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Impact of religion and religious differences on political and economic cooperation between countries

Betul Dicle

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IMPACT OF RELIGION AND RELIGIOUS DIFFERENCES ON
POLITICAL AND ECONOMIC COOPERATION BETWEEN COUNTRIES

A Dissertation

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

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The Department of Political Science

by

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Table of Contents

- Acknowledgments** ii
- List of Tables** vi
- Abstract** ix
- 1 Introduction** 1
 - 1.1 Literature Review 5
 - 1.1.1 Economic and Political Cooperation Within Economic Unions 11
 - 1.1.2 Impact of Religion on European Union Accession and Economic Convergence 14
- 2 Data, Convergence Variable and Econometric Model** 17
 - 2.1 Political Variables 17
 - 2.2 Economic Variables 22
 - 2.3 Demographic Variables 22
 - 2.4 Trend Convergence 26
 - 2.4.1 Trend Convergence Measure 26
 - 2.4.2 Trend Convergence Between Religions 32
 - 2.4.3 Testing Methodology for the Trend Convergence 35
 - 2.4.4 Control Variables for the Trend Convergence and Divergence 38
 - 2.5 Econometric Model 40
- 3 Trend Convergence in Income Levels** 42
 - 3.1 Common Religion of Dyads 42
 - 3.1.1 All Religions 43
 - 3.1.2 Individual Religions 51
 - 3.1.3 All Sects 52
 - 3.1.4 Individual Sects 54
 - 3.2 Common Religion of Dyads and Likelihood of Convergence 54
 - 3.2.1 All Religions and Sects 55
 - 3.2.2 Individual Religions and Sects 58
 - 3.3 Religious Diversity of Dyads 60
 - 3.3.1 All Religions and Sects 62
 - 3.3.2 Individual Religions and Sects 62
 - 3.4 Religious Diversity of Dyads and Likelihood of Convergence 65
 - 3.4.1 All Religions and Sects 66
 - 3.4.2 Individual Religions and Sects 66
- 4 Economic Causality and Bilateral Trade Relationships** 70
 - 4.1 Economic Causality 70

4.1.1	Control Variables	70
4.1.2	Economic Causality Measure	71
4.1.3	Common Religion of Dyads	72
4.1.4	Religious Diversity of Dyads	73
4.2	Bilateral Trade Relationship	76
4.2.1	Common Religion of Dyads	81
4.2.2	Religious Diversity of Dyads	84
5	Conclusion	88
5.1	Concluding Remarks	88
5.2	Possible Explanations for Economic Convergence between Islamic Countries	92
5.2.1	Economic Sanctions	92
5.2.2	Colonizations and Effect of “Umma”	94
6	Case Study of the Turkish Accession to the EU: Are Religious Parties More Successful?	97
6.1	Introduction	97
6.2	Literature Review	100
6.3	Turkey and the EU	103
6.4	Religious Tendencies in Turkey	106
6.5	International Integration and Increased Religious Tendencies? . . .	109
6.6	Data	110
6.7	Model and Empirical Findings	111
6.8	Conclusion	118
	Bibliography	119
	Vita	125

List of Tables

2.1	Descriptive statistics for real GDP per capita (RGDPCH) (in constant prices) by country	18
2.2	Population weights for each religion	24
2.3	Population weights for each sect	24
2.4	Descriptive statistics for RGDPCH for each religion	25
2.5	Descriptive statistics for RGDPCH for each sect	25
2.6	σ -Convergence and descriptive statistics for the entire European Union (EU)	27
2.7	σ -Convergence and descriptive statistics for the European Union (EU) excluding Luxembourg and Ireland	28
2.8	Trend-convergence for the European Union (EU)	31
2.9	Mean trend convergence between religions	33
2.10	Mean trend convergence between sects	34
2.11	Sample of the dataset used for the study	37
3.1	Effect of common religion and common sect on trend convergence (1950-2009)	45
3.2	Effect of common religion and common sect on trend convergence (1980-2009)	46
3.3	Effect of individual religions and sects on trend convergence (1950-2009)	47
3.4	Effect of individual religions and sects on trend convergence (1980-2009)	48
3.5	Effect of individual religions and sects on likelihood of trend convergence (1950-2009)	56

3.6	Effect of individual religions and sects on likelihood of trend convergence (1980-2009)	57
3.7	Effect of religion and sect diversity on trend convergence (1950-2009)	63
3.8	Effect of religion and sect diversity on trend convergence (1950-2009)	64
3.9	Effect of religion and sect diversity on likelihood of trend convergence (1950-2009)	67
3.10	Effect of religion and sect diversity on likelihood of trend convergence (1980-2009)	68
4.1	Effect of individual religions and sects on likelihood of economic causality(1950-2009)	74
4.2	Effect of individual religions and sects on likelihood of economic causality(1980-2009)	75
4.3	Effect of religion and sect diversity on likelihood of economic causality (1950-2009)	77
4.4	Effect of religion and sect diversity on likelihood of economic causality (1980-2009)	78
4.5	Mean trend in trades between religions	79
4.6	Mean trend in trades between sects	80
4.7	Effect of individual religions and sects on bilateral trade (1950-2009)	82
4.8	Effect of individual religions and sects on bilateral trade (1980-2009)	83
4.9	Effect of religion and sect diversity on bilateral trade (1950-2009) .	85
4.10	Effect of religion and sect diversity on bilateral trade (1980-2009) .	86
5.1	Trend-convergence for the Muslim dyads	89
5.2	Trend-convergence for the Christian dyads	90
6.1	Financial Assistance by EU to Turkey	105
6.2	Number of Mosques in Turkey	107

6.3	Quarterly change in the deposits collected	109
6.4	Correlations of foreign financial markets with the Istanbul Stock Exchange	112
6.5	Granger causality estimation results	115

Abstract

Studies on economic and political cooperation of countries generally focus on the effects of factors such as geographical proximity, political regime type, and the different fiscal and monetary policies, among others. The impact of religious affiliation, however, stayed mainly as theory. The clash between and/or within religions had important proponents. We provide evidence that religion can have economic union effects. We evaluate whether there is historic economic polarization and whether religions have group dynamics similar to economic unions. Economic convergence, causation and trade cooperation are commonly reported for economic unions. Do these effects exist for countries with the same religion?

Econometric challenges exist. Large dispersions within religious groups deem σ -convergence and β -convergence problematic: two common measures of income level equalizing effect of economic unions/groups. As a remedy, we propose a new convergence measure namely trend-convergence. This allows us to extend the analysis to over 200 countries, 8 religions, 17 religious sects and factors utilizing 15 different data sets for the 1950-2009 period as data allows.

The evidence shows that common religion between countries is an important factor for their economic income level equalization (convergence). However, countries with common religion in general have economic divergence and decreasing bilateral trade. These results are statistically significant at the .01 level. Economic unions and partnerships such as European Union and OPEC have economic convergence, as expected. Most importantly, the only religion that have economic convergence and increased bilateral trade is Islam. This evidence suggests that Islam is having similar effects as an economic union.

Chapter 1

Introduction

There have been two World Wars in history. Neither world war was related to religious affiliation or religious diversity. In the last two decades, however, we are witnessing a significant diversity between religions and between different sects of religions. A trend that seems to support the arguments of [Huntington \(1993\)](#).

It is true that Muslim-Shias and Muslim-Sunnis were at odds since the dispute over the first caliph after the prophet's death at year 632. However, it is only becoming a worldwide concern now that one side (Iran) is attempting to arm itself with nuclear weapons and the other side (Saudi Arabia and Egypt) is forming an alliance with the US, the superpower of the world.

The wars between Christian-Protestant and Christian-Catholics are common in history (such as the Thirty Years War, St. Bartholomew's Day massacre and ensuing religious wars in France, and Catholic-Protestant conflict in Ireland). The conflict between Muslims and Jews proved to be persistent in the 20th century. Anti-Semitism in Europe dates back to the Roman Empire and Jews were subjected to persecution for many centuries (such as the persecution of Jews in Russia in 19th century and their persecution during the Spanish Inquisition and their subsequent retreat to the Ottoman Empire). Anti-Semitism still persists throughout Europe.

Religion, while a uniting factor for countries with the same faith, can be a dividing factor between countries of different faiths. The inherent condemnation of other religions within religious teachings can impair economic as well as political relationships. It can also lead to conflicts. [Huntington \(1993\)](#) argues that religion is one of the most important factors in the division lines between civilizations.

On the other hand, there are examples of dyadic relationship that are exceptions, outliers. The historic relationship between the Turks and the Jews had military as well as financial consequences for the Ottoman Empire and for the new Republic of Turkey. When the Ottoman Sultan, Abdulhamid II, was asked to give permission to the European Jews to immigrate to Palestine, then under the Ottoman rule, by Dr. Theodore Herzl, the president of the World Zionist Congress and was offered to be freed from all Ottoman's foreign debt at that time, he declined.¹ Also, during the Spanish Inquisition, the Ottoman Empire provided a safe haven for the Jews. This relationship between the Muslim-Sunni caliph and the Jews was not welcomed in the Islamic world.

There are also obvious examples of religious conflicts such as the Crusades. More recently, wars between Israelis and Arab nations have their roots in the conflicts with Jews in the Arab world possibly due to religious teachings as well as the historic denial of the existence of Palestinian State by the Jews. Recently, within the last decade, we are witnessing a possible united front against Islamic faith, especially after September 11, 2001. This alliance is meeting with perhaps unwilling alliance on the Muslims side as well. Countries, otherwise enemies, seem to be grouping against a common threat. Turkey, for instance, a long time US ally, seems to be giving up its accession bid for EU and forming economic alliances with Iran and other Islamic nations. Perhaps this religious grouping has started decades ago. [Huntington \(1993, p. 28\)](#) notes that “Culture and religion also form the basis of the Economic Cooperation Organization, which brings together ten non-Arab Muslim countries...” and “One impetus to the revival and expansion of this organization, founded originally in the 1960s by Turkey, Pakistan and Iran, is the realization

¹Later in history, we see that Palestine allied with the British to be freed from the Ottoman Empire.

by the leaders of several of these countries that they had no chance of admission to the European Community.” Syria, a nation once threatened by Turkey with war due to Syria’s support for PKK terrorism, seems to be increasing its security relations with Turkey and Iraq, its Islamic neighbors. While ethnicity seems to be also important, the 700 year effect of the Ottoman Empire is inevitable. Ex-USSR countries also seem to be choosing their economic and political counterparts based on their common religious affiliations. Fukuyama (1989, p. 12) noted this religion based polarization trend in 1989: “The rise of religious fundamentalism in recent years within the Christian, Jewish, and Muslim traditions has been widely noted.”

Regardless of exceptions, the main questions of the present study are: Is religion a dividing or uniting factor for countries? Is there such a thing as religious brotherhood when it comes to international economic/political cooperation? How does religious affiliation affect economic/political performance/cooperation comparatively? Finally, is there religious segregation in the world which should cause concern for future conflicts?

In a study about religion and its comparative effect on countries, one of the major obstacles is the data about religion. It is a variable that can be measured at different dimensions. While religious affiliation is a dimension, affinity is also a dimension. Being born into a religion is yet another dimension. Respondents to surveys about religion have different states of minds that are based on whether they are living in Iran, Saudi Arabia or France. These dimensions limit the empirical studies about religion to major religious groups. The majority of Iran was Muslim-Shias during the Shah and the majority of Iran is still Muslim-Shias now.

We have several contributions to the existing literature. There are four new measures introduced to remedy the problems associated with high diversity and outliers within groups that may potentially mask trends. We introduce the *trend-*

convergence measure within section 2.4 which is an alternative to σ -convergence measure. Trend-convergence captures different dimensions of convergence. However, due to possibly similar growth rates of countries within groups, convergence does not sufficiently capture the intended cooperation between religions. In sections 4.1 and 4.2, two new measures are introduced: economic causality and trend of bilateral trade, respectively. All three measures combined provide us with a clearer understanding of the intra-religion dynamics and cooperation within each religion. The final new measure is for the higher religiosity in Islam. Since we are arguing that the worldwide Islamophobia is creating a united front on both sides, and this is a cause of concern, we suggest a measure for higher religiosity for Islamic faith. Islamic banking figures (compared to traditional banking figures) in each country is used as an indicator of the willingness of the public to choose a more risky banking practice (there is no deposit insurance in Islamic banking) over traditional commercial banking. Thus, this measure shows the willingness of the public to act on their religious beliefs, which we define as religiosity. We control for increased Islamic religiosity and cooperation between these countries in each of the empirical test sections.

Our most important contributions to the existing literature are the actual conclusions: 1) The economic result of religious uniting is evident for Muslims and Christians. While Muslims are converging in their economic situations and having higher bilateral trade, Christians are diverging economically and having lower bilateral trade. If there is polarization in the world against the Islamic faith, it seems that it is helping the Muslims to unite. 2) There is increasing cooperation between countries with increased Islamic religiosity. And 3) Christians and Muslims, along with certain sects, seem to be the leading groups of divergence and convergence

movement. All three of these conclusions have policy implications and point to a possible segregating impact between the religions.

We are not arguing, in any way, that one religion is opposed another. However, there is a trend after September, 2001, to suspect one religion (Islam) as the culprit. The Afghanistan and the Iraq wars are between mostly Christian states and Muslim states. The Al-Qaeda terrorist organization is comprised of Muslim individuals. Iran, another Islamic state, is accused of developing nuclear weapons. In this study, we provide empirical evidence that Islamic states have economic convergence. They also have convergence in military spending. On the other hand, Christians have divergence in GDP per capita and military spending. Shias have the highest convergence in military spending (compared to all sects). Thus, if there is a polarization in the world based on religion, Islamic states seem to be the only group polarizing.

1.1 Literature Review

Religion is a factor that affects the economic and political structure of countries. [Weber \(1930\)](#), for instance, argues that Christian-Protestants' work ethics is a reason for economic development. This argument would establish the basis of evaluating the comparative effect of religion on economic development across countries with different religions, including Christian-Protestants. In a similar vein, arguments of [Thomas Babington \(1848\)](#) and [Harrison \(1985\)](#) compare Christian-Catholicism to Christian-Protestants in terms of its less positive effect on economic development. In a wide based empirical study, [Grier \(1997\)](#) shows the difference in economic development levels between Christian-Protestant countries and Christian-Catholic countries. He reports a positive relationship between GDP growth and Christian-Protestant belief. [Inglehart and Norris \(2003\)](#) argue that Is-

lam is also a religion that has impact on the economic development of countries. Perhaps, since level of women within the workforce is lower in Muslim countries compared to Christians, it would be intuitive to argue that Muslim countries' development would be hampered compared to Christians'. The common argument of these studies is that religions affect economic development in individual countries. In other words, each religion is evaluated in its own merits without considering its interactions with other religions.

The evaluation of economic development is understandably a process that considers individual country attributes. Religion is one of them. As de Melo et al. (1992) point out, the world is integrating and economically converging. The European Union, for instance, is one of the attempts toward regional integration that aims to unite European nations economically and politically. Efforts such as NAFTA is less ambitious and aims to enhance regional trade and improve economic development. OPEC is for oil producing countries in the world without regional coverage. NATO is for military cooperation, again without any regional preference.² OECD is economic cooperation without regional coverage.

Each dyadic relationship has unique dynamics based on its geographical, ethnic, historical, linguistic, economic, political and religious situations. Having the same colonizer in history, as argued by Grier (1997), is a factor for economic development. Britain, Spain, France, Italy, and the Netherlands, among others, had many colonies in different parts of the world. They instilled their legal systems, cultures and languages. English, French, and Spanish are either official languages or widely spoken languages in many former colonies. Most legal systems are based on common law, civil law or other western law. In their seminal work, La Porta et al.

²Canada, United States, and Turkey are in different parts of the world

(1998) show the effect of legal systems on financial development of countries. In their grouping of legal systems, La Porta et al. (1998, p. 1130) include “English-origin”, “French-origin”, “German-origin”, and “Scandinavian-origin”. While some countries’ choice of legal systems is based on historical development of their legal systems, some are based on regional proximity and some are based on past colonizations. Kuran (2009) argues that the religious culture had impacted the development of Islamic countries due to the influence of Islam on legal systems.³ Based on the arguments of Kuran (2009), if we were to include a new grouping to La Porta et al. (1998), it would be countries whose legal systems are based on Shari’a (Islamic religious law). However, there are countries that do not have Shari’a as the law of the land, but their cultures are heavily influenced by the Islamic religion. For instance, Bangladesh a former British colony, has its legal system based on English common law.⁴ However, Islamic family law has its place within the court system.

The arguments about common denominators aim to explain economic development and comparative differences between countries. Huntington (1993) is the seminal work that argues civilizations’ differences and states that “Civilizations are differentiated from each other by history, language, culture, tradition and, most important, religion” (Huntington, 1993, p. 25). While his study is to argue the “Clash of Civilizations”, he also argues that common traits within civilizations are uniting factors for members of civilizations: “... perhaps as a result, a return to the roots phenomenon is occurring among non-Western civilizations” (Huntington, 1993, p. 26). In fact, Huntington (1993) argues that the religion is a major factor in this uniting tendency: “The ‘unsecularization of the world,’ George Weigel has remarked, ‘is one of the dominant social facts of life in the late twentieth century.’”

³Lack of corporations and hereditary laws, among others, are some of these reasons

⁴<http://www.law.emory.edu/ifl/legal/bangladesh.htm>

The revival of religion, ‘la revanche de dieu,’ as Gilles Kepel labeled it, provides a basis for identity and commitment that transcends national boundaries and unites civilizations” [Huntington \(1993, p. 26\)](#). These points form the basis for our argument that there should be more economic cooperation between nations with the same religion. This hypothesis also implies that there should be relatively less cooperation between nations with different religions. After all, according to [Huntington \(1993, p. 27\)](#), “Even more than ethnicity, religion discriminates sharply and exclusively among people.” In specific, we would expect that the conflict between “Western and Islamic civilizations” that “has been going on for 1,300 years.” ([Huntington, 1993, p. 31](#)) should reflect as relatively less economic cooperation.

Our argument is not as strong as those of [Huntington \(1993\)](#). We are not claiming that the supposed animosity between religions is resulting in less economic cooperation. There can be economic cooperation between any countries. After all, as Voltaire put it: “When it’s a question of money, everybody is of the same religion”. However, we are arguing that due to the commonalities within religions, there should be more economic cooperation between the countries of the same religion. History, culture and religion are uniting factors within civilizations and dividing factor between civilizations. [Huntington \(1993, 29\)](#) states “As the ideological division of Europe has disappeared, the cultural division of Europe between Western Christianity, on the one hand, and Orthodox Christianity and Islam, on the other, has reemerged.”

While [Huntington \(1993\)](#) is a contradicting study to [Fukuyama \(1989\)](#), [Fukuyama \(1989, p. 11\)](#) also recognizes “... contradictions in liberal society beyond that of class that are not resolvable.” He further states that “The rise of religious fundamentalism in recent years within the Christian, Jewish, and Muslim traditions has been widely noted” ([Fukuyama, 1989, p. 12](#)). We find that both [Huntington \(1993\)](#)

and Fukuyama (1989) agree on the fact that affiliation to the same religion can be a uniting factor for countries. Religion also can be a dividing factor between countries of different faiths.

There are certainly opposing arguments. Bilgrami (2003), for instance, argues that the clash is not necessarily between civilizations but also within civilizations. He argues, that the differences between the secularists and absolutists among Muslims is a potential for division. This argument would be opposite to ours. We agree with the fact that within religions (or more generally, within civilizations) there could be dividing factors so strong that it could lead to clashes. For instance, the differences between Muslim-Sunnis and Muslim-Shias have their roots in the early years of Islam and did not resolve for the past 1,300 years of Islamic history. Similarly, the differences between Christian-Protestants and Christian-Catholics are also reasons of diversion. In fact, what Bilgrami (2003) argues is not the clash between sects of Islam. It is clash within a sect.

One of the important measures of economic cooperation is income equalization between countries. Lucas (1990, p. 96) for instance hypothesizes several reasons to explain the "... absence of income equalizing international capital flows." In fact, he states "The central idea of virtually all postwar development policies is to stimulate transfers of capital goods from rich to poor countries" (Lucas, 1990, p. 96). While economic cooperation could be measured with bilateral trade, long-term integration or economic causation, what is important is the benefit each country is attaining from the economic cooperation. Thus, we use a measure similar to Lucas (1990) in that we believe that economic cooperation should be measured with income equalization between countries. A dyad of countries may have ever increasing bilateral trade and one of the countries may not be benefiting from this trade as much as the other one. A country's economy may be impacting

another's economy negatively. While one country does better, the other one may be doing even better. On the other hand, income equalization implies that the poorer country becomes similar, in richness, to the richer country. The income disparity gets lower. Both countries do well but the poorer country does better. This income level equalization is the convergence of GDP per capita between countries.

Based on the characteristics of individual religions, their relations within themselves and with each other, we further argue that there are general patterns of economic convergence/divergence for different religions. Based on the arguments of [Weber \(1930\)](#), two Christian-Protestant countries should be converging in their economic development more than their convergence with other countries. If both countries have similar work ethics, their bilateral trade should increase more than their bilateral trade trend for other countries. We expect to find more economic and trade cooperation between Christian-Protestants. On the other hand, just because being a Christian-Catholics country is argued to be less positive (economically) than being a Christian-Protestant country, it does not mean that Christian-Catholic dyads should have more/less cooperation between themselves. In a similar analogy, just because Islam's impact on economic development is less positive, it does not mean Islamic countries cooperates more or less.

If it is found that Christian dyads economically converge or Muslim dyads economically converge, it would provide evidence in line with the arguments of [Huntington \(1993\)](#) and [Fukuyama \(1989\)](#) in that a religion has a uniting factor within itself. However, if Muslim dyads economically diverge, it would provide support for the [Bilgrami \(2003\)](#).

Further evaluation examines the dyadic relationship of countries with different religions. This leads to religions' relationships with each other as groups, as if they are economic/political unions themselves. Finally, these dyadic relationships are

evaluated within the context of already established economic and political unions such as European Union.

1.1.1 Economic and Political Cooperation Within Economic Unions

Earlier studies (e.g., Balassa and Toutjesdijk, 1975) find a positive effect of integration between developing countries on economic growth through increased trade among member countries. On the other hand, some of the recent studies (e.g., Economidou et al., 2006) based on developing countries find that trade among the members of trade blocs does not necessarily induce economic growth. Based on a cross-section of 101 countries (OECD and developing) for the period 1960-1985, de Melo et al. (1992) find that economic and trade integration have an insignificant effect. Several other studies also find no significant effect of integration on economic growth (Landau, 1995; Vanhoudt, 1999; Badinger, 2001; Estrin et al., 2001; Kocenda, 2001). There are also many studies that provide evidence for the positive effect of economic or trade integration on economic growth and/or productivity (Brada and Mendez, 1988; Baldwin, 1989; Rivera-Batiz and Romer, 1991; Ben-David, 1993; Coe and Moghadam, 1993; Ben-David, 1994; Kokko, 1994; Henrekson et al., 1997; Haveman et al., 2001; Brada et al., 2005; Economidou et al., 2006; Kutan and Yigit, 2007; Cuaresma et al., 2008). In addition, Dreze (1989) argues that integration benefits smaller countries more than it does larger countries. Grossman and Helpman (1991) argue in contrast to Dreze (1989). These mixed results make it hard to make inferences about the real economic impact of economic unions by the member countries.

Most of the studies cited above differ in terms of methodology, data periods, countries included, and questions evaluated. The common denominator is the economic impact of integration and the channels in which such impact occurs. Barro

and Sala-i Martin (1992) is one of the early studies that present the concept of β -convergence which refers to the correlation between GDP and its growth rate in similar fashion to the trend analysis of Dickey and Fuller (1981) for stationarity. Convergence requires that the correlation coefficient to be statistically significant and negative. Among the studies that evaluate convergence in income levels cross-sectionally are, Dowrick and Duc-Tho (1989); Barro (1991); de Melo et al. (1992); and Henrekson et al. (1997). Barro and Sala-i Martin (1992) also evaluate convergence through what is referred to as σ -convergence which is the decreasing standard deviation of income among member countries. Recently, Cuaresma et al. (2008) provide evidence in favor of both β - and σ -convergence using the EU member countries for the time period 1961-1998.

Based on the mixed results obtained through cross-sectional analysis, more recent studies employ panel data estimations and estimate convergence as well as channels in which economic benefits are obtained. Convergence provides a reliable measure of income growth for economic and trade integrations. Among the studies that employ panel type estimations are Coe and Helpman (1995); Evans and Karras (1996); Evans (1998); Fleissig and Strauss (2001); Kocenda (2001); Economidou et al. (2006); and Cuaresma et al. (2008). The results of these studies are also mixed, however; more of them provide evidence for the positive effect of economic integration on income growth and especially β -convergence.

The mixed results are troubling. However, we can still infer some conclusions from studies that show positive economic effects of economic and/or trade integration. While there is contradictory evidence, these points are primarily what is being expected and further examined. Integration is expected to increase FDI, the growth rate of productivity, research & development, and growth rate of income per capita. While the effects are static, they also have medium- and long-term

impact. The level of education increases the absorptive capacity of countries for new technology and enables the country to better utilize FDI, which in-turn is expected to increase the impact of integration. The size of integration (sum of GDP for member countries) affects the possible benefits for members.⁵ Government spending in general should affect integration benefits.⁶ Trade is expected to increase with integration, not just with the member countries but also with non-member countries, which in turn would lead to greater openness of the economy and growth in income levels. Convergence in income and productivity is expected among integrated countries and it is expected to be higher for poorer countries. Diversification of integration is expected to improve growth rates of income level.

