propensity to opt for an investment above the middle value, which Table 4.4 reveals to be 36 % and 32 % respectively. This difference is nonetheless much smaller than in the case of the gender subgroups.

As to the overall level of Islamic religiosity as measured by the total score on the five-point Likert scale, the results show that there was no difference in mean score between the university and non-university subgroups, at 4.25 points and 4.24 points respectively. None of the graduates scored below 2 points, while only one respondent in the lower educational attainment subgroup scored between 1 and 3. Finally, there was, as with the gender results, very little difference between the educational subgroups in the proportions of them scoring between four and five points on the religiosity scale, at 80 % for those with a university education and 77 % for those below this educational level.

4.4.2. Empirical analysis

Two hierarchical regression models were estimated in this study to test the influence of gender and of education on the relationship between risk-taking propensity and Islamic religiosity. These are explained in turn in the following subsections.

4.4.2.1. Gender

The first regression model was built to control for a personal characteristic, gender, which is well known from the literature to be associated with risk-taking propensity and with religiosity. The binary variable Gender takes a value of 1 for respondents who indicated on the questionnaire that they were male and value of 0 for females. In addition, we controlled for the following sociodemographic characteristics of each gender subgroup: age, education level, work experience, entrepreneurship status and monthly income. The first two hypotheses, $\mathbf{H_{1a}}$ and $\mathbf{H_{1b}}$, concerns the role of gender in the relationship between risk taking and Islamic religiosity (Section 4.2.1.4). More specifically, they state that there will be a significant U-shaped relationship between the religiosity of Muslim males, rather than Muslim female, and their risk-taking propensity. In other words, both highly religious and non-religious Muslim males will be more likely to involve themselves in risky financial decisions, whereas this will not apply to females. In order to test our hypothesis, we formulated the following quadratic linear regression equation:

$$\textit{Risk taking} = f(\textit{Gender} + \textit{Religiosity} + \textit{Religiosity}^2 + \textit{Controls}) + \varepsilon.$$

$$y = \beta_1(\textit{Gender}) + \beta_2\chi_1 + \beta_3\chi_1^2 + \beta_4(\textit{Age}) + \beta_5(\textit{Education level}) + \beta_6(\textit{Work experience}) + \beta_7(\textit{Entrepreneurship status}) + \beta_8(\textit{Income}) + \varepsilon.$$

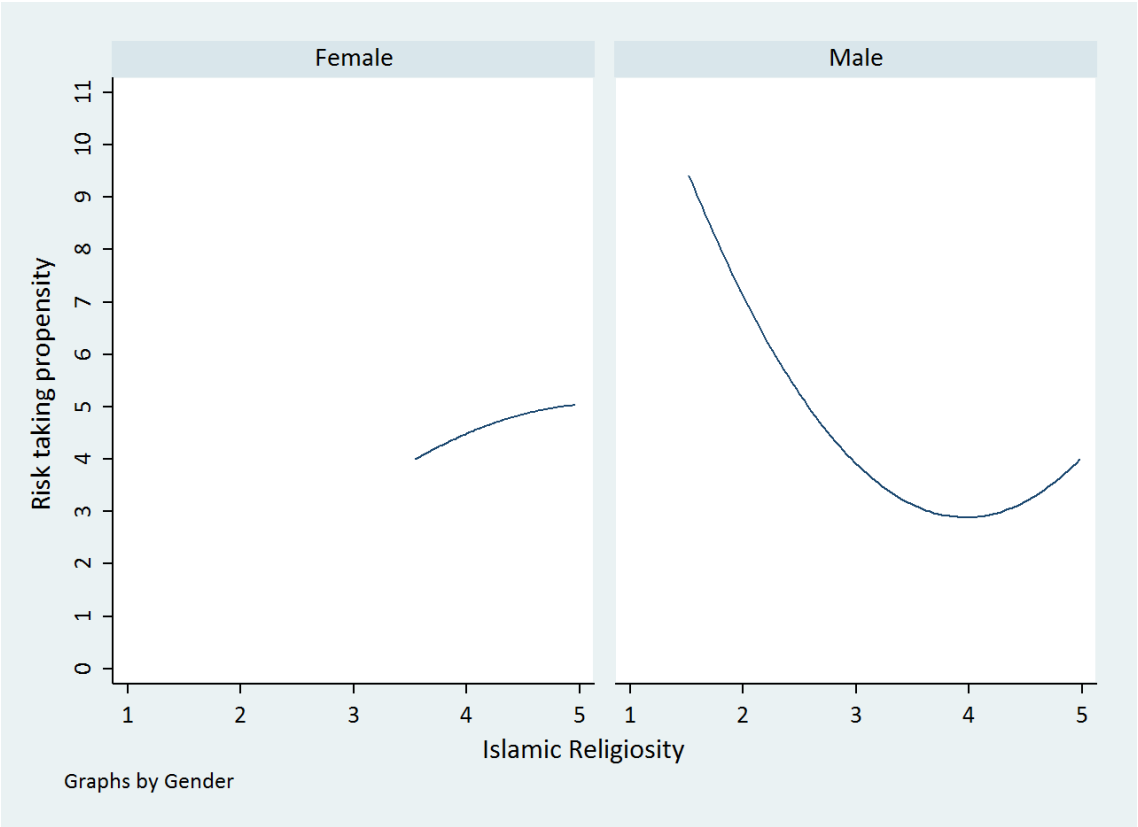

Figure 4.2: The relationship between risk and religiosity by gender

Figure 4.2 provides some initial graphical evidence that the relationship between risk-taking propensity and Islamic religiosity does indeed differ between males and females. It can be seen that a significant U-shaped relationship exists in the data for male respondents, while there is no such relationship in the female data. Table 4.5 displays the results in more detail, showing that for males, the religiosity variable is negatively significant at the level of $p < 0.05$ and has a positive significant sign at $p < 0.05$ for religiosity squared. Only the income ($p < 0.05$) and entrepreneurship ($p < 0.01$) variables remain statistically significant in the model. By contrast, the results for female respondents indicate that the relationship between risk-taking propensity and Islamic religiosity has an insignificant inverted U-shape. The significance of the U-shape for the male subsample in this study indicates that gender is an important factor in

understanding the relationship between Islamic religiosity and the propensity to take risks in making financial decisions, specifically in the Islamic context of Saudi Arabia.

4.4.2.2. Education

Education is also important to this research, because it is the other factor most often associated in the literature with risk-taking propensity and religiosity. In the model built for this study, the Education variable is binary, being assigned a value of 1 where the respondent has obtained a university qualification at the level of a bachelor's degree or above (e.g. a master's or PhD degree) and a value of 0 for those with no such academic qualification, meaning that their highest educational attainment was at the level of a diploma, high school, secondary or primary education. In addition, as in the first model, we controlled for the sociodemographic variables of age, gender, work experience, entrepreneurship and monthly income. The second two hypotheses, $\mathbf{H_{2a}}$ and $\mathbf{H_{2b}}$, concerns the role of education in the relationship between risk-taking propensity and Islamic religiosity, stating more specifically that there will be a significant U-shaped relationship between the religiosity and risk-taking propensity of Muslims with a low level of educational attainment. In other words, highly religious and non-religious Muslims who were educated to a level below that of university are more likely to invest money in risky opportunities than those with university education or below. In order to test this hypothesis, we formulated this quadratic linear regression equation:

$$\textit{Risk taking} = f(\textit{Education} + \textit{Religiosity} + \textit{Religiosity}^2 + \textit{Controls}) + \varepsilon.$$

$$y = \beta_1(\textit{Education}) + \beta_2\chi_1 + \beta_3\chi_1^2 + \beta_4(\textit{Age}) + \beta_5(\textit{Gender}) + \beta_6(\textit{Work experience}) + \beta_7(\textit{Entrepreneurs status}) + \beta_8(\textit{Income}) + \varepsilon.$$

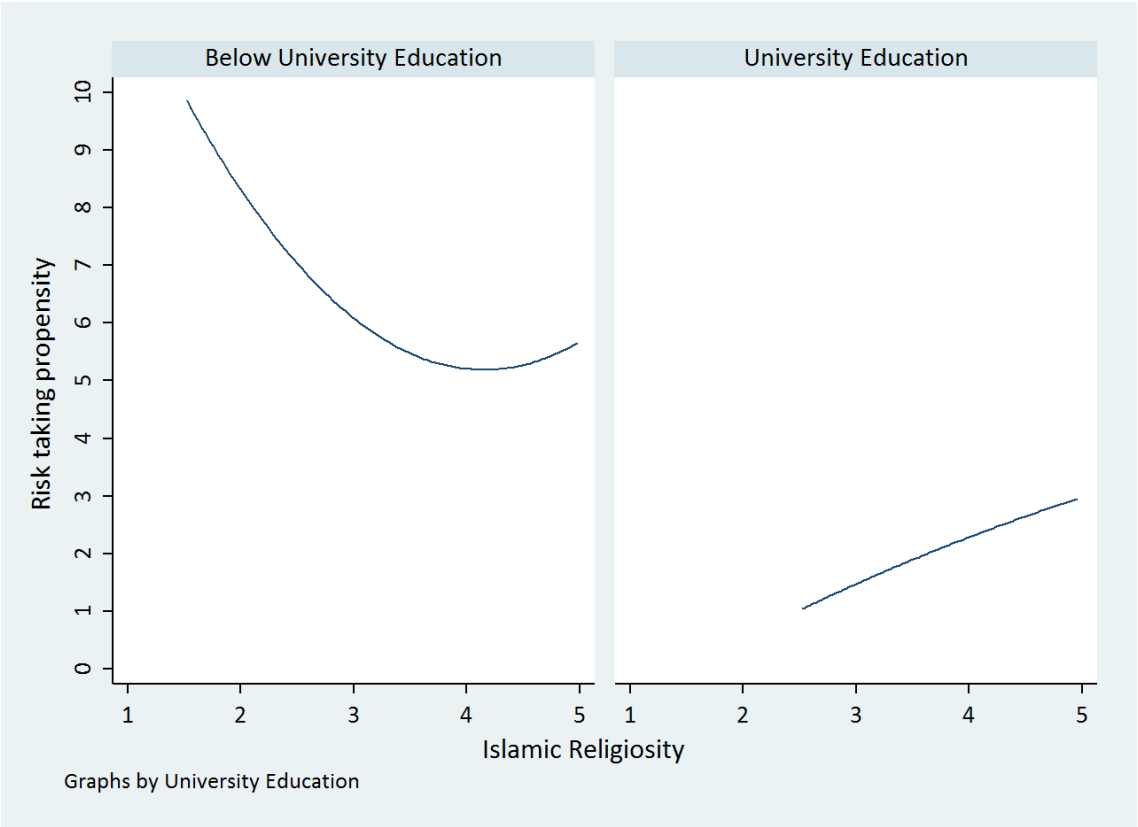

Figure 4.3: The relationship between risk and religiosity by education

Figure 4.3 provides graphical evidence that education level is a strong determinant of the relationship between risk-taking propensity and Islamic religiosity. The analysis tabulated in Table 4.6 indicates that the Islamic religiosity variable has a negative significant ($p < 0.1$) regression coefficient for those educated to a level below that of university and that it is positive and significant at $p < 0.1$ when the Islamic religiosity variable is squared. As in the model discussed in the previous subsection, only the income ($p < 0.05$) and entrepreneurship ($p < 0.01$) variables remain statistically significant in the model. By contrast, the results for participants educated to university level indicate that the relationship between risk-taking propensity and Islamic religiosity has an insignificant inverted U-shape. These results support the hypothesis of a U-shaped relationship between risk and religiosity among Muslims with a relatively low

level of educational attainment. Thus, we can conclude that the level of education is an important predictor of the relationship between risk-taking propensity and Islamic religiosity.

4.5. Discussion and conclusion

In the first part of this study, as discussed in Chapter 3 (Section 3.5), it was concluded that the relationship between Islamic religiosity and risk-taking propensity among Muslims is a U-shaped one, such that those with high or low religiosity are more inclined to take financial risks than are those showing moderate adherence to Islam. The work reported in this chapter has extended the scope of the study to explore the effects of two main predictor variables, gender and level of education, on the above risk-religiosity relationship among the same sample of Saudi Muslims. To the best of our knowledge, this study addresses a gap in the literature by being the first to explore the role of gender and level of education in this relationship. The Kingdom of Saudi Arabia, as one of the most dominant Islamic countries, offers a good context within which to conduct this exploration amongst Muslim adherents. The Kingdom provides a particularly appropriate setting because its cultural landscape and its institutional and governmental patterns are strongly associated with Islamic law. Therefore, to test the hypotheses set out in Sections 4.2.1 and 4.2.2, a questionnaire seeking to evaluate participants' religiosity and their propensity to involve themselves in risky financial decisions was administered to a representative sample of 638 Muslim adherents in Saudi Arabia. The results reported in Section 4.4 support both of these hypotheses, confirming that gender and level of education are two major factors moderating the effect of Islamic religiosity on individuals' risk-taking propensity.

4.5.1. Gender

The hierarchical regression model explained in Section 4.4.2.1 was used to test the influence of Islamic religiosity on risk-taking propensity by applying a quadratic linear regression to the data gathered from the two gender subsamples. As expected, $\mathbf{H_{1a}}$ and $\mathbf{H_{1b}}$ are supported by the finding of a U-shaped relationship between religiosity and risk taking among male participants only at a significance level of $p < 0.1$. In common with much of the literature that examines the role of gender in the relationship between religiosity and risk attitude using linear regression (Miller and Hoffmann, 1995; Stark, 2002; Charness and Gneezy, 2012), our findings support the notion that males have a greater propensity to take risks than females do (Hariss *et al*., 2008; Eckel and Grossman, 2002; He *et al*., 2008). However, the present results are novel in indicating that more risky decisions are taken not only by highly religious Muslim males, but also by those who manifest a low level of Islamic religiosity. The fact that religious Muslim males are more inclined to take financial risks than comparable females can be ascribed to their adherence to the stipulations of *Shar'aiah* law. In Islam, men have different financial responsibilities from those of women (Kazemi, 2000). The relevant verse of the Holy Quran urges men to support their families' needs, stating that ***"the father of the child shall bear the cost of the mother's food and clothing on a reasonable basis"*** [Al-Baqarah, 1:233]. Therefore, each Muslim man is held to be responsible for providing his family with sustenance (rizq), which necessitates his involvement in economic activities of one kind or another. The concept denoted by the Arabic word 'rizq' is related to that of risk (Gümüsay, 2015) and Islamic law makes it imperative for all Muslim men to take whatever risk is necessary to ensure the provision of rizq (Khalifa, 2001). Muslim

females, on the other hand, are not bound by any such requirement under *Shar'aiah* and consistent with this gender distinction, this study has found that both religious and non-religious females were less tolerant of risk in making financial decisions than the males were. While these findings are not statistically significant, they indicate that Muslim females might not choose to participate in the kinds of risky activities associated with the provision of rizq. However, these findings are restricted to financial risk and other studies have suggested that gender differences in risk propensity may vary according to the context and type of risk, so that the same results could not necessarily be expected to apply to health or physical risks (Byrnes *et al*., 1999).

4.5.2. Education

The second hierarchical regression model, as explained in Section 4.4.2.2, was used to test the influence of education on the association of Islamic religiosity with risk-taking propensity, by distinguishing between two subgroups of participants, educated at university and below university level respectively. While much literature has been published on the effects of education on religiosity (Iannaccone, 1998; Arias-Vazquez, 2012; Hungerman, 2014) and on risk-taking propensity (Sychareun *et al*., 2011; Wang *et al*., 2013), little research has been conducted into the influence of education on the interaction between these other two variables. Thus, this part of the study fills a gap in the literature by using a dummy variable for education. The results of the quadratic linear regression on the education subsamples shows that $\mathbf{H_{2a}}$ is statistically significantly supported at the level of $p < 0.1$. The analysis confirms that Muslims with a low level of educational attainment who also have either a high level or a low level of religiosity (as opposed to those of moderate religiosity) are more likely to invest larger sums of money

in a risky financial opportunity than otherwise equivalent Muslims with a university education. According to Islamic law, Muslims are required to acquire religious knowledge, in addition to knowledge of all other aspects of life, as emphasised by the fact that the very first verse of the Holy Quran expresses the command of God Almighty to study: ***"Read! In the Name of your Lord, Who has created (all that exists)"*** [Al-Alaq 96:1-5]. According to human capital theory, individuals make rational choices to invest their capital in education (Becker, 2009). Investment in education has been shown to increase cognitive ability, which in turn enables individuals to elucidate and analyse information and to make and implement rational decisions. It follows that Muslims with a higher standard of education are less willing than their relatively poorly educated peers to expose themselves to risky situations because they are better able to predict the potential negative consequences of such risk taking. This study confirms the theoretical arguments that highly religious and non-religious Muslims who have been educated to a level below that of a university degree are more likely to be risk takers.

4.5.3 Overall conclusions, limitations and future research

The review in Section 4.2 of the literature on gender and educational differences in religiosity and risk-taking propensity relevant to financial opportunity has revealed that the findings of such research have tended to be inconsistent. This inconsistency can be attributed to the fact that the influences of gender and of education on risk and religiosity have been explored separately. Therefore, this study has addressed how and to what extent the social constructs of gender and education can be shown to affect the relationship between religiosity and attitude to risk, using a sample of Muslim

adherents. The results indicate that among males and those with a low level of education, this relationship is a U-shaped one.

It must be acknowledged that the present study has some limitations. First, the data were collected from a relatively small sample (*n* = 638) of Muslim adherents in a specific context, that of Saudi Arabia. Therefore, it may not be appropriate to generalise the study's findings to the whole Muslim population. This limitation could be overcome by extending the research from a specific country to a cross-national level. Second, while the results support the contention that both gender and education play essential roles in the propensity to take risks, the results of this research are limited to the specific context of financial risk. It would be useful to conduct further research on the relationship between Islamic religiosity and risk to include other types of risky behaviours, including among others the domains of health and physical risk. This would allow future researchers to assess the robustness of the U-shaped relationship between risk-taking propensity and religiosity. Finally, future work might broaden the scope of this research to address the effects of gender and education on the relationship between risk attitude and religiosity among adherents of other Western religions, such as Christianity and Judaism, or of Eastern religions such as Hinduism and Buddhism.

