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Does faith move stock markets? Evidence from Saudi Arabia[☆]

Alessandra Canepa[a,*], Abdullah Ibnrubbian[b]

[a] Brunel University, London, UK
[b] Institute of Public Administration, Riyadh, Saudi Arabia

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ABSTRACT

This paper investigates the effects of religious beliefs on stock prices. Our findings support the viewpoint that the religious tenets have important bearing on portfolio choices of investors. It is found that Shariah-compliant stocks have higher return and volatility than their non-Shariah compliant counterparts.

1. Introduction

The role of beliefs, social norms and values has not been widely studied in financial literature. Yet, it seems intuitive that individuals operating in different social environments would exhibit different behavior. In the end, markets do not make decisions, but people do and interactions among individual choices, corporate culture and social norms are unavoidable.

Prior research suggests links between individual religiosity and risk aversion. For example, Miller and Hoffmann (1995) report a negative correlation at individual level between religiosity and attitude towards risk. Similarly, Osoba (2003) uses individual panel data to show that risk-averse individuals attend churches more often than risk-seeking individuals. Hillary and Hui (2009) examine if religion affects corporate behavior in US. They find that firms located in counties with higher level of religiosity display lower degree of risk exposure. Extant literature also acknowledge that religiosity and social norms have some bearing on investment decisions of institutions such as pension plans and corporate-decision making in general. In this paper we endeavor to add to the existing body of knowledge by focusing on the relation between religion and financial markets. This study focuses specifically on Islamic religion and examines the market effects of ethical norms in the novel setting of stock markets.

Islamic religion imposes several restrictions on individual investment choices. Most notably, the prohibition of investing in "sin stocks" (i.e. publicly traded companies involved in producing alcohol, tobacco, and gaming) and interest bearing securities. We postulate that in countries where religion plays a heavy role in dictating individual behavioral code and social norms, portfolio selection is affected.

To investigate the market effects (if any) of ethical norms we focus on a country where religion constitutes an integral part of society, namely Saudi Arabia. This country is an ideal setting in which to study this phenomenon, for several reasons. Firstly, Muslims constitute 97% of population. Also, Saudi Arabia is a conservative society that has adopted the most austerely puritanical form of Islam. The country also plays a central role in the international Muslim community as the host of the two holy cities of Makkah and Medina and this is a paramount to the country identity.

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* Corresponding author at: Department of Economics and Finance, Brunel University, Uxbridge, Middlesex UB8 3PH, UK. Tel.: +44 0189 5266207.
E-mail address: alessandra.canepa@brunel.ac.uk (A. Canepa).

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Secondly, although Islamic finance services industry is expanding rapidly in the homeland of Islam, non Shariah-compliant stocks are available on the market and there is no legal obligation to invest in these securities. Portfolio selection is entirely left to market participants and any moral obligation depends on the ethical attitude of investors. Finally, as a result of its development and the peculiarity of the Saudi economy (Saudi economy is heavily dependent on oil revenue), the Saudi stock market has several characteristics that makes it unique among emerging-market bourses. Market capitalization and trading volume have multiplied by some orders of magnitude in the last few years, yet the large majority of investors are individuals rather than institutions. Also, foreign investment is very limited as GCC national[1] and other Arab residents account for a small proportion of buy and sell transactions, whereas the non-Arab resident proportion is close to zero.

It is clear from the few highlights above that Islamic religion plays an integral part of everyday life in the country determining much of the interaction within the society. The prominent role of religion in the society together with recent developments of the Saudi stock market constitute a rare opportunity for a social scientist to observe a phenomenon in an almost lab-made experiment in which to test the effect of religious tenets on financial markets: starting from 2001 onward, *first-time local individual* investors (i.e. not institutional or professional mutual fund managers) entered a "conventional" (i.e. not only Islamic finance oriented) and relatively thin stock market in large number and started trading massively.

A natural question arises at this point: Is portfolio selection of market participants affected by social environment? In other words, is there any market effect that can be ascribed to religious prescriptions? Moreover, given the very large proportion of retail investors versus institutional investors in the market how this affects stock prices? Is there an interaction between religious tenets concerning financial investment and portfolio choice of retail investors? These are the issues addressed in this paper.