The purpose of this study is to evaluate religion as a common denominator for economic and political cooperation. Based on the mixed findings in the previous literature, while we know that economic unions are advantageous for the members, for the most part, we cannot explain some of the different findings for certain members of economic unions. It is argued here that religion can be a uniting factor for groups of countries to cooperate more and dividing factor for some of the countries within economic unions. For instance, unions that are based on geographic locations, such as the EU, include different religions. Thus, it would be expected to have Christian-Protestant states to have better working relations with other Christian-Protestant states within the EU. It also would be expected to have Christian-Orthodox, such as Greece, to be alienated, relatively speaking.

⁵While [Rivera-Batiz and Romer \(1991\)](#) argues positive impact, [Economidou et al. \(2006\)](#) argues negative impact.

⁶While [Barro \(1991\)](#); [Levine and Renelt \(1992\)](#); [Barro and Sala-i Martin \(1997\)](#); [Economidou et al. \(2006\)](#) argue for negative impact, [Barro \(1995\)](#) explain that 'productive government spending' has positive effects.

1.1.2 Impact of Religion on European Union Accession and Economic Convergence

The European Union (EU) has a total real GDP of \$11.5 trillion and a population of about 488 million.⁷ With 27 sovereign countries as members, it is a challenge to economically and politically unite. By the end of 1995, Belgium, Germany, France, Italy, Luxembourg, the Netherlands, United Kingdom, Ireland, Denmark, Greece, Spain, Portugal, Austria, Finland and Sweden were EU members. Considering the alliance structure of the WWII, the EU has faced several challenges even at its initial stages. However, these countries also had quite in common, including geopolitics, economic co-integrations, cultures, shared histories and, perhaps more importantly, their religion.

Since 1959, Turkey has been an applicant country for EU membership. In 1995, Turkey formed and honored a trade union with the EU. However, no full EU membership is in sight. While Turkish governments would like to be considered a European country, the majority of Turkey's land is in Asia. Turkey would be the second biggest country within the EU in terms of its population. However, economically, its GDP per capita and its GDP growth rate would be the lowest among EU member countries. Turkey's population is predominantly Muslim.

Earlier studies that evaluate the economic impact of EU find positive effects for member countries (i.e., Coe and Moghadam, 1993; Ben-David, 1994; Kokko, 1994; Henrekson et al., 1997; Economidou et al., 2006; Kutan and Yigit, 2007; Cuaresma et al., 2008). In line with these findings, Ben-David (1996) show that the positive effects of the EU membership are evident for candidate countries as well. Contrary to this evidence, mainly based on methodological arguments, it is also argued that

⁷Heston et al. (2009) provide economic data for 188 countries for the time period 1950-2004 with the Penn World Table (PWT). It is available through Center for International Comparisons of Production, Income and Prices (CIC) at University of Pennsylvania (http://pwt.econ.upenn.edu/php_site/pwt_index.php).

membership may have negative economic impact as well (i.e [Badinger, 2001](#); [Estrin et al., 2001](#)).

After 1995, as a trade union partner of EU, Turkey was expected to improve its economy, its socio-political institutions, and most importantly its level of democracy. However, the level of improvement is not sufficient for Turkey's full accession to the EU. There are several reasons for the lack of progress for Turkey. As a country that is a frequent target of terrorism, Turkey had a significant defense budget against radical Islamist (i.e., IBDA-C Hisbullah) and separatist Kurdish (i.e., PKK) terrorist organizations. Turkey also had to defend its guardianship rights in Cyprus for which it had to fight against Greece in 1967 and once again in 1974. Since, 1974, Turkey has had to finance the peace and safety of the Northern Cyprus Turkish Republic. While these costs are economic, there are also political costs involved with issues such as terrorism and problems with Greece over Cyprus and Aegean Sea territorial rights. According to the peace agreements after the Cyprus war, neither side of Cyprus (Turkish or Greek) can be a member to international unions (or organizations) if one of the guarantor states is not a member to that union (Greece and Turkey). Accordingly, membership of South Cyprus to EU is accepted by the EU despite this agreement even though two of the signatory parties to the initial peace agreement are EU members (Greece and the U.K.).

In this study, it is argued that religious commonality plays a significant role in European Union's inner economic convergence. While there may be a union-wide economic convergence, there is also economic convergence among the countries sharing a common religious faith. It is further argued that religion is one of the main reasons that Turkey cannot utilize the EU economic and political benefits to their fullest extent. Since 1995, the resistance of EU towards Turkey, coupled with the veto powers held by Greece and South Cyprus, did not allow Turkey to take

full advantage of the customs union agreement. Turkey, as the successor state of the Ottoman Empire, is charged with the directives of Ataturk to be westernized. Islamic roots within the society and the social impact of religion have their toll on such quest. In recent years, after a religious government was elected democratically in Turkey (2002), the EU was in full support of “moderate Islam”. Such support, however, resulted in powerful Islamic government which eventually diverted its focus from EU membership towards other Islamic neighbors.

Turkey’s relationship with the EU provides a unique case study for the evaluation of the effect of religious differences on the economic and political cooperation. In support of the theoretical argument, the empirical evidence would evaluate Turkey’s level of religious tendency in relation to Turkey’s integration with the EU. For instance, before 2002, the Turkish government was not Islamicly oriented and it was not a proponent of “moderate Islam”. Thus, the period before and after the current one of moderate Islamic rule by the Justice and Development Party (JDP) provides a unique opportunity to evaluate Turkey’s integration level with the EU in comparative perspective. There is also a period (1996-1997) during which another “moderately Islamic” party was partly in power through a coalition government. This period, due to the coalition government, would provide a unique robustness check; we would expect the effect of religion on EU integration to be lower than in non-Islamic government periods and higher than in completely Islamic government periods. The level of religious tendency for Turkey can be measured by the number of students in clergy high schools. As an alternative, the amount of deposits Islamic Banks collect in comparison to commercial banks can also be used. The level of integration with EU can be measured by the level of convergence or by Turkey’s co-integration with EU members.

Chapter 2

Data, Convergence Variable and Econometric Model

Several data sets are utilized for this study for political, economic and religion variables. Table 2.1 provides the list of countries that are included in the study. Since multiple data sets are combined, a country name mapping file is created across datasets. While the majority of the countries' names are not problematic, some of the countries names do not match across data sets (ex. South Korea may be Korea, South or Republic of Korea) .¹

2.1 Political Variables

The main source of the political variables is the “Correlates of War Project” (COW).² Dyadic variables from this data set include alliances (Formal Alliances, v3.03) (*alliance*), bilateral trade (Bilateral Trade, v2.01) (*imports and exports*), contiguity (Direct Contiguity, v3.1) (*contiguity*), diplomatic exchanges (Diplomatic Exchange, v2006.1) (*de*), intergovernmental organization memberships (Intergovernmental Organizations, v2.3) (*IGO*), interstate wars (Inter-State War, v3.0) (*war*) and militarized interstate disputes (Militarized Interstate Disputes, v3.1) (*mid*).^{3,4} Political variables that are country specific include intra-state wars (Intra-State War, v3.0) (*c_war*) and country codes (*ccode*).

¹A Stata command (*stdcountry*) is created as part of this study which can be downloaded and installed from <http://www.financepolisci.com/stata>

²Correlates of War Project is available through <http://www.correlatesofwar.org/>

³While the variables available through the dataset may include many more variables, the list of variables provided here are the variables used in this study.

⁴Variables names, as they are used in empirical tests, are provided in italics throughout this study. While some of the variables may be used as they are used in the data sources, some are changed to avoid conflict between different datasets used.

TABLE 2.1: Descriptive statistics for real GDP per capita (RGDPCH) (in constant prices) by country. RGDPCH (growth) is divided by the World average GDP per capita (growth). The World average is either equally weighted or population weighted. Trend is the coefficient for the trend for the model: $X_t = \alpha + \beta_1 trend_t + \epsilon_t$ where X is the variable of the column. DF-z is the Dickey-Fuller stationarity test. Economic variables are used from “Penn World Table” (PWT). *, **, and *** represent statistical significance at 1%, 5% and 10% levels respectively.

Country	Obs.	RGDPCH			RGDPCH growth			Population weighted RGDPCH			Population weighted RGDPCH growth						
		Mean	Stdev.	Trend	DF-z	Mean	Stdev.	Trend	DF-z	Mean	Stdev.	Trend	DF-z				
Afghanistan	38	0.08	0.03	-0.002 *	-1.277	13.67	96.86	0.919	-6.278 *	0.12	0.06	-0.005 *	-1.181	0.03	4.16	0.040	-5.568 *
Albania	38	0.31	0.03	-0.001	-1.432	-0.59	24.89	-0.053	-6.593 *	0.49	0.09	-0.006 *	-1.273	0.50	1.87	0.010	-5.142 *
Algeria	48	0.59	0.12	-0.006 *	-4.589 *	1.08	12.79	-0.115	-6.657 *	0.91	0.19	-0.012 *	-3.251 **	-1.97	16.78	0.219	-7.426 *
Angola	38	0.31	0.05	-0.002 *	-2.135	-4.75	20.16	-0.042	-4.613 *	0.49	0.12	-0.009 *	-1.984	0.37	2.78	0.034	-6.877 *
Antigua and Barbuda	38	1.06	0.32	0.025 *	-0.943	-5.64	26.83	0.164	-5.416 *	1.62	0.33	0.023 *	-1.356	1.16	1.97	-0.043	-5.830 *
Argentina	58	1.43	0.32	-0.015 *	-1.180	-1.91	13.06	-0.121	-8.401 *	2.24	0.55	-0.029 *	-0.885	0.08	3.02	0.008	-9.064 *
Armenia	15	0.46	0.13	0.029 *	3.062	-4.12	28.73	3.112	-54.835 *	0.63	0.17	0.036 *	2.633	1.87	0.85	0.039	-3.485 *
Australia	58	2.51	0.32	0.007 *	-1.842	-0.59	13.96	-0.090	-8.368 *	3.90	0.32	-0.000	-5.102 *	0.34	3.98	0.006	-10.627 *
Austria	58	2.34	0.50	0.025 *	-2.472	-0.04	6.26	-0.074	-6.552 *	3.62	0.64	0.027 *	-5.394 *	0.78	3.94	-0.018	-8.996 *
Azerbaijan	15	0.40	0.15	0.020 **	1.092	39.87	137.77	-14.063	-150.809 *	0.55	0.19	0.025 **	0.674	1.18	3.45	0.578 *	-2.275
Bahamas	38	2.17	0.27	0.004	-1.764	-2.92	12.29	0.195	-4.461 *	3.41	0.52	-0.030 *	-1.909	-0.55	5.67	0.121	-5.001 *
Bahrain	37	2.29	0.44	-0.034 *	-1.355	4.71	24.29	0.256	-5.567 *	3.70	1.16	-0.096 *	-0.995	0.37	1.93	-0.012	-4.586 *
Bangladesh	49	0.20	0.07	-0.003 *	-1.532	-1.91	12.31	-0.064	-6.651 *	0.31	0.10	-0.006 *	-3.230 **	2.23	14.54	-0.163	-6.694 *
Barbados	48	2.06	0.17	0.002	-2.218	1.61	14.75	-0.075	-6.506 *	3.19	0.45	-0.008 **	-0.911	-2.43	25.34	0.274	-7.391 *
Belarus	14	1.22	0.26	0.061 *	1.219	2.60	2.68	0.225	-4.717 *	1.66	0.32	0.075 *	0.892	1.54	1.61	0.073	-4.502 *
Belgium	58	2.30	0.34	0.016 *	-2.149	-0.46	8.82	-0.067	-7.081 *	3.58	0.41	0.014 *	-5.250 *	0.31	5.33	0.009	-8.611 *
Belize	38	0.65	0.09	0.007 *	-1.061	5.02	18.16	0.036	-5.419 *	1.02	0.08	-0.001	-1.806	0.70	1.62	-0.006	-4.649 *
Benin	49	0.14	0.03	-0.001 *	-1.240	0.51	36.50	0.248	-7.110 **	0.22	0.04	-0.003 *	-0.842	0.11	2.64	0.013	-8.226 *
Bermuda	38	3.63	0.23	0.012 *	-1.728	-0.65	5.91	0.094	-4.577 *	5.71	0.53	-0.042 *	0.727	0.44	0.95	-0.007	-7.089 *
Bhutan	38	0.18	0.09	0.008 *	1.897	-5.59	37.33	0.007	-6.459 *	0.27	0.10	0.009 *	1.418	1.33	2.06	0.043	-7.385 *
Bolivia	58	0.44	0.16	-0.008 *	-1.392	0.52	12.38	-0.025	-6.213 *	0.70	0.26	-0.014 *	-1.078	-1.70	11.19	0.087	-5.557 *
Bosnia and Herzegovina	18	0.36	0.14	0.018 *	-1.175	-15.64	87.80	3.196	-4.104 *	0.50	0.18	0.022 *	-1.177	1.91	4.29	-0.147	-1.903
Brazil	48	0.45	0.20	0.014 *	-0.367	0.45	13.82	-0.048	-9.823 *	0.68	0.27	0.018 *	-1.172	-2.92	34.46	0.395	-7.291 *
Brazil	58	0.75	0.13	0.005 *	-2.636 ***	0.15	11.25	-0.100	-7.380 **	1.18	0.24	0.004 **	-2.880 **	0.35	6.28	-0.007	-9.274 *
Brunei Darussalam	38	6.62	2.16	-0.170 *	-0.287	1.11	10.64	-0.000	-7.560 **	10.87	4.79	-0.384 *	-0.318	0.22	3.37	-0.079	-5.389 *
Bulgaria	38	0.59	0.12	0.008 *	-1.672	-1.53	11.06	-0.029	-5.293 *	0.91	0.14	0.003	-2.083	1.25	2.32	-0.083 **	-4.588 *
Burkina Faso	49	0.12	0.03	-0.001 *	-2.184	1.03	7.53	-0.002	-8.233 *	0.18	0.04	-0.002 *	-2.907 **	-1.18	13.84	0.139	-7.377 *
Burundi	48	0.10	0.02	-0.001 *	-1.284	0.63	6.54	-0.070	-5.094 *	0.15	0.04	-0.003 *	-0.276	-2.99	20.90	0.249	-6.556 *
Cambodia	38	0.15	0.04	0.001	-2.434	0.93	7.17	0.053	-7.742 *	0.24	0.06	-0.002 **	-4.999 *	-0.11	2.55	0.133 *	-3.775 *
Cameroon	48	0.30	0.08	-0.004 *	-1.742	2.16	21.92	0.145	-7.114 **	0.46	0.12	-0.007 *	-0.727	4.20	24.15	-0.375	-6.384 *
Canada	58	2.61	0.26	0.006 *	-2.341	0.03	13.98	-0.070	-8.025 **	4.07	0.35	-0.003 *	-5.318 *	0.67	1.22	-0.006	-8.693 *
Cape Verde	48	0.41	0.10	0.003 *	-0.376	-0.53	13.47	-0.024	-5.636 *	0.62	0.09	0.003 *	-1.143	-4.29	34.07	0.489	-7.070 *
Central African Republic	48	0.15	0.08	-0.005 *	-3.372 **	0.74	14.69	0.017	-9.859 **	0.24	0.11	-0.008 **	-2.768 ***	-1.42	8.43	0.114	-6.294 *
Chad	48	0.21	0.09	-0.005 *	-2.649 ***	-1.33	11.30	-0.003	-6.111 *	0.32	0.12	-0.008 **	-2.223	0.33	3.28	0.025	-5.697 *
Chile	57	1.09	0.24	0.002	-1.008	1.38	24.13	-0.065	-6.359 **	1.69	0.29	-0.004 ***	-2.556	0.58	2.47	0.020	-10.442 *
China	56	0.19	0.15	0.008 **	9.194	-4.20	30.72	-0.191	-7.826 **	0.29	0.17	0.010 **	10.044	2.38	6.95	-0.021	-9.041 *
China Version 2	56	0.22	0.14	0.007 *	6.493	-4.26	31.65	-0.219	-7.841 **	0.33	0.17	0.008 **	7.226	1.94	5.91	-0.012	-9.010 **
Colombia	58	0.63	0.06	-0.001	-1.888	-0.14	7.84	-0.053	-7.856 **	0.98	0.12	-0.004 *	-2.833 ***	0.48	1.87	-0.005	-9.597 *
Comoros	48	0.24	0.07	-0.004 *	-0.673	3.43	23.89	0.136	-6.500 **	0.37	0.10	-0.007 **	0.401	-3.39	24.04	0.301	-6.934 *
Congo, Democratic Republic	58	0.19	0.13	-0.007 *	-0.216	10.85	68.88	0.546	-7.689 **	0.31	0.21	-0.011 *	-0.199	0.92	6.85	-0.101 ***	-6.180 *
Congo, Republic	48	0.34	0.07	0.001 ***	-1.634	-1.41	45.89	0.258	-6.087 **	0.53	0.11	0.000	-1.368	2.88	10.03	-0.244 **	-5.184 *
Costa Rica	58	0.91	0.12	-0.003 **	-2.141	1.56	13.95	-0.048	-8.462 **	1.43	0.24	-0.009 **	-2.505	0.35	3.70	-0.003	-8.441 *
Cote d'Ivoire	48	0.31	0.07	-0.005 *	-0.491	1.44	20.66	0.059	-8.541 **	0.49	0.13	-0.005 **	0.608	0.39	3.17	-0.039	-8.594 *
Croatia	18	0.93	0.09	0.007	-2.664 ***	-1.85	38.00	0.149	-3.826 **	1.30	0.14	0.000	-4.987 *	0.25	2.07	0.209 **	-5.415 *
Cuba	38	0.81	0.15	-0.001	-1.199	-1.80	19.84	-0.009	-5.528 *	1.28	0.29	-0.014 *	-0.745	0.55	1.67	-0.024	-4.164 *

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Table 2.1 – continued from previous page

Country	RGDPCH growth				Population weighted RGDPCH				Population weighted RGDPCH				
	Obs.	Mean	Stdev.	Trend	DF-z	Mean	Stdev.	Trend	DF-z	Mean	Stdev.	Trend	DF-z
Cyprus	58	1.20	0.46	0.025 *	-0.653	-2.50	19.21	-0.140	-6.994 *	1.83	0.58	0.032 *	-1.829
Czech Republic	18	1.51	0.07	0.008 **	-1.953	-0.65	23.87	0.047	-4.804 *	2.11	0.49	-0.003 *	-7.478 *
Denmark	58	2.41	0.37	0.012 *	-1.936	-2.39	18.32	0.157	-7.179 *	3.74	0.41	0.007 **	-4.656 *
Djibouti	38	0.60	0.25	-0.020 *	-2.657 ***	16.13	64.13	0.358	-5.813 *	0.99	0.53	-0.043 *	-2.704 ***
Dominica	38	0.36	0.10	0.007 *	-1.592	-0.51	10.03	0.034	-6.689 *	0.56	0.10	0.005 *	-1.577 *
Dominican Republic	57	0.53	0.10	0.005 *	-0.946	-0.56	7.08	-0.034	-9.291 **	0.82	0.09	0.004 *	-4.833 *
Ecuador	57	0.54	0.06	-0.001 *	-1.897	0.48	9.66	-0.063	-6.793 *	0.85	0.15	-0.005 *	-1.956
Egypt	58	0.33	0.08	0.003 *	-0.691	-3.68	22.46	-0.097	-6.242 *	0.50	0.09	0.004 *	-2.333
El Salvador	58	0.57	0.14	-0.006 *	-0.741	-0.59	14.54	-0.105	-6.705 *	0.90	0.24	-0.012 *	-0.944
Equatorial Guinea	48	0.47	0.50	0.022 *	1.496	17.25	91.83	0.848	-6.706 *	0.68	0.66	0.029 *	1.148
Eritrea	16	0.06	0.01	-0.002 *	-0.374	-22.06	92.76	6.810	-4.114 *	0.09	0.02	-0.003 *	0.001
Estonia	18	1.00	0.20	0.031 *	1.069	6.34	10.20	-1.076 **	-3.221 **	1.39	0.25	0.034 *	0.260
Ethiopia	58	0.12	0.04	-0.002 *	-0.778	2.62	10.48	0.106	-6.722 **	0.19	0.06	-0.003 *	-0.804
Fiji	48	0.53	0.05	-0.001 *	-2.541	1.37	16.24	-0.094	-5.848 *	0.82	0.09	-0.005 *	-0.647
Finland	58	2.02	0.35	0.016 *	-2.261	-0.49	12.61	-0.066	-6.890 *	3.14	0.45	0.015 *	-4.736 *
France	58	2.20	0.34	0.014 *	-2.676 ***	-0.22	6.86	-0.069	-6.838 *	3.42	0.47	0.012 *	-4.727 *
Gabon	48	1.01	0.19	-0.008 *	-1.111	-0.02	8.84	-0.039	-4.100 *	1.59	0.41	-0.018 *	-0.513
Gambia	48	0.17	0.06	-0.004 *	-2.996 **	-0.36	28.47	0.045	-9.958 *	0.27	0.09	-0.007 *	-2.105
Georgia	15	0.42	0.10	0.020 *	1.573	17.95	56.16	-5.945	-86.574 *	0.58	0.12	0.025 *	1.254
Germany	38	2.39	0.28	0.019 *	-1.184	-1.26	9.57	-0.069	-6.258 *	3.74	0.23	-0.009 *	2.199
Ghana	53	0.14	0.02	-0.001 *	-3.310 **	2.37	15.56	0.038	-9.867 *	0.23	0.05	-0.002 *	-2.193
Greece	57	1.70	0.34	0.016 *	-2.390	1.21	5.66	-0.064	-6.242 *	2.65	0.52	0.016 *	-4.688 *
Grenada	38	0.81	0.30	0.026 *	-1.123	6.45	43.16	-0.129	-5.924 *	1.22	0.34	0.028 *	-1.502
Guatemala	58	0.58	0.08	-0.003 *	-1.077	1.22	7.08	-0.009	-5.287 *	0.92	0.17	-0.007 *	-1.179
Guinea	49	0.42	0.19	-0.010 *	-1.249	-0.66	7.00	-0.030	-8.055 *	0.64	0.27	-0.017 *	-1.787
Guinea-Bissau	48	0.07	0.02	-0.001 *	-2.252	2.66	30.29	-0.277	-6.377 *	0.11	0.03	-0.001 *	-1.902
Guyana	38	0.23	0.04	-0.002 *	-1.774	9.50	49.92	-0.393	-4.938 *	0.37	0.11	-0.007 *	-1.333
Haiti	48	0.23	0.09	-0.006 *	-3.224 **	5.08	23.92	0.177	-6.558 *	0.36	0.13	-0.009 *	-2.295
Honduras	58	0.38	0.08	-0.004 *	-1.401	3.97	20.51	0.161	-7.527 *	0.60	0.15	-0.008 *	-1.020
Hong Kong	48	2.11	0.84	0.057 *	-0.531	-1.11	13.27	-0.143	-7.164 *	3.18	1.08	0.072 *	-1.739
Hungary	38	1.16	0.11	0.007 *	-1.757	0.86	8.82	-0.012	-6.426 *	1.82	0.18	-0.008 *	-0.955
Iceland	58	2.46	0.41	0.019 *	-2.146	1.31	7.46	-0.030	-8.124 *	3.82	0.54	0.018 *	-4.140 *
India	58	0.20	0.04	0.001 *	-0.361	0.05	8.39	-0.037	-7.598 *	0.31	0.03	0.001 *	-3.622 *
Indonesia	48	0.29	0.09	0.006 *	-0.248	-1.71	16.65	-0.133	-7.819 *	0.45	0.10	0.007 *	-0.753
Iran	53	0.86	0.25	-0.007 *	-1.551	6.59	41.30	-0.296	-6.827 *	1.36	0.48	-0.015 *	-1.064
Iraq	38	0.67	0.28	-0.019 *	-1.123	18.21	58.59	0.227	-6.084 *	1.11	0.57	-0.042 *	-0.821
Ireland	58	1.81	0.61	0.029 *	0.792	0.00	18.43	-0.077	-7.520 *	2.77	0.68	0.035 *	-1.001
Israel	58	1.71	0.29	0.012 *	-2.285	-1.19	11.80	-0.119	-7.548 *	2.66	0.41	0.011 *	-3.846 *
Italy	58	2.04	0.44	0.021 *	-2.621 ***	0.01	7.30	-0.090	-7.144 *	3.16	0.57	0.023 *	-4.919 *
Jamaica	55	0.92	0.25	-0.011 *	-0.542	0.71	4.72	-0.025	-6.488 *	1.46	0.40	-0.022 *	0.549
Japan	58	1.99	0.70	0.037 *	-2.634 ***	1.28	3.74	-0.077 *	-7.198 *	3.09	1.00	0.047 *	-4.259 *
Jordan	54	0.66	0.26	-0.012 *	-0.798	0.24	13.39	-0.092	-7.080 *	1.04	0.39	-0.022 *	-0.533
Kazakhstan	15	0.85	0.16	0.024 *	0.426	13.81	44.28	-4.376	-53.102 *	1.17	0.19	0.026 **	-0.034
Kenya	58	0.27	0.09	-0.005 *	-0.905	0.27	4.94	0.014	-7.006 *	0.42	0.15	-0.008 *	-0.568
Kiribati	38	0.24	0.12	-0.008 *	-1.383	0.43	26.17	-0.236	-7.391 *	0.40	0.25	-0.017 *	-1.289
Kuwait	38	4.92	2.79	-0.180 *	-4.532 *	-1.24	35.52	-0.124	-4.241 *	8.12	5.51	-0.388 *	-4.695 **
Kyrgyzstan	15	0.30	0.03	-0.002 *	-4.029 *	31.12	113.72	-12.192	-250.087 *	0.42	0.04	-0.005 **	-3.777 *
Laos	38	0.13	0.03	0.003 *	-0.450	-2.42	19.30	-0.090	-6.619 *	0.20	0.02	0.002 *	-1.317
Latvia	15	0.80	0.16	0.034 *	4.816	-0.90	13.02	1.485 ***	-47.469 *	1.10	0.19	0.041 *	3.686
Lebanon	38	1.10	0.50	-0.034 *	-2.049	-2.68	55.27	-0.445	-8.456 *	1.80	0.97	-0.072 *	-1.888
Lesotho	48	0.15	0.02	0.000 *	-1.765	-0.23	14.16	-0.045	-7.533 **	0.23	0.02	-0.000 *	-3.339 **
Liberia	38	0.12	0.09	-0.007 *	-1.212	8.99	82.74	0.677	-6.731 *	0.20	0.16	-0.014 *	-1.225
Libya	38	2.83	1.62	-0.127 *	-1.127	3.29	34.06	0.141	-6.111 *	4.78	3.27	-0.257 *	-1.060
Lithuania	15	0.86	0.12	0.024 *	0.708	20.29	67.41	-7.163	-149.000 *	1.19	0.14	0.028 *	0.179
Luxembourg	58	4.08	1.04	0.047 *	-0.238	-0.99	10.02	-0.059	-7.878 *	6.26	1.07	0.050 *	-2.284
Macao	38	2.07	0.68	0.057 *	1.291	-0.48	10.71	-0.021	-6.021 *	3.15	0.71	0.056 *	-0.461