Table 4.1: Sociodemographic statistics (Gender)

Male (*n*=461)					Female (*n*=177)				
Variable	**Obs.**	**%age**	**Mean**	**SD**	**Variable**	**Obs.**	**%age**	**Mean**	**SD**
Age:					**Age:**				
15 to 68 year	461	72.25	35.75	11.06	16 to 74 year	177	27.75	31.42	9.26
Work experience (years):					**Work experience (years):**				
No	110	23.86			No	93	52.54		
Yes	351	76.14	10.64	10.40	Yes	84	47.46	4.83	7.66
University education:					**University education:**				
University Education	258	55.97			University Education	142	80.23		
Below University Education	203	44.03			Below University Education	35	19.77		
Entrepreneurship status:					**Entrepreneurship status:**				
Entrepreneurs	132	28.63			Entrepreneurs	15	8.47		
Non- Entrepreneurs	329	71.37			Non- Entrepreneurs	162	91.53		
Monthly income (SR):					**Monthly income (S.R.):**				
Less than 1000	26	5.64			Less than 1000	61	34.46		
1000 to 2999	21	4.56			1000 to 2999	12	6.78		
3000 to 4999	17	3.69			3000 to 4999	5	2.82		
5000 to 6999	48	10.41			5000 to 6999	14	7.91		
7000 to 8999	38	8.24			7000 to 8999	7	3.95		
9000 to 10999	56	12.15			9000 to 10999	17	9.60		
11000 to 12999	68	14.75			11000 to 12999	25	14.12		
13000 to 14999	44	9.54			13000 to 14999	15	8.47		
15000 or more	143	31.02			15000 or more	21	11.86		

Notes: *N* = 638, SR stands for Saudi riyal, SD stands for standard deviation.

Table 4.2: Sociodemographic statistics (Education)

University Education (*n*=400)					Below University Education (*n*=238)				
Variable	**Obs.**	**%age**	**Mean**	**SD**	**Variable**	**Obs.**	**%age**	**Mean**	**SD**
Gender:					**Gender:**				
Male	258	64.50			Male	203	85.29		
Female	142	35.50			Female	35	14.71		
Age:					**Age:**				
15 to 74 year	400	62.70	36.46	10.55	15 to 60 year	238	37.30	34.41	11.52
Work experience (years):					**Work experience (years):**				
No	113	28.25			No	90	37.82		
Yes	287	71.75	9.89	10.09	Yes	148	62.18	7.57	9.85
Entrepreneurship status:					**Entrepreneurship status:**				
Entrepreneurs	72	18.00			Entrepreneurs	75	31.51		
Non- Entrepreneurs	328	82.00			Non- Entrepreneurs	163	68.49		
Monthly income (S.R.):					**Monthly income (S.R.):**				
Less than 1000	47	11.75			Less than 1000	40	16.81		
1000 to 2999	19	4.75			1000 to 2999	14	5.88		
3000 to 4999	12	3.00			3000 to 4999	10	4.20		
5000 to 6999	18	4.50			5000 to 6999	44	18.49		
7000 to 8999	23	5.75			7000 to 8999	22	9.24		
9000 to 10999	43	10.75			9000 to 10999	30	12.61		
11000 to 12999	61	15.25			11000 to 12999	32	13.45		
13000 to 14999	45	11.25			13000 to 14999	14	5.88		
15000 or more	132	33.00			15000 or more	32	13.45		

Notes: *N* = 638, SR stands for Saudi riyal, SD stands for standard deviation.

Table 4.3: Risk-taking propensity and Islamic religiosity statistics (Gender)

Male (*n*=461)					Female (*n*=177)				
Variable	**Obs.**	**%age**	**Mean**	**SD**	**Variable**	**Obs.**	**%age**	**Mean**	**SD**
Risk taking:					**Risk taking:**				
Money investment (0 to 100,000 S.R.):					**Money investment (0 to 100,000 S.R.):**				
0	8	1.74			0	4	2.26		
10,000	12	2.6			10,000	18	10.17		
20,000	11	2.39			20,000	9	5.08		
30,000	39	8.46			30,000	21	11.86		
40,000	23	4.99			40,000	15	8.47		
50,000	184	39.91			50,000	72	40.68		
60,000	39	8.46			60,000	8	4.52		
70,000	54	11.71			70,000	8	4.52		
80,000	25	5.42			80,000	7	3.95		
90,000	12	2.6			90,000	15	8.47		
100,000	54	11.71			100,000	0	0		
Total	**461**	**100**			**Total**	**177**	**100**		
Islamic Religiosity (1 to 5 Likert scale):					**Islamic Religiosity (1 to 5 Likert scale):**				
<=1	0	0	0	0	<=1	0	0	0	0
>1 to =<2	1	0.21	1.52	.	>1 to =<2	0	0	0	0
>2 to =<3	1	0.21	2.52	.	>2 to =<3	0	0	0	0
>3 to =<4	100	21.70	3.80	0.19	>3 to =<4	33	18.64	3.76	3.54
>4 to =<5	359	77.88	4.37	0.21	>4 to =<5	144	81.36	4.40	0.25
Total	**461**	**100**	**4.23**	**0.34**		**177**	**100**	**4.28**	**0.34**

Notes: *N* = 638, SR stands for Saudi riyal, SD stands for standard deviation.

Table 4.4: Risk-taking propensity and Islamic religiosity statistics (Education)

University Education (*n*=400)					Below University Education (*n*=238)				
Variable	**Obs.**	**%age**	**Mean**	**SD**	**Variable**	**Obs.**	**%age**	**Mean**	**SD**
Risk taking:					**Risk taking:**				
Money investment (0 to 100,000 S.R.):					**Money investment (0 to 100,000 S.R.):**				
0	10	2.5			0	2	0.84		
10,000	14	3.5			10,000	16	6.72		
20,000	15	3.75			20,000	5	2.1		
30,000	38	9.5			30,000	22	9.24		
40,000	23	5.75			40,000	15	6.3		
50,000	156	39			50,000	100	42.02		
60,000	23	5.75			60,000	24	10.08		
70,000	45	11.25			70,000	17	7.14		
80,000	21	5.25			80,000	11	4.62		
90,000	8	2			90,000	4	1.68		
100,000	47	11.75			100,000	22	9.24		
Total	**400**	**100**			**Total**	**238**	**100**		
Islamic Religiosity: (1 to 5 Likert scale):					**Islamic Religiosity: (1 to 5 Likert scale):**				
<=1	0	0	0	0	<=1	0	0	0	0
>1 to =<2	0	0	0	0	>1 to =<2	1	0.42	1.52	.
>2 to =<3	1	0.25	2.52	.	>2 to =<3	0	0	0	0
>3 to =<4	80	20.00	3.79	0.17	>3 to =<4	53	22.26	3.79	0.19
>4 to =<5	319	79.75	4.38	0.22	>4 to =<5	184	77.31	4.38	0.23
Total	**400**	**100**	**4.25**	**0.33**	**Total**	**238**	**100**	**4.24**	**0.37**

Notes: *N* = 638, SR stands for Saudi riyal, SD stands for standard deviation.

Table 4.5: The effect of gender on the relationship between risk-taking propensity and Islamic religiosity

Variables	Risk taking Total sample	Risk taking Male	Risk taking Female
Religiosity	-4.384*	-4.993**	3.705
	(2.338)	(2.468)	(10.66)
Religiosity squared	0.546*	0.629**	-0.421
	(0.288)	(0.309)	(1.249)
Age	-0.00697	-0.00348	-0.0209
	(0.0102)	(0.0115)	(0.0257)
Female	-0.541**		
	(0.230)		
University education	0.303	0.289	0.393
	(0.200)	(0.224)	(0.467)
Work experience	0.251	0.249	0.226
	(0.237)	(0.278)	(0.469)
Entrepreneurs	0.906***	0.861***	1.398**
	(0.224)	(0.240)	(0.659)
Income	0.350***	0.301*	0.412**
	(0.114)	(0.159)	(0.183)
Constant	10.88**	12.30**	-6.614
	(4.910)	(5.206)	(22.61)
Observations	638	461	177
R-squared	0.111	0.065	0.119

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 4.6: The effect of education on the relationship between risk-taking propensity and Islamic religiosity

Variables	Risk taking Total sample	Risk taking Graduates	Risk taking Non-graduates
Religiosity	-4.384*	0.831	-4.787*
	(2.338)	(5.192)	(2.579)
Religiosity squared	0.546*	-0.0469	0.547*
	(0.288)	(0.624)	(0.327)
Age	-0.00697	-0.0136	0.00549
	(0.0102)	(0.0134)	(0.0163)
Female	-0.541**	-0.570**	-0.551
	(0.230)	(0.275)	(0.460)
University education	0.303		
	(0.200)		
Work experience	0.251	0.309	0.165
	(0.237)	(0.319)	(0.352)
Entrepreneurs	0.906***	1.063***	0.694**
	(0.224)	(0.314)	(0.319)
Income	0.350***	0.296**	0.405**
	(0.114)	(0.146)	(0.190)
Constant	10.88**	0.445	11.79**
	(4.910)	(10.87)	(5.477)
Observations	638	400	238
R-squared	0.111	0.094	0.159

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Chapter 5

The Effect of Religion on Income: Risk-taking Propensity as a New Channel

The Effect of Religion on Income:

Risk-taking Propensity as a New Channel

Abstract

While there is some literature exploring the relationship between religion and income and other studies of the association between religion and risk taking, no research appears to have tested the influence that risk taking as affected by religion has on individuals' income. Most of the economic literature has long treated risk-taking propensity as an exogenous predictor, excluding the possibility that risk taking itself might be influenced by other variables such as religious adherence. The aim of the study reported in this chapter is to fill this gap in the context of Islam. In doing so, we add a new channel through which religion might affect income. Using micro-level data collected from Saudi Arabia, a country dominated by Islam, this chapter reports the application of two-stage least squares (2SLS) estimation to address the possible endogeneity of the effect in question. We found that risk propensity as affected by Islamic religiosity had a positive relationship with income. These empirical findings provide evidence of the effects of Islamic religiosity on the relationship between risk taking and income.

5.1. Introduction

The economics literature reports some research into the use of a number of social variables such as religion to explain subsequent variations in economic growth. Barro and McCleary (2003) argue that if researchers wish to achieve a sound explanation of economic performance they are obliged to include political and social forces in their propositions. Although some economists and sociologists have explored the influence of religion on economic performance via such individual variables as work ethics (Weber, 1905), entrepreneurship (Audretsch *et al*., 2013) and wellbeing (Florea and Caudill, 2014), little is known about the influence of religion on economic outcomes such as national or household incomes. The available literature on the relationship between religion and income nevertheless reveals a number of direct and indirect channels through which religion might have an influence on the link between the two constructs. However, the mechanisms by which religion affects income are undetermined and have yet to be adequately explored. The study reported in this chapter is an attempt to extend the explanation of the influence of religion on income by proposing a new possible mechanism. We argue that economic income could be affected by the relationship between risk-taking propensity and religiosity, in other words, the strength and frequency of religious beliefs and behaviours. Noussair *et al*. (2013, p.167) affirm that it is important to identify "the nature of the connection between risk attitudes and religion" in order to fully understand "the mechanism underlying the effects of culture on economic outcomes." Thus, exploring this correlation is potentially valuable to promote an understanding of how religious beliefs and practices can shape economic performance.

The recent economic literature has recognised the role of risk-taking propensity in many of the most important economic processes. This conception can be seen as reflecting the central role played by risk propensity in individuals' income. The growing body of research which has conceptualised and empirically examined the relationship between the propensity towards risk taking and economic income or wealth is best characterised as following three tracks. One of these is taken by researchers who argue that having a greater willingness to take risky decisions is positively correlated with income (e.g. Dohmen *et al*., 2011). Another body of research into the relationship between risk propensity and income goes in the opposite direction, suggesting that risk-taking propensity might have a negative correlation with income (see Bouchouicha and Vieider, 2017). The third distinct group of contributors to this literature comprises those academics who stand against the notion that income distribution can be significantly determined by risk-taking propensity and who conclude that the relationship between risk and income is not statistically significant in either direction (Binswanger, 1980), contradicting the findings of the other two sets of researchers. Notwithstanding this tripartite distinction, however, most of the economic literature has long treated risk-taking propensity as an exogenous variable, excluding the possibility that risk taking itself might be influenced by other factors such as religion.

Despite the existence of a few empirical studies which report a significant correlation between religion and income (Lipford and Tollison, 2003, Bettendorf and Dijkgraaf, 2010, Beck and Gundersen, 2016) or between religion and risk taking (Miller and Hoffmann, 1995; Miller, 2000; Dohmen *et al*., 2011), the role of religion in the relationship between these two dimensions of the economic process—risk taking and individual income—has received very little attention and is virtually unexamined from

the perspective of Islam. Another limitation of this body of literature is that most such economic studies have been carried out in developed countries, while the role of religion in influencing economic processes in developing or less developed countries has received little attention in the recent empirical literature. This chapter can therefore be seen as an attempt to respond to both of the above mentioned gaps in the literature. It does so first by going beyond the narrow set of factors that have been shown to affect economic performance, through exploring the indirect influence of religion on individuals' income. Specifically, the component of the present study reported here seeks to elucidate the relationship between Muslims' risk-taking propensity and their monthly income, taking into account the role of Islamic religiosity as an important determinant of attitude to risk taking. Although we argue that Islamic religiosity is assumed to act positively on income, the primary interest of this work is not to explore the direct relationship between the Islamic religiosity of individuals and their income. Rather, the aim is to explore the influence of Islamic religiosity on Muslims' income through the channel of their risk-taking propensity. In other words, our study of the correlation between income and risk behaviour relies on the assumption that risk-taking propensity itself is an instrumental variable that can be determined by Islamic religiosity.

The main purposes of this third component study are to explore the influence of risk-taking propensity on Muslims' income and to determine how Islamic religiosity affects this relationship. The dependent variable in this enquiry is a categorical variable representing respondents' monthly income in a range from less than 1000 Saudi riyals to 15000 SR or more. The main independent variable measures the respondents' risk-taking propensity by asking them to indicate their willingness to take financial risky decisions. As with the parts of the study reported in Chapter 3 and 4, they were asked

to choose an amount of money between zero and 100,000 SR (in intervals of 10,000 SR) that they would be prepared to invest in an economic activity with a 50/50 chance of either getting back double the amount invested or losing half of it. However, as the independent variable is endogenous in our model, we used a composite mean score of 46 items to measure the respondents' Islamic religiosity in order to predict the fitted value of risk-taking propensity (new risk taking). As with the first and second component studies, the sample comprised 638 Muslim respondents recruited in the Kingdom of Saudi Arabia. To investigate the research proposition, we used two-stage least squares (2SLS) to estimate the endogenous effect of risk taking on Muslims' income. At the first stage, we used ordinary least squares (OLS) regression to predict the effect of Islamic religiosity on risk-taking propensity, then at the second stage, the fitted value (new risk taking) from the first regression was used to predict the experimental outcomes using 2SLS estimation. Our empirical findings indicate that the risk-taking propensity that was determined by Islamic religiosity (the first regression OLS) is positively associated with Muslims' income. In other words, respondents who were more willing to participate in making risky financial decisions were likely to earn a higher income.

The remainder of this chapter in divided into four sections. Section 5.2 reviews the extant literature on the role of risk-taking propensity in determining income and its association with religion. This review considers arguments for the possible influence of Islamic religiosity on Muslims' earned income via the channel of risk-taking propensity. Section 5.3 then explains the methods used in this study, describing the dataset and the variables to be measured. Next, section 5.4 presents the results, beginning with the descriptive statistics and concluding with the empirical analysis of the findings obtained from the OLS and 2SLS model estimations. Finally, Section 5.5 discusses the findings and

concludes with a consideration of some limitations of the study and suggestions of new directions for future research.

5.2. Literature review

5.2.1. Religion and income

Studies of the relationship between religion and economic development reflect a growing consensus that religious factors play an essential role in various economic processes and behaviours (Iannaccone, 1998). Weber (1930) argued in the early part of the last century that the prosperity of capitalism was due to the effects of Protestant beliefs and ethics, which he took to explain the relatively high incomes of Protestant countries at that time. Beed (2006, p.21) maintains the Weberian thesis that the relationship between religion and economy is "an enduring issue and specifically classifying relationships between the two disciplines is a periodic occurrence". However, the available literature also provides arguments for a reverse causality and raises the question of whether religion affects income or vice versa (McCleark, 2008). According to Welch and Mueller (2001, p.185), the assertion "that religion and economics are great forming agencies that shape the conduct of human affairs and the organisation of human society is largely undisputed. What is in dispute is their relationship to one another." This area of contention highlights the need for research to clarify the direction of causality, if any, in the relationship between religion and income.

This review begins by looking at those contributors to the literature who have put forward or examined the proposition that religion influences income. The results are mixed, in that scholars have neither achieved general agreement concerning the sign of the effect of religion on income nor consistently reported statistically significant results.

For example, Bettendorf and Dijkgraaf (2010), using data for twenty five countries taken from the European and World Value Survey, found that religion, as measured by church membership, had a positive effect on income for countries with high income and that this effect became negative when countries with low income were examined. Likewise, Lam and Hung (2005) investigated the relationship between income and ethics among different religions in China and report mixed results. The authors indicate that ethical Christians and non-religious groups correlated positively with high income, while income declined with adherence to traditional Chinese religions. When Florea and Caudill (2014) examined the correlation between religion and wellbeing using data from five European countries, namely Hungary, Bulgaria, the Czech Republic, Poland and Slovakia, they found that religious behaviours were positively associated with wellbeing. Beck and Gundersen (2016) investigated the relationship between religious denomination and income in Ghana, which they describe as one of the most religious countries in Africa. They report the interesting finding that among women who belonged to three particular religious denominations, Spiritualism, Methodism and Pentecostalism, their religious adherence had a positive association with earned income, which for these women was significantly higher than among Protestant women, by 21, 15 and 12 per cent respectively. In one of the few studies to approach the relationship between religion and income from an Islamic perspective, Campante and Yanagizawa-Drott (2015) explored the effect of the holy month of Ramadan on the economic growth of 167 countries. Although Muslims who fast during Ramadan exhibit high levels of happiness, the authors found a negative relationship between economic performance and participation in religious activities in Ramadan, which resulted in lower earnings, particularly in Muslim countries. However, the empirical investigation covered only the

holy month itself, while ignoring the economic activities of Muslims throughout the remaining eleven months of the year, which weakened the findings and might be seen as introducing some degree of bias. Squeira *et al*. (2017), using data on church attendance for 32 countries, conclude that religious beliefs and participation in religious activities have a nonsignificant negative association with household income as measured by GDP per capita. Likewise, exploring the relationship between religion and income in a number of Prussian counties, Becker and Woessmann (2013) found that income was not a causal driver of secularisation and conversely that religious participation had no significant effect on income.