We begin our investigation by classifying stock returns according to their degree of compliance with Islamic finance principles. First, we hypothesize that shares of stocks which are less Shariah-compliant should be held in smaller proportions in the religious minded investor's optimal portfolio. We test this hypothesis by considering the stochastic dominance principle for portfolio selection of a risk averse investor. Consistent with our predictions, we find that stocks that are more Shariah-compliant have higher returns and are associated with higher relative risk. Next we investigate the effect of retail investors on the volatility of returns. Given the massive increase of retail investors in the market that occurred in the recent years we postulate that by increasing trade volume of stocks which are more Shariah-compliant, religious tenets affect the volatility of returns. According to behavioral finance literature noise traders acting on the base of noisy signal create additional sources of systemic risk in the market, therefore increasing volatility of the assets affected by the action of noise traders. Looking at the evolution of trade volume in different stock market sectors it is found that individual investors trade more actively in Shariah-compliant stocks. Given the strong relation between trade volume and volatility it appears that by pushing away stock prices from their fundamental values noise traders affect volatility of Shariah-compliant stocks. Finally, because individual investors tend to place small orders their actions have to be coordinated in order to make an impact on the market. Accordingly, in order to test this hypothesis tests for herding behavior in the stock market are conducted. Overall, our findings on the effect of religious tenets in the context of stock market strongly support the viewpoint that religious prescriptions can have important effect for market in the country under consideration.

The rest of the paper proceeds as follows. Section 2 provides some theoretical background. In Section 3 the results of the empirical investigation are reported and the methodology used is discussed. In Section 4, the relationship between price volatility and trade volume is investigated. In Section 5 a test for herd behavior is conducted along with a limited analysis on the US stock market which is taken as a benchmark. Finally, some concluding remarks are given in Section 6.

2. Background and Theoretical Motivation

Economists have long realized the importance of understanding individual portfolio choice. A rich theoretical literature demonstrates how portfolio decisions depend on factors such as risk aversion and investment opportunities. Early contributions analyze static models in which an investor selects the portfolio that maximizes expected utility function given total wealth and the risk-return patters of available assets (Tobin, 1958)). More recent research has moved to a dynamic framework in which a portfolio is selected to maximize expected lifetime utility. The empirical literature on portfolio choice seeks to find observable variables that explain cross-sectional variations in portfolio behavior. Typically, covariates include resources available to the household (total wealth and income) as well as demographic characteristics (age, race, gender, marital status). The role of religion has received little attention, yet in many communities religious tenets play a role in shaping economic behavior and market outcomes, overriding at times the profit motive.

In this paper we aim at investigating if religion affects portfolio selection. From the theoretical point of view our paper relates to the literature of ethical investments where portfolio selection is realized on the basis of ethical principle along with the traditional mean-variance relation. Following this literature we postulate that investors' religious considerations restrict the set of securities available for portfolios selection to a subset of the available stocks in the market. Testing whether religion affects portfolio selection directly requires micro-level data on individual ownership. Ideally, one should analyze the link between the level of religiosity and risk attitude. Unfortunately, micro-level data are not available to us. Therefore, we adopt and indirect approach and analyze the return behavior in the Saudi stock market. Underneath this approach lays the idea that portfolio composition of a religion minded investor is affected by the degree of Shariah-compliant element of the assets.

In order to understand how religion may affect portfolio selection we need to look at the recent evolution of the Saudi stock a market. The Saudi bourse experienced an impressive increase in the number of market participants in the recent years. According to the Samba Report (2009) the number of market participants increased from 52,598 in 2001 to 1.5 million at the end of 2005. The overflow of investors associated with the limited number of shares offered in the market inflated asset prices and caused a surge in volatility.[2] The bubble eventually busted in February 2006 when the market collapsed.

Periods of boom followed by painful bust are common in financial markets, however like many emerging markets, the Saudi

[1] The countries in the Cooperation Council for the Arab States of the Gulf (GCC) are: Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, United Arab Emirates.

[2] Between 2003 and its peak in February 2006 the TASI gained an impressive 700%, with market capitalisation soaring at more than twice the country GDP. During this period the Saudi bourse was one of the largest stock market in the world by value traded, this despite having only 78 listed stocks (many of which with a limited free float).