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Table 2.1 – continued from previous page

Country	RGDP/CH			RGDP/CH growth			Population weighted RGDP/CH			Population weighted RGDP/CH growth			
	Obs.	Mean	Stdev.	Trend	DF-z	Mean	Stdev.	Trend	DF-z	Mean	Stdev.	Trend	DF-z
Macedonia	18	0.60	0.07	-0.013 *	-3.305 **	5.90	16.28	-1.322 *	-4.235 *	0.84	0.13	-0.023 *	-4.212 *
Madagascar	48	0.13	0.05	-0.003 *	-2.019 *	0.74	6.65	-0.005 *	-7.701 *	0.20	0.07	-0.005 *	-1.200 *
Malawi	54	0.11	0.02	-0.001 *	-2.268 *	2.57	16.56	0.165 *	-5.931 *	0.17	0.03	-0.002 *	-1.730 *
Malaysia	53	0.80	0.34	0.020 *	0.394	-3.24	23.67	-0.180	-7.666 *	1.21	0.41	0.025 *	-0.008 *
Maldives	38	0.22	0.10	0.009 *	0.144	-0.73	21.20	0.064	-8.330 *	0.32	0.12	0.011 *	-0.218 *
Mali	48	0.10	0.03	-0.001 **	-4.296 *	1.42	17.14	0.092	-8.477 *	0.16	0.03	-0.001 **	-4.627 **
Malta	38	1.25	0.43	0.036 *	-2.065 *	-2.83	22.66	-0.185	-6.422 *	1.89	0.47	0.037 *	-2.617 ***
Marshall Islands	38	0.77	0.15	-0.003	-0.885	1.39	19.26	0.128	-5.331 *	1.22	0.27	-0.016 *	-0.373 *
Mauritania	48	0.22	0.04	-0.002 *	-1.648 *	5.19	21.03	0.025	-7.067 **	0.34	0.08	-0.004 *	-0.950 *
Mauritius	58	1.05	0.28	0.007 *	-0.186 *	-1.16	12.18	-0.019	-8.163 **	1.61	0.32	0.005 **	-1.634 *
Mexico	58	0.92	0.11	0.001	-2.725 ***	1.28	13.23	-0.064	-5.249 **	1.44	0.21	-0.003 ***	-2.987 **
Micronesia	38	0.30	0.03	-0.001 ***	-1.717	-5.58	49.68	-0.520	-5.981 *	0.47	0.08	-0.006 **	-0.491
Moldova	16	0.26	0.03	-0.003 ***	-2.814 ***	30.43	115.74	-9.346	-3.787 **	0.36	0.05	-0.006 **	-3.374 **
Mongolia	38	0.20	0.03	0.000	-1.619	-0.25	24.18	0.261	-3.191 **	0.32	0.06	-0.003 *	-1.063 *
Montenegro	18	0.52	0.15	-0.013 **	-4.424 *	4.95	23.31	-1.152	-5.586 **	0.74	0.24	-0.025 **	-4.681 *
Morocco	58	0.43	0.07	0.001 *	-2.071	-3.26	26.11	-0.216	-7.314 *	0.67	0.10	0.000	-2.966 **
Mozambique	48	0.17	0.05	-0.003 *	-2.185	1.98	11.76	-0.001	-4.870 **	0.26	0.08	-0.005 *	-1.731
Namibia	48	0.67	0.18	-0.012 *	-1.309	-0.25	8.94	-0.091	-4.488 *	1.04	0.29	-0.020 *	-0.284
Nepal	48	0.17	0.04	-0.001 *	-2.883 **	-1.16	14.94	-0.107	-7.375 **	0.26	0.05	-0.003 *	-2.701 ***
Netherlands	58	2.51	0.34	0.010 *	-2.273	-0.27	7.86	-0.051	-8.101 *	3.90	0.41	0.004	-5.019 **
New Zealand	58	2.12	0.38	-0.011 *	-1.584	-1.42	13.67	-0.079	-8.220 **	3.31	0.58	-0.025 **	-1.643 *
Nicaragua	58	0.41	0.19	-0.010 *	-0.551	-1.35	12.96	-0.051	-7.626 **	0.65	0.32	-0.016 *	-0.788 *
Niger	48	0.15	0.09	-0.005 *	-2.143	0.48	9.06	-0.088	-5.916 *	0.23	0.13	-0.009 *	-1.690 *
Nigeria	58	0.20	0.07	-0.003 *	-1.252	2.64	8.30	0.096	-6.472 *	0.32	0.11	-0.006 *	-1.227 *
Norway	58	2.94	0.61	0.031 *	-1.404	-1.33	15.52	-0.133	-7.757 **	4.54	0.66	0.033 **	-4.085 *
Oman	38	1.88	0.42	0.028 *	-1.427	1.58	12.99	-0.196	-4.870 *	2.91	0.46	0.016 **	-1.510 *
Pakistan	58	0.23	0.03	0.001 *	-0.809	-1.16	9.92	-0.065	-7.605 **	0.35	0.04	0.001 *	-3.965 *
Palau	38	2.30	1.37	-0.098 **	-1.290	1.01	17.40	-0.082	-6.290 **	3.86	2.80	-0.204 *	-1.221 **
Panama	58	0.56	0.11	0.005 *	-1.738	0.50	12.35	-0.021	-11.363 **	0.87	0.14	0.005 *	-3.411 **
Papua New Guinea	48	0.22	0.03	-0.001 ***	-2.082	-1.59	16.32	-0.174	-8.663 **	0.33	0.06	-0.002 *	-1.346
Paraguay	57	0.49	0.07	-0.002 *	-0.933	3.50	16.59	0.119	-7.211 *	0.77	0.14	-0.006 **	-1.160
Peru	58	0.63	0.16	-0.007 *	-0.989	-1.91	32.90	-0.208	-7.362 *	0.99	0.28	-0.013 **	-1.130
Philippines	58	0.39	0.06	-0.002 *	-1.783	-0.37	11.27	-0.105	-7.183 **	0.61	0.11	-0.004 *	-2.176 *
Poland	38	0.89	0.09	0.006 *	-0.470	-0.93	23.08	-0.217	-7.593 **	1.39	0.15	-0.006 **	-1.272 *
Portugal	58	1.24	0.37	0.020 *	-1.939	-0.41	12.04	-0.099	-7.662 **	1.92	0.47	0.025 **	-3.374 **
Puerto Rico	58	1.61	0.46	0.024 *	-1.948	-0.46	13.62	-0.127	-8.541 *	2.48	0.56	0.029 *	-3.877 *
Qatar	38	6.56	2.01	-0.137 *	-2.228	5.30	24.92	-0.098	-4.386 *	10.69	4.53	-0.346 **	-2.113
Romania	48	0.64	0.14	0.004 *	-1.950	0.92	14.64	-0.120	-6.503 *	0.99	0.28	0.003	-1.725
Russia	18	0.93	0.21	-0.018 ***	-2.606 ***	16.74	63.47	-3.102	-4.540 *	1.30	0.34	-0.035 **	-3.023 **
Rwanda	48	0.14	0.06	-0.003 *	-3.280 **	18.17	115.17	0.933	-6.832 *	0.22	0.08	-0.006 **	-2.599 ***
Samoa	38	0.48	0.04	-0.003 *	-1.897	3.72	14.97	0.093	-6.260 **	0.77	0.16	-0.013 **	-0.893
Sao Tome and Principe	38	0.55	0.15	-0.012 *	-0.426	3.36	20.47	0.129	-6.566 **	0.90	0.35	-0.029 **	-0.357
Saudi Arabia	38	2.88	1.26	-0.096 *	-0.900	11.00	40.47	-0.513	-4.207 **	4.78	2.65	-0.205 **	-0.703
Senegal	48	0.26	0.13	-0.008 *	-4.314 *	-2.35	14.90	-0.007	-6.856 *	0.40	0.18	-0.012 *	-3.835 *
Seychelles	48	1.11	0.34	0.021 *	-0.956	4.15	13.96	0.076	-6.366 **	1.68	0.41	0.025 **	-1.409 *
Sierra Leone	47	0.29	0.11	-0.008 **	-0.544	2.37	8.32	0.016	-4.689 **	0.46	0.19	-0.013 **	0.285
Singapore	48	1.92	0.89	0.061 *	0.446	-4.94	29.16	-0.197	-6.930 **	2.88	1.13	0.078 *	-0.341
Slovak Republic	21	1.15	0.11	-0.000	-1.572	1.36	25.55	-0.295	-3.959 **	1.64	0.21	-0.015 **	-2.305
Slovenia	18	1.69	0.17	0.030 *	0.056	-3.13	35.25	0.648	-4.200 **	2.35	0.17	0.026 **	-0.671
Solomon Islands	38	0.16	0.03	-0.002 *	-0.466	3.94	15.74	-0.202	-4.058 *	0.26	0.07	-0.006 **	-0.301
Somalia	38	0.08	0.03	-0.003 *	-1.087	12.90	82.94	0.626	-6.098 **	0.12	0.06	-0.005 **	-1.051
South Africa	58	0.95	0.18	-0.008 **	-0.988	0.26	3.45	-0.007	-7.756 **	1.49	0.32	-0.015 **	-1.118
South Korea	55	0.91	0.56	0.033 *	0.496	-3.59	29.35	-0.216	-7.271 **	1.37	0.73	0.043 **	1.108
Spain	58	1.74	0.44	0.023 *	-1.958	0.21	7.57	-0.081	-6.753 **	2.70	0.56	0.027 **	-4.554 **
Sri Lanka	58	0.32	0.07	0.003 *	-0.100	-1.69	13.54	-0.086	-7.637 **	0.49	0.07	0.003 *	-2.779 ***
St. Kitts and Nevis	38	0.68	0.30	0.027 *	-0.141	-1.90	24.41	-0.184	-6.388 *	1.02	0.35	0.031 *	-0.918

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Table 2.1 – continued from previous page

Country	RGDPCH growth				Population weighted RGDPCH				Population weighted RGDPCH growth				
	Obs.	Mean	Stdev.	Trend	DF-z	Mean	Stdev.	Trend	DF-z	Mean	Stdev.	Trend	DF-z
St. Lucia	38	0.84	0.17	0.014 *	-1.276	0.35	10.74	-0.176	-5.088 *	1.30	0.15	-0.008 *	-1.689
St. Vincent and the Grenadines	38	0.32	0.09	0.008 *	0.058	2.48	12.56	0.184	-4.827 *	0.48	0.09	0.007 *	-0.602
Sudan	38	0.13	0.02	-0.000	-1.457	6.38	27.31	-0.119	-6.324 *	0.21	0.05	-0.003 *	-1.932
Suriname	38	0.94	0.15	-0.010 *	-1.278	8.92	41.79	0.082	-6.248 *	1.51	0.38	-0.031 *	-0.582
Swaziland	38	0.54	0.10	0.007 *	-2.334	2.32	16.38	0.316	-5.480 *	0.84	0.11	0.002	-2.662 ***
Sweden	58	2.41	0.31	0.001	-1.990	-0.48	10.04	-0.076	-6.873 *	3.76	0.43	-0.009 *	-3.743 *
Switzerland	58	3.34	0.50	-0.008 **	-1.687	0.41	5.35	-0.011	-6.960 *	5.21	0.81	-0.026 *	-2.154
Syria	48	0.23	0.03	-0.001 **	-3.015 **	-1.41	13.33	-0.152	-7.323 *	0.36	0.05	-0.002 *	-2.205
Taiwan	57	0.96	0.64	0.037 *	1.410	-1.79	21.76	-0.201	-7.788 *	1.44	0.85	0.050 *	-0.104
Tajikistan	15	0.19	0.04	0.000	-2.453	13.14	45.59	-4.333	-43.592 *	0.26	0.06	-0.001	-2.868 **
Tanzania	48	0.08	0.02	-0.001 *	-2.049	0.26	8.85	-0.022	-5.425 *	0.12	0.03	-0.002 *	-1.171
Thailand	58	0.42	0.20	0.011 *	0.145	-2.01	21.57	-0.133	-8.238 *	0.64	0.25	0.014 *	-0.807
Togo	48	0.15	0.05	-0.004 *	-0.438	-0.90	30.94	-0.305	-5.800 *	0.23	0.09	-0.006 *	0.499
Tonga	38	0.50	0.12	0.006 *	-1.263	-6.22	31.13	0.036	-8.276 *	0.78	0.14	0.002	-1.045
Trinidad and Tobago	58	1.31	0.30	0.003	-1.156	-1.60	34.76	-0.227	-6.709 *	2.04	0.45	-0.001	-2.376
Tunisia	47	0.57	0.11	0.007 *	-0.055	-1.12	13.90	-0.100	-7.322 *	0.87	0.09	0.007 *	-1.104
Turkey	58	0.53	0.07	0.002 *	-3.201 **	4.72	24.46	0.166	-7.070 *	0.83	0.09	-0.000	-6.121 *
Turkmenistan	15	0.80	0.10	-0.005	-4.731 *	29.87	108.14	-11.362	-134.120 *	1.10	0.15	-0.013	-5.663 *
Uganda	58	0.13	0.05	-0.003 *	-0.825	-8.03	48.85	-0.356	-7.552 *	0.21	0.08	-0.004 *	-0.860
Ukraine	15	0.62	0.10	0.004	-2.185	28.75	102.43	-10.601	-166.015 *	0.86	0.14	0.001	-3.095 **
United Arab Emirates	38	4.81	1.80	-0.060 **	-1.702	5.13	24.24	-0.527	-4.199 *	7.80	3.77	-0.177 *	-1.323
United Kingdom	58	2.23	0.30	0.005 **	-1.768	-1.20	12.36	-0.080	-7.367 *	3.46	0.31	-0.003	-4.984 *
United States	58	3.16	0.38	0.008 *	-1.954	-0.34	11.35	-0.064	-8.487 *	4.91	0.41	-0.003	-5.280 *
Uruguay	58	1.10	0.24	-0.009 *	-1.312	-0.21	25.35	-0.124	-6.352 *	1.71	0.41	-0.019 *	-1.329
Uzbekistan	18	0.15	0.02	-0.002 **	-4.393 *	12.74	43.02	-2.523	-4.415 *	0.21	0.03	-0.004 *	-5.480 *
Vanuatu	38	0.49	0.07	0.001	-1.883	-5.38	25.70	0.235	-4.183 *	0.77	0.12	-0.006 *	-1.266
Venezuela	58	1.47	0.43	-0.022 *	-0.183	3.35	16.45	0.059	-6.695 *	2.33	0.78	-0.040 *	-0.729
Vietnam	38	0.17	0.05	0.005 *	2.921	-2.87	16.46	0.035	-5.653 *	0.26	0.05	0.004 *	2.014
Yemen	19	0.09	0.01	0.000	-1.792	3.78	9.60	-0.978 **	-13.941 *	0.13	0.01	-0.000	-0.635
Zambia	53	0.27	0.17	-0.010 *	-0.878	6.88	29.95	0.237	-6.558 *	0.43	0.26	-0.016 *	-0.926
Zimbabwe	54	0.51	0.14	-0.007 *	0.079	-1.82	19.86	-0.182	-7.519 *	0.81	0.25	-0.014 *	0.312

In addition to the COW variables, a military expenditure dataset is also utilized.⁵ Military spending variable (milex) is the military spending as a percentage of GDP for each country since 1975 until 2007. Finally, political regime characteristics (polity) are also included in the study as provided by the Polity4 project.⁶

2.2 Economic Variables

Economic variables are used from “Penn World Table” (PWT).⁷ Economic and demographic variables include population (pop), ratio of GNP to GDP (cgnp), real GDP per capita (rgdpl), openness in constant prices (openk), consumption share of real GDP per capita (kc), government share of real GDP per capita (kg), real GDP per capita relative to the United States (y) and growth rate of real GDP chain per capita (grgdpch).

2.3 Demographic Variables

Religion variables are taken from the “World Religion Database” (WRD).⁸ Religion variables include the name of the religion (rel), number of people adhering to a religion in a country in year 2000 (p2000) and in year 2010 (p2010) and percentage of population adhering to a religion in a country in year 2000 (pct2000) and in year 2010 (pct2010). Each religion is listed as a major religion category as well as its various sects. For instance, while ‘Christians’ is listed as a religion, ‘Christians - Protestants’ is also listed as a religion. The total of all sects make up the major religion category. For this study, we are using the sects when available and using the major religions if sects are not available. Religions include

⁵Military expenditure data are available from the Stockholm International Peace Research Institute (SIPRI), <http://milexdata.sipri.org> and various editions of the SIPRI Yearbook. Stockholm International Peace Research Institute (SIPRI) available through http://www.sipri.org/contents/milap/milex/mex_database1.html

⁶Polity 4 dataset is available through <http://www.systemicpeace.org/polity/polity4.htm>

⁷Penn World Table is available through http://pwt.econ.upenn.edu/php_site/pwt_index.php

⁸World Religion Database is available through http://www.worldreligiondatabase.org/wrd_default.asp World Religion Database is a subscription only database.

Agnostics, Buddhists Lamaists, Buddhists Mahayanists, Buddhists Theravadins, Chinese folk, Christians Anglicans, Christians Orthodox, Christians Protestants, Christians Roman Catholics, Ethnoreligionists, Hindus, Jews, Muslims Shias and Muslims Sunnis. The religious diversity variable used in the study is created based on; 1) number of religions that have at least 5 percent followers, 2) number of religions that have at least 10 percent followers and 3) number of religions that have at least 15 percent followers.

Other demographic variables are obtained from “CEPII Research Center” (CEPII).⁹ These additional demographic variable provide, on the dyadic level, contiguity (contig), common official primary language (commlang_off), common language spoken by at least 9 percent in both countries (commlang_ethno), historic common colonizer (comcol), current common colonizer (curcol), distance (dist), distance of the capitals (distcap) and city population weighted distance (distwces).

Finally, special attention is paid to a unique variable used to measure the level of religiosity in Islamic countries. Islamic banking deposits data are obtained from Islamic Banks & Financial Institutions Information System provided by the Islamic Research & Training Institute of the Islamic Development Bank Group.¹⁰

Tables 2.2 and 2.3 provide the population weights of each religion and sect respectively. These weights are with respect to the world. Accordingly, Christians, Agnostics, Muslims and Hindus have the highest percentage of affiliation world wide. In terms of sects, Roman Catholics have the highest affiliation.

⁹CEPII Research Center data are available through <http://www.cepii.fr/anglaisgraph/bdd/distances.htm>

¹⁰Islamic banking deposits data are available through <http://www.ibisonline.net/IBISHomepage.aspx>

TABLE 2.2: **Population weights for each religion.** Weight is the total population of a religion divided by the total World population for each year. Mean (stdev) weight is the average (standard deviation) of the annual weights. Trend is the coefficient for the trend for the model: $X_t = \alpha + \beta_1 trend_t + \epsilon_t$ where X is the weight. Population variable is used from the 'Penn World Table' (PWT). Religion data are used from the 'World Religion Database (WRD). *, ** and *** represent statistical significance at 1%, 5% and 10% levels respectively.

Religion	Affiliates	Mean	Stdev.	Trend	
Agnostics	2	21.8559	0.6438	-2.0766	*
Buddhists	8	5.4637	0.2648	-1.4842	*
Chinese folk	4	0.5489	0.0329	0.0967	*
Christians	120	39.4871	2.0369	-11.8905	*
Ethnoreligionists	5	0.5023	0.1062	0.6147	*
Hindus	3	16.0252	0.8012	4.6463	*
Jews	1	0.0836	0.0130	0.0745	*
Muslims	47	16.0333	1.7074	10.0191	*

TABLE 2.3: **Population weights for each sect.** Weight is the total population of a sect divided by the total World population for each year. Mean (stdev) weight is the average (standard deviation) of the annual weights. Trend is the coefficient for the trend for the model: $X_t = \alpha + \beta_1 trend_t + \epsilon_t$ where X is the weight. Population variable is used from the 'Penn World Table' (PWT). Sect data are used from the 'World Religion Database' (WRD). *, ** and *** represent statistical significance at 1%, 5% and 10% levels respectively.

Sect	Affiliates	Mean	Stdev.	Trend	
Agnostics	4	22.1740	0.6786	-2.4815	*
Anglicans	1	1.3694	0.3306	-1.9375	*
Chinese folk	4	0.5489	0.0329	0.0967	*
Ethnoreligionists	8	0.9136	0.1552	0.8880	*
Hindus	4	16.0419	0.7987	4.6323	*
Independents	5	1.6892	0.1007	0.5141	*
Jews	1	0.0836	0.0130	0.0745	*
Lamaists	1	0.0092	0.0016	0.0083	*
Mahayanists	2	3.8571	0.3222	-1.8974	*
Marginals	1	0.0020	0.0002	-0.0008	*
Orthodox	15	6.9948	1.0789	-6.3663	*
Protestants	21	1.6023	0.1071	0.5695	*
Roman Catholics	66	24.8844	1.1407	-6.6206	*
Shias	4	1.2564	0.1934	1.1119	*
Sunnis	45	16.8929	1.8870	11.0717	*
Theravadins	5	1.5975	0.0886	0.4047	*
Unaffiliated	2	0.0828	0.0116	-0.0675	*

Tables 2.4 and 2.5 provide the descriptive statistics for real GDP per capita for the religions and sects, respectively. Accordingly, Jews and Chinese folk have the highest real GDP per capita followed by Christians. Ethnoreligionists have the lowest. In terms of sects, Anglicans have the highest real GDP per capita followed by Jews. Ethnoreligionists have the lowest real GDP per capita.

TABLE 2.4: **Descriptive statistics for RGDPCH for each religion.** Weight is the total population of a religion divided by the total World population for each year. Mean (stdev) weight is the average (standard deviation) of the annual weights. Trend is the trend coefficient for the model: $RGDPCH_t = \alpha + \beta_1 trend_t + \epsilon_t$ Stdev within sect is the standard deviation of RGDPCH between the affiliated countries for each year. Trend in this column shows whether there is σ -convergence. Time series analysis is based on the group mean as a ratio of world mean. Trend would indicate whether the change in the group mean vs. world mean has a trend. DF-z is the Dickey-Fuller stationarity test. *, ** and *** represent statistical significance at 1%, 5% and 10% levels respectively.

Religion	Stdev within religion			RGDPCH				DF-z
	Mean	Trend		Obs.	Mean	Stdev.	Trend	
Jews				58	1.7026	0.2957	1.2352 *	-2.2431
Chinese folk	0.4101	-0.9186 *		57	1.4964	0.8862	5.2308 *	0.4323
Christians	0.6568	0.4495 *		58	1.0743	0.1000	-0.1758 **	-1.6066
Muslims	2.9956	4.8624 *		58	0.8576	0.4038	0.8807 *	-1.7473
Buddhists	0.6234	0.3460 *		58	0.5666	0.1488	0.2669 **	-2.2470
Hindus	2.5457	-0.7550		58	0.4988	0.1270	0.0106	-1.3086
Agnostics				56	0.1920	0.1467	0.7585 *	9.2314
Ethnoreligionists	0.5395	0.1377 **		48	0.1721	0.0458	-0.3098 *	-0.8045

TABLE 2.5: **Descriptive statistics for RGDPCH for each sect.** Weight is the total population of a sect divided by the total World population for each year. Mean (stdev) weight is the average (standard deviation) of the annual weights. Trend is the trend coefficient for the model: $RGDPCH_t = \alpha + \beta_1 trend_t + \epsilon_t$ Stdev within sect is the standard deviation of RGDPCH between the affiliated countries for each year. Trend in this column shows whether there is σ -convergence. Time series analysis is based on the group mean as a ratio of world mean. Trend would indicate whether the change in the group mean vs. world mean has a trend. DF-z is the Dickey-Fuller stationarity test. *, ** and *** represent statistical significance at 1%, 5% and 10% levels respectively.