While much of the literature reviewed above asserts that it is religion which has an influence (whether positive or negative) on income, this direction of causality is not always the case. Indeed, it is plausible that there is a causal relationship which runs in the opposite direction, from income to religion (Lam and Hung, 2005). For example, Parasca (2015), using data from a survey in Romania by Gallup International, explored how individuals' approach to religious participation depended on their level of education and the size of their income. Parasca found that individuals who earned a high income and had attained higher education qualifications had a lower tendency to engage in religious practices. Lipford and Tollison (2003), using data on per capita income and church membership in a number of US states, argue that people with higher income tend to participate less in religious activities because they substitute economic activity for religious participation. The empirical results that these authors report support their hypothesis.

Many of the teachings and rules of religions can be seen as potentially having either positive or negative effects on economic performance and income. The theoretical literature identifies a number of direct and indirect channels through which religion might have a significant influence on income (Njoku, 2014, Beck and Gundersen, 2016). First, the available literature reveals that a prospective direct effect of religion on household income might arise from the spouses' choices as to their participation in the labour market (Bettendorf and Dijkgraaf, 2010). Women in some societies, in keeping with the religious doctrines that they espouse, might opt for the traditional role that encourages women to stay at home and nurture the family, while leaving the role of breadwinner to their menfolk. Inglehart and Baker (2000) found that the household income of secular-rational countries tended to be greater than that of religious households in conservative countries where women's accepted role is to support men by taking care of the household. The second direct theoretical argument focuses on the allocation of time between religious activities and work. According to this argument, for any increase in time given to attendance at church, temple or mosque, to reading religious scripture or to performing pilgrimage, which is particularly relevant for Muslims (Campante and Yanagizawa-Drott, 2015), there will be less time available for them to devote to economic activities. In other words, religious participation reduces the adherents' income because of the expenditure of time that could otherwise be used to earn money (Bettendorf and Dijkgraaf, 2010). The final way in which religion can have a direct influence on income can be seen in the prohibition by religious rules of some types of financial transactions or trade, in particular, restrictions on buying and selling certain goods. Some religious teachings may thus discourage adherents from participating in potentially profitable economic activities, which would in turn have the effect of

reducing their income. The religious traditions of the Jewish faith, for example, forbid the consumption of foods that are not kosher, in other words, which do not meet the requirements of Judaism's strict dietary laws (Regenstein at al., 2003), while Hindus' veneration of cows excludes them from consuming beef (Alam *et al*., 2011). Similarly, under Islamic law, food must be halal and Muslims are forbidden to trade in any merchandise that *Shar'aiah* deems *haram* (proscribed), such as products containing alcohol or pork: ***"Forbidden to you (for food) are: Al-Maytatah (dead animals that have not been slaughtered), blood, the flesh of swine"*** [Al-Ma`idah 5: 3]. In addition, Muslims are prohibited from accepting usury when they intend to borrow money, conforming to the Quranic text of Surah Al-Baqarah, verse 275: *"… Allah has permitted trading and forbidden Riba (usury)"*.

On the other hand, it is possible that those religious beliefs and behaviours that stress the importance of social networking might have an indirect effect on individuals' earning. Religious groups are seen in some regions as providing an important channel of social capital (Gruber, 2005) and as contributing positively to income opportunities (Bettendorf and Dijkgraaf, 2010). For example, Keister (2003) found that members of the Jewish community in the United States earned higher wages and achieved a greater of accumulation wealth than adherents of other religious denominations because of the strength of their social networks. Among other explanatory variables, Grant and Rosenstock (2006) suggest that social networking can be seen to be an important factor that increases the standard of living of Mennonites in Canada. Contributors to another strand of the literature argue that some religious ethics and beliefs which are commensurate with the holding of a positive attitude towards economic growth can be shown to result indirectly in higher income. Weber (1930) ascribes the prosperity of

capitalism to the stimulus of the Protestant work ethic, which results, according to his analysis, in higher per capita incomes for inhabitants of Protestant countries. Steen (1986) found that some religious values such as honesty and discipline, when put into practice in the workplace, might indirectly have the positive effect of raising incomes. A final proposal of indirect causality between religion and income is that the relationship is driven by education. McCleark (2008) argues that the more highly educated people are, the less likely they are to manifest a high degree of religiousness. The common explanation for these findings is that people with higher education qualifications thereby obtain increased social capital. Iannaccone (1998, p.1470) claims that religion "is not the province of the poor or uninformed. In numerous analyses of cross-sectional survey data, rates of religious belief and religious activity tend not to decline with income". Moy and Lee (2002) argue that educational attainment could enable workers to gain well paid employment, along with improved career development pathways that will tend to increase their income accumulation. Black *et al*. (2015) discovered that each extra year of education increases involvement in the stock market and that extra educational attainment results in individuals keeping more financial assets.

All of the channels mentioned above emphasise some of the direct and indirect effects of religion on economic performance that result in the income of individuals either increasing or decreasing. However, the question of whether religious belief and practice tend to raise incomes or to reduce them remains unresolved and requires further empirical research if it is to be settled one way or the other (Lam and Hung, 2005). Guiso and his colleagues argue that "the complexity and variety of every religion make it impossible to reach any conclusion on purely theoretical grounds" and that "empirical work is plagued by identification problems" (Guiso *et al*., 2003 p: 231). These

problems of complexity and identification are illustrated by the fact that the literature refers to many different and sometimes incompatible classifications of the various components of the relationship between the two sets of factors. As a result, the mechanisms and channels through which religion may affect economic development—and individual income in particular—are undetermined and need more insight.

In response to this need, the component study presented in this chapter is an attempt to extend the explanation of the effect of religion on income by proposing a new possible indirect mechanism by which income can be determined by religion. We can add a new argument concerning the potential influence of religion on individuals' economic status and the size of their income via the mechanism of risk-taking propensity. This endeavour promotes the explanation of a possible link between religion and income from the Islamic perspective. The following section reviews the available literature and highlights the connections among religion, risk-taking propensity and income, with particular reference to the ways in which the distinguishing features of the Islamic religion may affect its role in this relationship.

5.2.2. Risk taking and income

Risk taking is considered to be a fundamental attitudinal precondition for economic growth (Hopland *et al*., 2016) and to be particularly helpful in attempts to understand and predict economic behaviour (Dohmen *et al*., 2011). Banerjee and Neuman (1993, p.275) state that "[the] distribution [of income and wealth] can affect saving, investment, risk bearing, fertility, and the composition of demand and production". Previous research has conceptualised and empirically examined various different aspects of the relationship between the propensity to take financial risks on

one hand and income or wealth on the other. A number of authors argue that the relatively poor performance of some nation's economies and the poverty of their populations can be explained by the proposition that high risk aversion leads to a reduction in the generation of income (Haushofer and Fehr, 2016, Gloede *et al*., 2013).

The prevalent view of contributors to the relevant empirical research, according to Bouchouicha and Vieider (2017), is that an inclination towards risk taking is positively correlated with income. For example, Dohmen *et al*. (2011) explored what determines the tendency to involve oneself in risky situations, using data from the German Socio-Economic Panel Survey. Dohmen and his colleagues found that income or wealth increased people's willingness to be involved in risky decisions, because "they cushion the impact of bad realizations" (Dohmen *et al*., 2011, 529). Likewise, when Bouchouicha and Vieider (2017) analysed a large dataset from the World Value Survey, collected from 78 countries with a median sample of 1200 responses per country, their findings revealed mixed results. The risk instruments that were used within the various countries asked the respondents about their willingness to take risks, while the measure used to compare the countries with one another was GDP per capita. While analysis of the individual level data was found to indicate a positive correlation between risk taking and income, the authors report that the correlation became negative when comparisons were made between countries. Again, the findings of the research into the relationship between risk and income are conflicting. Using a model of choice under risk as the basis of their analysis, Hopland *et al*. (2016) found that Norwegian people tended to be risk averse when they were faced with decisions that would affect their living standards and that those whose income was higher were more likely to accept financial risk.

However, many other scholars have explored this relationship and found mixed effects between risk and income. Cardenas and Carpenter (2013), for instance, explored this relation by connecting people's risk propensity with their accumulation of the resources that are needed for wellbeing. Using a sample of 3000 adults from six Latin American cities, Cardenas and Carpenter found a weak correlation between the two constructs. Likewise, Binswanger (1980) investigated 240 households in rural India and found that wealth tended to increase slightly in line with the propensity to take risks, but that this relationship was not statistically significant, so that they were unable to confirm or contradict the argument. Tanaka and Nguyen (2010) tried to answer the question of whether risk aversion and impatience can explain why some Vietnamese people remain poor. Their results suggest that people who lived in poor villages were less willing to take risks, while the status of living in a rich village was significantly positively correlated with risk taking.

Two important explanations of the inconsistent conclusions of the empirical work reported in the literature discussed above are a lack of adequate measurements of risk preferences and the unreliability of measures of income and wealth. Another weakness of this literature is that risk in the field of economics is treated as an exogenous factor, excluding the possibility that the risk behaviour itself might be formed by sociocultural factors such as religion. For example, Miller and Hoffmann (1995), Miller (2000), Dohmen *et al*. (2011) and Noussair *et al*. (2013) have modelled the risk behaviour of individuals as an important determinant of their religiosity. This stream of research, therefore, opens a new space for examining the indirect influence of religious traditions on the relationship between risk propensity and individual income. Therefore, we introduce a new hypothesis, that the religion of Islam tends to influence Muslims'

income indirectly, via its direct effect on risk-taking propensity. In the following section, a short review of the relationship between Islam and income is presented and our proposition is formulated.

5.2.3. Islam and income: the role of risk taking

While most of the available literature investigating the relationship between religion and economic growth is concerned with Christianity, Judaism and the various Eastern religions, there is scant literature on research into the effects of Islam on economic growth and therefore on income. Ul-Haq and Westwood (2012, p.229) assert that "Islamic management … is relatively under- and mis-represented in the literature"; similarly, it has been remarked that the effects of Islam on the economies of Islamic countries has been largely ignored by most of the mainstream economics and management journals (Gümüsay, 2014). Thus, exploring the influence of Islamic religiosity on an important economic outcome, viz. income, provides a fruitful opportunity to extend the available literature on the link between religion and economic performance.

There is broad agreement in the literature that adherence to various religions is correlated with economic outcomes and contributes to individual income in different ways; this study argues that Islam is alike in this respect. Abdel-Khalek (2011) affirms that Islam is similar to other religions in many ways and unique in others. Following the above argument that religions may influence income via both direct and indirect channels, it is valuable to highlight four such channels that exist from the perspective of Islam.

First, Islamic law is recognised as being progressive in nature and as fostering a number of positive attitudes toward prosperity (Gümüsay, 2014); thus, in Islam, economic development is seen as making a contribution to the welfare of society (Sadeq, 1987). In fact, all Muslims are encouraged to participate in productive economic activities and to earn an adequate income in order to support themselves, their dependents and members of the wider community. The Holy Quran encourages Muslims to maintain reasonable earning for the provision of the necessities and comforts of human life such as shelter, food, education and medical care. With direct relevance to the present study, Islam holds that the concept sustenance comes directly from God Almighty, via Quranic verses such as the following: ***"Verily, God is the All-Provider, Owner of Power, the Most Strong"*** [Adh-Dhariyat 51:58] and **"*O you who believe! Spend of that with which We have provided for you"*** [Al-Baqarah, verse 254]. In these and other related passages, the Arabic word *rizq* is used with the meaning of 'sustenance and provision through earning income' (Solihu *et al*., 2011).

Secondly, Islamic law speaks in favour of legitimately increasing income or creating wealth, as long it follows the requirements of Islam and does not harm Muslim society. For instance, equity in wealth, or income distribution, is a fundamental principle of *Shar'aiah*, derived from this declaration in the Quran:

> ***"What God gave as booty (Fai') to His Messenger (Mohammed) from the people of the townships, -- it is for God, His Messenger (Mohammed), the kindred (of Messenger Mohammed), the orphans, Al-Masâkin (the poor), and the wayfarer, in order that it may not become a fortune used by the rich among you."*** [Surah Al-Hashr, 59:7]

Thirdly, a number of studies reveal the importance of the work ethic in Islam and show how Islamic teachings encourage lawful business behaviour which in turn results in the generation of adequate income. For example, Tlaiss (2013) explores the Islamic business ethic among female entrepreneurs across four Arab Muslim countries in the Middle East region and reports the finding that these women pursued the goals of wellbeing in their lives and excellence in their business affairs. The author also states that Muslim women who adhered to Islamic values such as hard work, honesty, justice and benevolence perceived these values as instruments to success and concludes that these women shared positive attitudes to the role of Islamic business ethics in the workplace. In light of the Weberian thesis, Arslan (2001) examined five dimensions of the Protestant work ethic, namely hard work, use of time, money saving, locus of control and attitude towards leisure, among British Protestants, Irish Catholics and Turkish Muslims. The significant finding was that the Muslim sample scored more highly on these variables, followed by the Protestants and then the Catholics. Using a quantitative approach to examine the relationship between Islam and socially responsible business conduct (SRBC), Graafland *et al*. (2006) found that Muslim entrepreneurs in the Netherlands showed evidence of a positive attitude to different elements of SRBC such as wellbeing, compliance with legal obligations and support for social projects in the local community.

The fourth channel by which religion is thought to have an effect on income concerns the role of educational attainment. Arguments asserting and seeking to explain the impact of religion on educational attainment are well established and have been widely rehearsed in the literature (Arias-Vazquez, 2012; Hungerman, 2014). Becker (2009, pp.15-17) states that education and training constitute “the most important

investment in human capital" and that "schooling, computer training courses, expenditure on medical care, and lectures on the virtues of punctuality and honesty are capital too in the sense that they … raise earnings". From the Islamic point of view, the importance of education and knowledge is established from the first word of the Holy Quran as revealed to the Prophet Mohammed (pbuh). As noted in earlier chapters, the sacred text begins with these words: ***"Read! In the Name of your Lord"*** [Al-Alaq 96:1]. Islamic law requires all Muslims to learn about all aspects of their lives, including what to eat and drink, how to dress and behave (Adeleye, 1983). It is apparent that Islamic laws provide the basis for education by encouraging Muslims to increase their knowledge. In other words, education and the acquisition of knowledge are central to the Islamic view of life (Khan and Sheikh, 2012). The capabilities that education provides will help individuals to think and to distinguish between right and wrong, furnishing them with the knowledge of how to analyse situations and make decisions. McClear (2008, pp.48-49) puts it like this: "Educated people engage in speculative reasoning and are better able to think abstractly. Therefore, religion can offer something to them". Thus, Islamic teachings matter for peoples' income though their acquisition of skills that will reward them in terms of their future livelihood.

We can conclude that *Shar'aiah* law is compatible with economic growth and stimulates a positive correlation between its teachings and the generation of income. However, whilst we argue that Islamic religiosity is assumed to correlate positively with income, the primary interest of this chapter is not to explore any purported direct relationship between Islamic religiosity and individuals' income. Rather, the study reported here is concerned with the indirect influence of Islamic religiosity on Muslims' income through the channel of risk-taking propensity. In other words, our study of the

correlation between income and risk behaviour relies on the assumption that risk-taking propensity is an exogenous variable that can be determined by Islamic religiosity. The following paragraphs connect religion with risk-taking propensity and set out the hypothesis which this study is designed to test.

In the first component study of the present research, reported in Chapter 3 of this thesis, we reviewed the available literature on religion and risk theory, concerning how the beliefs and behaviours associated with religions influence the risk-taking propensity of their adherents. One strand of research into the effects of religion on risk propensity suggests a negative linear correlation between religion and risk (Miller and Hoffmann, 1995, Hilary and Hui, 2009). The associated body of literature argues that risk preference is a significant predictor of religiosity through the mechanism of secularisation. However, the evidence of a negative relationship between religion and risk propensity, albeit strong, comes predominantly from studies of Western religions and is thus limited in terms of generalisability.

A contrasting strand of research is concerned with arguments about the effect of Islam on risk-taking propensity. Since the early work of Weber, indicating that Protestantism had a positive impact on capitalism via its work ethic, but asserting that this did not apply to Islam, a number of scholars have claimed that adherence to Islam is negatively correlated with economic prosperity and Islamic law is a deterrent to risk propensity (e.g. Bartke and Schwarze, 2008b, Jiang *et al*., 2015, McManus *et al*., 2007). Within this body of work on the question of the possible influences of Islamic religiosity on risk propensity, however, there is a handful of studies which affirm the operation of the opposite effect. Audretsch *et al*. (2013), for instance, suggest that the principle of

risk sharing in Islamic banking models indirectly provides incentives for risk taking. Gümüsay (2014, p.5) argues that Islam should be considered an "entrepreneurial religion" because it encourages entrepreneurial traits such as innovation, opportunity pursuit and risk taking. Further, as Hassan and Hippler (2014) have observed, Muslims are often motivated to take riskier decisions in order to maximise their profits. This proposition was examined in Chapter 3 of this thesis, where we analysed the influence of Islamic religiosity on Muslims' risk behaviour and reported findings confirming that religion is an important predictor of risk behaviour. We found that Muslims who show evidence of practising *toakul* (i.e. trust in God Almighty) thereby exhibit a high level of Islamic religiosity, which is correlated positively with risk-taking propensity.

Given that religious teachings appear to influence the risk-taking propensity of individuals (Miller, 2000; Dohmen *et al*., 2011 Noussair *et al*. 2013, Audretsch *et al*., 2013, Hassan and Hippler, 2014) and that their income has been shown to be influenced by their tendency to take financial risks (Hopland *et al*., 2016, Bouchouicha and Vieider, 2017), it is reasonable to hypothesise an indirect link between religion and income through the channel of individuals' propensity to involve themselves in taking risky decisions. This study attempts to promote the explanation of the influence of religion on peoples' income through the mechanism of risk-taking propensity from the Islamic perspective. Based on the above review of literature, we can add a new argument concerning a possible indirect channel whereby the effect of religion on individuals' economic status and their income level operates through the mediation of their risk-taking propensity. Therefore, it is hypothesised that Muslims' risk-taking propensity, as determined by the strength of their Islamic religiosity, is correlated positively with their income.

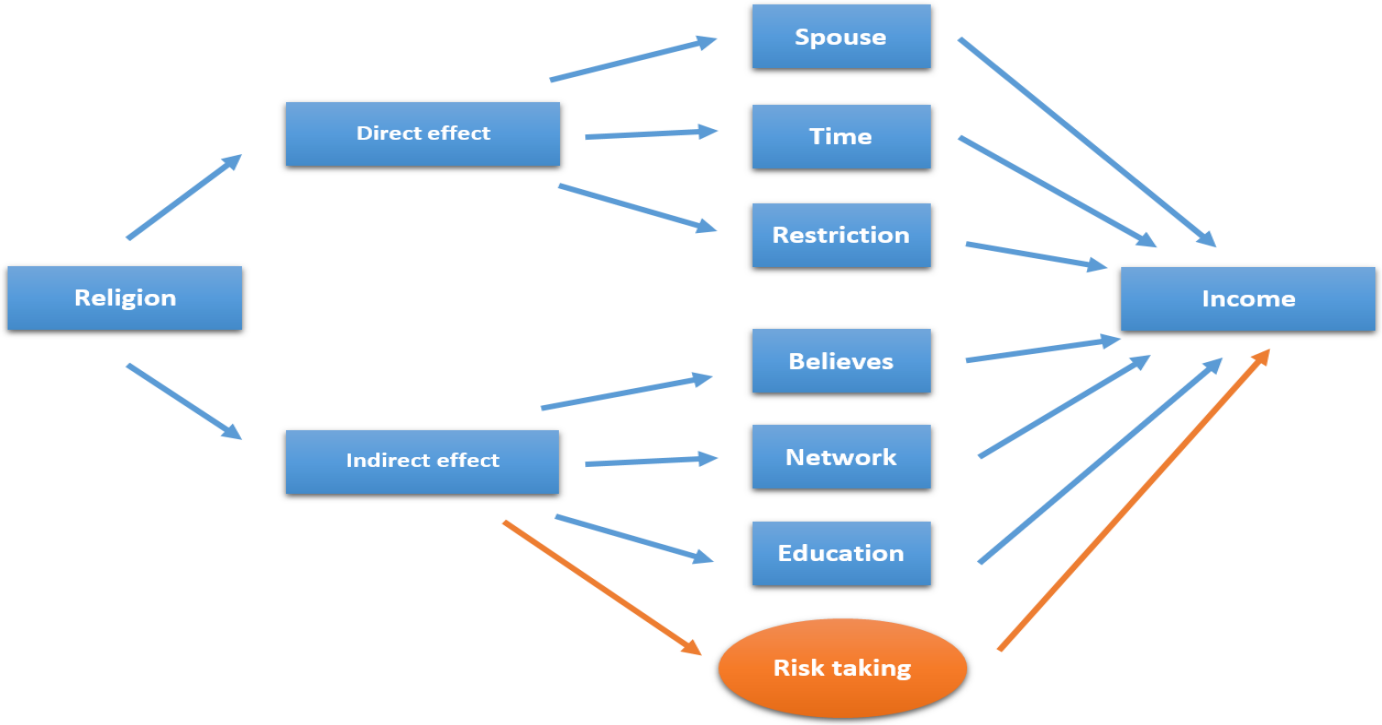

Figure 5.1: The proposed relationship between Islamic religiosity and income compiled by the author

5.3. Methodology

5.3.1. Dataset

To analyse the influence of religion on individual income via the channel of risk taking, we conducted a survey in the Kingdom of Saudi Arabia. This choice of the country in which to undertake the study was based on a number of considerations. First, Saudi Arabia is identified with Islam and has a special religious status in the Islamic world as the place where the religion and its sacred text, the Quran, were revealed to its founder, Mohammed, and as the site of two of Islam's holiest mosques, at Mecca and Medina. Second, Saudi Arabia has Islamic law as the basis of its state constitution and thus of its political and judicial systems. Finally, the strong religiosity of the population has created a suitable environment for the Saudi government to apply Islamic law in ways that may be seen as restrictive from a social and political perspective. It is widely perceived and largely accepted that Saudi Arabia is the most traditional and sanctified Muslim country. More than 90 per cent of its inhabitants are Arabs and almost all are Muslims (Agency, 2013).

Paper-based and online questionnaires were considered preferable for data collection in this study. The original questionnaire was developed in English. However, as Arabic is the first language in Saudi Arabia and most of the respondents would not be expected to understand English, it was translated into Arabic by a professional translator, using the mechanism of forward and backward translation as recommended by Graham *et al.* (1994). The final questionnaire was distributed to 1000 Muslims in Saudi Arabia. After several steps of data cleaning, a total of 639 questionnaires, corresponding to a response rate of 63.9%, were received and included in the analysis.

This is consistent with the advice of Tabachnick *et al.* (2001) that a sample size of 500 to 1000 can be considered very good (See Chapter 3, Section 3.3 for more details).

5.3.2. Variables

5.3.2.1. Measures of Islamic religiosity (instrumental variable)

Although most of the available measurements of religiosity have been designed to suit predominantly Christian beliefs or at best adapted for use within a non-Muslim context (Hill and Hood, 1999), it was possible to produce a credible instrument to measure Islamic religiosity by combining elements of three existing scales to capture as much as possible of the Islamic religious commitment amongst respondents. As detailed in Chapter 4, Section 4.3.5.1, the largest element was a religiosity scale comprising thirty five items designed to measure Muslims' beliefs and behaviours (Alsanie, 1989). These concerned the degree to which individuals were committed to the five pillars of Islam, such as "I believe there is no God but Allah" and to the six pillars of the Islamic faith, such as "I believe in heaven", as well as their obedience to Islamic law, such as "I recite the Holy Qur'an". Seven more questions were adapted from the Muslim Religiosity-Personality Inventory and four were adapted from the World Value Survey. For each of the 46 items, respondents were asked to rate the extent of their agreement with a statement, using a Likert scale from one to five. The three scales were combined into a composite mean score to measure the respondents' religiosity, which therefore had a total possible score ranging from 46 to 230, with a higher score representing a greater degree of Islamic religiosity. Some of the original items were modified to fit the context of this study. The reliability of the scale was calculated using Cronbach's alpha for all constructs. The overall alpha value for the scale was 0.89, which can be considered to

represent high reliability, being well above the cut-off value of 0.7 (Hinton *et al*., 2014). Appendix 1 lists the questionnaire items used to measure the Islamic religiosity variable.

5.3.2.2. Measures of risk-taking propensity (independent variable)

Lumpkin and Dess (1996) emphasise the importance of distinguishing between different types of risk when conducting economic research. This study uses the term 'risk' in the context of financial risk-return or trade-off, where individuals make a risky decision when they have a probability of losing money or of facing a negative outcome. As a measure of participants' risk-taking propensity, they were asked one question concerning their willingness to take risks on an eleven-interval scale. The question, which was adapted from Block *et al.* (2015), asked respondents to choose an amount of money between zero and 100,000 SR (in intervals of 10,000 SR) that they would be prepared to invest in an economic activity which gave them a 50/50 chance of either getting back double the amount invested or of losing half of it. This interval was chosen to allow comparisons among participants (Bhattacherjee, 2012), to keep the questionnaire quick and simple to respond to and to make the responses comparable with the results of prior research. This instrument for testing risk-taking propensity had been validated in an earlier field experiment (Dohmen *et al.*, 2011) and used in a number of published studies (Jaeger *et al.*, 2010; Dohmen *et al.*, 2011). Appendix 1 reproduces the exact question.

5.3.2.3. Measures of income (dependant variable)

The dependent variable in the estimation model was the logarithm of individuals' monthly income, measured by a questionnaire item with nine alternative responses, from less than 1000 SR to 15000 SR or more. Table 5.3 profiles the respondents in terms

of the income variable. We included in our regression all potential sources of income derived from working in the public or private sectors, business ownership, retirement, unemployment and student status.

This study controls for a number of sociodemographic variables that might have influenced individuals' response. We asked the respondents to indicate their gender, age, level of education, work experience and entrepreneurship status (measured by owning a business). Gender, level of education, work experience and entrepreneurial status were measured by dummy variables (0/1). To control for respondents' age, we used a continuous variable measured in years. Table 5.1 profiles the respondents in terms of these sociodemographic variables.

5.4. Results

5.4.1. Descriptive statistics

Table 5.1 lists the sociodemographic characteristics of the sample in terms of percentages, means and standard deviations. It shows that almost three quarters of the respondents were males and that their ages ranged between 15 and 74 years, with an average of 35 years. In terms of educational background, a little less than two thirds (63 %) had bachelor's or postgraduate degrees, while the remainder had obtained a diploma or a lower level qualification. When asked about their work and entrepreneurial status, just over two thirds reported some previous work experience, while 23 per cent of the sample stated that they owned businesses.

Table 5.2 shows the distribution of respondents by risk-taking propensity (the independent variable) and by Islamic religiosity (the instrumental variable). Results on

risk taking indicate that by far the most popular choice of investment amount, chosen by 40 % of the sample, was the medial option of 50,000 SR, while a quarter chose to invest less than that figure and the remaining one third opted to invest more. The five central options, from 30,000 to 70,000 SR, account for around three quarters of the total responses, which denotes that the majority of the Muslims in this sample preferred to take a moderate risk when they had the chance to invest money in a 50/50 win/loss opportunity. However, eleven per cent of the respondents took the highest risk choice, whereas fewer than two per cent elected not to risk any money on this opportunity. The overall mean value invested for the sample was 53,896 SR, with a standard deviation of 23,970 SR. The fact that the standard deviation value is relatively high as a proportion of the mean for the total sample indicates that the responses tended to vary considerably from one participant to another. In other words, individual scores were relatively scattered around the total mean value. This indicates that participants' responses diverged to a certain extent, in terms of their propensity to take risks when making financial investment choices. These results are illustrated graphically in Figure 5.3.

As to the measurement of Islamic religiosity, on five-point Likert scale derived from the overall mean score on the 46 religiosity scale items, the data in Table 5.2, illustrated by the histogram in Figure 5.2, show that almost four fifths of the respondents (78.7 %) scored between 4 and 5, which indicates that they had high Islamic religiosity, while more than a fifth scored between 3 and 4, leaving only two respondents whose religiosity score was below 3 and none who scored as low as one. The overall mean of the respondents' religiosity scores was 4.25, with a standard deviation of 0.34.

Table 5.3 shows the detailed distribution of monthly income statistics, including log values, frequencies and percentages, while Figure 5.4 displays the frequencies of the mid-point values of this dependent variable in the form of a histogram. A quarter of the sample (25 %) can be seen to have an income in the highest category of 15000 SR or more, while 13 % indicated that they earned less than 1000 SR. A further 25 % of the sample earned between 1000 SR and 10999 SR, while 35 % stated that their income was between 11,000 SR and 14,999 SR per month.

5.4.2. Empirical analysis

In order to test our proposition, we performed an ordinary least squares regression analysis to capture the relationship between risk taking and Islamic religiosity amongst the sample. In this regression, we included a quadratic linear model to test the influence of Islamic religiosity on risk-taking propensity (see Chapter 3 for more details). We omitted the income variable from this regression, due to its redundancy in the second stage. The OLS regression formula is:

$$\textit{Risk taking} = f(\textit{Religiosity} + \textit{Religiosity}^2 + \textit{Controls}) + \varepsilon.$$

$$y = \beta_1\chi_1 + \beta_{2(\chi_1)2} + \beta_3\,(\textit{Gender}) + \beta_4\,(\textit{Marital status}) + \beta_5\,(\textit{Age}) + \beta_6\,(\textit{Education}) + \beta_7\,(\textit{Work experience}) + \beta_8\,(\textit{Entrepreneurs status}) + \varepsilon.$$

Our main analysis is based on the assumptions that risk taking is an endogenous variable that can be predicted by Islamic religiosity. To account for this endogeneity, we apply the two-stage least squares regression method in testing for potential endogeneity, where Islamic religiosity is the instrumental variable for predicting risk-taking propensity. This method operates in two stages to estimate the value of an

endogenous variable (Wooldridge, 2010). In the first stage, risk taking was regressed with Islamic religiosity and some other explanatory variables, which we assume to influence risk-taking propensity. The estimated value of this model was then used as a dependent variable in the second stage of the regression. The first stage of the 2SLS estimation had this form:

$$\textit{Risk taking} = f(\textit{Religiosity} + \textit{Religiosity}^2 + \textit{Controls}) + \varepsilon.$$

$$y = \beta_1\chi_1 + \beta_2(\chi_1)_2 + \beta_3\,(\textit{Gender}) + \beta_4\,(\textit{Martial status}) + \beta_5\,(\textit{Age}) + \beta_6\,(\textit{Education}) + \beta_7\,(\textit{Work experience}) + \beta_8\,(\textit{Entrepreneurs status}) + \varepsilon.$$

The second stage was as follows:

$$\textit{Income} = f([\textit{Risk taking} = f(\textit{Religiosity} + \textit{Religiosity2} + \textit{Controls}) + \varepsilon] + \textit{Controls}) + \varepsilon.$$

$$Y = [y = \beta_1\chi_1 + \beta_2(\chi_1)_2 + \beta_3\,(\textit{Gender}) + \beta_4\,(\textit{Martial status}) + \beta_5\,(\textit{Age}) + \beta_6\,(\textit{Education}) + \beta_7\,(\textit{Work experience}) + \beta_8\,(\textit{Entrepreneurs status}) + \varepsilon] + \beta_2\,(\textit{Religiosity}) + \beta_3\,(\textit{Gender}) + \beta_4\,(\textit{Martial status}) + \beta_5\,(\textit{Age}) + \beta_6\,(\textit{Education}) + \beta_7\,(\textit{Work experience}) + \beta_8\,(\textit{Entrepreneurs status}) + \varepsilon.$$

To investigate the endogeneity assumption, the Durbin–Wu–Hausman test was performed. The null hypothesis, in which the risk-taking variable is exogenous, was rejected at $p < 0.01$. This result confirms the endogeneity in our model, indicating that risk taking is a variable driven by Islamic religiosity.

We began our analysis by calculating the correlation between the main variables of our regression and the variance inflation factors (VIFs), as reported in Table 5.5. The

VIF test was performed to measure the degree of multicollinearity of the relationship between the independent and dependent variables (O'Brien, 2007). The VIF values indicate that there is no multicollinearity in our model (maximum VIF = 1.27), except for religiosity and religiosity squared, regarding the square value. To test the proposition that income is determined by risk-taking propensity as affected by Islamic religiosity, we estimated a 2SLS regression. In the first stage, as noted above, we regressed risk-taking propensity as dependent variable with Islamic religiosity and religiosity squared, the independent variable, to test the relationship between the two constructs. At this stage, the results suggested a quadratic (U-shaped) relationship between risk taking and Islamic religiosity. The religiosity term was negatively significant at the level of $p < 0.05$ and the religiosity squared term was positively significant at the level of $p < 0.05$, which suggests that the effect takes the form of a nonlinear relationship. The difference in sign between the estimated regression of risk taking with Islamic religiosity and with Islamic religiosity squared indicates that this relationship is U-shaped. In other words, at low levels of religiosity, the slope of the relationship is negative, to the point that the relationship reaches its minimum value. This precisely states that overall risk taking decreases initially and then increases after the minimum has been reached. Furthermore, the U-shape was found to remain statistically significant when we added the control variables into the equation (see Table 5.6 for more details).

At the second stage, we used the amount of monthly income as the dependent variable and the amount of money invested in the proposed risky economic activity as the independent variable. According to Table 5.6, there is a positive and significant correlation between risk taking and income. The coefficient is positive (0.360) and significant at the level of $p < 0.1$. This result indicates that an increase in risk-taking

propensity will increase the respondent's monthly income, after controlling for all other sociodemographic variables. The correlation is positive and significant between monthly income and the control variables at the level of $p < 0.01$ in regard to age and work experience, but is negative and insignificant for females. Furthermore, each of the sociodemographic characteristics was found to have a significant effect on income. T-test and mean values were calculated to analyse differences in income within the control groups. Male respondents were found to have higher incomes than females ($p < 0.01$). The same is true for respondents who had previous work experience, for those with a university level of education and for the ones who owned businesses. Table 5.3 gives the details of income distribution and Table 5.4 lists the results of these *t*-tests.

5.5. Discussion and conclusion

The literature in the fields of economics and psychology provides some insights into the role of religion as a contributor to economic growth, mostly based on studies conducted in developed countries. Another limitation of the body of available studies on the relationship between religion and economic growth is a predominant focus on religions that are dominant in the West, such as Christianity and Judaism (Ayanian *et al*., 2015; Adhikari and Agrawal, 2016), while the effect of the Islam on economic growth has been the subject of little research. Thus, this study contributes to one aspect of this neglected literature by exploring the effect of Islamic religiosity on Muslims' income.

There have been a number of previous attempts to explore the effect of religion on economic performance (Beck and Gundersen, 2016). A major strand of this literature argues that there are several direct and indirect channels by which religions might influence income (Beck and Gundersen, 2016). Some scholars have presented

theoretical arguments to the effect that religion might influence income in direct ways such as spouses' choice of occupation, time allocation and the restriction of some financial transactions. On the other hand, religion may have indirect effects through social networks, some religious beliefs and behaviours, or educational attainment. However, Bettendorf and Dijkgraaf, (2010, p.23) assert that "the income effects of religion are theoretically undetermined" and conclude that "adding evidence from other countries would improve the understanding of the relation between religion and income in general". Therefore, the novel contribution of this study is to suggest a new alternative mechanism for the impact of religion on individuals' income. We argue that Islam might affect the distribution of its adherents' income through the channel of their willingness to engage in taking financial risks . We have proposed a positive linear relationship between Islamic religiosity and Muslims' income. To the best of our knowledge, this is the first empirical study to investigate the endogenous effect of risk taking on income from an Islamic point view. To test our proposition, we used 2SLS methodology to estimate the effect of risk taking on respondents' income in Saudi Arabia, a country dominated by adherence to Islam.