Sect	Stdev within sect			RGDPCH				DF-z
	Mean	Trend		Obs.	Mean	Stdev.	Trend	
Anglicans				58	2.2096	0.2967	0.4989 **	-1.7339
Jews				58	1.6979	0.2942	1.2206 *	-2.2448
Chinese folk	0.4101	-0.9186 *		57	1.4915	0.8829	5.2100 *	0.4330
Protestants	1.1659	2.2151 *		58	1.2851	0.1343	-0.1039	-1.9532
Mahayanists	0.9686	0.2190 *		58	1.2589	0.3564	0.8221 *	-2.5571
Agnostics	10.1405	-35.5390 *		58	1.2175	0.2598	-0.2766	-4.2014 *
Shias	1.4298	0.2979		53	1.1798	0.4879	-0.8357 ***	-1.0794
Roman Catholics	0.5696	0.2825 *		58	1.1232	0.1068	-0.0901	-1.6343
Unaffiliated	0.2396	3.0296 *		55	0.9543	0.2260	-0.7418 *	-1.1303
Sunnis	3.4963	5.6456 *		58	0.8021	0.3807	0.9001 *	-1.7545
Orthodox	1.0832	-0.9664 *		58	0.7749	0.1333	0.3820 *	-3.5073 *
Independents	0.4391	-0.3605 *		58	0.6941	0.1268	0.2545 *	-2.0376
Marginals				38	0.5001	0.1158	0.6344 *	-1.2662
Hindus	2.3112	-1.6406 *		58	0.4599	0.1209	-0.2214 **	-2.1335
Theravadins	0.3156	0.7745 *		58	0.2785	0.0653	0.2059 *	-0.5529
Lamaists				38	0.1794	0.0893	0.7620 *	1.9100
Ethnoreligionists	0.4545	0.2418 *		49	0.1628	0.0419	-0.2689 *	-0.6547

2.4 Trend Convergence

In a study, such as ours, that utilizes data from many different countries with diverse characteristics, the main problems are data dispersion and outliers. It may be a method to select countries out of the sample for the study. However, it may also be considered selection bias. On the other hand, to keep them in the sample would potentially impact the statistical estimation results. To solve this dilemma, we propose a new convergence measure that is explained in the following sections.

2.4.1 Trend Convergence Measure

The β -convergence and σ -convergence measures are common in the literature (ex. Barro, 1991; de Melo et al., 1992; Coe and Helpman, 1995; Evans and Karras, 1996; Henrekson et al., 1997; Evans, 1998; Fleissig and Strauss, 2001; Kocenda, 2001; Economidou et al., 2006; Cuaresma et al., 2008). While there is vast empirical proof of economic convergence for countries in the European Union (EU), there seems to be a common practice to exclude Luxembourg and Ireland when calculating the σ -convergence for the EU.¹¹ This is probably because of the outlier status of these two countries' GDP per capita through the years.

Table 2.6 shows the σ -convergence for the entire EU in terms of the variables under evaluation. Accordingly, based on the trend of the standard deviation between EU member countries, there is statistically significant (at 1 percent) convergence or divergence in terms of all the variables tested, except real GDP per capita. In fact the trend coefficient for the standard deviation of real GDP per capita among the EU members is not even statistically significant.

¹¹For instance, Kaitila (2004).

TABLE 2.6: σ -Convergence and descriptive statistics for the entire European Union (EU). RGDPCH is the real GDP per capita, OPENK is the openness, KG is the government share of the GDP, KC is the consumption share of the GDP and SIPRI is the military spending share of the GDP. All variables are ratios to the EU averages which are population weighted. Trend is the coefficient for the trend for the model: $Y_t = \alpha + \beta_1 trend_t + \epsilon_t$ where Y is one of the variables in the table. Stdev within group is the standard deviation of Y between the affiliated countries for each year. Trend in this column shows whether there is σ -convergence. Time series analysis is based on the group mean as a ratio of world mean. Trend would indicate whether the change in the group mean vs. world mean has a trend. DF-z is the Dickey-Fuller stationarity test. *, ** and *** represent statistical significance at 1%, 5% and 10% levels respectively.

Variable	Stdev within group			Time-Series Descriptive Statistics				
	Mean	Trend		Obs.	Mean	Stdev.	Trend	DF-z
RGDPCH	0.382	0.052		58	1.941	0.276	0.842 *	-2.176
OPENK	1.415	-2.213	*	58	0.846	0.161	0.891 *	0.490
KG	0.303	0.141	*	58	0.868	0.107	-0.433 *	-2.620 ***
KC	0.111	-0.091	*	58	0.851	0.033	0.061 **	-2.061
SIPRI	0.448	-1.019	*	21	0.702	0.057	0.142	-2.648 ***
IMPORTS	7.975	-13.575	*	57	2.527	0.594	-1.050 **	-0.708
EXPORTS	8.928	-16.277	*	57	2.802	0.552	0.276	-1.527

Table 2.7 shows the σ -convergence for the EU, excluding Luxembourg and Ireland. The differences between Table 2.6 and Table 2.7 are quite significant. While most of the trend coefficients are lower when the two countries are excluded from the sample, the most important difference for our purposes is the change of sign and statistical significance for the trend coefficient for the real GDP per capita. With Luxembourg and Ireland excluded, there seems to be real GDP per capita convergence through years for the EU member countries.

While reduced dispersion of GDP per capita among EU member is what is defined as σ -convergence, removing two outliers to modify the dispersion is a statistically questionable practice. If we start removing countries out of samples because of their power to change the results, this may be considered selection bias. On the other hand, if we leave these outliers within the sample, we will have EU divergence of GDP per capita which is not correct for all but two countries of the EU.

TABLE 2.7: σ -Convergence and descriptive statistics for the European Union (EU) excluding Luxembourg and Ireland. RGDPCH is the real GDP per capita, OPENK is the openness, KG is the government share of the GDP, KC is the consumption share of the GDP and SIPRI is the military spending share of the GDP. All variables are ratios to the EU averages which are population weighted. Trend is the coefficient for the trend for the model: $Y_t = \alpha + \beta_1 trend_t + \epsilon_t$ where Y is one of the variables in the table. Stdev within group is the standard deviation of Y between the affiliated countries for each year. Trend in this column shows whether there is σ -convergence. Time series analysis is based on the group mean as a ratio of world mean. Trend would indicate whether the change in the group mean vs. world mean has a trend. DF-z is the Dickey-Fuller stationarity test. *, ** and *** represent statistical significance at 1%, 5% and 10% levels respectively.

Variable	Stdev within group			Time-Series Descriptive Statistics				
	Mean	Trend	*	Obs.	Mean	Stdev.	Trend	DF-z
RGDPCH	0.298	-0.071	*	58	1.887	0.270	0.680	* -2.339
OPENK	0.930	-0.380		58	0.731	0.184	1.041	* 0.494
KG	0.293	0.108	*	58	0.897	0.114	-0.458	* -2.730 ***
KC	0.103	-0.089	*	58	0.852	0.037	0.097	* -1.892
SIPRI	0.436	-1.132	*	21	0.732	0.061	0.095	-2.740 ***
IMPORTS	0.687	-0.216	*	57	1.367	0.205	0.546	* -1.969
EXPORTS	0.763	-0.217	*	57	1.459	0.310	1.640	* -0.794

This issue is a significant problem for studies, like the present one, that evaluate large group of countries. The problem is exacerbated when grouping countries based on religion which tends to gather countries from very diverse economic categories. We cannot simply exclude countries because they do not fit to our group means. As a remedy, we propose a new measure of convergence that is a derivation of the σ -convergence. We would like to refer to this measure as trend convergence. Calculation of the trend convergence is in three steps.

First, for dyads of countries and for each year, we calculate the difference of the two countries' GDP per capita as a percentage of the average GDP per capita of the two countries as follows;

$$D_t = \left| \frac{(GDP_{1,t} - GDP_{2,t})}{(GDP_{1,t} + GDP_{2,t})/2} \right| \quad (2.1)$$

In Equation 2.1, the first country of the dyad is notated with 1 and the second country of the dyad is notated with 2. This difference is a symmetrical percentage in absolute value. The absolute value is needed because we need the difference between the two countries regardless of which country has the higher GDP per capita. The trend convergence is the decreasing trend of this percentage difference through years. Symmetrical percentage is used instead of simple percentage in order to maintain a base level across dyads included in the sample. The symmetrical percentage difference between two countries with \$10,000 and \$1,000 GDP per capita is 163.64 percent. The symmetrical percentage difference between two countries with \$1,000 and \$100 GDP per capita is also 163.64 percent. In terms of simple percentage difference, the result will still be the same but it will depend on which country of the dyad is in the denominator: a problem that is not an issue with the symmetrical percentage difference.

As the second step, we estimate the following model for each dyad;

$$D_t = \alpha + \beta_1 trend_t + \epsilon_t \quad (2.2)$$

This estimation simply tests whether the percentage difference of GDP per capita's between any two countries is increasing or decreasing through the years. If the trend coefficient is positive ($\beta_1 > 0$) then the difference is in fact increasing meaning that the GDP per capita is diverging. If the trend coefficient is negative ($\beta_1 < 0$) then the difference is decreasing and the two countries' GDP per capita are converging. If, on the other hand, the trend coefficient is not statistically significant then there is no convergence or divergence.

Within the sections that evaluate convergence through econometric estimations, these trend coefficients are used as the dependent variable. For instance, to evaluate whether countries with common religion have economic convergence or divergence,

we estimate the following regression:

$$\beta_{i,j} = \alpha + \gamma Common_{i,j} + \epsilon_{i,j} \quad (2.3)$$

where i and j are countries, $Common_{i,j}$ is a binary variable that is assigned a value of one if both countries of the dyad is of the same religion and $\beta_{i,j}$ is the trend coefficient from the equation 2.2 between country i and j .

For the tabular sections, after estimating the trend between all dyads within a group, we take the average of the trend coefficients.

$$T - convergence_t = \frac{\sum_{dyad=1}^n \beta_{1,dyad}}{n} \quad (2.4)$$

Equation 2.4 is the trend convergence and indicates whether there is GDP per capita convergence through time between members of the sample. As an additional information, to remedy to the problem associated with Ireland and Luxembourg for EU convergence, we calculate the percentage of dyads that have statistically significant and negative trend coefficients (β_1). This percentage indicates whether the majority of the dyads have convergence. This additional information is important because if a few dyads have very fast convergences (i.e. trend coefficient, β_1 , is too low or too high), they may mask the actual results when averaged. Thus the average and the percentage are provided together. For samples where there are more than 20 dyads, we also t-test the mean trend coefficient for statistical significance.

Table 2.8 shows the trend convergence measure calculated for the European Union. Accordingly, all of the tested variables are statistically significant at the 1 percent level except military spending. More importantly, there is convergence in real GDP per capita among EU members. 59.1 percent of the dyads within the EU have trend convergence. On the other hand, 23.4 percent of the dyads have divergence.

TABLE 2.8: **Trend-convergence for the European Union (EU)**. RGDPCH is the real GDP per capita growth, OPENK is the growth of openness, SIPRI is the growth of military spending share of the GDP and POLITY is the growth of political regime measure. All variables are ratios to the EU averages which are population weighted. Annual percentage difference between countries are calculated ($D_{t,i}$, where t is per year and i is per dyad) for pairs of countries. $D_{t,i}$ for each dyad is regressed with a time trend variable across years. The trend coefficient for each dyad is the cross-sectional dependent variable for the models in the table. A negative trend coefficient means convergence and a positive trend coefficient means divergence between dyads. A positive (negative) coefficient in the table means that the variable has an increasing (decreasing) effect on the trend coefficient and therefore it has a divergence (convergence) effect. *, ** and *** represent statistical significance at 1%, 5% and 10% levels respectively.

Variable	Mean Coefficient	% Negative	% Positive
RGDPCH	-0.360 *	0.591	0.234
OPENK	-0.583 *	0.608	0.240
SIPRI	-0.083	0.359	0.392
POLITY	-16.646 *	0.700	0.067

Similar to the σ -convergence measure for the EU, σ -convergence measures for individual religions and for individual sects are provided with the Tables 2.4 and 2.5 respectively. Descriptive statistics for each religion are also provided. Tables 2.2 and 2.3 provide the population statistics for individual religions and sects respectively.

The hypotheses included in the next section utilize the trend convergence measure. The trend coefficients (β_1) for the trend convergence between dyads of groups provide us with the cross-sectional dataset that can be statistically tested for explanatory variables. For the EU member countries, we simply provided the summary statistics of the EU member dyads. However, each country within the EU has a convergence relationship with another member of the EU. Thus, it is possible to test which common factors increase the likelihood of convergence which can be tested using logit estimation. It is also possible to test which common factors explain the variation in the trend coefficients (β_1). Using trend-convergence, we can test factors explain convergence or divergence of economies.

2.4.2 Trend Convergence Between Religions

Similar to the analysis for the European Union, trend convergence for the groups of countries with the same religion is questioned as the preliminary step. If there are no inter- or intra-religion convergences or divergences, then there would be no need for any further analysis.

Hypothesis 2.1. *There is no trend convergence between dyads of religions.*

Hypothesis 2.2. *There is no trend convergence between dyads of religious sects.*

These two hypotheses evaluate whether there is convergence among countries with the same religion and with the same sect. Table 2.9 provide the trend convergence means for the religions included in the study. Table 2.10 provides the convergence results for the religious sects included in the study.

It is interesting to note that the only religion that has mostly *statistically significant* mean trend β across dyads of the religion is Christianity. However, unlike the dyads of the EU, dyads of the Christianity have positive coefficients with Hindus, Muslims, Etnoreligionists and Chinese folk religions which points to divergence in real GDP per capita. Christians, on the other hand, have trend convergence with Agnostics and Buddhists. Based on the results in the Table 2.9, it is concluded that the Hypothesis 2.1 can be rejected in favor of existing convergence and divergence between dyads of religions in terms of real GDP per capita.¹²

In terms of sects, while Agnostics have mostly negative coefficients (trend convergence), they are statistically significant with Etnoreligionists, Jews, Orthodox, and Roman Catholics.

¹²Tables 2.9 and 2.10 are also available upon request for other variables including openness, consumption, government spending, military spending, imports and exports.

TABLE 2.9: **Mean trend convergence between religions.** Annual differences between dyads are calculated using: $D_t = \left| \frac{(X_{country1,t} - X_{country2,t})}{(X_{country1,t} + X_{country2,t})/2} \right|$ where X is GDP per capita. The trend in the annual differences is estimated for each dyad using: $D_t = \alpha + \beta_1 trend_t + \epsilon_t$. The figures are the mean coefficient of the trend regression (β_1) across dyads of the religion pairs. *, ** and *** represent statistical significance at 1%, 5% and 10% levels respectively.

Religion	Agnostics	Buddhists	Chinese folk	Christians	Ethnoreligionists	Hindus	Jews	Muslims
Agnostics		-0.13	-0.39	-1.58 *	1.46	-0.61	-1.08	-0.71
Buddhists	-0.13	0.11	0.36 ***	-0.30 *	1.61 *	0.38	-0.49 ***	-0.11
Chinese folk	-0.39	0.36 ***	-0.59	0.72 *	1.84 *	1.01 **	-0.68	0.72 *
Christians	-1.58 *	-0.30 *	0.72 *	0.35 *	1.05 *	0.26 *	-0.12	0.14 *
Ethnoreligionists	1.46	1.61 *	1.84 *	1.05 *	0.75	1.40 *	0.67 **	0.83 *
Hindus	-0.61	0.38	1.01 **	0.26 *	1.40 *	0.72	0.15	0.17
Jews	-1.08	-0.49 ***	-0.68	-0.12	0.67 **	0.15		-0.15
Muslims	-0.71	-0.11	0.72 *	0.14 *	0.83 *	0.17	-0.15	0.06

In Table 2.10, there are more than one country with Agnostics as a sect. This is because, since there are no sects of Agnostics, it is included into the sect analysis as if it is a sect by itself such as main sect of Agnostics. However, for countries where the primary religion has multiple sects, such as Muslims or Christians, since the percentage of the main religion is split up to the sects, Agnostics within these countries may be the main sect. For instance, if a country has 70 percent Christians with 25 percent Catholics, 25 percent Protestants, 10 percent Anglicans and 10 percent Orthodox, also has 30 percent Agnostics, this country will have Christianity as a major religion. However, it will have Agnostics as the main sect. Thus, in Table 2.10, we have multiple Agnostic dyads and they have trend convergence.

Interestingly, Sunnis have divergence with the three main sects of Christianity. Shias have convergence with the same three sects of Christianity. Sunnis and Shias do not have any convergence, neither among themselves nor with each other. Chinese folks, Ethnoreligionists, Independents, Orthodox, Protestants and Catholics have higher number of statistically significant convergence and divergences. These results reject the Hypothesis 2.2 in favor of existence of divergence or convergence between dyads of sects.

TABLE 2.10: Mean trend convergence between sects. Annual differences between dyads are calculated using: $D_t = \frac{(X_{country1,t} - X_{country2,t})}{(X_{country1,t} + X_{country2,t})/2}$ where X is GDP per capita. The trend in the annual differences is estimated for each dyad using: $D_t = \alpha + \beta_1 trend_t + \epsilon_t$. The figures are the mean coefficient of the trend regression (β_1) across dyads of the sect pairs. *, **, and *** represent statistical significance at 1%, 5% and 10% levels respectively.

Sect	Agnost.	Anglic.	Chine.	Ethno.	Hindus	Indep.	Jews	Lamaist	Mahayan.	Margin.	Orth.	Protes.	Catholics	Shias	Sunnis	Therav.	Unaff.						
Agnostics	-1.66	-0.25	-0.43	0.75	-0.43	***	-0.50	-0.79	-0.72	-0.85	-1.16	*	-0.38	***	-0.58	*	-0.60	***	-1.18				
Anglicans	-0.25	-1.71	**	0.52	* 0.13	-0.52	-0.54	-0.88	-0.98	-0.19	-0.93	***	0.11	0.09	0.02	-0.41	-0.54						
Chinese folk	-0.43	-0.59	1.80	* 1.29	* 1.13	* 1.13	* 0.68	-0.15	-0.36	1.53	**	-0.03	0.48	**	0.89	*	1.01	*	0.38				
Ethnoreligionists	0.75	* 0.52	*	0.72	** 1.15	* 1.73	* 0.62	1.41	1.04	2.06	*	1.56	*	0.81	*	0.96	**	0.70	*	0.99	*		
Hindus	-0.43	*** 0.13	1.29	* 1.15	* 0.35	0.78	*** 0.26	-0.91	0.04	0.93	0.96	*	0.33	*	0.32	*	0.28	0.22	***	0.84	***	0.32	
Independents	-0.50	-0.52	1.13	* 1.73	* 0.78	*** -0.01	-0.41	-1.68	** -0.23	0.26	0.70	0.34	**	0.31	*	-1.50	**	0.25	***	-0.08	0.93		
Jews	-1.14	*	-0.68	0.62	* 0.26	-0.41	-1.22	-1.22	-0.36	-0.54	-1.59	**	0.05	0.14	-1.10	-0.04	-0.35	-0.86					
Lamaists	-0.72	-0.88	-0.15	1.41	-0.91	-1.68	** -1.22	-0.42	-0.42	-2.25	-0.91	-1.05	*	-1.52	*	-0.60	-0.84	-1.87					
Mahayanists	-0.72	-0.98	-0.36	1.04	** 0.04	-0.23	-0.36	-0.42	-0.44	-0.61	-0.83	***	-0.23	-0.25	***	-0.10	-0.03	0.13	-0.82				
Marginals	-0.85	-0.19	1.53	** 2.06	* 0.93	0.26	-0.54	-2.25	-0.61	-0.61	0.57	0.20	0.27	-1.84	*	0.17	0.04	1.09					
Orthodox	-1.16	*	-0.93	*** 0.03	1.56	* 0.96	* 0.70	-1.59	** -0.91	-0.83	***	0.57	0.07	0.27	***	0.16	***	-0.65	**	0.53	*	0.01	0.19
Protestants	-0.38	*** 0.11	0.48	** 0.81	* 0.33	* 0.34	** 0.05	-1.05	* -0.23	0.20	0.27	***	0.30	* 0.35	*	-0.35	* -0.14	* 0.03	0.35				
Roman Catholics	-0.58	* 0.09	0.89	* 0.81	* 0.32	* 0.31	* 0.14	-1.52	* -0.25	*** 0.27	0.16	***	0.35	*	0.41	*	-0.44	*	-0.13	0.45	**		
Shias	-0.89	-0.58	-0.38	0.96	** 0.28	-1.50	** -1.10	-0.19	-0.10	-1.84	*	-0.65	*** -0.35	-0.44	*	-0.47	0.04	-0.86	-0.94				
Sunnis	0.26	0.02	0.86	* 0.70	* 0.22	*** 0.25	*** -0.04	-0.60	-0.03	0.17	0.53	*	0.14	*	0.15	*	0.04	0.09	***	0.21	0.30		
Theravadins	-0.60	*** -0.41	1.01	*	2.14	* 0.84	*** -0.08	-0.84	0.13	0.04	0.01	0.03	-0.13	-0.86	0.21	1.55	**	-0.20					
Unaffiliated	-1.18	-0.54	0.38	0.99	* 0.32	0.93	-0.86	-1.87	-0.82	1.09	0.19	0.35	0.45	** -0.94	0.30	-0.20	3.66						

2.4.3 Testing Methodology for the Trend Convergence

So far the empirical tests of trend convergence for EU and for individual religions are based on the mean of the trend convergence coefficient across dyads of individual groups. Since we have statistically sufficient number of dyads, we can statistically test the significance of the mean of the trend convergence coefficient. In this section, the evaluation is cross sectional and across dyads. Each observation is the trend convergence coefficient for an individual dyad. Since we are utilizing a difference measure as in the Equation 2.2 for the variables of the dyad, the direction is not important. Thus, to avoid double counting, dyads are counted only once. For instance, while country1-country2 is a dyad, country2-country1 is also a dyad. If we are evaluating the imports of country1 from country2, then this direction within the dyad would be needed. However, since we are either taking the difference between the two countries (i.e. GDP per capita) or the sum (i.e. total trade) we do not need the two dyadic observations. Thus, we only use one of the two directions.

Table 2.11 provides a small, random, section of the dataset used by the present study. The dyads are available under the columns Country1 and Country 2. Their primary religions and primary sects are provided under each corresponding column. Under the trend column, the coefficient is the β_t from the Equation 2.2 and the P is the statistical significance stars based on the p-value. The negative trend is a binary variable that is assigned a value of 1 if the trend coefficient is negative and statistically significant at 5 percent or lower and zero otherwise. Common religion, common sect, common religious diversity, common sect diversity and common EU membership are also binary variables and are assigned a value of one if both countries of the dyad have the same religion, sect, religious diversity, sect diversity and

EU membership status. Note that Table 2.11 is a sample in terms of number of observations and variables used by the study.

The evaluation is conducted using two different tests. First, we ask, what factors explain the variance in the trend convergence coefficients across dyads. Thus, having a negative coefficient means that as the evaluated factor increases the trend coefficient gets lower. This does not mean that the factor leads to trend convergence. It just lowers the trend coefficient and therefore contributes to trend convergence. A positive coefficient, on the other hand, means that the evaluated factor increases the trend coefficient and therefore contributes to trend divergence (or lowers convergence).

The lack of explanation in terms of what leads to convergence or divergence requires the second set of tests. So far, we can only get at what increases the trend coefficient and what decreases it. However, we would need a more definitive explanation. For this, we create a binary variable and assign a value of one if the dyad have statistically significant (the .05 level or better) trend convergence and zero otherwise (as explained above). We use this new convergence variable within logit type estimation to evaluate which factors increase/decrease the likelihood of dyads having convergence. There are three types of dyads, though. While one group has trend convergence and the other group has the trend divergence, the third group has statistically insignificant trend coefficient. Thus, similar to convergence binary variable, we also construct a divergence binary variable and test factors' effect on the likelihood of the divergence.

TABLE 2.11: **Sample of the dataset used for the study.** The dataset is explained in detail within the text. Rel refers to religion, R.Div. to common religious diversity, S.Div. to common sect diversity and EU to common EU membership. *, ** and *** represent statistical significance at 1%, 5% and 10% levels respectively.