Islamic law encourages Muslims to maintain sustainable earnings (rizq) to cover their expenses by lawful means. The relevant passage of the Holy Quran commands: *"O you who believe! Spend of that with which We have provided for you"*. Although we claim that there is a direct and positive correlation between Islamic religiosity and income (see Table 5.7), the purpose of this final study was not to test the direct effect of Islamic religiosity on Muslims' income, but instead to explore its indirect effect on income through the channel of risk-taking propensity. In the first place, the empirical results indicate that the risk-taking propensity of participants as determined by the strength of

their Islamic religiosity correlates positively with their monthly income. The results of the first stage of the regression model show that Islamic religiosity has a U-shaped relationship with risk-taking propensity. This finding runs contrary to the assertion in the literature, discussed in some detail in Chapter 3, that adherence to Islam is negatively associated with risk taking (Miller and Hoffmann, 1995; Miller, 2000; Jiang *et al*., 2015). The first stage findings have further significance in confirming the instrumental role of Islamic religiosity in determining Muslims' risk-taking propensity. The results of the Durbin–Wu–Hausman test for the two-stage procedure suggest that our model is valid in that risk taking is an endogenous variable that depends on Islamic religiosity. The estimation from the second stage of the regression model yields a significant linear effect of risk taking on respondents' monthly income after controlling for sociodemographic variables. Our empirical findings are consistent with those of Bouchouicha and Vieider (2017), Tanaka and Nguyen (2010) and Dohmen *et al*. (2011), all of whom conclude that religion is positively correlated with income. However, our findings have added a new insight: that risk-taking propensity is an endogenous variable in our empirical analysis and that it is affected by a determined variable, namely Islamic religiosity. The analysis also provides some insight regarding the sociodemographic variables in our model.

The fact that this study was restricted to one region prompts the suggestion that in order to develop a better understanding of the relationship between Islamic religiosity and income, future research might usefully broaden its scope by combining data gathered in different Islamic countries. This diversity of data would allow researchers to test for religious heterogeneity and to explore the role of culture in understanding Islamic teachings, since, as Noland (2005, p.1228) affirms, "Islam, like all

religions, changes over time and space. It is possible that one could obtain differing results from another time period, [or] a different country sample." Furthermore, there are other opportunities for future research which the present study brings to light. It might be fruitful for future research to examine whether the relationship established here is present in different religions or in the various doctrinal strands of one religion. Another potential area for further research is the inclusion of additional cultural factors such as those present in different regions which might influence Islamic religiosity. Controlling for more cultural variables would allow researchers to gain broader and more reliable insights.

Three specific limitations of this study must be acknowledged. Although it used the 2SLS approach to test the endogenous effect between risk-taking propensity and income, it may be that its outcomes were driven by an endogenous effect between Islamic religiosity and income. This means that it is as likely that different levels of income may influence individuals' religiosity as is the reverse causality, where it is religion which influences income. Second, our analysis of the relationship between risk taking and income uses the term 'risk' in the context of finance. In order to generalise the findings of the effect of Islamic religiosity on risk-taking propensity and income, and to solidify this tripartite relationship, researchers might explore the propensity to take other types of risk. The third limitation is that although the sample size of 638 is considered to be representative (Tabachnick *et al*., 2001), the empirical findings are limited and cannot be generalised to the entire Muslim population. While recognising these limitations, we consider our findings to represent a starting point for the exploration of the relationship between religion and income through the mechanism of risk-taking propensity.

The theme of our analysis is based on the assumption that Islamic law is not incompatible with economic development, as has often been claimed (Zelekha *et al*., 2014, Kuran, 2008b, Perkins, 2003). The empirical results presented in this chapter confirm this assumption by linking Islamic religiosity, which is built upon compliance with Islamic law, with the distribution of income amongst Muslims. In sum, Islamic religiosity tends to contribute positively to the economies of Muslim countries by its influence on two main constructs, risk-taking propensity and income. We can conclude that the present findings are consistent with the assertion of a number of scholars that Islam is not merely a religion in the sense of a set of beliefs, rules and practices related to worship, but a way of life (Wong, 2007; Vargas-Hernández *et al*., 2010; Tlaiss, 2013; Ullah *et al*., 2013; Aminuddin *et al*., 2014).

Table 5.1: Sociodemographic statistics

Variable	Observation	%age	Mean	Standard Deviation
Gender:		100		
Female	177	27.83		
Male	461	72.64		
Age:		100		
(15 to 74 years)			35.75	11.06
University education:		100		
No	238	37.30		
Yes	400	62.70		
Work experience (years):			9.02	10.05
No	203	31.77		
Yes	436	68.23	13.22	9.62
Entrepreneurs:		100		
No	491	76.96		
Yes	147	23.04		

Notes: *N* = 638.

Table 5.2: Risk-taking propensity and Islamic religiosity statistics

Variable	Observations	Percentage	Mean	Standard deviation
Risk-taking in investment (0 to 100,000 SR):				
0	12	1.88		
10,000	30	4.70		
20,000	20	3.13		
30,000	60	9.40		
40,000	38	5.96		
50,000	256	40.13		
60,000	47	7.37		
70,000	62	9.72		
80,000	32	5.02		
90,000	12	1.88		
100,000	69	10.82		
Total	**638**	**100**	**53,896**	**23,970**
Islamic religiosity (1 to 5 Likert scale):				
<=1	0	0	0	
>1 to =<2	1	0.15	1.52	
>2 to =<3	1	0.15	2.52	
>3 to =<4	133	20.81	3.77	0.18
>4 to =<5	503	78.71	4.38	0.22
Total	**638**	**100**	**4.25**	**0.34**

Notes: *N* = 638.
SR: Saudi riyal

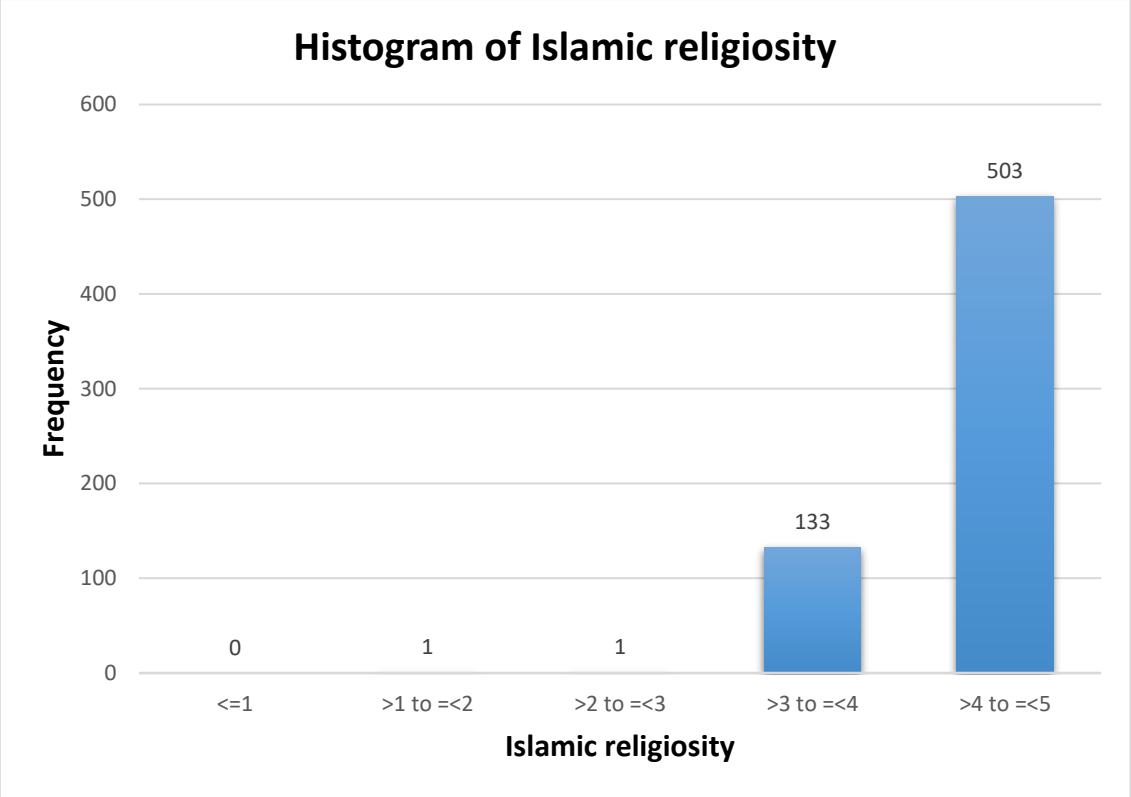

Figure 5.2: Histogram of Islamic religiosity

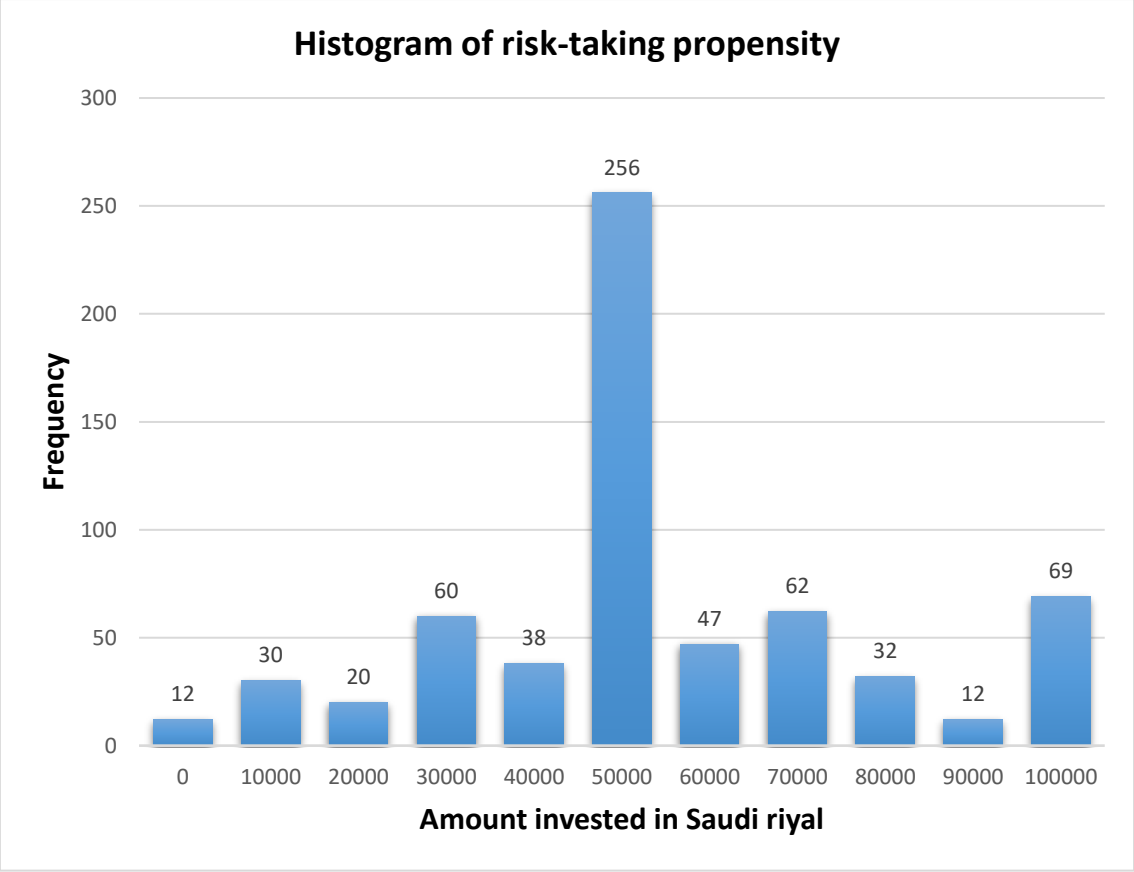

Figure 5.3: Histogram of risk-taking propensity

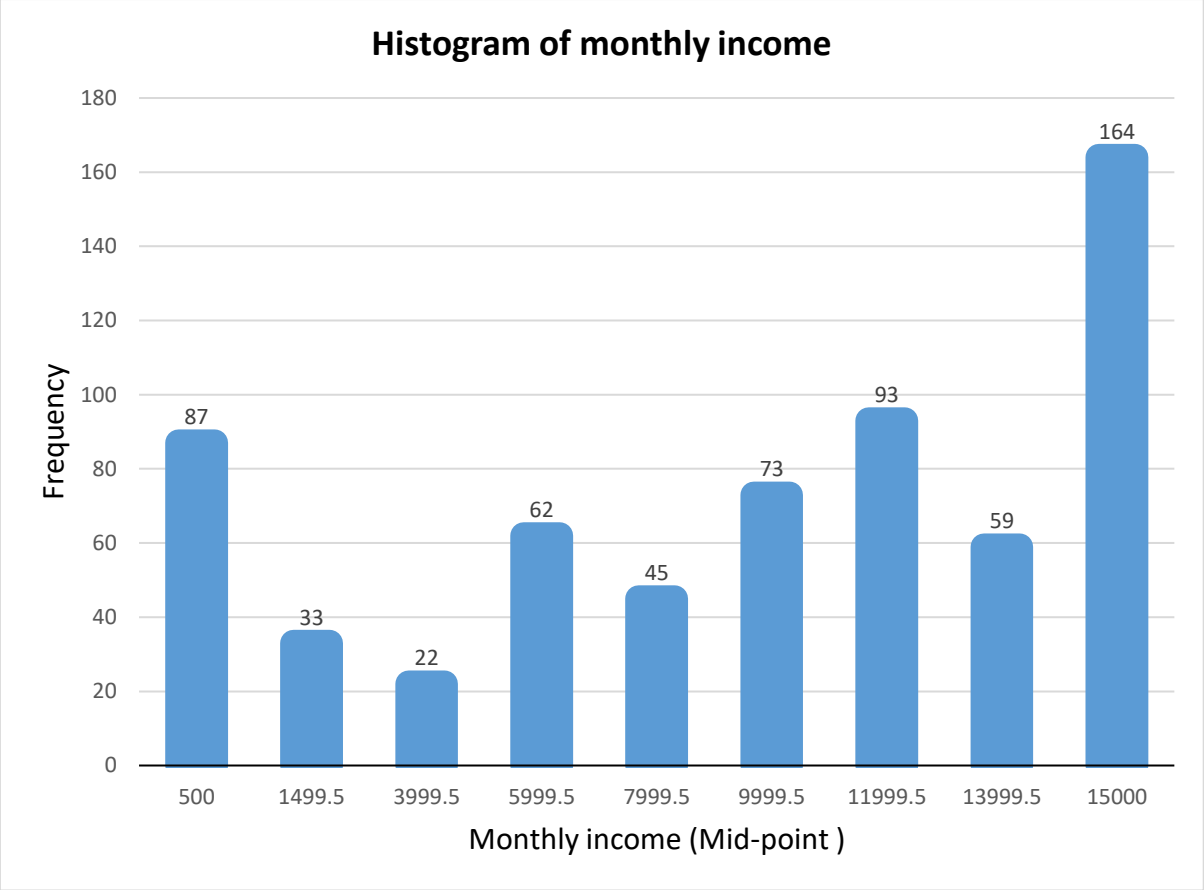

Figure 5.4: Histogram of income

Table 5.3: Distribution of monthly income

Monthly income (SR):	Mid-point	Log income	Freq.	Percent
Less than 1000	500	6.214	87	13.62
1000 to 2999	1499.5	7.312	33	5.16
3000 to 4999	3999.5	8.293	22	3.44
5000 to 6999	5999.5	8.699	62	9.70
7000 to 8999	7999.5	8.987	45	7.04
9000 to 10999	9999.5	9.210	73	14.71
11000 to 12999	11999.5	9.392	93	14.58
13000 to 14999	13999.5	9.546	59	9.23
15000 or more	15000	9.615	164	25.67

Note: *N* = 638, SR: Saudi riyal

Table 5.4: Results of t-tests

Variable	Groups	Obs.	Mean[a] (*M*)	*S.D.*	*p*-value[b]
Age (40 Years)[c]	No	341	8.27	1.29	*P*<0.001
	Yes	297	9.33	0.57	
Female	No	461	9.034	0.877	*P*<0.001
	Yes	177	8.076	1.464	
University education	No	238	8.540	1.182	*P*<0.001
	Yes	400	8.904	1.116	
Work experience	No	203	7.809	1.433	*P*<0.001
	Yes	435	9.216	0.606	
Entrepreneur	No	491	8.630	1.248	*P*<0.001
	Yes	147	9.230	0.553	

Notes: *N* = 638.
[a] The logarithm of individuals' monthly income.
[b] The *p*-value refers to *t*-test of the equality of means.
[c] With continuous variables, the mean is used to construct the groups.
SD = standard deviation.

Table 5.5: Correlation and variance inflation factors (VIFs)

Variables	1.	2.	3.	4.	5.	6.	7.	*8.*	*9.*	*VIF*
Income[a]	1.0000									
Risk taking[b]	0.2658	1.0000								
Islamic religiosity	0.1010	0.0170	1.0000							81.63
Islamic religiosity^2	0.1082	0.0252	0.9938	1.0000						81.39 [c]
Age	0.5878	0.1428	0.1257	0.1336	1.0000					1.26
Female	-0.3718	-0.1889	0.0607	0.0626	-0.2416	1.0000				1.23
University education	0.1526	0.0390	0.0252	0.0210	0.0904	0.2246	1.0000			1.12
Work experience	0.5680	0.1924	0.0288	0.0252	0.3895	-0.2757	0.0993	1.0000		1.27
Entrepreneur	0.2190	0.2132	0.0124	0.0116	0.1247	-0.2143	-0.1552	0.1740	1.0000	1.09

Note: *N* = 638

[a] VIF value is omitted because income is not included in the first regression.

[b] the dependent variable for the first regression.

[c] VIF is large between Islamic religiosity and Islamic religiosity^2 because of the square value.

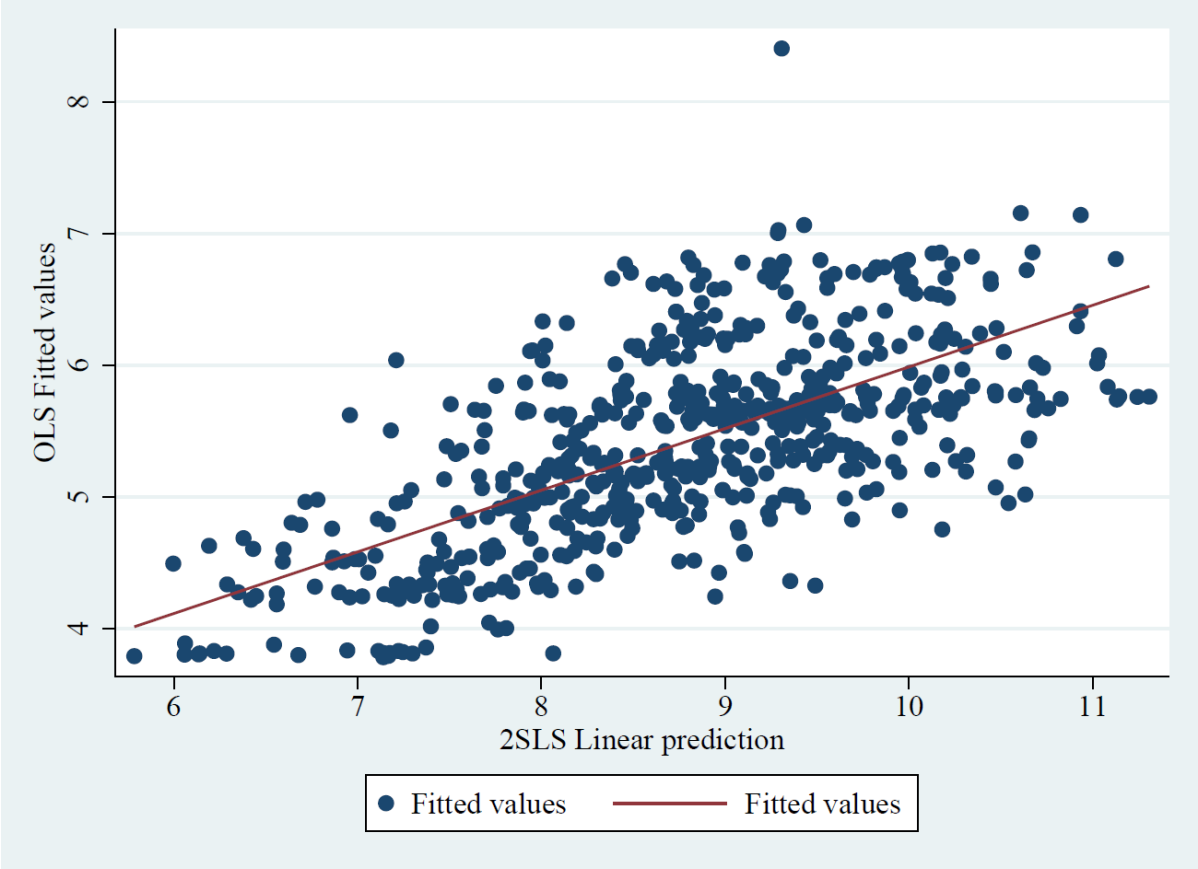

Figure 5.5: The relationship between risk-taking propensity and income

Table 5.6: The relationship between income and risk-taking propensity

Variables	(OLS) Risk taking	(2SLS) Income
Risk taking		0.360*
		(0.215)
Religiosity	-4.960**	0.140
	(2.345)	(0.124)
Religiosity squared	0.625**	
	(0.288)	
Age	0.00668	0.0366***
	(0.00925)	(0.00468)
Female	-0.727***	-0.272
	(0.224)	(0.184)
University education	0.426**	0.199
	(0.198)	(0.126)
Work experience	0.542**	0.637***
	(0.219)	(0.151)
Entrepreneur	0.994***	-0.105
	(0.224)	(0.237)
Constant	14.23***	4.461***
	(4.818)	(1.021)
Observations	638	638
R-squared	0.098	0.154

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 5.7: The relationship between income and Islamic religiosity

Variables	Income
Religiosity	0.168*
	(0.0907)
Risk taking	0.0442***
	(0.0137)
Age	0.0394***
	(0.00317)
Female	-0.496***
	(0.0776)
University education	0.326***
	(0.0682)
Work experience	0.801***
	(0.0755)
Entrepreneur	0.208***
	(0.0782)
Constant	5.750***
	(0.391)
Observations	638
R-squared	0.542

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Chapter 6

Conclusion

6.1. Introduction

The main purpose of this thesis has been to examine the influences of Islamic religiosity on some aspects of economic processes, more precisely risk-taking propensity and its influence on Muslims' individual income. This was addressed from an Islamic perspective by setting the research in a major Islamic country, the Kingdom of Saudi Arabia. Specifically, this thesis has sought to explore the role of Islamic law in partially determining individuals' risk-taking propensity and their income. Chapters 3, 4 and 5 have focused respectively on whether *Shar'aiah* can influence Muslims' risk-taking propensity, on the role of gender and education in the relationship between religion and risk-taking propensity, and on the interweaving of religion, risk taking and income. Although each of these chapters reports a study which stands independently, they are linked insofar as they have implications for each other and centre on the influence of religion on the economic development of an emerging country, Saudi Arabia. The current chapter concludes the thesis by summarising the earlier chapters in terms of their respective literature reviews, conceptual models, results and conclusions. It ends by considering key contributions, implications, limitations and suggestions for future research.

The remainder of this chapter is structured as follows. Section 6.2 presents a summary of each of the preceding chapters, Section 6.3 identifies the contributions that the research makes to existing knowledge, then Section 6.4 reiterates its key findings. Section 6.5 discusses certain methodological issues that arise and Section 6.6 considers the generalisability of the findings. Section 6.7 next distils the key limitations of the research, followed by suggestions for the direction of future research in Section 6.8.

Implications for policymakers are presented in section 6.9 and the thesis ends with some brief concluding remarks in Section 6.10.

6.2. Thesis summary

The overall theme of this research has been the influence of Islamic religiosity on the propensity of Muslims to take risks and its influence on their income within the context of the Kingdom of Saudi Arabia. This theme was addressed in terms of three related aims, each pursued in an independent part of the overall study and reported in a separate chapter. This section summarises each of the chapters of the thesis in turn, beginning with the two general ones.

Chapter One provided an overall introduction to the research. It began by setting out the background and highlighting the research problem. The economic situation of the majority of Islamic countries, including Saudi Arabia, is best described by a lack of investment in people, a steady decline in productivity, a shortage of employment opportunities and slow economic development (Kuran, 1997; Bhalla, 2002). Contributors to the Western literature have addressed the weak development in large parts of the Islamic world by focusing their criticism on the religion itself (Zelekha *et al.*, 2014, Kuran, 2008, Perkins, 2003), presenting Islam as an anti-developmental and counterproductive religion that stands behind the economic underdevelopment. Assuming that religion is indeed one of the explicit elements that influences economic performance, the aim of the present research was to further the understanding of the influence of Islamic law and of religious beliefs and behaviours on the participation of Muslims in the economic development of a major Islamic country, the Kingdom of Saudi Arabia.

The present research had the following objectives: (1) to identify and examine the relationship between Islamic religiosity and risk-taking propensity among Muslim adherents, (2) to assess the influences of gender and educational background as factors affecting the relationship between Islamic religiosity and risk-taking propensity and (3) to examine the indirect influence of Islamic religiosity on Muslims' income though the channel of risk-taking propensity. Given the lack of empirical research to confirm or contradict the claim that Islamic law acts as a constraint on economic performance, this research has sought to bridge this gap by studying the above relationships.

Chapter Two set the research in context by offering a description of Saudi Arabia in general and its entrepreneurial sector in particular. It began by describing the system of government, followed by demographic and geographic information on the country, such as its population and location, before considering its religious and cultural environment. The outline of the economy of Saudi Arabia included recognition of the significance of entrepreneurship to the national economy, justifying the inclusion of a section highlighting some of the main initiatives that have been made by the government to promote entrepreneurship.

Chapter Three reported the first of three component studies, on religiosity and risk taking in Islam, to determine whether the level of adherence to Islamic law would affect Muslims' propensity to engage in financial risk taking. Although the current literature (e.g. Miller, 2000; Audretsch *et al*., 2013) sheds some light on the importance of religion in shaping economic development, the arguments as to how religions influence economy are still under development, and more work needs to be done, in particular, from an Islamic perspective. The literature, on one hand, claims that

Shar'aiah law is the main obstacle to the economic development of the Islamic countries (Zelekha *et al*., 2014, Kuran, 2008b, Perkins, 2003) and that it expressly discourages a significant aspect of economic behaviour, namely risk-taking propensity (e.g. Miller, 2000; Jiang *et al*., 2015). On the other hand, some scholars argue that Islamic law is similar in some respects to other common religious laws and that *Shar'aiah* encourages various economic operations (Graafland *et al*., 2006, Ahmad, 1995, Fontaine, 2008) such as risk taking (e.g. Audretsch *et al*., 2013; Gümüsay, 2014). The first study sought to bridge this gap in knowledge by investigating whether Islamic law encourages or discourages risk taking amongst Muslim adherents. This part of the research provided a micro-level perspective on the relationship between Islamic religiosity and risk-taking propensity in the context of the Kingdom of Saudi Arabia.

While the available literature fails to settle the debate as to whether *Shar'aiah* hinders or supports risk taking, the study found a U-shaped relationship between Islamic religiosity and risk-taking propensity. Chapter 3 concluded that this nonlinear relationship has two different consequences regarding the economic effects of *Shar'aiah*. On one hand, the findings indicate that highly religious Muslims who practice *toakul* (i.e. who put their trust in God Almighty) are willing to engage in financially risky decisions, relying on the following Quranic passage: ***"And whosoever puts his trust in God, then He will suffice him. Verily, God will accomplish his purpose"*** [Surah At-Talaaq, verse 3]. On the other hand, among those Muslims who have a high propensity to take financial risks, some are also prone to engage in gambling and thus by definition have a low level of religiosity, given the Quranic injunction to avoid gambling: ***"They ask you (O Mohammed) concerning alcoholic drink and gambling [maiseer], Say: In them is a great sin"*** [Surah Al-Baqarah, verse 219]. This part of the study advances the social and

economic literature by revealing that religion is an important construct in predicting economic behaviour. This study is important as the first to investigate the influence of Islamic religiosity on financial risk among Muslim adherents. Furthermore, its empirical results counter the argument that Islamic law discourages risk behaviour and is therefore deleterious to some aspects of economic development.

Chapter Four extended the work reported in Chapter Three in the form of the second component study, on the impact of gender and education on the relationship of Islamic religiosity with risk taking. This first part of the study had not provided a theoretical understanding of how individual characteristics such as gender and educational background might affect the religiosity-risk association. Although a number of scholars argue for the existence of a gender gap in religiosity (Stark, 2002; Roth and Kroll, 2007) and assert that gender has a strong effect on risk taking (Hariss *et al*., 2008, Charness and Gneezy, 2012), there appear to be no contributions to the literature which answer the question of how this gender gap shapes the relationship between Islamic religiosity and risk-taking propensity. Likewise, the literature affirms that educational background is strongly related to differences in individuals' religiosity (Arias-Vazquez, 2012; Hungerman, 2014) and in their risk-taking propensity (Dohmen *et al*., 2011, Block *et al*., 2015). However, the question of whether education influences the relationship between religiosity and risk-taking propensity has not yet been sufficiently explored, particularly within the Islamic context. The objective of the second component study was thus to bridge this gap by exploring the effects of two sociocultural factors, gender and education, on the relationship between religiosity and risk taking propensity, the main theme of this research.

To deal first with gender, Tlaiss (2014) states that Islam is a comprehensive religion that governs all of the activities of Muslims, from worshiping God Almighty to conducting all of their worldly affairs. Islam professes the equality of the sexes in matters such as faith and worship, as reflected in many religious texts; for example Surah Adh-Dhariyat, verse 56 states: ***"And I (God) created not the jinns and humans [Men and Women] except they should worship Me (Alone)."*** However, other passages indicate that there need not necessarily be equality of responsibilities between the two genders in worldly matters such as inheritance and financial obligations. Thus, the Quran states that ***"the father of the child shall bear the cost of the mother's food and clothing on a reasonable basis"*** [Surah Al-Baqarah, verse 233]. This shows that Muslim men are required by *Shar'aiah* to take the responsibility for ensuring the sustenance or *rizq* of the household, which in turn requires their involvement in economic activity. The etymological argument that the concept of rizq is closely related to that of risk, not only by its orthography but also in its meaning (Gümüsay, 2015), leads to the conclusion that Muslim men are expected to have a greater propensity to engage in making risky decisions than women are.

The second factor dealt with in Chapter Four is education and specifically the influence of the level of educational attainment on the relationship between religiosity and risk taking, from an Islamic point view. The literature reviewed for this part of the study indicates that human capital theory considers education to be an element of human capital but that there is inconsistent evidence as to how educational level influences individuals' religiosity and their propensity to engage in risky decisions. On one hand, the literature argues either that educational attainment weakens religious beliefs (Arias-Vazquez, 2012, McCleary and Barro, 2006) or, in contrast, that it

strengthens them (Brown and Taylor, 2007, Glaeser and Sacerdote, 2008). On the other hand, the literature suggests two opposing impacts of individuals' education level on their risk-taking propensity. Some contributors assert that a high level of education increases the ability to analyse information and to implement appropriate decisions, which in turn decreases risk propensity (Tihanyi *et al*., 2000, Nabi *et al*., 2011), whereas others have associated a high level of education with higher propensity for taking risks (Ding *et al*., 2010, Black *et al*., 2015).

Through the lens of Islam, the principles of *Shar'aiah* not only encourage Muslims to acquire religious knowledge but also urge them to obtain all of the knowledge that humankind needs to cope with everyday challenges (Kaur, 2013). The importance of education in Islam appears from the first verse of the Holy Quran: ***"Read! … And your Lord is the Most Generous, Who has taught (writing) by the pen, [Who] Has taught man that which he knew not"*** [Al-Alaq 96:1-5]. It is also made clear in Surah Ta-Ha, verse 114, where God Almighty urges the Prophet Mohammed (pbuh) to pray for the seeking of knowledge. The Islamic literature clearly encourages Muslims to improve their level of education and to acquire the skills that they will need throughout life. These skills help Muslims to think, to analyse situations, to distinguish between right and wrong and to understand the consequences of their decisions. Therefore, strengthening this analytical capability will reduce religious Muslims' willingness to take risks in making economic decisions. On the other hand, Muslims who have a low level of education may find that their analytical ability to understand *Shar'aiah* texts is inadequate and this may in turn reflect in their reduced likelihood of avoiding participation in activities prohibited by Islamic law, such as gambling (Fam at al., 2002). It has been documented that gambling activities often involve high risk (Spurrier and Blaszczynski, 2014, Mishra *et al*.,

2010) and that increased participation in gambling appears to be associated with a low level of education (Herring and Bledsoe, 1994, Lam, 2007); thus, Muslims gamblers who are poorly educated might also be involved in risky financial decisions.

The results reported in Chapter Four emphasise the role of gender and education in Islamic law. First, although the findings indicate that Muslim men have on average a significantly greater propensity to engage in taking risky decisions than Muslim women, the relationship confirms the theoretical argument that both highly religious Muslims and their non-religious counterparts favour risk in the context of financial activities. Additionally, the results support the contention that in Islamic societies, education has a strong effect on risk propensity. The analysis confirms that poorly educated Muslims who were deemed to have a level of religiosity either higher or lower than average were more likely to invest more money in risky financial opportunities.

Chapter Five, by reporting the third component study, on risk-taking propensity as a new channel for the effect of religion on income, sought to extend the exploration of the influence of Islamic religiosity on Muslims' income. It began with a review of the available literature on the relationship between religion and income at both the aggregate and individual levels. The review of publications on the relationship between religion and income reveals a number of direct and indirect channels through which religion might have an influence on the link between the two constructs. The theoretical arguments offered by scholars hold that religion might affect income in direct ways such as spouses' choice of occupation, time allocation and the restriction of some financial transactions (Beck and Gundersen, 2016). On the other hand, religion may have indirect effect through social networks, some religious beliefs and behaviours or educational

attainment (Bettendorf and Dijkgraaf, 2010). However, the identification and understanding of these channels remain open for further research (Lam and Hung, 2005). The work reported in Chapter Five attempted to explore this theoretical gap from the perspective of Islam.

It was argued that Islamic religiosity possibly represented a new indirect channel for the influence of religion on income. Against the background of assertions that religion may have linear relationships with income (Hopland *et al*., 2016, Bouchouicha and Vieider, 2017) and with risk taking (Miller, 2000; Dohmen *et al*., 2011 Noussair *et al*. 2013), we used data from the Kingdom of Saudi Arabia to test our assumption that Islamic religiosity would affect income though the channel of risk-taking propensity. To test for the endogenous effect of Islamic religiosity, we used the 2SLS regression method, identifying Islamic religiosity as the instrumental variable for predicting risk-taking propensity. Muslims are encouraged by *Shar'aiah* to provide sustenance (rizq) for their families and to cover their expenses by lawful means. The authority for this comes directly from the Holy Quran: *"O you who believe! Spend of that with which We have provided for you"*. The findings discussed in Chapter Five confirm the extended effect of Islamic religiosity on income through the mechanism of risk-taking propensity. Furthermore, the empirical results of the third component study open a new direction for further research by again controverting the argument that Islamic law discourages economic development.

6.3. Contributions of the research to existing knowledge

This research contributes to existing knowledge in the following ways. ***First***, the reviews of literature presented in chapters 3, 4 and 5 clearly show that efforts to

understand the overall development in the research area have been scattered and sparse with regard to the Islamic perspective in general and to the Kingdom of Saudi Arabia in particular. In the course of constructing a synthesis, this research also reviewed a number of theoretical models, frameworks and theories which had been developed over a period of time and found that they could not be used to represent a complete understanding of religion and risk taking amongst Muslims. Therefore, this research gathered relevant constructs from various models and found that they could be usefully represented in the form of independent and dependent constructs. This was the first attempt of its type to develop an exhaustive model to test the influence of Islamic religiosity on financial risk propensity and the indirect influence of Islamic religiosity on individuals' income though the channel of risk-taking propensity.

Second, as noted above, there is a lack of empirical research in the area of Islamic economics; the empirical models developed here and presented in three stages (see Figures 3.2, 4.1 and 5.1) not only fill in this research gap, but are also validated by the primary data. As there is an acute lack of empirical research in the context of Islamic countries in general and in the Arab world in particular, this research initiative is one of very few efforts at understanding the psychology of the Arab-Islamic economy. Moreover, this research has established relationships between some constructs, such as gender and education, that seem to have been tackled very rarely in the Islamic literature. Understanding and establishing such relationships is a foundation for economic growth research and paves the way for future research. As there has been scarce research performed in the entrepreneurship sector in the context of developing countries or the Islamic world, this research will lay the foundation of an understanding

of various factors that are responsible for economic growth and therefore for the development of entrepreneurship.

The third contribution of the present research is a significant methodological one in the context of Islamic countries. While all religious measurements reported in the literature (Hill and Hood, 1999) are useful means of measuring religious psychology, most of the frameworks have been developed to suit predominantly Christian beliefs or within some other non-Muslim context. The religiosity measure in this study is a combination of three scales, combined to give a composite mean score of respondents' religiosity. This was the first attempt to develop an Islamic religiosity measurement to capture the distributed response of the study sample.