Country 1		Country 2		Trend	Causality	Trade	Common	
Country	Religion	Country	Religion	Coef. P.	Chi2 P.	Coef. P.	Rel Sect	R.Div. S.Div. EU
Argentina	Christians	Ethiopia	Roman Catholics	0.200 *	0.785	0.000	1	0
Azerbaijan	Muslims	Egypt	Shias	-0.300	2.969	0.215	1	0
Barbados	Christians	Cyprus	Christians Orthodox	-2.000 *	2.706	0.002	1	0
Benin	Ethnoreligionists	Djibouti	Muslims	-1.700 *	4.611 ***	-0.001	0	0
Brazil	Christians	Costa Rica	Christians Roman Catholics	-0.900 *	9.261 *	0.035 *	1	0
Cameroon	Roman Catholics	Cambodia	Buddhists Theravadians	-1.100 **	1.682	-0.002 *	0	0
Chile	Christians	Djibouti	Muslims Sunnis	3.400 *	3.072	-0.003 *	0	0
Costa Rica	Christians	China	Agnostics Agnostics	-2.300 *	6.764 **	3.205 *	0	0
Denmark	Christians	Costa Rica	Christians Roman Catholics	0.700 *	0.057	0.020 *	1	0
Egypt	Muslims	Cyprus	Christians Orthodox	0.800 *	5.662 ***	0.030 *	0	1
Fiji	Protestants	Denmark	Christians Protestants	0.200 *	3.936	-0.175 **	1	1
Gambia	Muslims	Fiji	Christians Protestants	1.400 *	0.587	-0.006	0	1
Greece	Christians	France	Christians Roman Catholics	-0.400 *	0.490	2.411 *	1	0
Guyana	Christians	Estonia	Christians unaffiliated	2.000 *	2.617	-0.018	1	0
Iceland	Christians	Estonia	Christians unaffiliated	-1.900 *	5.625 ***	5.257 *	1	0
Iraq	Muslims	Colombia	Christians Roman Catholics	0.100	5.196 ***	0.001 *	0	0
Jamaica	Christians unaffiliated	Cape Verde	Christians Roman Catholics	-2.000 *	4.007	0.000	1	0
Kenya	Protestants	Cyprus	Christians Orthodox	2.400 *	12.610 *	-0.003	1	0
Latvia	Christians	Ecuador	Christians Roman Catholics	5.300 *	0.250	0.055	1	0
Libya	Muslims	Denmark	Christians Protestants	-0.400	2.015	-0.438 *	0	0
Madagascar	Ethnoreligionists	Chad	Muslims	0.300 ***	1.562	0.004 *	0	0
Mali	Muslims	Gambia	Muslims	-1.700 *	0.278	-0.008	1	1
Mexico	Christians	Colombia	Christians Roman Catholics	0.200 **	5.830 ***	0.252 *	1	0
Mozambique	Christians	France	Christians Roman Catholics	0.400 *	2.493	-1.730 *	1	0
Niger	Muslims	Cameroon	Christians Roman Catholics	1.900 *	1.492	0.001	0	1
Pakistan	Muslims	Croatia	Christians Roman Catholics	0.700 **	0.492	0.011 **	0	0
Poland	Christians	Colombia	Christians Roman Catholics	0.200	1.303	-0.063 *	1	0
Russia	Christians	Chad	Muslims	-0.800 **	12.124 *	0.003	0	1
Seychelles	Christians	Germany	Christians Roman Catholics	-1.400 **	20.993 *	24.983 *	1	0
Spain	Christians	Cuba	Christians Roman Catholics	1.100 *	2.301	-0.141 **	1	1
Suriname	Christians	Egypt	Muslims Sunnis	-2.700 *	1.576	0.000	0	1
Taiwan	Chinese folk	Denmark	Christians Protestants	-2.700 *	5.051 ***	0.340 *	0	1
Togo	Christians	Cape Verde	Christians Roman Catholics	2.300 *	3.691	-0.050	1	0
Uganda	Ethnoreligionists	Dominica	Christians Roman Catholics	2.100 *	8.531 **	-0.016 ***	1	0
Vanuatu	Christians	Finland	Protestants	0.400 *	3.474	-0.064 **	1	0
Zambia	Christians	Cuba	Christians Roman Catholics	2.000 *	0.521	0.001 ***	1	0

2.4.4 Control Variables for the Trend Convergence and Divergence

Based on the existing literature, there are some variables that are known to have explanatory power over the convergence of countries' income levels. For the tests of religion as an explanatory variable, we will include these known control variables to avoid missing variables bias and also to better model the reasons for countries' income levels. Since we are now arguing for religion to be a reason behind inter-country economic cooperation, the control variables are part of the model.

First, distance between the dyads is included in its log. Thus, we are controlling the effect of distance on the countries' economic cooperation. Alternatively, we test whether contiguity can replace, compliment the log of distance variable. However, in all cases, distance seems to be statistically significant and the contiguity is not. Also, since with the logit regression, we have a binary dependent variable, having log of distance as one of the independent variables instead of another binary variable, contiguity, provides us with a more efficient estimations.

The second control variable is the common language. While there is no established argument about the effect of common language on economic cooperation between countries, intuitively, it would be expected to have easier trade if both countries speak the same language.

The third control variable is the level of democracy. However, we do not include the polity2 variable from the Polity dataset as provided. While it is a very useful time-series variable, in terms of dyads, we are interested in the difference of level of democracy between the countries of the dyad. Thus, there are three scenarios: 1) both countries have positive polity2 variables, in which case the difference between the two is used, 2) both countries have negative polity2 variables, in which case the difference of absolute values of the polity2 variables is used, and 3) countries

have different signs for the polity2 variable, in which case we add the positive polity2 variable to the absolute value of the negative polity2 variable. However, since the difference between level of democracy and level of autocracy have different implications for economic cooperation, the second scenario is multiplied by -1 to indicate differences in levels of autocracies. EU membership, OECD membership, and NATO memberships are argued in the previous literature to have economic convergence effects. Thus, these binary variables are also included as control variables.

Since the dependent variable is the trend coefficient across dyads, the percentage of difference in terms of military spending, economic openness, real GDP per capita, government spending, and consumption share of the GDP are included as control variables. It is argued in the literature that if two countries already have high income levels, they are less likely to converge to a common income level. They may both increase or decrease. This is especially true for the trend convergence since it is the trend of difference between income levels of two countries. In another words, if two countries have high difference between their income levels, they are more likely to converge either by the lower income level country increasing its income level or both converging to a mean level through years. In terms of military spending, economic openness, government spending, and consumption, however, the reasoning to include these variable is different. They simply indicate categorical differences between the countries of the dyad. A country who needs to spend 30 percent of its GDP to military spending is different compared to a country that only spends 5 percent of its GDP. Also, a country that has 50 percent openness compared to a country with 5 percent openness belong to different categories.

Finally, it is important to consider a special type of economic cooperation that is rather a new phenomenon. Islamic banking is a special type of commercial banking

which is based on project financing. Deposits in Islamic banking are not guaranteed.¹³ Also, interest payments are not guaranteed. Thus, there is no guarantee of either the principal or the interest. The expectation is profit and loss sharing. With this type of banking, competing with international commercial banks, Islamic banking is a challenging business. For deposit customers, Islamic banks are competing against well established principal -and interest- guaranteeing commercial banks. In most cases, principals at commercial banks are also protected by governments such as the Federal Deposit Insurance Corporation (FDIC) of the US. Again, in most cases such guarantees are not applicable to deposits held at Islamic banks. Thus, for a customer to chose Islamic banking over traditional commercial banking either Islamic banks pay higher profits compared to commercial banks' interests or customers would chose Islamic banking due to their religious beliefs. Since historically profits paid by Islamic banks are very similar to those of commercial banks and there have been several Islamic bank failures in the past and customers increasingly choosing Islamic banks for their deposit in some countries points to higher preference for Islamic banks due to their religious attributes. Thus, in this study, we include a binary variable that indicates whether countries of dyads have increasing Islamic banking deposits to indicate higher Islamic religiosity. We also control for increased Islamic banking for individual countries where indicated.

2.5 Econometric Model

Throughout the present study, we will be testing our hypotheses using two main econometric model templates. The dependent variable, independent variables, and control variables will be different for each section. These will be explained in cor-

¹³Even though in some countries practices vary about deposit insurance, the principal of Islamic banking requires risk sharing.

responding sections as they apply to the econometric models. For the purpose of compactness, the two econometric model templates are provided in this section.

The first model is a OLS regression as follows;

$$\begin{aligned}
 X_d = \alpha + \gamma_1 Y_d + \delta_1 &Common_language_d + \delta_2 Level_of_democracy_d & (2.5) \\
 + \delta_3 &Military_spending_d + \delta_4 Economic_openness_d \\
 + \delta_5 &GDP_per_capita_d + \delta_6 Government_spending_d \\
 + \delta_7 &Consumption_d + \delta_8 EU_membership_d \\
 + \delta_9 &NATO_membership_d + \delta_{10} OECD_membership_d \\
 + \delta_{11} &Islamic_banking_partners_d + \epsilon_X
 \end{aligned}$$

In Equation 2.5, Y_d is the variable of interest that is being tested. The dependent variable, X_d will change and will be explained for each chapter. To conserve space across models we will omit reporting the results for some of the control variables if their coefficients do not change in sign or in significance. Equation 2.5 is estimated to evaluate each independent variable's explanatory power to explain the changes in the dependent variable.

The second econometric model is a logit regression and it is constructed as Equation 2.5 with the exception that the dependent variable, X_d is a binary variable. Each individual independent variable is tested for their effect on the likelihood of X_d having a value of one.

Chapter 3

Trend Convergence in Income Levels

3.1 Common Religion of Dyads

After preliminary explanations about the data, methodology, and the control variables, we begin our analysis with the evaluation of common religion as a factor explaining trend convergence. We define countries having common religion if their primary religions are common. However, there are countries (i.e. Lebanon) where percentage of the country with religious affiliation is very close for the primary religion and for the secondary religion. In other words, it is too close to call country religion X when percentage of religion Y in the country is very close to the percentage of religion X. In order to address this issue primary religion is defined as the religion with 30 percent or more affiliation in a country. Therefore common religion binary variable is assigned a value of one if both countries of the dyad have the one common primary religion.

The trend in differences between countries of dyads is estimated using the Equation 2.2. This gives us a trend coefficient β for each dyad included in the study. Trend differences are calculated for variables including real GDP per capita, military spending, economic openness, and level of democracy. Therefore we have a β for each dyad and for each variable: $\beta_{variable,dyad}$.

Equation 2.5 is estimated separately for each of the variables: real GDP per capita, military spending, economic openness, and level of democracy. For each estimation, $\beta_{variable,dyad}$ is the dependent variable. Each independent variable explains the variation in the trend for a difference between the countries of dyads.

Variables in the estimation are used as described in the data section. Thus, each variable is used in three different forms. First, the variable itself. Thus, when testing the trend between countries, the variable is taken as itself for both countries and the difference is calculated as a percentage. However, a second form is also used to normalize each of the variable with the world. For instance, for the real GDP per capita for country X, the figure is divided by the world average real GDP per capita. The difference between the countries is the difference of the ratio of their GDP per capita to the world. Finally, the third measure is takes the world average using population weighting instead of equally weighting.¹

3.1.1 All Religions

Initially, the common religion measure is across all religions. This means that, as long as the countries of the dyad have the same common religion, regardless of the religion, the common religion measure will have a value of one and zero otherwise. The independent variable for the Equation 2.5 (Y_d) is replaced with the common religion binary variable ($common_religion_d$).

This section is the test for the hypotheses put forth by [Huntington \(1993\)](#) and [Fukuyama \(1989\)](#). If having a common religion has an economic convergence effect, we would argue that there is beneficial economic cooperation within religions. However, if there is no statistically significant economic convergence, then we cannot speak of any intra-religion economic cooperation. Since the impact of common religion is tested using a dummy variable, it shows the impact of having a common religion as opposed to having a different religion within a dyad. For instance, if there is convergence (a negative coefficient) for common religion, it means that hav-

¹The tables included in the study are prepared using variables without normalizations. The same tables using normalized variables are available upon request. If there are meaningful differences between the tables in terms of empirical results, they are included within the text.

ing a common religion has a decreasing effect on the trend coefficient (dependent variable) compared to having a different religion.

Table 3.1 provides the results for this section. Table 3.3 provides the same results but also provides the results for the control variables and the results for individual religions and sects. Since this is the first test on the control variables, evaluation of the results for the control variables is needed.

For the first model (1) evaluating trend convergence in real GDP per capita (RGDPCH), in terms of the distance variable, the coefficient is negative and not statistically significant. This means that as the distance between countries of the dyad increases so does their trend coefficients towards convergence. Intuitively, it would be expected that the countries that are closer to have more convergence. However, we posit that the higher convergence of countries afar is due to technological developments that enable foreign trade. Common language, contrary to our expectations, is not statistically significant. It was, however, expected that countries with the same official language would have more convergence of income levels due to ease in trade cooperation.

Level of democracy has a negative and statistically significant coefficient which means that it has an impact towards trend convergence. In other words, if the difference of democracy levels between the countries of the dyads is higher, they will have more trend convergence. Consumption also has a negative coefficient for the GDP which implies that higher differences in consumption between the countries of the dyad trend towards economic converge.

Note that the level of democracy as a control variable is the difference in levels of democracy between the countries of the dyads. Thus, increased difference in levels of democracy increases the convergence. This can be explained with the relationship between income levels and level of democracy across countries. [Barro](#)

TABLE 3.1: Effect of common religion and common sect on trend convergence for country dyads for 1950-2009 period. Annual percentage difference between countries are calculated ($D_{t,i}$, where t is per year and i is per dyad) for pairs of countries. D is the difference in terms of real GDP per capita, military spending, openness and polity level. $D_{t,i}$ for each dyad is regressed with a time trend variable across years. The trend coefficient for each dyad is the cross-sectional dependent variable for the models in the table. A negative trend coefficient means convergence and a positive trend coefficient means divergence between dyads. Common religion, common sect, common language and membership variables are binary variables. A positive coefficient in the table means that the variable has an increasing effect on the trend coefficient and therefore it has a divergence effect. A negative coefficient in the table means that the variable has an decreasing effect on the trend coefficient and therefore it has a convergence effect. Distance is the log of average distance between the countries' main cities. Government spending and consumption are differences between countries of the dyads. *, ** and *** represent statistical significance at 1%, 5% and 10% levels respectively.

	RGDP		SIPRI		OPEN		POLITY	
	1	2	1	2	1	2	1	2
Distance	-0.017	-0.011	0.264 *	0.318 *	0.055 *	0.079 *	1.020 **	0.665
Common language	-0.036	-0.017	0.127	0.062	0.428 *	0.375 *	1.260	0.720
Level of democracy	-0.011 *	-0.011 *	0.001	0.004	-0.003	-0.002	-2.071 *	-2.085 *
Govern. spending	0.126 *	0.096 **	0.213	0.163	0.164 *	0.153 *	-2.275 **	-0.995
Consumption	-0.082	-0.104 ***	-1.737 *	-1.725 *	-0.173 *	-0.160 *	5.711 *	6.614 *
EU members	-0.279 **	-0.215 ***	-0.408	-0.260	0.128	0.161	-0.145	-2.541
NATO members	0.097	0.142	0.732 *	0.828 *	-0.267 **	-0.214 ***	-2.871	-4.667
OECD members	-0.905 *	-0.902 *	-0.407 **	-0.494 **	0.739 *	0.698 *	-3.141	-3.854
Islamic religiosity	-0.593 *	-0.530 *	-1.461 *	-1.536 *	0.397 *	0.318 *	1.111	-0.959
Common religion	0.254 *		0.362 *		0.072 **		-10.245 *	
Common sect		0.166 *		0.636 *		0.280 *		-8.228 *
Constant	0.430 *	0.442 *	-1.805 *	-2.379 *	-1.355 *	-1.661 *	-0.435	1.007
N	15202	15202	4700	4700	13920	13920	11572	11572
R ²	0.157	0.155	0.286	0.291	0.243	0.248	0.309	0.305
F	33.0 *	28.3 *	13.8 *	17.1 *	33.2 *	42.8 *	199.6 *	192.5 *

TABLE 3.2: Effect of common religion and common sect on trend convergence for country dyads for 1980-2009 period. Annual percentage difference between countries are calculated ($D_{t,i}$, where t is per year and i is per dyad) for pairs of countries. D is the difference in terms of real GDP per capita, military spending, openness and polity level. $D_{t,i}$ for each dyad is regressed with a time trend variable across years. The trend coefficient for each dyad is the cross-sectional dependent variable for the models in the table. A negative trend coefficient means convergence and a positive trend coefficient means divergence between dyads. Common religion, common sect, common language and membership variables are binary variables. A positive coefficient in the table means that the variable has an increasing effect on the trend coefficient and therefore it has a divergence effect. A negative coefficient in the table means that the variable has an decreasing effect on the trend coefficient and therefore it has a convergence effect. Distance is the log of average distance between the countries' main cities. Government spending and consumption are differences between countries of the dyads. *, ** and *** represent statistical significance at 1%, 5% and 10% levels respectively.

	RGDP		SIPRI		OPEN		POLITY	
	1	2	1	2	1	2	1	2
Distance	-0.075 *	-0.076 *	0.264 *	0.318 *	0.073 *	0.092 *	1.926 *	1.515 **
Common language	-0.019	0.013	0.127	0.062	0.451 *	0.406 *	0.351	-0.404
Level of democracy	-0.012 *	-0.013 *	0.001	0.004	0.003	0.004	-4.637 *	-4.658 *
Govern. spending	-0.065	-0.089 ***	0.213	0.163	0.078	0.068	1.325	3.249 **
Consumption	-0.207 *	-0.230 *	-1.737 *	-1.725 *	0.013	0.020	14.925 *	16.420 *
EU members	-0.557 *	-0.517 *	-0.408	-0.260	-0.091	-0.061	14.544 *	11.951 **
NATO members	0.517 *	0.549 *	0.732 *	0.828 *	-0.010	0.032	-7.959 ***	-10.631 *
OECD members	-0.889 *	-0.865 *	-0.407 **	-0.494 **	0.902 *	0.863 *	18.347 *	17.396 *
Islamic religiosity	-0.564 *	-0.479 *	-1.461 *	-1.536 *	0.234 ***	0.169	18.372 *	14.811 *
Common religion	0.238 *		0.362 *		0.052		-15.116 *	
Common sect		0.095 *		0.636 *		0.224 *		-10.780 *
Constant	1.147 *	1.239 *	-1.805 *	-2.379 *	-1.798 *	-2.040 *	-9.337	-9.087
N	14620	14620	4700	4700	13388	13388	11088	11088
R ²	0.111	0.108	0.286	0.291	0.207	0.209	0.420	0.415
F	19.3 *	15.6 *	13.8 *	17.1 *	15.5 *	18.5 *	451.9 *	438.3 *

TABLE 3.3: Effect of individual religions and sects on trend convergence for country dyads for 1950-2009 period. Annual percentage difference between countries are calculated ($D_{t,i}$, where t is per year and i is per dyad) for pairs of countries. D is the difference in terms of real GDP per capita, military spending, openness and polity level. $D_{t,i}$ for each dyad is regressed with a time trend variable across years. The trend coefficient for each dyad is the cross-sectional dependent variable for the models in the table. A negative trend coefficient means convergence and a positive trend coefficient means divergence between dyads. Common religion, common sect, common language and membership variables are binary variables. A positive coefficient in the table means that the variable has an increasing effect on the trend coefficient and therefore it has a divergency effect. A negative coefficient in the table means that the variable has an decreasing effect on the trend coefficient and therefore it has a convergence effect. Distance is the log of average distance between the countries' main cities. Government spending and consumption are differences between countries of the dyads. *, ** and *** represent statistical significance at 1%, 5% and 10% levels respectively.

	RGDP				SIPRI				OPEN				POLITY			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Distance	-0.015	-0.011	-0.034 ***	-0.031 ***	0.245 *	0.309 *	0.211 *	0.219 *	-0.003	0.032 ***	0.005	0.018	0.916 **	0.596 **	1.196 **	0.821 ***
Level of democracy	-0.011 *	-0.011 *	-0.015 *	-0.013 *	-0.000	0.004	-0.007	-0.009	-0.005 **	-0.003	-0.003	-0.002	-2.066 *	-2.083 *	-2.032 *	-2.062 *
Consumption	-0.070	-0.095 ***	-0.012	-0.091 ***	-1.733 *	-1.721 *	-1.682 *	-1.490 **	-0.174 *	-0.163 *	-0.205 *	-0.173 *	5.479 *	6.489 *	4.718 *	6.122 *
EU members	-0.276 **	-0.215 ***	-0.319 *	-0.248 **	-0.441	-0.279	-0.516 ***	-0.451 ***	0.058	0.111	0.071	0.099	-0.238	-2.580	0.364	-2.340
NATO members	0.095	0.138	0.071	0.109	0.714 **	0.818 **	0.691 **	0.646 **	-0.346 *	-0.269 **	-0.333 **	-0.273 **	-2.878	-4.673	-2.524	-4.205
OECD members	-0.915 *	-0.910 *	-0.965 *	-0.882 *	-0.430 **	-0.512 **	-0.494 **	-0.302	0.699 *	0.659 *	0.718 *	0.600 *	-3.091	-3.830	-2.583	-4.247 ***
Islamic religiosity	-0.597 *	-0.535 *	-0.302 *	-0.485 *	-1.453 *	-1.535 *	-0.680 **	-0.772 *	0.399 *	0.322 *	0.227 **	0.285 *	1.196	-0.867	-1.652	-1.068
Common religion	0.244 *				0.366 *				0.127 *				-9.944 *			
Common sect	0.165 *				0.644 *					0.335 *				-8.133 *		
Buddhists			0.323				-0.127				0.015				5.918	
Chinese folk			-0.730				4.760 **				0.350				-21.504 *	
Christians			0.394 *				0.560 *				0.068 **				-11.895 *	
Ethnoreligionists			0.347 **				-0.523				-0.961 *				-4.403	
Hindus			0.089				0.094				-0.086				19.147 ***	
Muslims			-0.216 *				-0.793 *				0.386 *				-5.570 *	
Agnostics				-0.035				-0.677 **				0.451 *				4.260
Chinese folk				-0.601				0.968				-0.300				-10.184
Ethnoreligionists				-0.445 *				-1.303 *				-0.317 *				2.507
Hindus				-0.297				0.041				0.041				6.069
Independents				0.373 *				-2.022 **				-0.222 **				0.059
Orthodox				0.072				2.052 **				-0.648 *				1.076
Protestants				0.061				0.530 *				0.014				-3.663 *
Roman Catholics				0.193 *				1.381 *				0.380 *				-11.425 *
Shias				0.292				-3.354 *				-0.797 *				-16.570 **
Sunnis				0.010				-0.487 *				-0.460 *				-5.327 *
Theravadins				0.624				2.052 ***				-0.737 ***				11.085
Constant	0.471 *	0.482 *	0.607 *	0.693 *	-1.527 *	-2.216 *	-1.260 **	-1.471 **	-0.721 *	-1.136 *	-0.779 *	-0.998 *	-0.455	1.252	-2.501	-0.929
N	15202	15202	15202	15202	4700	4700	4700	4700	13920	13920	13920	13920	11572	11572	11572	11572
R ²	0.157	0.155	0.163	0.157	0.285	0.291	0.289	0.314	0.235	0.242	0.238	0.248	0.309	0.305	0.310	0.308
F	39.9 *	34.6 *	33.4 *	18.6 *	16.9 *	21.3 *	12.6 *	19.0 *	22.6 *	38.7 *	18.3 *	23.7 *	248.7 *	240.5 *	156.0 *	110.8 *

TABLE 3.4: Effect of individual religions and sects on trend convergence for country dyads for 1980-2009 period. Annual percentage difference between countries are calculated ($D_{t,i}$, where t is per year and i is per dyad) for pairs of countries. D is the difference in terms of real GDP per capita, military spending, openness and polity level. $D_{t,i}$ for each dyad is regressed with a time trend variable across years. The trend coefficient for each dyad is the cross-sectional dependent variable for the models in the table. A negative trend coefficient means convergence and a positive trend coefficient means divergence between dyads. Common religion, common sect, common language and membership variables are binary variables. A positive coefficient in the table means that the variable has an increasing effect on the trend coefficient and therefore it has a divergenc effect. A negative coefficient in the table means that the variable has an decreasing effect on the trend coefficient and therefore it has a convergenc effect. Distance is the log of average distance between the countries' main cities. Government spending and consumption are differences between countries of the dyads. *, ** and *** represent statistical significance at 1%, 5% and 10% levels respectively.

	RGDP				SIPRI				OPEN				POLITY			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Distance	-0.071 *	-0.076 *	-0.097 *	-0.101 *	0.245 *	0.309 *	0.211 *	0.219 *	0.014	0.043	0.019	0.038	1.849 *	1.510 **	2.444 *	2.142 *
Level of democracy	-0.012 *	-0.013 *	-0.016 *	-0.015 *	-0.000	0.004	-0.007	-0.009	0.002	0.003	0.003	0.004	-4.640 *	-4.663 *	-4.511 *	-4.567 *
Consumption	-0.211 *	-0.238 *	-0.152 **	-0.221 *	-1.753 *	-1.721 *	-1.632 *	-1.490 *	0.002	0.005	-0.024	-0.006	15.046 *	16.798 *	13.084 *	15.609 *
EU members	-0.551 *	-0.517 *	-0.600 *	-0.565 *	-0.441 *	-0.279 *	-0.516 ***	-0.451 ***	-0.172	-0.119	-0.161	-0.144	14.521 *	12.025 **	15.776 *	12.586 *
NATO members	0.524	0.553	0.487	0.535	0.714 **	0.818 *	0.691 **	0.646 **	-0.081	-0.016	-0.072	0.005	-8.089 **	-10.790 *	-7.163 ***	-9.746 **
OECD members	-0.882 *	-0.857 *	-0.945 *	-0.841 *	-0.430 **	-0.512 **	-0.494 **	-0.302	0.861 *	0.824 *	0.876 *	0.729 *	18.179 *	17.124 *	19.047 *	16.613 *
Islamic religiosity	-0.563 *	-0.475 *	-0.247 **	-0.413 *	-1.453 *	-1.535 *	-0.680 **	-0.772 *	0.239 **	0.179	0.122	0.188	18.407 *	14.745 *	10.257 *	11.137 *
Common religion	0.238 *				0.366 *				0.118 *				-15.140 *			
Common sect		0.096 *				0.644 *				0.286 *				-10.831 *		
Buddhists			-0.075				-0.127				-0.058				16.832	
Chinese folk			-1.893 **				4.760 **				-0.110				9.258	
Christians			0.412 *				0.560 *				0.069				-19.927 *	
Ethnoreligionists			0.128				-0.523				-0.667 **				-1.682	
Hindus			0.351				0.094				-0.333				-7.655	
Muslims			-0.259 *				-0.793 *				0.297 *				-2.817	
Agnostics				-0.053				-0.677 **				0.706 *				5.289
Chinese folk				-1.672 *				0.968				-0.408				14.039
Ethnoreligionists				-0.438 *				-1.303 *				0.222 ***				5.809 **
Hindus				-0.227				0.214				-0.334				-11.511
Independents				0.689 *				-0.100				-0.114				0.593
Orthodox				-0.302				2.052 **				-0.153				-9.330
Protestants				0.004				0.530				0.032				-5.869 *
Roman Catholics				0.168 *				1.381 *				0.174 *				-16.296 *
Shias				0.347				-3.354 *				-1.222 *				-8.916
Sunnis				-0.093 ***				2.052 ***				0.366 *				-2.617 ***
Theravadins				0.170				-0.487 *				-1.708 *				21.985
Constant	1.078 *	1.200 *	1.275 *	1.441 *	-1.527 *	-2.216 *	-1.260 **	-1.471 **	-1.195 *	-1.531 *	-1.222 *	-1.461 *	-7.993	-7.675	-12.209 **	-13.679 **
N	14620	14620	14620	14620	4700	4700	4700	4700	13388	13388	13388	13388	11088	11088	11088	11088
R ²	0.111	0.108	0.115	0.113	0.285	0.291	0.289	0.314	0.203	0.206	0.204	0.207	0.420	0.415	0.424	0.418
F	23.9 *	19.1 *	21.3 *	13.0 *	16.9 *	21.3 *	12.6 *	19.0 *	10.2 *	15.6 *	7.4 *	8.7	564.8 *	547.1 *	355.4 *	248.9 *

(1999), for instance, provides evidence for this relationship and shows that higher democracy follows higher income levels. If both countries have similar levels of democracy (i.e. level of democracy control variable is low) they are more likely to have similar income levels. If they have similar income levels, it would be expected that they would have less room for convergence compared to pairs of countries with very different income levels. However, if the level of democracy between the two countries are at different levels then their income levels would be expected to vary as well leaving room for economic convergence.

All three membership control variables (EU, NATO and OECD) are binary variables. EU and OECD membership have an increasing effect on trend convergence (negative coefficient) for GDP. Note that, since these are binary variables, interpretation of their coefficients are important. For instance, for dyads where both countries are OECD members, the trend coefficient is lower (negative coefficient) compared to dyads where at least one of the countries of the dyad is not an OECD member country. Thus, this negative coefficient is comparative to the other group (which is assigned zero for this binary variable).

Note that OECD membership has the highest coefficient (in absolute value) which points to the importance of OECD membership for economic convergence compared to other variables evaluated. Interestingly, NATO membership only has an increasing effect on trend convergence in economic openness. In fact, NATO membership leads to trend divergence in terms of military spending. This finding is in support of the arguments made by [Olson and Zechhauser \(1966\)](#) and [Sandler and Forbes \(1980\)](#). They argue the free-rider problem: smaller countries depending on larger countries' military protection. The evidence of divergence in military spending between NATO member countries shows that while some countries in-

crease their military spending shares in their GDPs, others decrease it. Evidence is in support of the free-rider argument.

As the final control variable, Islamic banking partnership (two countries of the dyad having increasing Islamic banking deposits and thus higher Islamic religiosity), has a negative coefficient (-0.593) and it is statistically significant at the .01 level. The coefficient is the second highest among all independent variables. It is actually second to the effect of EU membership. To emphasize this point; having two countries with increased Islamic religiosity in a dyad affects the level of convergence. In other words, if two countries have higher Islamic religiosity, their income level convergence will be higher compared to two countries with no Islamic religiosity. The model overall has an R^2 of 0.157.

In terms of the actual variable of interest, two countries of the dyad having a *common religion*, the coefficient is (0.254) statistically significant at .01 level for GDP convergence. Religion is an important factor for economic cooperation of countries. In fact, it is almost as important as EU membership which has a coefficient of -0.279. While the economic impact of common religion and EU membership is almost equal, they have different signs: EU membership leads to convergence and common religion to divergence.

Since both [Huntington \(1993\)](#) and [Fukuyama \(1989\)](#) argue that religion is a factor of polarization, our finding that common religion is a factor explaining economic cooperation is evidence for their argument. However, we find that having a common religion has a divergence effect for countries (positive coefficient). Since it is a dummy variable, it also means that having a different religion between countries has convergence effect. This would be evidence against [Huntington \(1993\)](#). Interestingly however, having two countries in a dyad increases the convergence level in level of democracy. The coefficient for the common religion for the POLITY model

is the highest (in absolute value) among all independent variables. Thus, common religion has an effect towards trend divergence in income levels and towards trend convergence in level of democracy.

3.1.2 Individual Religions

The results of the previous section point to the importance of having common religion for dyads' economic convergence even if it means it has an effect towards divergence. While the effect of common religion, whether it is convergence or divergence, is important, the statistical significance of the common religion variable is also important. However, the results obtained in the previous section are limited due to the binary common religion variable that includes all religion pairs. Thus, it is not possible to point to a possible reason for religion pairs to have divergence.

To understand the explanatory power of the common religion, we evaluate the common religions in terms of individual religions. For this analysis, we reconstruct the common religion binomial variable to be assigned one if both countries are of the same primary religion and if they are Agnostics, Buddhists, Chinese folk, Christians, Ethnoreligionists, Hindus, Jews and Muslims.

In order to test the effect of having a specific common religion, the common religion variable in Equation 2.5 ($\gamma_1 common_religion_d$) is replaced with a common religion binary variable for each of the six religions ($\sum_{m=1}^6 \gamma_{X,m} religion_d$). Since there are limited number of countries that have Agnostics and Jews as the primary religion, these two common religions cannot be estimated.² If, due to lack of observations, we cannot estimate a variable its coefficient is left empty on the table. Table 3.3 provides the results for this analysis.

²These two religions allows us to include the constant in the regression estimation.

The results indicate that if the two countries of the dyad are both Christians or they are both Ethnoreligionists, this has an effect towards divergence of income levels. In terms of Islam, having two Muslims in a dyad affects towards convergence of GDP per capita, military spending and level of democracy. Christians and Ethnoreligionists also have increased impact on convergence of level of democracy.

These results are important because Islam is the only religion that has convergence. Inglehart and Norris (2003) argues that Islam impacts economic development, perhaps due to the place of women in the workforce. However, Islamic countries have economic convergence. Since the data reveals that GDP per capita is growing for Islamic countries, we conclude that poorer Islamic countries are closing their gaps with richer Islamic countries. Lucas (1990) questions why there is no capital flow from richer countries to poorer countries. Our evidence contradicts both Inglehart and Norris (2003) and Lucas (1990) in that there is income equalization between Islamic countries and they are getting richer as a group. Note however that due to the construction of the *trend convergence* measure, there could be exceptions to the ‘Islamic countries getting richer all together’ argument. However, based on the results of the Table 3.3, we can generalize that there is trend convergence in income levels intra-Islam.

3.1.3 All Sects

At this point we would like to evaluate further by separating the religions into their sects. With the main religions, we were able to deduce the convergence between religions, specifically among Christians, Ethnoreligionists and Muslims. However, the tensions between sects within the same religion also make it an interesting question. For instance, we would expect that within Islam, Shias’ and Sunnis’ convergences would be within themselves. We would expect to see more convergence

among Shia countries and among Sunni countries. The similar argument can also be made for the sects of Christianity. We would expect that the sects of Christianity would have different economic convergence dynamics.

Note that if a country has a primary religion, it does not necessarily have the sect of the primary religion as the primary sect. While the sum of all sects makes up the religion and thus may have the highest percentage within a country, an individual sect within another religion in the same country may have higher percentage than any other sect in the country. Also, if a religion do not have a sect in the database (i.e. Agnostics) it is included as a sect by itself. However, if a religion has a sect in the database (i.e. Christians and Catholics) but the country fails to have the sect and lists only the main religion, then the country is excluded from the sect analysis.

For the evaluation of the effect of having a common sect, the independent variable for the Equation 2.5 (Y_d) is replaced with the common sect binary variable (*common_sect_d*). Table 3.3 also shows the results of the study where the common sect variable is whether the two countries of the dyad have the same primary sect. Thus, this is general to all sects included in the study.

The coefficient for the common sect is (0.166) positive and statistically significant in 1 percent similar to common religion. Having the same sect for two countries of a dyad increases the trend coefficient toward divergence. The effect of common sect is not as high as the common religion (0.254 vs. 0.166), but it is comparable to the effect of EU membership in magnitude (-0.215 vs. 0.166). The overall model that includes the common sect has an R^2 of 0.155.

The divergence effect of having the same religion could have been blamed on the differences between sects: Christian-Protestant vs. Christian-Catholics or Muslim-Sunnis vs. Muslim-Shias. Since common religion does not discriminate the different

sects within religions, the results can easily be due to the sects of the religions. However, the positive trend coefficient for the common sect is an evidence for the intra-sect economic divergence.

3.1.4 Individual Sects

As the final step of evaluating the common religion and common sect affiliations, we extend the analysis to the lowest level and construct common sect variable for each of the religious sects. The common sect variable in Equation 2.5 is replaced with a common sect binary variable for each of the eleven sects.

The results are interesting and point to the main reasons behind having common sect and common religion as the reasons for divergence. Table 3.3 shows that three sects in specific have statistically significant coefficients for GDP per capita. While Ethnoreligionists have negative coefficient, Independent Christians and Romans Catholics have positive coefficients. Ethnoreligionists have convergence of GDP per capita, military spending and economic openness. Roman Catholic have divergence in GDP per capita, military spending and economic openness and convergence in level of democracy. Shias have convergence in military spending, economic openness and level of democracy while their GDP per capita is diverging. Sunnis have convergence in military spending, and level of democracy while their economic openness is diverging. The results provide evidence in favor of having a common sect between countries of dyads as an important factor for convergence/divergence in GDP per capita, military spending, economic openness and level of democracy.

3.2 Common Religion of Dyads and Likelihood of Convergence

The results of the previous section tell us whether each independent variable increases the trend convergence β or decreases it. Thus a move towards convergence

or a move towards divergence. We can also evaluate each of the factors in terms of their effect on the likelihood of a dyad having a trend convergence with a logit model.

With the previous evaluation, one of the shortcomings of the model lies in the fact that we cannot conclude whether a factor leads to convergence or to divergence. We can only infer on the possible effect it would have on the trend convergence coefficient. A negative coefficient can also be interpreted as lowering the already existing divergence.

With the logit estimation, the dependent variable is a dichotomous variable which is assigned a value of one if there is trend convergence (negative and statistically significant, at the .05 level or better trend convergence coefficient) and zero otherwise. This allows us to infer directly about the factors that increase/decrease the likelihood of dyads having convergence.

3.2.1 All Religions and Sects

Table 3.5 provides the results for the logit estimation of the Equation 2.5 with the dependent variable replaced with the binary variable for negative and statistically significant trend coefficients, namely convergence variable. Note that the interpretation of the coefficients for the logit estimation is different compared to the previous evaluation based on convergence coefficients as the dependent variable. Thus, some of the control variables are addressed for this model as well.

Interestingly, if two countries are Islamic banking partners, countries with increasing Islamic religiosity, then it increases the likelihood of GDP convergence. This is important because after EU membership, it is still the second highest coefficient. Thus, while being an EU member increases the likelihood of GDP convergence with the other EU members, being a country with increased Islamic

TABLE 3.5: **Effect of individual religions and sects on likelihood of trend convergence for country dyads for 1950-2009 period.** Annual percentage difference between countries are calculated ($D_{t,i}$, where t is per year and i is per dyad) for pairs of countries. D is the difference in terms of real GDP per capita, military spending, openness and polity level. $D_{t,i}$ for each dyad is regressed with a time trend variable across years. A negative trend coefficient means convergence and a positive trend coefficient means divergence between dyads. The dependent variable for the models in the table is a binary variable which is assigned a value of one if trend coefficient for the dyad is negative and statistically significant. A positive coefficient in the table means that the variable increases the likelihood of convergence. A negative coefficient in the table means that the variable decreases the likelihood of convergence. Common religion, common sect, common language and membership variables are binary variables. Distance is the log of average distance between the countries' main cities. Government spending and consumption are differences between countries of the dyads. *, **, and *** represent statistical significance at 1%, 5% and 10% levels respectively.

	RGDP				SIPRI				OPEN				POLITY			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Distance	0.027	0.010	0.079 *	0.076 *	-0.159 *	-0.157 *	-0.145 *	-0.099 **	-0.019 *	0.013	-0.034	0.013	0.024	0.040	-0.003	0.016
Common language	0.008		-0.017	-0.004	-0.220 *	-0.212 *	-0.212 *	-0.008 ***	-0.531 *	0.022 *	-0.523 *	0.020 *	-0.030	0.132 *	-0.030	0.132 *
Level of democracy	-0.009 *	-0.009 *	-0.002	-0.004	-0.009 **	-0.009 **	-0.008 ***	-0.004	0.022 *	0.021 *	0.019 *	0.020 *	0.134 *	0.132 *	0.131 *	0.132 *
Govern. spending	-0.266 *	-0.337 *	-0.337 *	-0.337 *	-0.215 **	-0.213 **	-0.213 **	-0.004	-0.181 *	-0.157 **	-0.157 **	-0.157 **	-0.161 *	-0.126 **	-0.126 **	-0.126 **
Consumption	0.274 *	0.312 *	0.170 *	0.288 *	0.969 **	0.964 *	0.962 *	0.909 *	0.028	0.018	0.067	0.038	-0.415 *	-0.517 *	-0.368 *	-0.536 *
EU members	0.654 *	0.478 *	0.768 *	0.574 *	0.379 **	0.359 **	0.405 **	0.472 *	-0.437 **	-0.382 **	-0.467 **	-0.372 **	0.933 *	1.157 *	0.877 **	1.207 *
NATO members	-0.085	-0.214	-0.024	-0.057	-0.668 *	-0.694 *	-0.656 *	-0.555 *	0.919 **	0.938 *	0.901 *	0.936 *	0.102	0.278 ***	0.065	0.153
OECD members	1.030 *	1.012 *	1.131 *	0.881 *	-0.041	0.031	-0.025	-0.052	-0.203 ***	-0.099	-0.224 **	0.010	0.158	0.244 **	0.117	0.528 *
Islamic religiosity	1.178 *	1.104 *	0.586 *	0.854 *	0.526 *	0.575 *	0.430 *	0.211	-0.301 *	-0.235 **	-0.079	-0.139	-0.808 *	-0.687 *	-0.512 *	-0.584 *
Common religion	-0.645				-0.141 **	0.575 *	0.430 *	0.211	-0.061 ***	-0.235 **	-0.079	-0.139	0.708 *	-0.687 *	-0.512 *	-0.584 *
Common sect		-0.515 *			-0.141 **	0.575 *	0.430 *	0.211	-0.061 ***	-0.235 **	-0.079	-0.139	0.708 *	-0.687 *	-0.512 *	-0.584 *
Buddhists			-0.134			-0.346 *	0.443			-0.370 *	-0.063			0.377 *		
Chinese folk			1.313								1.128				-0.255	
Christians			-0.828 *				-0.163 *				-0.015				2.828 *	
Ethnoreligionists			-0.077				1.100				0.367 ***				0.781 *	
Hindus			-0.211				0.082				-0.007				-0.025	
Muslims			0.142 **				-0.003				-0.352 *				-1.035 ***	
Agnostics			0.571 *				0.375 **				-0.802 *				0.304 *	
Chinese folk			0.698				-0.324				1.466 ***				-1.207 *	
Ethnoreligionists			0.446 **				1.348 *				0.106				1.804 *	
Hindus			0.616 **				-0.204				-0.391				-0.635 ***	
Independents			-0.209 ***				0.100				0.343 *				-0.635 ***	
Orthodox			-0.513				-1.977 **				0.599 ***				0.024	
Protestants			-0.520 *				-0.303 *				-0.009				-0.194	
Roman Catholics			-0.601 *				-0.670 *				-0.349 *				0.193 *	
Shias			-0.221				1.597 **				0.649 **				-0.290	
Sunnis			-0.059				0.088				-0.525 *				0.183 *	
Theravadins			-0.868				-0.277				1.305 ***				-0.185	
Constant	-0.622 *	-0.655 *	-1.044 *	-1.315 *	0.696 **	0.641 ***	0.573	0.124	0.420 **	0.114	0.536 **	0.098	-1.578 *	-1.580 *	-1.351 *	-1.312 *
N	17292	17292	17292	17292	6800	6800	6798	6800	17292	17292	17292	17292	16486	16486	16486	16486
R ²	0.029	0.023	0.038	0.031	0.017	0.019	0.018	0.033	0.016	0.014	0.017	0.018	0.136	0.123	0.139	0.126
χ^2	652.5 *	508.1 *	842.4 *	674.9 *	151.8 *	168.4 *	155.4 *	290.5 *	376.1 *	322.5 *	408.3 *	437.0 *	2979.2 *	2689.1 *	3045.5 *	2765.7 *

TABLE 3.6: Effect of individual religions and sects on likelihood of trend convergence for country dyads for 1980-2009 period. Annual percentage difference between countries are calculated ($D_{t,i}$, where t is per year and i is per dyad) for pairs of countries. D is the difference in terms of real GDP per capita, military spending, openness and polity level. $D_{t,i}$ for each dyad is regressed with a time trend variable across years. A negative trend coefficient means convergence and a positive trend coefficient means divergence between dyads. The dependent variable for the models in the table is a binary variable which is assigned a value of one if trend coefficient for the dyad is negative and statistically significant. A positive coefficient in the table means that the variable increases the likelihood of convergence. A negative coefficient in the table means that the variable decreases the likelihood of convergence. Common religion, common sect, common language and membership variables are binary variables. Distance is the log of average distance between the countries' main cities. Government spending and consumption are differences between countries of the dyads. *, **, and *** represent statistical significance at 1%, 5% and 10% levels respectively.

	RGDP				SIPRI				OPEN				POLITY			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Distance	0.015	0.003	0.060 ***	0.049 ***	-0.159 *	-0.157 *	-0.145 *	-0.099 **	0.045 **	0.055 **	0.028 *	0.045 **	0.067 **	0.075 *	-0.006	-0.005
Common language	-0.066	-0.082 ***	-0.010 *	-0.012 *	-0.220 *	-0.009 **	-0.212 *	-0.099 **	-0.355 *	0.014 *	-0.354 *	0.011 *	0.082 *	0.180 *	0.083	0.177 *
Level of democracy	-0.015	-0.016 *	-0.010 *	-0.012 *	-0.009 **	-0.009 **	-0.008 ***	-0.004	0.075	0.013 *	0.104 **	0.011 *	-0.247 *	0.180 *	0.175 **	0.177 *
Government spending	0.091 ***	0.487 *	0.336 *	0.478 *	0.969 *	0.964 *	0.962 *	0.909 *	-0.095	-0.084	-0.050	-0.065	-0.709 *	-0.829 *	-0.605 *	-0.828 *
Consumption	0.410 *	0.706 *	1.000 *	0.757 *	0.379 **	0.359 **	0.405 **	0.472 *	-0.132	-0.108	-0.170	-0.124	-0.148	0.074	-0.297 ***	-0.041
EU members	-0.896 *	-0.788 *	-0.651 *	-0.708 *	-0.668 *	-0.694 *	-0.656 *	-0.555 *	0.617 *	0.604 *	0.594 *	0.540 *	0.809 *	0.943 *	0.718 *	0.738 *
NATO members	0.601 *	0.529 *	0.678 *	0.469 *	-0.041	0.031	-0.025	-0.052	-0.164	-0.110	-0.190 ***	0.098	0.170	0.257 **	0.059	0.601 *
OECD members	0.933 *	0.827 *	0.503 *	0.643 *	0.526 *	0.575 *	0.430 *	0.211	-0.037	0.007	0.207 ***	0.086	-1.331 *	-1.228 *	-0.396 *	-0.832 *
Islamic religiosity	0.612 *	-0.445 *	-0.560 ***	-0.643 *	-0.141 **	-0.346 *	0.443 *	0.211	-0.020	-0.274 *	-0.230	0.086	0.705	0.390 *	-3.074 *	-0.832 *
Common sect																
Buddhists							0.443				-0.230			0.390 *	-3.074 *	-0.832 *
Christians							-0.163 *				0.045			0.390 *	-3.074 *	-0.832 *
Ethnoreligionists							1.100				0.461 **			0.390 *	-3.074 *	-0.832 *
Hindus							0.082				0.445			0.390 *	-3.074 *	-0.832 *
Muslims							-0.003				-0.330 *			0.390 *	-3.074 *	-0.832 *
Agnostics							0.375 **							0.390 *	-3.074 *	-0.832 *
Chinese folk							-0.324							0.390 *	-3.074 *	-0.832 *
Ethnoreligionists							1.484 **							0.390 *	-3.074 *	-0.832 *
Hindus							0.143							0.390 *	-3.074 *	-0.832 *
Independents							0.120							0.390 *	-3.074 *	-0.832 *
Orthodox							-0.265 **							0.390 *	-3.074 *	-0.832 *
Protestants							0.100							0.390 *	-3.074 *	-0.832 *
Roman Catholics							-1.977 *							0.390 *	-3.074 *	-0.832 *
Shias							-0.118							0.390 *	-3.074 *	-0.832 *
Sunnis							-0.604 *							0.390 *	-3.074 *	-0.832 *
Theravadians							-0.383 *							0.390 *	-3.074 *	-0.832 *
Constant	-0.796 *	-0.740 *	-1.159 *	-1.207 *	0.696 **	0.641 ***	0.573	0.277	-0.317	-0.306	-0.190	0.576	-1.800 *	-1.755 *	-1.200 *	-0.978 *
N	17292	17292	17286	17292	6800	6800	6798	6800	17292	17292	17286	17292	15496	15496	15490	15484
R ²	0.025	0.017	0.030	0.021	0.017	0.019	0.018	0.033	0.007	0.007	0.009	0.011	0.213	0.200	0.229	0.218
X ²	538.5 *	371.2 *	652.3 *	452.6 *	151.8 *	168.4 *	155.4 *	290.5 *	168.6 *	168.5 *	209.8 *	267.7 *	4530.5 *	4256.9 *	4861.4 *	4628.7 *

religiosity increases the likelihood of GDP convergence with the other countries with increased Islamic religiosity.

In terms of the main variable of the analysis, *common religion*, the coefficient is negative and statistically significant. This means that, having two countries with the same religion decreases the likelihood of economic convergence. The likelihood of military spending convergence and economic openness are also reduced for countries of the same religions. Same religion dyads have increased likelihood for convergence in level of democracy. These findings are confirmation of the findings in the previous section about the effect of the common religion on economic convergence.

The evaluation of the factors that effect the likelihood of dyads having convergence in terms of income levels, military spending, economic openness, and level of democracy is extended to evaluate the impact of having the same sect by the two countries of the dyad. Table 3.5 provides the results for the effect of having the same sect for all sects and for the individual sects.

The coefficient for the *common sect* is also negative and statistically significant at the .01 level, indicating a lower likelihood of convergence between countries with the common main sect. Having a common sect decreases the likelihood of having economic and military spending and economic openness convergence, while it increases the likelihood of level of democracy convergence. These findings also confirm the previous sections' findings.

3.2.2 Individual Religions and Sects

The results for the individual religions and sects are interesting. The evidence for divergence between Christians and convergence between Muslims are confirmed with the likelihood analysis. If two countries of a dyad are Christians, they have a

lower likelihood of convergence. If two countries of a dyad are Muslims, they have a higher likelihood of convergence.

These results may be due to the intra-religion conflicts or already established income levels across the religion. In other words, if all Christians are of the similar income levels, there is no mean to converge to. However, this cannot be true considering that the income levels across countries within religions vary widely. The other reason might be that a sect in each religion may be to blame for the overall result for the religion. Thus, we continue with the evaluation of the individual sects of the religions. Our interest, however, is to explain the results for the Christians and Muslims.

The results for the individual sects are also interesting. Agnostics, Ethnoreligionists and Hindus have positive coefficients (increased likelihood of economic convergence). Protestants and Catholics have lower likelihood of economic convergence among their own sects. Agnostics, Ethnoreligionists and Shias have higher likelihood of military spending convergence. The coefficient is the highest for the Shias. Among the negative coefficients for the military spending, sects with the lower likelihood of convergence, the coefficient is the lowest for the Orthodox.

The results of the likelihood of convergence are in line with the results of the previous sections. In the previous sections, we found that having a common religion increased the trend coefficient towards divergence or lower convergence. With the findings in this section, evaluating the effect of common religion of likelihood of convergence, we can conclude that having the same religion has a divergence effect on dyads. Also, having the same sect also has a divergence effect on dyads.

3.3 Religious Diversity of Dyads

Religious diversity is an issue that has different dimensions. If a country, such as United States or United Kingdom, has several minority religions, it may indicate religious freedom. There are countries, however, where there is only one minority religion and the rest of the country believes in another religion. For instance, if a country has several minority religions but it is over 95 percent religion X, is it fair to compare the religious freedom in the US and UK to this country? On the other hand, if there are several minority religions, it still has more religious freedom than a country with only a few religious minorities.

A country with religious freedom, or perhaps pluralism, is categorically different than a country with limited religious pluralism. This section evaluates whether countries with similar religious pluralism work together. In addition to the differences in religious pluralism, if there are multiple religions in a country, it is more likely that the country will be cooperating with other countries that have similar religions. In other words, if common religion is a reason for countries' cooperation then having multiple religions increases the likelihood of having a religious match. Based on the results already established, since we know that common religion decreases the likelihood of having trend convergence for income levels, if it is due to intra-religion conflict than a country with more diverse religious structure is more likely to have a religious match and therefore more likely to have decreased trend convergence with one of the common religions. Note that we only included the highest affiliated three religions in our common religion measure. Religious diversity gives us the opportunity evaluate further.