Fourth, while there is limited literature exploring the relationships between religion and income and between religion and risk taking, it is remarkable that no studies appear to have tested the influence on individuals' income of risk taking as affected by religion. Most of the economic literature has long treated risk-taking propensity as an exogenous predictor, excluding the possibility that risk taking itself might be influenced by other predictors such as religion. To the best of our knowledge, the research reported in this thesis is the first to apply two-stage least squares estimation to address the possible endogeneity of the effect on Muslims' income of Islamic religiosity.

Fifth, number of scholars have demonstrated that the dynamics and challenges of developing countries contexts are different from those of developed (Jamali and Mirshak, 2007; Dobers and Halme, 2009). The unique characteristics of developing country settings bring a new and different meaning to the Western operationalization of the entrepreneurship concept. Therefore, this thesis makes a significant contribution

to the existing knowledge on entrepreneurial risk taking propensity, by empirically operationalizing the influence of religion in the context of Saudi Arabia. The research reveals that the relationship between Islamic religiosity and risk taking propensity is context dependent (see Chapter 2 for more details), and that it is shaped by a combination of macro-level factors. Therefore, this research contributes to the existing scholarly knowledge and understanding by underlining the context differences of the entrepreneurial milieu.

Finally, although, the focus of this research is to empirically explore the relationship between Islamic religiosity (Shar'aiah) and risk taking propensity, this thesis sought to demonstrate the role of entrepreneurship in job creation and economic growth (see Chapter 2 for more details). Although the Kingdom of Saudi Arabia has undergone a remarkable rate of economic growth within the last two decades that were derived very considerable revenues from the production of 12 million barrels of oil per day, which makes Saudi Arabia the largest exporter of oil in the world (Dev, 2016), these huge oil revenues have not yet helped the country to achieve the necessary development. Furthermore, the modernisation and development schemes carried out by the Saudi government has not fully succeeded in creating enough employment opportunities for young Saudis, whether male or female.

ACS (2006) affirms that entrepreneurship is one of the most successful instruments that has been found to assist in promoting economic growth in developing countries by creating new businesses. A central characteristic of the entrepreneurial process is risk taking (Locke and Collins, 2003), since an entrepreneur is by definition one who is willing to take risks in making decisions; for example, entrepreneurs risk

losing the money that they invest in order to begin a new business, doing so before knowing whether it will ultimately be successful. Thus, this study contributes to the entrepreneurship literature by examines theories of religion and risk taking to improve the understanding of their interaction among Muslims. In particular, it seeks to analyse the relationship between Islamic religiosity and the propensity to take risky decisions among Muslim adherents in order to promote better understanding of one of the entrepreneurial characteristics; that is risk taking propensity. Therefore, the empirical finding of this thesis, where research has tended to identify the different experiences of male and female, educated individuals and low educated and high and low monthly income financial decisions and the different aspects thereof, in the context of Saudi Arabia have given a full understanding of the dynamic between Islamic religiosity and one main characteristics of entrepreneurs` traits, in particular risk taking propensity.

6.4. Key findings

Contrary to the argument that Islamic law is one of the foremost obstacles to economic development (see Zelekha *et al*., 2014), the findings of this research suggest that *Shar'aiah* may have some positive effects on financial activity. The present study has found empirical evidence of positive associations between Islamic law and some constructs involved in economic development, namely risk-taking propensity and individual income. Three major conclusions may be drawn. Chapter 3 outlined how Islamic religiosity among Muslim adherents affected their participation in financially risky activities. It revealed that religious Muslims had a greater propensity to engage in risk taking associated with the strength of their trust in God. The second component study (Chapter 4) showed how gender and education could determine the relationship

between Islamic religiosity and risk-taking propensity, while the third study (Chapter 5) demonstrated the indirect influence of religion on Muslims' income through the channel of risk-taking propensity. These findings confirm that religion in general and *Shar'aiah* in particular represent an important element that should be considered when assessing economic processes.

6.5. Methodological issues

This research contributes to the limited literature on the relationship between Islam and economic development by providing new insights into the beliefs and attitudes of Muslims at the micro level. It is largely based on exploring factors that are directly or indirectly used to understand the religiosity of Saudi Muslims and its effects on their risk-taking propensity and income. Therefore, data were collected by means of a questionnaire survey with closed-ended questions, scored on a Likert scale, to capture participants' levels of religiosity and attitudes to risk taking. Such a survey was found to be sufficient to comprehend the underlying relationships among the research variables. However, such quantitative data cannot provide researchers with a full and detailed understanding of all of the diverse facets of individuals' religiosity and risk-taking propensity. Thus, to gain broader understanding of the relationships in question, a qualitative approach to collecting data, by means such as interviews, would help to expand the existing knowledge on practical aspects of Islamic law and enhance the understanding of the subject area.

The literature suggests that very little empirical economic research has been conducted in Muslim countries and only a handful of exploratory studies are available in the context of Saudi Arabia. Therefore, this study was undertaken in the Kingdom of

Saudi Arabia. This choice of the particular Islamic country in which to conduct the study was based on a number of considerations. First, Saudi Arabia is closely identified with Islam; indeed, it has a distinct religious status in the Islamic world as the place where the religion of Islam was originally revealed and as the site of two of Islam's holiest mosques, at Mecca and Medina. Second, Islamic law is the foundation of the governance, constitution and legal system of the Kingdom. Article 1 of the Saudi Arabian constitution states: "The Kingdom of Saudi Arabia is a sovereign Arab Islamic state with Islam as its religion; God's Book [the Holy Quran] and the Sunna of His Prophet, God's prayers and peace be upon him, are its constitution, Arabic is its language and Riyadh is its capital", while Article 7 asserts that "Government in Saudi Arabia derives power from the Holy Quran and the Prophet's tradition" (Royal Decree NO A/90, 27th Sha'ban 1412 AH [1 March 1992]). The Islamic religiosity of the Saudi people has created a suitable environment for the Saudi government to apply a restricted Islamic law among its inhabitants, from social and political perspectives. It is widely perceived and largely accepted that Saudi Arabia is the most traditional and sanctified Muslim country. Most of the inhabitants (90 per cent) are Arabs and almost 100 per cent are Muslims (Agency, 2013). Thus, it could be argued that the Kingdom of Saudi Arabia is the most fertile Islamic country in which to conduct research related to the practice of Islam and the influence of Islamic religiosity. Finally, the researcher has the advantage in this context of being a citizen of Saudi Arabia and an alumnus of one of its universities, having worked with a number of local government institutions. Working with institutions and business communities is likely to help the researcher to obtain a favourable response (Creswell, 2013). Furthermore, given the researcher's experience in the Saudi Arabian market prior to conducting this study, his engagement with the labour market and his connections to

the governmental institutions in the area, he can be seen to have the credibility necessary for conducting the study (Wolcott, 1994).

6.6. Generalisability of the findings

As most of the Arab Muslim countries share a sense of religious and cultural commonality, the findings of this thesis could probably be applied to other Muslim countries in this region. Moreover, as the Kingdom Saudi Arabia can be classified as a developing country that has an emerging economy similar to a number of other countries such as China and India, the findings of this research might be expected to be replicated in such countries to a certain extent. However, it would be more appropriate when planning further research to be attentive to the generalisability of the current findings. The data that were gathered for this research involved a number of variables that might not be fully applicable to another otherwise similar context; for example, it might not be appropriate to attempt to measure religiosity in China, while to do so in India might require a very different approach from that taken here. Hence, the generalisation of the research findings to different contexts beyond the Islamic countries must be seen as limited.

6.7. Research limitations

Although great care has been taken to undertake this research in a systematic and thorough way, some limitations were experienced due to a number of constraints which are mentioned briefly here. One major limitation of this study was the gathering of data from a single location. The Muslims who participated in this study were all resident in the same country, the Kingdom of Saudi Arabia, which limits the

generalisability of the findings. A better understanding of the influence of religiosity on risk-taking propensity would be gained by examining the phenomenon in diverse settings. Another potential limitation is related to the sample size, as the data were elicited from a relatively small number of Muslim adherents (N = 638). However, while this restricted sample size may be considered to have introduced common method bias, it does not diminish the significance of the findings of the study. A third possible shortcoming concerns the difficulty of measuring Islamic religiosity. One problem is the possibility of offending participants' sensitivity, in particular when they were asked to answer questions about their relationship with God Almighty. Another is that Muslims believe that hypocrisy is detestable and strongly prohibited by *Shar'aiah*. Therefore, it may be difficult for religious Muslims to present themselves in a position where they might be seen to exhibit a high degree of religiosity as the means of avoiding hypocrisy. Fourth, while risk-taking propensity is complex and multifaceted, this research measures only the attitude to financial risk. Further research on the relationship between risk and Islamic religiosity could usefully include other types of risk behaviour, involving risks to health or physical risks, for example, in order to assess the influence of religiosity on risk taking more broadly. Finally, although the results support the notion that gender and educational background play essential roles in determining risk-taking propensity, the results of this research are limited to the context of financial risk.

6.8. Future research

Based on the above identification of limitations in this research, further avenues can be developed in the following areas. First, the impact of Islamic religiosity should be investigated with a similar conceptual frame in other Islamic countries in order to

develop a stronger element of generalisation. By looking at whether *Shar'aiah* affects the economic process in these countries in a similar way, widening the context will provide enough data to develop the research model in such a way as to take into account all possible factors that might affect this model. Furthermore, it might be fruitful for future research to explore the relationships under study here from the perspective of other religions, such as Christianity, Judaism, Hinduism, or Buddhism, or from that of different doctrines within the same religion, to determine whether similar findings emerge.

Second, the methodology adopted in this research could be modified for potential future research. While the present study investigated the relationships between religiosity, risk-taking propensity and income at an individual level, future research might examine these at a macro level to expand the robustness of the findings. In addition, it would be valuable to conduct qualitative analysis of interview data to enable access to the views of respondents and determine their knowledge of Islamic law in relation to economic development. The closed-ended questions used in the current research were not able to capture the independent views of respondents, whereas this might be done using open-ended interview questions. A final potential area for further research is to evaluate the impact of other factors that might influence religiosity and risk-taking propensity, such as family status and composition, culture or aspects of the legal system, to determine their impact on the research findings.

6.9. Research implications

The main purpose of this research was to explore how the beliefs and practice of Islam affect the economic behaviour and outcomes of Muslims in the Kingdom of Saudi

Arabia. In particular, this research has attempted to associate this relationship with entrepreneurial practices to overcome the unemployment problem. Through the research findings, this thesis can help researchers as well as decision makers in the Kingdom, with some implications for further development. The present study offers various implications, indicating that economic development does not occur in a vacuum but within the religious environment of the country.

On the government level, ***first,*** it has been shown that religion is considered an important construct which influences economic performance. Thus, the government of Saudi Arabia should continue to conduct research that links religion with economic development to gain a deeper understanding of this relationship. Moreover, the findings of this research show that Islamic law has some unique teachings as well as some that can be compared to those of non-Islamic religions. Each of Chapters 3, 4 and 5 has its own discussion section that provides a framework for researchers to mitigate the adverse influences of religion on income not only in Saudi Arabia, but in other Islamic countries that share the same characteristics. Academically speaking, however, researchers should continue exploring the influence of religion on economic activity, paying close attention to the context of the study and the research instruments that would generate conclusive insights.

Second, much attention has been given to the propensity towards risk as an important characteristic for those intending to start a business (Kan and Tsai 2006; Douglas and Shepherd 2002). The findings of this research indicate that Islamic religiosity is a significant predictor of the differences in risk propensity between the genders. Highly religious Muslim men as well as less religious respondents proved more

willing to engage in risky decision making than women. On the other hand, no differences have been found between genders related to their Islamic religiosity. These findings suggest a new insight: that religious prescriptions concerning women in Islam may be attributable to traditional and tribal interpretations, rather than to genuinely religious ones. These interpretations are key factors in making it difficult for women to start businesses in Saudi Arabia. The Saudi government should continue its modernisation efforts and should promote new schemes to develop clearer insights into the religious texts to meet all new human needs. As Kaur (2013, p.28) has stated, there is an ongoing need for Muslim scholars to respond to a changing world by developing "appropriate Islamic solutions" and Tlaiss (2014, p.874) stressed "the need for new mainstream research emphasizing the intersectionality between gender, Islam, and the Middle East.". Thus, Islamic scholars need to take responsibility for explaining to the public in lectures, writings, on television and radio, through the ministry of education and the ministry of culture and information.

Third, although the results of the second paper confirm the determinant role of education on the relationship between risk taking propensity and Islamic religiosity, they show that Muslims with low level of education are more willing to take financial risky decisions than those who obtain bachelor degree or higher. However, this research focused only the influence of general education, rather that entrepreneurial education on this relationship. These results provide some insights on the education system that the Saudi Arabia government apply. Indeed, our model related to education is a good framework for looking at the influence of entrepreneurship education on risk taking propensity and religion relationship. Thus, educational institutes in Saudi Arabia should provide entrepreneurship education for all student levels from early years towards

graduation. This implication may help promoting Saudi students with the need for entrepreneurial mind-set, of which was found to explain the low level of engagement in risk propensity amongst Saudis with high-level education.

6.10. Concluding remarks

This research comprises three qualitative component studies aiming to bridge an existing gap in knowledge arising from a paucity of empirical research in the field of religion and economic risk taking, by exploring some of the determinants of risk-taking propensity among Muslims. The review of the literature in general and in the context of developing Islamic countries in particular suggests that there are very few empirical studies of the influence of religion on economic development and that this body of work is inadequate to provide researchers with a deep understanding of the factors that affect Muslims' willingness to engage in taking financially risky decisions. Improved knowledge in this area would be highly advantageous for policymakers, whose actions would be guided by greater certainty as to how factors such as religion can influence the actions of entrepreneurs. While the findings of this research contribute to extending the knowledge available in this domain, its outcomes are also important at a national level, as hardly any empirical research has yet been conducted in this economic area in the setting of the Kingdom of Saudi Arabia. The current research is just a stepping stone towards a closing of the huge research gap in Islamic subjects; a very considerable amount of work is still warranted to properly and completely bridge all such existing research gaps.

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Appendix:

Appendix 1: English questionnaire

Southampton Business School

University of Southampton

University road, Southampton, SO17 1BJ, United Kingdom

Dear Sir/Madam

I am a Ph.D. candidate from Southampton Business School at the University of Southampton in the United Kingdom.

I am writing this letter to kindly request you to participate by filling this survey. This study aims to evaluate the relationship between religiosity and risk-taking. Accordingly, the enclosed questionnaire is designed to benefit from your experience and background. This questionnaire is necessary towards the completing of my Ph.D. degree. In addition, the findings of this study will allow me to propose suitable recommendations to policy making of Saudi Arabia. **All information will be treated confidentially and will only be used for the purposes of this study. This is an anonymous survey.** There are no right or wrong answers. Participation is voluntary and participants have the right to withdraw at any time.

As a way of expressing appreciation for your co-operation in completing this survey, I will be happy to send you a copy of the results. If you would like to have a copy of the results, please fill in your details at the end of the questionnaire.

Finally, if you have any questions or would have further information about this project please do not hesitate to contact me at:

Adaa1r13@soton.ac.uk

Your Sincerely

Abdulaziz Aldhehayan

(Section 1)

Socio-demographic (SD) questions.

Please check the box that gives the best answer for you.

SD1:	Gender:	☐ Male ☐ Female		
SD2:	Age: (……..)			
SD4:	Level of education:	☐ Diploma Degree OR below ☐ Bachelor Degree OR above		
SD5:	Occupation status:	☐ Employed ☐ Business owner		
SD7:	Monthly income (£):	☐ Less than 1000	☐ 1000 to 2999	☐ 3000 to 4999
		☐ 5000 to 6999	☐ 7000 to 8999	☐ 9000 to 10999
		☐ 11000 to 12999	☐ 13000 to 14999	☐ 15000 or more
SD8:	Do you have work experience:	☐ Yes (…….) Years (……..) Months ☐ No		

(Section 2)
Risk attitude (RA) question.

Imagine you have won £100,000. After having received the money, you have the possibility to invest the money in an economic activity. With a probability of 50 %, you double the amount. With a probability of 50 %, you would lose half of the invested money. How much money would you invest?

0	10,000	20,000	30,000	40,000	50,000	60,000	70,000	80,000	90,000	100,000
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

(Section 3)
Islamic religiosity (IR) questions.
Please rate each of the following statements provided on a 1 to 5 point scale where:
1= Strongly disagree, 2= Disagree, 3= Not sure, 4= Agree, 5= Strongly agree

Please rate each of the following statements provided on a 1 to 5 point scale where:

	1	**2**	**3**	**4**	**5**
IR1: Religion is important in my life	☐	☐	☐	☐	☐
IR2: Religion is especially important so that children can be encouraged to learn at home	☐	☐	☐	☐	☐
IR3: I get comfort and strength from religion	☐	☐	☐	☐	☐
I think that the religious authorities or the religious leaders are giving adequate answers to:					
IR4 individual's moral problems and needs	☐	☐	☐	☐	☐
IR5 Problems of family life	☐	☐	☐	☐	☐
IR6 People's spiritual needs	☐	☐	☐	☐	☐
IR7 Social problems facing our country today	☐	☐	☐	☐	☐
IR8: I believe there is no God but Allah	☐	☐	☐	☐	☐
IR9: I believe Mohammed (pbuh) God's messenger	☐	☐	☐	☐	☐
IR10: I perform pilgrimage (Hajj) whenever I am able to do so	☐	☐	☐	☐	☐
IR11: I believe in God's angels	☐	☐	☐	☐	☐
IR12: I believe in God's books	☐	☐	☐	☐	☐
IR13: I believe in God's messengers	☐	☐	☐	☐	☐
IR14: I believe in afterlife	☐	☐	☐	☐	☐
IR15: I believe in predestination	☐	☐	☐	☐	☐
IR16: I believe in hell	☐	☐	☐	☐	☐
IR17: I believe in heaven	☐	☐	☐	☐	☐
IR18: Independently and credibly, I can say I am a religious person	☐	☐	☐	☐	☐

1= Never, 2= Rarely, 3= Sometimes, 4= Very often, 5= Always

	1	**2**	**3**	**4**	**5**
IR19: I pray the obligatory prayers	☐	☐	☐	☐	☐
IR20: I pray the supererogatory prayers	☐	☐	☐	☐	☐
IR21: I recite the Holy Qur'an	☐	☐	☐	☐	☐
IR22: I perform the obligatory fasting (Ramadan)	☐	☐	☐	☐	☐
IR23: I perform the supererogatory fasting	☐	☐	☐	☐	☐
IR24: I tell others things that are not true	☐	☐	☐	☐	☐
IR25: I give away the obligatory charity (Zakat)	☐	☐	☐	☐	☐
IR26: I give away the supererogatory charity	☐	☐	☐	☐	☐
IR27: I promote virtue and prevent vice	☐	☐	☐	☐	☐
IR28: I obey my parents	☐	☐	☐	☐	☐
IR29: I attempt to bribe if necessary	☐	☐	☐	☐	☐
IR30: I accept bank usury if necessary	☐	☐	☐	☐	☐
IR31: I try to smile as much as possible	☐	☐	☐	☐	☐
IR32: I am patient in all situations	☐	☐	☐	☐	☐
IR33: I pay visits to relatives	☐	☐	☐	☐	☐
IR34: I care about neighbours	☐	☐	☐	☐	☐
IR35: I avoid mixing with opposite sex	☐	☐	☐	☐	☐
IR36: I fulfil my promises	☐	☐	☐	☐	☐
IR37: I follow the Islamic code of dress	☐	☐	☐	☐	☐
IR38: I do not abuse others	☐	☐	☐	☐	☐
IR39: I help old people when they need it	☐	☐	☐	☐	☐
IR40: I avoid something if I am unsure about its legal status	☐	☐	☐	☐	☐
IR41: I would remove an obstacle that I see on the road, even if it is small	☐	☐	☐	☐	☐
IR42: I obey Shar'aiah rules in every situation	☐	☐	☐	☐	☐
IR43: I enjoy watching magic	☐	☐	☐	☐	☐
IR44: I forgive others who wrong me before they ask for my forgiveness	☐	☐	☐	☐	☐
IR45: I get upset when I hear about the suffering of Muslims in other parts of the world	☐	☐	☐	☐	☐
IR46: I performed Umrah (The non-mandatory lesser pilgrimage) for the last 5 years					
☐ None ☐ 1 to 2 ☐ 3 to 4 ☐ 5 to 6 ☐ 7 or more					

(Section 4)

Comments and Feedback.

If you have any comments or suggestions that you wish to express regarding this questionnaire, please write them down below. (continue on a separate sheet if necessary).

_____

_____

_____

If you would like to have a copy of the results, please fill in your details below.
(Optional)
Email:
_____

THANK YOU

Appendix 2: Arabic questionnaire

UNIVERSITY OF Southampton

أخي الكريم... أختي الكريمة...

السلام عليكم ورحمة الله وبركاته ،،

أنا طالب في برنامج الدكتوراه في كلية إدارة الأعمال بجامعة ساوثهامتون- بريطانيا. هذه الاستبانة هي متطلب لإنهاء بحثي لمرحلة الدكتوراه والتي اسعى من خلالها إلى دراسة العلاقة بين التدين الإسلامي ودرجة اتخاذ المخاطرة لدى أفراد المجتمع بشكل عام ورواد الأعمال بشكل خاص في المملكة العربية السعودية.

ولإيماني التام بأنكم خير مصدر للوصول إلى المعلومات المطلوبة لإنجاح هذا البحث فإني كلي أمل بتعاونكم الكريم بتعبئة واستكمال كافة الاسئلة. حيث أن:

- الإجابة على هذه الاستبانة بشكل صحيح عنصر أساسي لنجاح هذا البحث.
- ليس هناك إجابة صحيحة وأخرى خاطئة، فرأيكم الصادق هو ما تحتاجه هذه الاستبانة.
- التأكيد على حرية الرأي، حيث أن هذه الاستبانة لا تتطلب ذكر الإسم عند الإجابة.
- كافة البيانات التي يتم الحصول عليها منكم ستستخدم فقط لأغراض هذا البحث العلمي.
- لن تستغرق هذه الاستبانة من وقتكم أكثر من (5 - 10) دقائق.

في حالة وجود أسئلة أو استفسارات يرجى التواصل من خلال البريد الالكتروني:
Adaa1r13@soton.ac.uk

وأخيراً يطيب لي أن أقدم لكم شكري وتقديري لحسن تعاونكم واهتماكم الكريم.

الباحث

عبدالعزيز بن ضحيان الضحيان

□

□
□
□

القسم الأول: المعلومات الشخصية

الرجاء وضع علامة (√) في المربع المناسب لإجابتك.

الجنس:	**□ ذكر** **□ أنثى**
العمر:	**(.....)**
المستوى التعليمي:	**□ درجة الدبلوم أو أقل** **□ درجة البكالوريوس فما فوق**
الحالة الوظيفية:	**□ موظف** **□مالك منشأة**

الدخل الشهري (ريال سعودي):

□ أقل من 1000	**□ 1000 إلى 2999**	**□ 3000 إلى 4999**
□ 5000 إلى 6999	**□ 7000 إلى 8999**	**□ 9000 إلى 10999**
□ 11000 إلى 12999	**□ 13000 إلى 14999**	**□ 15000 فأكثر**

هل لديك خبرة عملية:	**□ نعم ، (.....) سنوات (.....) أشهر** **□ لا**

القسم الثاني: درجة المخاطرة

الرجاء وضع علامة (√) في المربع المناسب لإجابتك.

تصور بانك قد فزت بملغ 100,000 ريال سعودي، وبعد حصولك على المبلغ لديك الإمكانية لاستثمار هذا المبلغ في أحد الأنشطة التجارية مع احتمالية 50٪ بأنك ستضاعف هذا المبلغ وكذلك 50٪ بأنك ستفقد نصف هذا المال. كم مقدار ما ستستثمره من المال؟

0	10,000	20,000	30,000	40,000	50,000	60,000	70,000	80,000	90,000	100,000
□	□	□	□	□	□	□	□	□	□	□

القسم الثالث: قياس التدين

I- قيم العبارات التالية وفقا للمعيار التالي:

1	2	3	4	5
أعارض بشدة	أعارض	محايد	أوافق	أوافق بشدة

		1	2	3	4	5
1.	الدين مهم في حياتي	□	□	□	□	□
2.	الدين مهم لدرجة حث الأطفال لتعلمه في المنزل	□	□	□	□	□
3.	أنا أحصل على الراحة والقوة من الدين	□	□	□	□	□
	أعتقد بأن القيادات الدينية والجهات الدينية يقدمون الحلول المناسبة لكل من:					
4.	المشاكل الأخلاقية واحتياجات الأفراد	□	□	□	□	□
5.	المشاكل العائلية	□	□	□	□	□
6.	الاحتياجات الروحانية للناس	□	□	□	□	□
7.	المشاكل الاجتماعية التي تواجه بلادنا هذه الأيام	□	□	□	□	□
8.	أنا أؤمن بأنه لا يوجد إله غير الله	□	□	□	□	□

9. أنا أؤمن بأن محمد (صلى الله عليه وسلم) هو رسول الله	☐	☐	☐	☐	☐
10. أنا أقوم بفريضة الحج عندما تكون لدي القدرة على ذلك	☐	☐	☐	☐	☐
11. أنا أؤمن بالملائكة	☐	☐	☐	☐	☐
12. أنا أؤمن بالكتب السماوية	☐	☐	☐	☐	☐
13. أنا أؤمن بالرسل	☐	☐	☐	☐	☐
14. أنا أؤمن باليوم الآخر	☐	☐	☐	☐	☐
15. أنا أومن بالقضاء والقدر	☐	☐	☐	☐	☐
16. أنا أؤمن بالنار	☐	☐	☐	☐	☐
17. أنا أؤمن بالجنة	☐	☐	☐	☐	☐
18. بكل مصداقية أستطيع أن اقول بأني شخص متدين	☐	☐	☐	☐	☐

II- قيم العبارات التالية وفقاً للمعيار التالي:

1	2	3	4	5
لا مطلقاً	نادراً	أحياناً	غالباً	دائماً

	1	2	3	4	5
19. أنا أصلي الفرائض	☐	☐	☐	☐	☐
20. أنا اصلي النوافل	☐	☐	☐	☐	☐
21. أنا أقرأ القرآن	☐	☐	☐	☐	☐
22. أنا أصوم الفرض	☐	☐	☐	☐	☐
23. أنا أصوم السنة (النوافل)	☐	☐	☐	☐	☐

24. أنا أتحدث بأشياء غير صحيحة (الكذب)	☐	☐	☐	☐	☐
25. أنا أخرج الزكاة	☐	☐	☐	☐	☐
26. أنا أعطي الصدقات	☐	☐	☐	☐	☐
27. أنا آمر بالمعروف وأنهى عن المنكر	☐	☐	☐	☐	☐
28. أنا أطيع والدي	☐	☐	☐	☐	☐
29. أنا أحاول أن أرشي إذا لزم الأمر	☐	☐	☐	☐	☐
30. أنا أقبل الربا	☐	☐	☐	☐	☐
31. أنا أحاول أن أبتسم في وجه أخي المسلم	☐	☐	☐	☐	☐
32. أنا صبور في كل الأحوال	☐	☐	☐	☐	☐
33. أنا أزور أقاربي	☐	☐	☐	☐	☐
34. أنا أهتم بجيراني	☐	☐	☐	☐	☐
35. أنا أتحاشى الاختلاط بالجنس الآخر من غير المحارم	☐	☐	☐	☐	☐
36. أنا أفي بعهودي	☐	☐	☐	☐	☐
37. أنا أتبع التعاليم الإسلامية في لباسي	☐	☐	☐	☐	☐
38. أنا لا أسيء للآخرين	☐	☐	☐	☐	☐
39. أنا أساعد كبار السن عند حاجتهم لذلك	☐	☐	☐	☐	☐
40. أنا اتجنب الاشياء التي اكون غير متأكد من شرعيتها	☐	☐	☐	☐	☐
41. أنا أميط الأذى عن الطريق	☐	☐	☐	☐	☐
42. أنا أتقيد بالتعاليم الدينية في شؤون حياتي	☐	☐	☐	☐	☐
43. أنا أستمتع بمشاهدة السحر	☐	☐	☐	☐	☐
44. أنا أسامح من أخطأ بحقي قبل ان يطلب مني ذلك	☐	☐	☐	☐	☐
45. أنا أتألم عند سماع معاناة المسلمين في البلدان الأخرى	☐	☐	☐	☐	☐

46. لقد أديت العمرة في الخمس سنوات الماضية:

☐ لا يوجد ☐ 1 أو 2 مرة ☐ 3 أو 4 مرات ☐ 5 أو 6 مرات ☐ 7 مرات فاكثر

القسم الرابع: التعليقات والمقترحات

إذا كان لديك أي تعليقات أو مقترحات ترغب في ذكرها بخصوص هذا الاستبيان، الرجاء التكرم بكتابتها أدناه (اختياري):

_____

_____

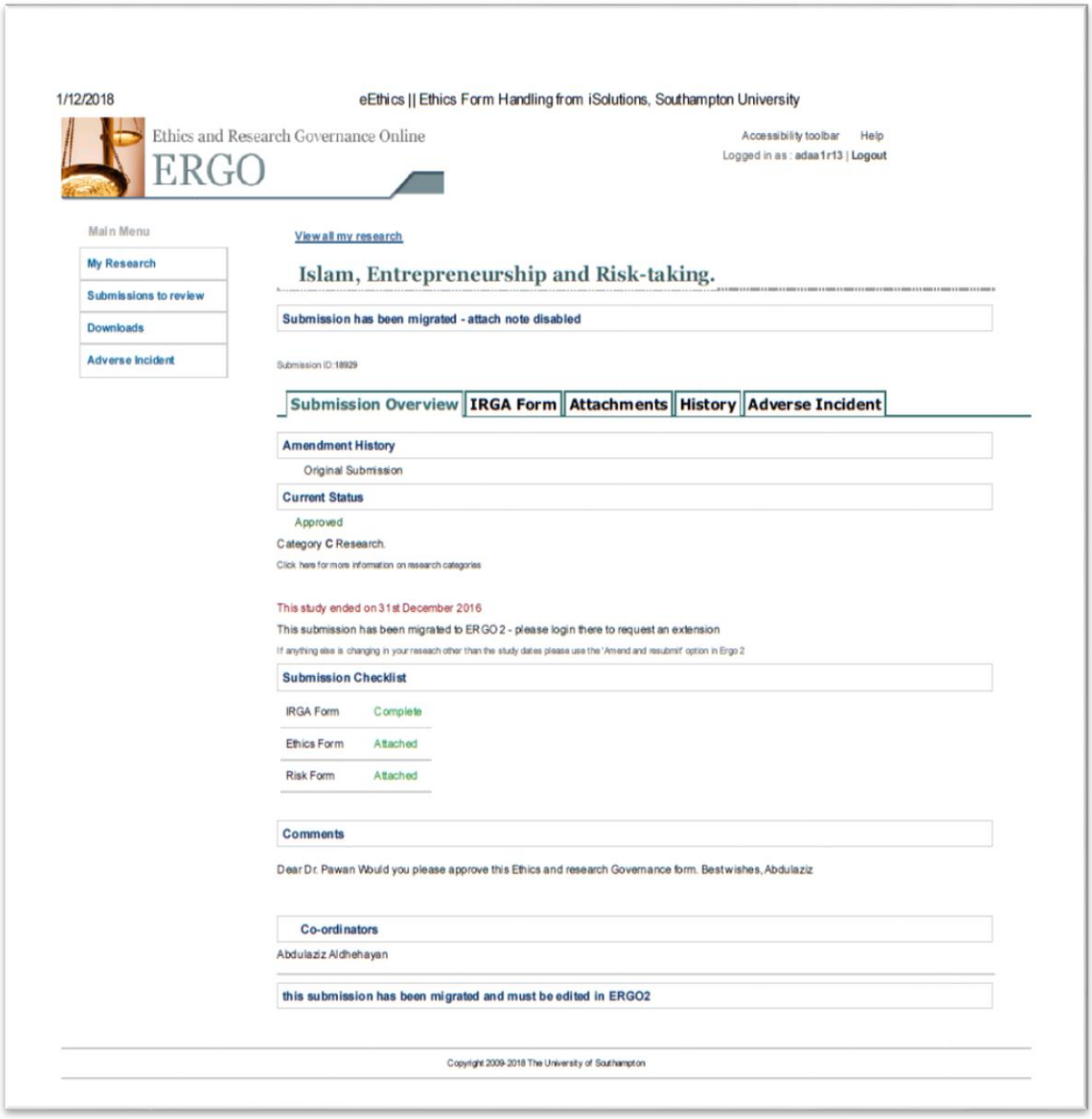
_____

إذا كنت ترغب في الحصول على نسخة من نتائج هذه الدراسة، يرجى البريد الإلكتروني أدناه (اختياري):

البريد الإلكتروني: _____

شكراً جزيلاً

Appendix 3: Ethics and Research Governance Online form (ERGO)



1/12/2018 eEthics || Ethics Form Handling from iSolutions, Southampton University

Ethics and Research Governance Online
ERGO

Accessibility toolbar Help
Logged in as : adaa1r13 | Logout

Main Menu

- My Research
- Submissions to review
- Downloads
- Adverse Incident

View all my research

Islam, Entrepreneurship and Risk-taking.

Submission has been migrated - attach note disabled

Submission ID:18929

Submission Overview | **IRGA Form** | **Attachments** | **History** | **Adverse Incident**

Amendment History

Original Submission

Current Status

Approved

Category C Research.

Click here for more information on research categories

This study ended on 31st December 2016

This submission has been migrated to ERGO 2 - please login there to request an extension

If anything else is changing in your research other than the study dates please use the 'Amend and resubmit' option in Ergo 2

Submission Checklist

IRGA Form	Complete
Ethics Form	Attached
Risk Form	Attached

Comments

Dear Dr. Pawan Would you please approve this Ethics and research Governance form. Best wishes, Abdulaziz

Co-ordinators

Abdulaziz Aldhehayan

this submission has been migrated and must be edited in ERGO2

Appendix 4: Consent form

CONSENT FORM (*1.0*)

Study title: Islam, Entrepreneurship and risk-taking.
Researcher name: Abdulaziz D. Aldhehayan
Ethics reference: 18929

Please initial the box(es) if you agree with the statement(s):

I have read and understood the information sheet (03/10/2016 /1.0) and have had the opportunity to ask questions about the study.	☐
I agree to take part in this research project and agree for my data to be used for the purpose of this study	☐
I understand my participation is voluntary and I may withdraw at any time without my legal rights being affected	☐
I am happy for the interview to be tape recorded. (If not applicable, please delete)	☐
I am happy to be contacted regarding other unspecified research projects. I therefore consent to the University retaining my personal details on a database, kept separately from the research data detailed above. The 'validity' of my consent is conditional upon the University complying with the Data Protection Act and I understand that I can request my details be removed from this database at any time.	☐

Data Protection
I understand that information collected about me during my participation in this study will be stored on a password protected computer and that this information will only be used for the purpose of this study. All files containing any personal data will be made anonymous.

Name of participant (print name)……

Signature of participant……..

Date……

Appendix 5: Participant formation sheet

Participant Information Sheet

Study Title: Islam, Entrepreneurship and risk-taking

Researcher: Abdulaziz D. Aldhehayan **Ethics number**: 18929

Please read this information carefully before deciding to take part in this research. If you are happy to participate you will be asked to sign a consent form.

What is the research about?
I am a Ph.D. candidate from Southampton Business School at the University of Southampton in the United Kingdom. I have been awarded a scholarship to obtain my Ph.D. in Management from Qassim University, Saudi Arabia. This research is a student research aims to understand the relationship between Islamic religiosity and risk-taking among Muslim. Understanding this relation would help policy makers in Saudi Arabia to design effective schemes to booster low entrepreneurship activities over there.

Why have I been chosen?
The enclosed questionnaire is designed to benefit from participants' experience and background as they acquire useful information and being in the scope of this study.

What will happen to me if I take part?
Participants will be asked to fill out short questionnaire. This questionnaire will last approximately 15 minutes.

Are there any benefits in my taking part?
There may be no direct benefit to you other than the sense of helping the public at large and contributing to knowledge.

Are there any risks involved?
This study involves asking participants' about their opinions. There is no risk involvement on this study.

Will my participation be confidential?
This is an anonymous survey and all information will be treated confidentially and will only be used for the purposes of this study. All data will be coded and kept on a password protected computer.

What happens if I change my mind?
Participation is voluntary and participants have the right to withdraw at any time of this study.

What happens if something goes wrong?
If something happens wrong, participants may wish to contact the research support officer, Ying Ying Cheung (risethic@soton.ac.uk) or Head of Research Governance (02380 595058, rgoinfo@soton.ac.uk)

Where can I get more information?
If participants have any questions or would have further information about this project, please do not hesitate to contact me at: Adaa1r13@soton.ac.uk.