If a country has multiple religious minorities with 5 percent or less affiliation, we refer to this as religious pluralism. Countries such as Vietnam, China, Taiwan, Malaysia and South Korea are the countries with 5 or more religions with at least

5 percent affiliation. Note that this is not a religious freedom measure. Instead it is a religious pluralism measure. Thus, the percentage of affiliation is kept rather high to make sure that minority religions are not counted towards pluralism.

On the other hand, countries with multiple religions of 15 percent have religious diversity. Countries such as Benin, Burkina Faso, Cameroon, Chad, Cuba, Ghana, Liberia, Mauritius, Mongolia, Mozambique, Singapore, Suriname and Togo have 3 religions with affiliations of 15 percent or more. It is considered to be religious diversity because of the religious pluralism. However, having multiple religions increases their likelihood of finding a trading or economic partner with the same religion: one of the religions they have.

Finally, countries with affiliated religions of 20 percent or more considered to be countries with possible religious conflict. We have several of these conflicts in history. For instance, the situation in Cyprus, may be seen as just such a case. The fact is that the island is split into two, with one part Muslim and the other part Christian.

For this section the dependent variable in Equation 2.5 is replaced with common religious diversity binary variables. First, it is the religious pluralism which is assigned a value of one if both countries of the dyad have multiple religions with more than 5 percent (but less than 15 percent) affiliation and zero otherwise. Second is the religious diversity which is assigned a value of one if both countries of the dyad have multiple religions with 15 percent or more affiliation and zero otherwise. Finally, the religious conflict variable which is assigned a value of one in case both countries of the dyad have multiple religions with 20 percent or more affiliation.

3.3.1 All Religions and Sects

We begin our analysis with the general form of the religious diversity measures. At this point we do not differentiate based on the primary religions. Thus the findings would apply to all countries in the sample without any interest in the primary religion. So, Christian religious diversity and Muslim religious diversity would be considered the same. If religious diversity puts countries in a different category, then is there a common trend within this group. In other words, countries with religious diversity are compared to countries with no religious diversity. For the religious conflict variable, countries with possible religious conflicts are compared to countries with no religious conflict.

Table 3.7 provides the results for this section. While the religious pluralism measure has a negative coefficient as expected, religious diversity has a positive coefficient. A negative coefficient is an effect towards trend convergence. Thus, countries that have religious pluralism have overall lower trend coefficients for their GDP per capita differences. On the other hand, countries with religious diversity have effect towards trend divergence. In terms of the sect diversity, however, the coefficient is statistically significant for the sect pluralism and diversity measures and they are positive. Thus, countries with sect pluralism and diversity have effect towards trend divergence. The overall models have R^2 s that are higher than 0.15.

3.3.2 Individual Religions and Sects

The evaluation is extended to include the individual religions. The binary variables for religious diversity are constructed separately for each religion. Thus, if two countries have multiple religions with 5 percent or more affiliation and they have a common primary religion X, then the religion pluralism X binary variable is assigned a value of one and zero otherwise.

TABLE 3.7: Effect of religion and sect diversity on trend convergence for country dyads for 1950-2009 period. Annual percentage difference between countries are calculated ($D_{t,i}$, where t is per year and i is per dyad) for pairs of countries. D is the difference in terms of real GDP per capita, military spending, openness and polity level. $D_{t,i}$ for each dyad is regressed with a time trend variable across years. The trend coefficient for each dyad is the cross-sectional dependent variable for the models in the table. A negative trend coefficient means convergence and a positive trend coefficient means divergence between dyads. Common religion, common sect, common language and membership variables are binary variables. A positive coefficient in the table means that the variable has an increasing effect on the trend coefficient and therefore it has a divergence effect. A negative coefficient in the table means that the variable has an decreasing effect on the trend coefficient and therefore it has a convergence effect. Distance is the log of average distance between the countries' main cities. Government spending and consumption are differences between countries of the dyads. Religious (sect) diversity is a binary variable which is assigned a value of one if country dyads that have multiple religions (sect) with 5%, 15% or 20% presence in the country. *, **, and *** represent statistical significance at 1%, 5% and 10% levels respectively.

	RGDP				SIPRI				OPEN				POLITY			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Distance	-0.035 **	-0.037 **	-0.030 ***	-0.029	0.176 *	0.243 *	0.231 *	0.193 *	-0.004	-0.017	-0.005	-0.012	1.844 *	1.754 *	1.706 *	1.182 **
Level of democracy	-0.012 *	-0.013 *	-0.014 *	-0.013 *	-0.001	-0.003	-0.004	-0.008	-0.006 *	-0.006 *	-0.005 **	-0.005 **	-2.043 *	-2.048 *	-2.040 *	-2.033 *
Consumption	-0.109 **	-0.099 ***	-0.091 ***	-0.101 ***	-1.763 **	-1.784 *	-1.712 *	-1.649 *	-0.193 *	-0.190 *	-0.198 *	-0.163 **	6.894 *	7.171 *	6.593 *	6.026 *
EU members	-0.237 ***	-0.258 **	-0.287 **	-0.249 **	-0.283	-0.373	-0.192	-0.459 ***	0.062	0.063	0.056	0.060	-0.967	-1.029	-0.083	-1.414
NATO members	0.108	0.115	0.104	0.104	0.606 **	0.737 *	0.759 *	0.653 **	-0.317 *	-0.321 *	-0.337 *	-0.312 *	-3.511	-3.504	-3.153	-3.731
OECD members	-0.871 *	-0.872 *	-0.912 *	-0.866 *	-0.250	-0.384 ***	-0.218	-0.264	0.691 *	0.715 *	0.689 *	0.606 *	-5.471 **	-5.136 **	-4.930 **	-5.244 **
Islamic religiosity	-0.463	-0.457 *	-0.427 *	-0.508 *	-1.346 *	-1.279 *	-1.184 *	-0.918	0.476 *	0.486 *	0.384 *	0.437 *	-4.247	-4.034 **	-3.501 ***	-2.525
Religious pluralism (5%)	-0.085				-1.365 *				0.207				2.024 **			
Religious diversity (15%)	0.205 *				0.224				0.022				-4.912 *			
Religious diversity (20%)	-0.026				-1.724 *				-0.206 **				-0.023			
Sect pluralism (5%)		0.137 *				-0.198			0.181 *					2.931 *		
Sect diversity (15%)		0.112 **				-0.209			0.179 **					-1.288		
Sect conflict (20%)		-0.091 ***				-0.177			-0.141 *				0.404			
Buddhists			0.238							0.086						
Chinese folk			-0.722						0.327							
Christians			0.173 *						0.137 *							
Ethnoreligionists			0.318 ***						-0.993 *							
Hindus			0.055						-0.092							
Muslims			-0.148 **						0.383 *							
Agnostics				-0.045						0.432 *						4.934
Chinese folk				-0.601						-0.355						-9.486
Ethnoreligionists				-0.462 *						-0.345 *						3.089
Hindus				-0.297						-0.004						6.626
Independents				0.381 *						-0.236 *						0.364
Orthodox				0.365						-0.759 **						0.985
Protestants				0.036						-0.022						-2.676 **
Roman Catholics				0.163 *						0.374 *						-11.837 **
Shias				0.251						-0.827 *						-15.108 **
Sunnis				0.095 **						-0.252 *						-4.021 *
Theravadin				0.589 **						-1.354 **						15.680
Constant	0.800 *	0.669 *	0.709 *	0.682 *	-0.115	-1.093 ***	-1.094 ***	-1.096 ***	-0.715 *	-0.696 *	-0.657 *	-0.662 *	-14.057 *	-14.804 *	-11.677 *	-5.066
N	15202	15202	15202	15202	4700	4700	4700	4700	13920	13920	13920	13920	11572	11572	11572	11572
R ²	0.153	0.154	0.154	0.157	0.318	0.285	0.289	0.303	0.236	0.237	0.237	0.243	0.298	0.297	0.298	0.307
F	25.4 *	26.5 *	20.6 *	18.1 *	36.1 *	13.4 *	12.7 *	14.5 *	20.4 *	21.4 *	17.2 *	18.9 *	178.1 *	177.0 *	138.1 *	109.7 *

TABLE 3.8: **Effect of religion and sect diversity on trend convergence for country dyads for 1980-2009 period.** Annual percentage difference between countries are calculated ($D_{t,i}$, where t is per year and i is per dyad) for pairs of countries. D is the difference in terms of real GDP per capita, military spending, openness and polity level. $D_{t,i}$ for each dyad is regressed with a time trend variable across years. The trend coefficient for each dyad is the cross-sectional dependent variable for the models in the table. A negative trend coefficient means convergence and a positive trend coefficient means divergence between dyads. Common religion, common sect, common language and membership variables are binary variables. A positive coefficient in the table means that the variable has an increasing effect on the trend coefficient and therefore it has a divergent effect. A negative coefficient in the table means that the variable has a decreasing effect on the trend coefficient and therefore it has a convergent effect. Distance is the log of average distance between the countries' main cities. Government spending and consumption are differences between countries of the dyads. Religious (sect) diversity is a binary variable which is assigned a value of one if country dyads that have multiple religions (sect) with 5%, 15% or 20% presence in the country. *, **, and *** represent statistical significance at 1%, 5% and 10% levels respectively.

	RGDP				SIPRI				OPEN				POLITY			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Distance	-0.094 *	-0.093 *	-0.094 *	-0.090 *	0.176 *	0.243 *	0.231 *	0.193 *	0.025	-0.011	0.022	0.020	3.102 *	2.894 *	2.903 *	2.612 *
Level of democracy	-0.013 *	-0.013 *	-0.014 *	-0.014 *	-0.001	-0.003	-0.004	-0.008	-0.000	0.000	0.002	0.002	-4.619 *	-4.608 *	-4.593 *	-4.557 *
Consumption	-0.249 *	-0.237 *	-0.241 *	-0.237 *	-1.763 *	-1.784 *	-1.712 *	-1.649 *	-0.005	0.035	-0.009	0.024	17.116 *	17.136 *	16.657 *	16.036 *
EU members	-0.521 *	-0.547 *	-0.552 *	-0.554 *	-0.283 *	-0.373 *	-0.192 *	-0.459 ***	-0.226	-0.227	-0.226	-0.177	12.076 **	12.610 **	13.954 *	13.319 *
NATO members	0.529 *	0.541 *	0.532 *	0.538 *	0.606 **	0.737 *	0.759 *	0.653 **	-0.019	-0.067	-0.074	-0.021	8.541 **	8.717 **	8.486 **	9.226 **
OECD members	-0.824 *	-0.831 *	-0.855 *	-0.824 *	-0.250	-0.384 ***	-0.218 *	-0.264 *	0.537 *	0.908 *	0.825 *	0.735 *	16.310 *	16.682 *	17.170 *	15.390 *
Islamic religiosity	-0.441 *	-0.421 *	-0.404 *	-0.469 *	-1.346 *	-1.279 *	-1.184 *	-0.918 *	0.341 *	0.321 *	0.218 ***	0.307 **	10.241 *	10.726 *	10.581 *	10.506 *
Religious pluralism (5%)	-0.135 *				-1.365 *				0.601 *				5.452 *			
Religious diversity (15%)	0.103				0.224				0.275 *				-2.151			
Religious confict. (20%)	0.067				-1.724 *				-0.424 *				1.970			
Sect pluralism (5%)	0.131 *				-0.198				0.719 *				1.997			
Sect diversity (15%)	0.132 **				-0.209				0.124 **				1.531			
Sect conflict (20%)	-0.065				-0.177				-0.192 *				3.364 ***			
Buddhists																
Chinese folk																
Christians																
Ethnoreligionists																
Hindus																
Muslims																
Agnostics																
Chinese folk																
Ethnoreligionists																
Hindus																
Independents																
Orthodox																
Protestants																
Roman Catholics																
Shias																
Sunnis																
Theravadins																
Constant	1.450 *	1.268 *	1.409 *	1.341 *	-0.115	-1.093 ***	-1.094 ***	-1.096 ***	-1.482 *	-1.461 *	-1.264 *	-1.283 *	-29.296 *	-27.634 *	-24.204 *	-19.306 **
N	14620	14620	14620	14620	4700	4700	4700	4700	13388	13388	13388	13388	11088	11088	11088	11088
R ²	0.108	0.109	0.108	0.112	0.318	0.285	0.289	0.303	0.214	0.214	0.206	0.206	0.409	0.408	0.409	0.416
F	15.7 *	16.5 *	12.1 *	12.4 *	36.1 *	13.4 *	12.7 *	14.5 *	26.7 *	26.8 *	10.6 *	7.9	423.1 *	422.0 *	326.3 *	245.8 *

Table 3.7 also provides the results for the individual religions and sects. Christians have positive and Muslims have negative, statistically significant coefficients. These models also have R^2 s that are higher than 0.15. These findings are interesting. We found, in the previous section, that there is trend divergence between Christians and trend convergence between Muslims. Once again, we are finding a different sign for Christians and Muslims. For Christians, religious diversity leads to trend divergence between Christian countries. However, the religious diversity leads to trend convergence between Islamic countries.

In terms of the sects however, while Sunnis, Catholics, Independent Christians have positive coefficients, Ethnoreligionists have a negative coefficient. It is important because it means that for Ethnoreligionists, having a religiously plural dyad increases their trend convergence.

The results are also interesting for the military spending convergence. Religiously plural and religiously conflicting countries have trend convergent effects for their military spending. This could mean that religiously plural countries spend less on military spending and religiously conflicting countries spending more on their military expenditure. Christians and Muslims have negative coefficients for military spending although it is statistically significant only of the Christians.

3.4 Religious Diversity of Dyads and Likelihood of Convergence

Using the religious pluralism, diversity and possible conflict variables constructed in the previous section, we now evaluate whether their effect can be understood better with the likelihood analysis. Thus, we evaluate whether having two religiously plural countries in a dyad increase the likelihood of having a trend convergence. Since the argument behind the religious diversity measure is that the countries

with religious pluralism are a different category of countries, there should be increased convergence within this group. There could be different reasons behind this argument. For instance, since we already established the common religion country pairs do not have increased convergence, countries that are religiously plural may also be lenient about religion to their economic and trade partners. Thus, they would be more open to the idea of working with others if they welcome others into their countries.

3.4.1 All Religions and Sects

The initial analysis is in general and disregards the specific religions. Table 3.9 provides the results for this sections and the first column shows the results for the general religious diversity measures. Accordingly, having religiously plural countries in a dyad increases the likelihood of trend convergence in GDP per capita. It also increases for military spending convergence. Religious diversity, however, has a decreasing likelihood for trend convergence. It is interesting to note that having two religiously diverse countries in a dyad increases the likelihood for democratic convergence. It is the only statistically significant coefficient of the three religious diversity measures for the level of democracy convergence.

In terms of sect pluralism, diversity, and possible conflict measures, having two countries with diverse sect structures decreases the likelihood of trend convergence. However, it increases the likelihood for convergence in democracy. Having two countries with sect conflicts increases their trend convergence likelihood and decreases the likelihood of democracy convergence.

3.4.2 Individual Religions and Sects

Table 3.9 also provides the results for the individual religions and sects. The results are interesting in that Christians and Muslims have different signs. Christians have

TABLE 3.9: Effect of religion and sect diversity on likelihood of trend convergence for country dyads for 1950-2009 period. Annual percentage difference between countries are calculated ($D_{t,i}$, where t is per year and i is per dyad) for pairs of countries. D is the difference in terms of real GDP per capita, military spending, openness and polity level. $D_{t,i}$ for each dyad is regressed with a time trend variable across years. A negative trend coefficient means convergence and a positive trend coefficient means divergence between dyads. The dependent variable for the models in the table is a binary variable which is assigned a value of one if trend coefficient for the dyad is negative and statistically significant. A positive coefficient in the table means that the variable increases the likelihood of convergence. A negative coefficient in the table means that the variable decreases the likelihood of convergence. Common religion, common sect, common language and membership variables are binary variables. Distance is the log of average distance between the countries' main cities. Government spending and consumption are differences between countries of the dyads. Religious (sect) diversity is a binary variable which is assigned a value of one if country dyads that have multiple religions (sect) with 5%, 15% or 20% presence in the country. *, ** and *** represent statistical significance at 1%, 5% and 10% levels respectively.

	RGDP				SIPRI				OPEN				POLITY			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Distance	0.087 *	0.081 *	0.073 *	0.073 *	-0.115 *	-0.141 *	-0.123 *	-0.089 **	0.053 **	0.065 *	0.048 **	0.051 **	0.001	-0.011	0.013	0.015
Level of democracy	-0.006 **	-0.006 **	-0.003	-0.004 ***	-0.007 ***	-0.006	-0.004	-0.003	0.024 *	0.023 *	0.023 *	0.023 *	0.129 *	0.129 *	0.129 *	0.131 *
Consumption	0.357 *	0.366 *	0.294 *	0.311 *	0.966 **	1.025 **	0.944 *	0.953 *	0.041	0.064	0.039	0.013	-0.546 *	-0.559 *	-0.532 *	-0.545 *
EU members	0.539 *	0.559 *	0.725 *	0.590 *	0.316 ***	0.342 **	0.354 **	0.495 *	-0.301 ***	-0.316 **	-0.270 ***	-0.305 ***	1.085 *	1.087 *	0.993 *	1.185 *
NATO members	-0.115	-0.124	-0.086	-0.056	-0.545 *	-0.630 *	-0.621 *	-0.555 *	0.990 *	0.987 *	1.012 *	0.993 *	0.227	0.215	0.183	0.133
OECD members	0.901 *	0.907 *	1.077 *	0.800 *	-0.090 *	-0.027	-0.073	-0.087 **	-0.145	-0.164	-0.113	0.002	0.303	0.310	0.208 ***	0.564 *
Islamic religiosity	0.932 *	0.923 *	0.806 *	0.910 *	0.589 *	0.498 *	0.435 *	0.242 *	-0.145	-0.364 *	-0.278 *	-0.300 *	-0.546 *	-0.555 *	-0.632 *	-0.600 *
Religious pluralism (5%)	0.195				0.517 *				-0.140				0.044			
Religious diversity (15%)	-0.600 **				-0.103				-0.106				0.391 *			
Religious conflict (20%)	0.278 **				0.675 *				0.078				0.156			
Sect pluralism (5%)		-0.018				0.311 *				-0.014				0.017		
Sect diversity (15%)		-0.280 *				-0.109				-0.261 *				0.259 *		
Sect conflict (20%)		0.168				0.027				0.154 *				-0.032		
Buddhists																
Chinese folk																
Christians																
Ethnoreligionists																
Hindus																
Muslims																
Agnostics																
Chinese folk																
Ethnoreligionists																
Hindus																
Independents																
Orthodox																
Protestants																
Roman Catholics																
Sbias																
Sunnis																
Theravadinis																
Constant	-1.634 *	-1.476 *	-1.394 *	-1.327 *	-0.150	0.116	0.137	-0.041	-0.372 ***	-0.480 **	-0.339 ***	-0.317	-1.103 *	-1.006 *	-1.218 *	-1.266 *
N	17292	17292	17292	17286	6800	6800	6798	6798	17292	17292	17292	17286	16486	16486	16486	16486
R ²	0.016	0.014	0.021	0.027	0.029	0.017	0.016	0.030	0.009	0.010	0.010	0.015	0.121	0.120	0.123	0.125
X ²	348.7 *	320.2 *	457.2 *	597.9 *	258.3 *	151.8 *	141.0 *	262.0 *	213.9 *	229.3 *	240.3 *	353.6 *	2660.4 *	2622.9 *	2688.7 *	2752.2 *

TABLE 3.10: Effect of religion and sect diversity on likelihood of trend convergence for country dyads for 1980-2009 period. Annual percentage difference between countries are calculated ($D_{t,i}$, where t is per year and i is per dyad) for pairs of countries. D is the difference in terms of real GDP per capita, military spending, openness and polity level. $D_{t,i}$ for each dyad is regressed with a time trend variable across years. A negative trend coefficient means convergence and a positive trend coefficient means divergence between dyads. The dependent variable for the models in the table is a binary variable which is assigned a value of one if trend coefficient for the dyad is negative and statistically significant. A positive coefficient in the table means that the variable increases the likelihood of convergence. A negative coefficient in the table means that the variable decreases the likelihood of convergence. Common religion, common sect, common language and membership variables are binary variables. Distance is the log of average distance between the countries' main cities. Government spending and consumption are differences between countries of the dyads. Religious (sect) diversity is a binary variable which is assigned a value of one if country dyads that have multiple religions (sect) with 5%, 15% or 20% presence in the country. *, ** and *** represent statistical significance at 1%, 5% and 10% levels respectively.

	RGDP				SIPRI				OPEN				POLITY			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Distance	0.065 *	0.069 *	0.055 **	0.041 ***	-0.115 **	-0.141 *	-0.123 *	-0.089 **	0.072 *	0.104 *	0.074 *	0.068 *	0.026 *	0.020	0.021	0.009
Level of democracy	-0.013 *	-0.013 *	-0.011 *	-0.013 *	-0.007 ***	-0.006	-0.004	-0.003	0.016 *	0.016 *	0.015 *	0.014 **	0.176 *	0.176 *	0.175 *	0.178 *
Consumption	0.518 *	0.528 *	0.481 *	0.493 *	0.966 **	1.025 **	0.944 **	0.953 *	-0.075	-0.104 ***	-0.069	-0.099 ***	-0.856 *	-0.841 *	-0.842 *	-0.871 *
EU members	0.773 *	0.786 *	0.919 *	0.773 *	0.316 ***	0.342 **	0.354 **	0.495 *	-0.028	-0.004	-0.016	-0.082	0.011	-0.044	-0.106	-0.031
NATO members	-0.716 *	-0.735 *	-0.702 *	-0.717 *	-0.545 *	-0.630 *	-0.621 *	-0.555 *	0.606 *	0.662 *	0.663 *	0.583 *	0.837 *	0.839 *	0.829 *	0.765 *
OECD members	0.442 *	0.438 *	0.574 *	0.401 *	-0.090	-0.027	-0.073	-0.087	-0.100	-0.185 ***	-0.105	0.099	0.322 *	0.309 *	0.210 ***	0.647 *
Islamic religiosity	0.674 *	0.649 *	0.643 *	0.714 *	0.589 **	0.498 *	0.435 *	0.242 **	-0.095	-0.076	0.001	-0.041	-1.130 **	-1.167 *	-1.053 *	-0.990 *
Religious pluralism (5%)	0.089 **				0.517 *				-0.342 *				-0.074 ***			
Religious diversity (15%)	0.089 **				-0.103				-0.315 *				0.138			
Religious diversity (20%)	0.072				0.675 *				0.407				-0.084			
Sect pluralism (5%)		-0.084 **				0.311 *			-0.384 *					0.239 *		
Sect diversity (15%)		-0.335 *				-0.109			0.020					0.041		
Sect conflict (20%)		0.102				0.027			0.064					-0.410 *		
Buddhists			1.023 *													
Christians			-0.503 *													
Ethnoreligionists			-0.100													
Hindus			-0.468													
Muslims			-0.027													
Agnostics				0.253 ***												
Chinese folk				1.524 **												
Ethnoreligionists				0.203 ***												
Hindus				0.138												
Independents				-0.292 **												
Orthodox				-0.134												
Protestants				-0.532 *												
Roman Catholics				-0.357 *												
Shias				-0.308												
Sunnis				-0.284 *												
Theravadins				-1.150 *												
Constant	-1.515 *	-1.399 *	-1.346 *	-1.150 *	-0.150	0.116	0.137	-0.041	-0.454 **	-0.603 *	-0.573 *	-0.573 *	-1.082 **	-1.197 *	-1.104 *	-1.075 *
N	17292	17292	17286	17286	6800	6800	6798	6798	17292	17292	17286	17292	15496	15496	15490	15490
R ²	0.011	0.013	0.015	0.020	0.029	0.017	0.016	0.030	0.010	0.008	0.007	0.010	0.196	0.198	0.200	0.214
X ²	242.1 *	287.6 *	323.2 *	424.3 *	258.3 *	151.8 *	141.0 *	262.0 *	250.3 *	202.2 *	158.0 *	235.6 *	4158.9 *	4215.4 *	4243.3 *	4545.6 *

a negative coefficient. If two Christian states are in a dyad and they have multiple religions with more than 5 percent affiliation, they are less likely to have trend convergence. For instance, if two countries are already developed and have high GDP per capita levels (i.e. US and UK), their income levels will not converge. This means that since 1950, US and UK must be both increasing their GDP per capita in a similar ratio. This would keep their trend coefficient for the difference in GDP per capita as not statistically significant. Therefore, for convergence to take place, we need to have two different GDP per capita measure to start in 1950 and gradually reduce the difference. This would be the case for statistically significant trend convergence. Thus, since the results are pointing to a decreased likelihood of trend convergence for religiously plural Christian pairs, this could be due to actually having lower likelihood for convergence or due to already high income levels.

In terms of individual sects, however, while Agnostics, Ethnoreligionists and Hindus have increased likelihood of trend convergence if they have sect pluralism, all sects of Christians and Muslims have lower likelihood. Orthodox, Protestant and Catholics also have lower likelihood of military spending convergence.

Chapter 4

Economic Causality and Bilateral Trade Relationships

4.1 Economic Causality

4.1.1 Control Variables

With the previous sections, our focus was on the convergence of real GDP per capita. However, if two economies are cooperating then it would be expected that as one economy gets better it would impact the other to do well, too. Also, based on the level of cooperation, the economic growth of an economic partner would have consequences on the other. Thus, we extend the convergence analysis to test whether countries with common religions and sects have causal effects on each other. This question, however, is complicated by some important exogenous variables. For instance, many of the Islamic countries have oil producing economies. Thus, while one economy may seem as though it is causing the other, it may very well be that the changes in oil prices are affecting both economies. Oil prices may have causal effect on individual countries' economics. Before we include oil prices as an exogenous variable into all dyadic causality tests, we test whether oil prices have any causal effect for any of the countries included in the analysis.

Hypothesis 4.1. *Oil prices do not cause economic growth.*

In order to answer this question, we estimate the following vector autoregressive model (VAR) model;

$$\Delta oil_t = \alpha_1 + \sum_{m=1}^2 \beta_{1,m} \Delta oil_{1,t-m} + \sum_{m=1}^2 \gamma_{1,m} \Delta rgdpch_{1,t-m} + \epsilon_1 \quad (4.1)$$

$$\Delta rgdpch_t = \alpha_2 + \sum_{m=1}^2 \beta_{2,m} \Delta oil_{2,t-m} + \sum_{m=1}^2 \gamma_{2,m} \Delta rgdpch_{2,t-m} + \epsilon_2 \quad (4.2)$$

Since we are only interested in whether the changes in oil prices have any causal effect on GDP growth, Equation 4.2 is of interest to us. Granger (1969) type causality test is the test of combined significance of the tested coefficients. Thus, we are interested in whether $\beta_{2,1} = \beta_{2,2} = 0$, which is tested with the Wald test (Enders, 2003).

The results show that the oil prices have causal effect for more countries' imports and exports than their GDP per capita growth.¹ We include oil prices into causality regressions as an exogenous variable where needed.

4.1.2 Economic Causality Measure

Economic causality refers to a condition whereby two economies have a Granger (1969) type causal relationship between their GDP per capita.² Thus if a country X's GDP per capita is Granger causing the GDP per capita of the country Y, we say that country X is Granger causing country Y. This is also true for country Y causing country X. However, unlike the trend convergence measure, economic causality is not necessarily bidirectional. While country X causing country Y, it is not necessary that country Y would be causing country X. Thus, the dyads are included into the study for both directions.

Causality is estimated using a VAR model (Sims, 1980) which includes changes in oil prices as explained previously. The Granger (1969) type causation estimation includes number of lags based on the lag selection that provides the lowest AIC (Akaike, 1974) criterion. Thus, the VAR is estimated for each dyad with possibly different lag lengths and with possibly oil prices as an exogenous variable. The VAR is as follows;

¹The results for the causality effect of oil prices on individual countries' economic growths are available upon request. The results are not limited to GDP per capita and includes results for imports, exports, openness, government spending, consumption, military spending and level of democracy.

²Granger type causality refers to past values of one variable explaining the current value of another variable, after accounting for its own autoregressive effect.

$$\Delta rgdpch_{X,t} = \alpha_X + \sum_{m=1}^2 \beta_{X,m} \Delta rgdpch_{X,t-m} + \sum_{m=1}^2 \gamma_{Y,m} \Delta rgdpch_{Y,t-m} + \epsilon_1 \quad (4.3)$$

$$\Delta rgdpch_{Y,t} = \alpha_Y + \sum_{m=1}^2 \beta_{Y,m} \Delta rgdpch_{Y,t-m} + \sum_{m=1}^2 \gamma_{X,m} \Delta rgdpch_{X,t-m} + \epsilon_2 \quad (4.4)$$

Both equations are estimated for all of the dyads. Wald test (Enders, 2003) results are used to construct the causality binary variable. Accordingly, if country X is causing country Y ($\gamma_{X,1} = \gamma_{X,2} = 0$) then the binary variable for country X causing country Y would be assigned a value of one and zero otherwise. If country Y is causing country X ($\gamma_{Y,1} = \gamma_{Y,2} = 0$) then the binary variable for country Y causing country X would be assigned a value of one and zero otherwise.

For each dyad, causation Wald test (Enders, 2003) results are used as the dependent variable. Since the level of the Chi^2 does not mean that causation is higher or lower, we will only be analyzing the factors for their impact on the likelihood of causation.

4.1.3 Common Religion of Dyads

We are extending our analysis to economic cooperation measures, namely economic causation. The example that we mentioned in the previous sections argued that if the US and the UK started at GDP per capita at any two different levels and kept increasing the GDP per capita in a similar pace, then there would be no convergence between the two countries. This is true for all pairs of countries.

The argument behind trend convergence is that, for the EU for instance, if countries join into an economic union, they benefit. Ultimately, their income levels increase. It also could be that there is group wise increase in the income levels and perhaps a steeper increase for newly joined members of the union. The reasoning behind this is the establishment of new trade relations, adoption of more reliable legal systems, having a more stable currency and, in effect, growing more rapidly.

With the religious groups, the argument is more complex. However, we argue that if two countries of the same religion, they should have higher economic and trade cooperation. So far, we found that they actually have less likelihood for convergence (except for Muslims). Again, it could be that they are growing in similar pace which also would be interpreted as economic cooperation. Within this co-growth, if there is actual cooperation then there should be more bilateral trade (next section) and there should be higher likelihood that these countries cause each others' growth. If two economies are growing and they are independent then it would be hard to argue economic cooperation. However, we would expect that similar religions will increase the likelihood of economic causality.

For pairs of countries having the same religion, Table 4.1 provides the results. The common religion measure is for all religions. The common sect measure is for all sects. The dependent variable for these models is the binary variable that has a value of one in cases of economic causal effect between the two countries. The coefficients for the common religion and common sect are negative but not statistically significant for GDP per capita. Results for the individual religions are also insignificant. The only statistically significant results are dyads of Chinese folk and Christian-Orthodox sects. For them, there is higher likelihood of economic causality.

4.1.4 Religious Diversity of Dyads

In this section, we address the issue of religious pluralism, diversity, and possible conflicts. The argument about the religious diversity is that countries that have religious pluralism are of a different category compared to a category of countries where there are either no or only one minority religion with 5 percent or less. Similar to the argument made earlier, while convergence is not necessary for economic

TABLE 4.1: Effect of individual religions and sects on likelihood of causality for country dyads for 1950-2009 period. Granger type causal relationships are estimated between countries for pairs of countries. Evaluated variables are real GDP per capita, military spending, openness and polity levels. The dependent variable for the models in the table is a binary variable which is assigned a value of one if there is statistically significant causality for the dyad. A positive coefficient in the table means that the variable increases the likelihood of causality. A negative coefficient in the table means that the variable decreases the likelihood of causality. Common religion, common sect, common language and membership variables are binary variables. Distance is the log of average distance between the countries' main cities. Government spending and consumption are differences between countries of the dyads. *, ** and *** represent statistical significance at 1%, 5% and 10% levels respectively.

	RGDP				SIPRI				OPEN				POLITY			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Distance	-0.039 ***	-0.027	-0.037 ***	-0.012	-0.068 ***	-0.049	-0.058	-0.054	0.047 ***	0.060 **	0.042 ***	0.030	0.058 **	0.039 ***	0.049 **	-0.012
Common language	-0.072	-0.004 ***	-0.076 ***	-0.003	-0.071	0.013 *	-0.059	-0.054	-0.092 ***	0.000	-0.001	-0.002	0.027	0.049 *	0.042	0.045 *
Level of democracy	-0.169 *	-0.175 *	-0.175 *	0.048	-0.226	0.004	-0.227	0.057	0.000	0.001	-0.034	-0.209 *	-0.118 **	0.047 *	-0.098 **	0.045 *
Govern. spending	0.058	0.044	0.056	0.048	0.009	0.004	0.002	0.057	-0.252 *	-0.262 *	-0.228 *	-0.209 *	0.818 *	0.780 *	0.849 *	0.781 *
Consumption	-0.105	-0.089	-0.102	-0.075	-0.025	0.005	-0.006	-0.018	-0.590 *	-0.553 *	-0.601 *	-0.623 *	0.167	0.191	0.141	0.119
EU members	0.338 **	0.358 **	0.339 **	0.327 **	0.317 **	0.344 **	0.326 **	0.318 **	0.206	0.239	0.199	0.227	-0.270	-0.272	-0.290	-0.275
NATO members	0.381 *	0.406 *	0.381 *	0.469 *	-0.004	0.017	0.004	0.003	0.614 **	0.634 **	0.602 *	0.537 *	1.502 *	1.535 *	1.492 *	1.403 *
OECD members	0.294 *	0.301 *	0.275 **	0.295 *	-0.243 ***	-0.256 ***	-0.282 ***	-0.236	0.286 ***	-0.273 **	-0.134	-0.134	-0.040	0.030	0.127	0.199 ***
Islamic religiosity	-0.024	-0.034	-0.034	0.082	-0.022	0.025	0.025	0.0236	0.068	0.029	-0.134	-0.134	0.123 *	-0.074 **	-0.074 **	0.199 ***
Common religion																
Common sect																
Buddhists																
Chinese folk																
Christians																
Ethnoreligionists																
Hindus																
Muslims																
Agnostics																
Chinese folk																
Ethnoreligionists																
Hindus																
Independents																
Orthodox																
Protestants																
Roman Catholics																
Shias																
Sunnis																
Theravadins																
Constant	-0.285	-0.477 **	-0.301	-0.603 *	0.706 **	0.397	0.612 ***	0.418	-1.184 *	-1.318 *	-1.145 *	-1.034 *	-0.900 *	-0.676 *	-0.836 *	-0.459
N	17292	17292	17286	17292	6787	6787	6787	6781	17288	17288	17288	17288	16096	16096	16096	16096
R ²	0.003	0.003	0.004	0.004	0.004	0.003	0.005	0.006	0.005	0.004	0.006	0.007	0.032	0.031	0.033	0.040
X ²	75.3 *	60.9 *	80.9 *	89.4 *	35.4 *	26.1 *	48.0 *	56.7 *	100.7 *	93.7 *	119.2 *	143.5 *	706.5 *	689.1 *	733.7 *	884.5 *

TABLE 4.2: Effect of individual religions and sects on likelihood of causality for country dyads for 1980-2009 period. Granger type causal relationships are estimated between countries for pairs of countries. Evaluated variables are real GDP per capita, military spending, openness and polity levels. The dependent variable for the models in the table is a binary variable which is assigned a value of one if there is statistically significant causality for the dyad. A positive coefficient in the table means that the variable increases the likelihood of causality. A negative coefficient in the table means that the variable decreases the likelihood of causality. Common religion, common sect, common language and membership variables are binary variables. Distance is the log of average distance between the countries' main cities. Government spending and consumption are differences between countries of the dyads. *, ** and *** represent statistical significance at 1%, 5% and 10% levels respectively.

	RGDP				SIPRI				OPEN				POLITY			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Distance	0.017	0.022	0.019	0.031	-0.068***	-0.049	-0.058	-0.054	0.102*	0.103*	0.084*	0.073*	0.065**	0.060**	0.063**	0.041
Common language	-0.044	-0.047	-0.047	0.000	-0.071*	0.013*	0.011*	0.012*	0.004	0.002	0.012	0.001	-0.079***	0.045**	-0.063	0.043*
Level of democracy	-0.000	-0.000	-0.000	0.000	-0.226*	-0.227*	-0.227*	0.042	0.016	0.002	0.042	-0.001	0.045**	0.044*	0.043*	0.043*
Govern. spending	-0.035	-0.039	-0.039	-0.306*	0.009	0.004	0.002	0.057	-0.001	-0.012	0.039	0.051	0.970*	0.958*	0.994*	0.940*
Consumption	-0.275*	-0.293*	-0.281*	-0.165	-0.025	0.005	-0.006	-0.018	0.265***	0.292***	0.230	0.239	0.036	0.050	0.028	-0.038
EU members	0.118	0.123	0.123	0.165	-0.025	0.005	-0.006	-0.018	0.169	0.191	0.147	0.154	0.045	0.027	0.036	0.022
NATO members	-0.012	0.017	-0.009	-0.044	0.317**	0.344**	0.326**	0.318**	0.230**	0.236**	0.204**	0.170	1.591*	1.619*	1.584*	1.454*
OECD members	0.007	0.029	0.010	0.170	-0.004	0.017	0.004	0.003	0.230**	0.236**	0.204**	0.170	0.060	0.098	0.192***	0.123
Islamic religiosity	0.101	0.128	0.068	0.104	-0.243***	-0.256***	-0.282***	-0.236	-0.301*	-0.285*	-0.059	-0.057	-0.004	-0.134*	1.041**	
Common religion	0.114*				-0.022				0.106*	0.068**	0.086					
Common sect		0.041				0.025					0.086					
Buddhists			0.176				2.252**				1.201					
Chinese folk			0.305				0.157				1.201					
Christians			0.104*				-0.036				0.155*				0.023	
Ethnoreligionists			-0.136				0.531				-0.046				-0.045	
Hindus			0.243				-1.165***				0.402				-3.282*	
Muslims			0.156**				0.036				-0.219*				-0.171**	
Agnostics			-0.437*									0.244**				1.926*
Chinese folk			-0.129									1.247**				1.292
Ethnoreligionists			-0.047									0.003				-0.028
Hindus			0.218									-0.261				-1.727*
Independents			0.103									0.139				-0.522*
Orthodox			1.160*									0.620**				-0.079
Protestants			-0.026									-0.027				0.329*
Roman Catholics			0.026									0.154*				-0.310*
Shias			0.018									-1.217**				0.652
Sunnis			0.065									-0.205*				-0.253*
Theravadin			-0.456									0.224				-0.254
Constant	-0.302	-0.328	-0.317	-0.404***	0.706**	0.397	0.612***	0.418	-1.385*	-1.364*	-1.234*	-1.088*	-0.750*	-0.697*	-0.747*	-0.494**
N	17292	17292	17292	17292	6787	6787	6787	6781	17266	17266	17266	17266	15144	15144	15144	15144
R ²	0.002	0.001	0.002	0.003	0.004	0.003	0.005	0.006	0.003	0.002	0.004	0.005	0.031	0.031	0.033	0.039
X ²	45.4*	33.3*	46.7*	61.1*	35.4*	26.1*	48.0*	56.7	63.9*	57.5*	94.7*	117.5*	635.7*	644.7*	676.6*	811.8*

cooperation, economic causality is an important indicator. Thus, we would expect the religiously plural countries to have a more economic causal relationship. In other words, having religious pluralism should increase the likelihood of economic causality between the countries.

Table 4.3 provides the results for this analysis. Economic causality based on religious pluralism, diversity and conflict provide no further explanation in addition to the previous sections. The coefficients based on pluralism, diversity and conflict are not statistically significant, either for religions or for sects.

4.2 Bilateral Trade Relationship

In this chapter, we evaluate bilateral trade as a variable for economic cooperation. If countries are cooperating economically, trade will be one of the main variables that will be positively affected. We estimate the trend in combined bilateral trade levels across years for dyads using Equation 2.1. Instead of the difference between the countries, we combine the bilateral trade and estimate the trend of it. We therefore evaluate religions and sects for their effect on the trend of bilateral trade and on the likelihood of having a positive and statistically significant trend coefficient.

Tables 4.5 and 4.6 provide the mean trend coefficients for each of the religions and sects, respectively. Most of the religions have increasing trade. In terms of religions, Agnostics have relatively higher mean trend coefficients for trade with all other religions. This is followed by Jews, Buddhists and Hindus.

In terms of the sects, Agnostics have the highest level of increase in trade across all sects. This is followed by Jews, Hindus and Chinese folks. Shias and Independent Christians have the highest (statistically significant) trend coefficient for bilateral trade. The coefficient between the Marginals and Independents is the second highest.

TABLE 4.3: Effect of religion and sect diversity on likelihood of causality for country dyads for 1950-2009 period. Granger type causal relationships are estimated between countries for pairs of countries. Evaluated variables are real GDP per capita, military spending, openness and polity levels. The dependent variable for the models in the table is a binary variable which is assigned a value of one if there is statistically significant causality for the dyad. A positive coefficient in the table means that the variable increases the likelihood of causality. A negative coefficient in the table means that the variable decreases the likelihood of causality. Common religion, common sect, common language and membership variables are binary variables. Distance is the log of average distance between the countries' main cities. Government spending and consumption are differences between countries of the dyads. Religious (sect) diversity is a binary variable which is assigned a value of one if country dyads that have multiple religions (sect) with 5%, 15% or 20% presence in the country. *, ** and *** represent statistical significance at 1%, 5% and 10% levels respectively.

	RGDP				SIPRI				OPEN				POLITY			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Distance	-0.040 ***	-0.020	-0.041 ***	-0.011	-0.065 ***	-0.055	-0.064 ***	-0.057	0.044 ***	0.059 **	0.044 ***	0.039	0.065 *	0.051 **	0.065 *	-0.003
Common language	-0.076 ***	-0.067	-0.067	-0.003	-0.061	0.012 *	-0.054	0.012 *	-0.072	0.000	-0.062	-0.001	0.058	0.048 *	0.022	0.046 *
Level of democracy	-0.004	-0.004	-0.004	-0.003	0.011 *	0.012 *	-0.012 *	0.012 *	0.000	0.001	-0.000	-0.001	-0.145 *	0.050 *	0.048 **	0.046 *
Govern. spending	-0.164 *	-0.175 *	-0.175 *	0.040	-0.226	0.026	-0.225 *	0.034	-0.056	-0.271 *	-0.058	-0.242 *	0.813	0.766 *	-0.118 **	0.789 *
Consumption	0.058	0.045	0.055	-0.061	0.022	-0.023	-0.005	-0.027	-0.262 *	-0.546 *	-0.560 *	-0.594 *	0.152	0.207	0.108	0.115
EU members	-0.107	-0.079	-0.090	0.353 **	-0.025	0.292 ***	0.335 **	0.300 ***	0.210	0.229	0.215	0.235	-0.241	-0.249	-0.259	-0.279
NATO members	0.332 **	0.356 **	0.335 **	0.353 **	0.005	0.026 **	0.011	0.016	0.635 *	0.636 *	0.645 *	0.541 *	1.513 *	1.501 *	1.488 *	1.398 **
OECD members	0.376 *	0.396 *	0.396 *	0.452 *	0.005	0.026 **	0.011	0.016	0.635 *	0.636 *	0.645 *	0.541 *	1.513 *	1.501 *	1.488 *	1.398 **
Islamic religiosity	0.282 *	0.280 *	0.279 *	0.266 *	-0.271 **	-0.252 ***	-0.269 ***	-0.246 ***	-0.263 **	-0.266 **	-0.247 **	-0.203 ***	-0.010	-0.004	0.014	0.194 ***
Religious pluralism (5%)	-0.032				-0.001				-0.030				0.258 *			
Religious diversity (15%)	0.035				-0.294 **				0.000				-0.179 **			
Religious conflict (20%)	-0.093				0.074				0.057				-0.132			
Sect pluralism (5%)		-0.043				0.142 **				-0.071 ***				-0.113 *		
Sect diversity (15%)		-0.056				-0.096				-0.008				0.082 ***		
Sect conflict (20%)		0.011				-0.041				0.038				-0.221 *		
Buddhists							1.527				0.737 **				0.733 ***	
Chinese folk			-0.337				0.149				0.232				0.133	
Christians			-0.094 **				-0.066				0.232				0.302 *	
Ethnoreligionists			-0.305				0.552				-0.080				0.052	
Hindus			-0.971				-1.162 ***				0.671				-1.688 *	
Muslims			-0.041				0.056				-0.107				0.142	
Agnostics				-0.167			-0.013					0.370 *				1.050 *
Chinese folk				1.399 **			1.561					0.176				0.136
Ethnoreligionists				0.074			-0.399					-0.100				-0.059
Hindus				-0.563			-1.155 **					0.560 ***				-1.445 *
Independents				0.012			-0.194					-0.045				-0.654 *
Orthodox				0.914 **			0.302					-0.390				-0.310
Protestants				-0.042			-0.132					-0.160 *				0.435 *
Roman Catholics				-0.043			0.277 *					0.049				-0.118 *
Shias				0.193			1.349 **					-0.364				0.097
Sunnis				0.018			-0.130					-0.147 **				-0.508 *
Theravadians				0.027								0.150				-0.076
Constant	-0.273	-0.502 **	-0.258	-0.626 *	0.683 **	0.381	0.657 **	0.449	-1.110 *	-1.241 *	-1.115 *	-1.104 *	-0.979 *	-0.726 *	-0.949 *	-0.291
N	17292	17292	17286	17292	6787	6787	6787	6785	17288	17288	17288	17288	16096	16096	16096	16096
R ²	0.003	0.003	0.004	0.004	0.005	0.004	0.005	0.007	0.005	0.005	0.005	0.006	0.034	0.032	0.034	0.040
χ ²	76.8 *	64.6 *	85.3 *	79.2 *	43.8 *	32.9 *	42.8 *	62.8 *	97.9 *	96.5 *	106.3 *	123.1 *	749.2 *	707.7 *	750.4 *	897.2 *

TABLE 4.4: Effect of religion and sect diversity on likelihood of causality for country dyads for 1980-2009 period. Granger type causal relationships are estimated between countries for pairs of countries. Evaluated variables are real GDP per capita, military spending, openness and polity levels. The dependent variable for the models in the table is a binary variable which is assigned a value of one if there is statistically significant causality for the dyad. A positive coefficient in the table means that the variable increases the likelihood of causality. A negative coefficient in the table means that the variable decreases the likelihood of causality. Common religion, common sect, common language and membership variables are binary variables. Distance is the log of average distance between the countries' main cities. Government spending and consumption are differences between countries of the dyads. Religious (sect) diversity is a binary variable which is assigned a value of one if country dyads that have multiple religions (sect) with 5%, 15% or 20% presence in the country. *, ** and *** represent statistical significance at 1%, 5% and 10% levels respectively.

	RGDP				SIPRI				OPEN				POLITY			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Distance	0.014	0.019	0.017	0.023	-0.065 ***	-0.055	-0.064 ***	-0.057	0.106 *	0.085 *	0.098 *	0.091 *	0.075 *	0.078 *	0.069 *	0.051 ***
Common language	-0.012	-0.032	-0.001	-0.000	-0.061	0.012 *	-0.054	0.012 *	0.027	0.001	0.012	0.000	-0.090 **	0.045 *	-0.105 **	0.044 *
Level of democracy	-0.001	-0.000	-0.049	-0.000	0.011 *	0.012 *	-0.225 *	0.012 *	0.001	0.001	0.001	0.000	0.044 *	0.045 *	0.042 *	0.044 *
Govern. spending	-0.049	-0.049	-0.049	-0.309 *	-0.226 *	0.026	0.015	0.034	-0.007	-0.003	-0.007	0.030	-0.090 ***	0.949 *	-0.055	0.960 *
Consumption	-0.289 *	-0.310 *	-0.290 *	-0.165	0.022	-0.023	-0.005	-0.027	-0.010	-0.003	-0.007	0.265 ***	0.971 *	0.047	-0.004	-0.044
EU members	0.140	0.163	0.121	0.165	-0.025	0.026	0.015	0.027	0.270 ***	0.244	0.261 ***	0.178	0.016	0.047	-0.004	-0.044
NATO members	-0.009	0.003	-0.001	-0.031	0.292 ***	0.335 **	0.315 **	0.300 ***	0.191	0.184	0.175	0.178	0.083	0.106	0.028	0.047
OECD members	0.034	0.027	0.009	0.153	0.005	0.026	0.011	0.016	0.228 **	0.257 **	0.226 **	0.191 ***	1.590 *	1.611 *	1.564 *	1.416 *
Islamic religiosity	0.131	0.133	0.106	0.123	-0.271 **	-0.252 ***	-0.269 ***	-0.246 ***	-0.271 **	-0.267 *	-0.234 **	-0.151	0.083	0.085	0.185 ***	0.128
Religious pluralism (5%)	0.027				-0.001				0.162 *				0.152 *			
Religious diversity (15%)	-0.161 **				-0.294 **				-0.075				0.234 *			
Religious diversity (20%)	0.122				0.074				-0.086				-0.110			
Sect pluralism (5%)		-0.108 *				0.142 **			0.228 *				0.012			
Sect diversity (15%)		0.021				-0.096			0.071				0.152 *			
Sect conflict (20%)		-0.039				-0.041			-0.206 *				-0.044		2.164 *	
Buddhists			-0.173				1.527			-0.009						
Chinese folk			0.257				0.149			1.198						
Christians			0.097 **				-0.066			0.098 **					0.214 *	
Ethnoreligionists			-0.170				0.552			-0.053					-0.081	
Hindus			0.207				-1.162 ***			0.375					-3.308 *	
Muslims			0.192 **				0.056			-0.073					-0.349 *	
Agnostics				-0.435 *								0.237 ***				1.930 *
Chinese folk				-0.147								1.265 **				1.363 ***
Ethnoreligionists				-0.052								-0.002				0.036
Hindus				0.211								-0.252				-1.706 *
Independents				0.090								0.158				-0.493 *
Orthodox				1.245 *								0.505				0.162
Protestants				-0.004								-0.034				0.270 *
Roman Catholics				-0.007								0.180 *				-0.230 **
Shias				0.031								-1.230 **				0.808 ***
Sunnis				0.031								-0.069				-0.369 *
Theravadians				-1.431								0.593				0.550
Constant	-0.221	-0.203	-0.256	-0.315	0.683 **	0.381	0.657 **	0.449	-1.413 *	-1.332 *	-1.302 *	-1.265 *	-0.915 *	-0.965 *	-0.818 *	-0.619 *
N	17292	17292	17292	17292	6787	6787	6787	6785	17266	17266	17266	17266	15144	15144	15140	15144
R ²	0.002	0.002	0.002	0.002	0.005	0.004	0.005	0.007	0.003	0.004	0.003	0.004	0.033	0.031	0.035	0.039
χ ²	37.4 *	41.2 *	43.5 *	58.6 *	43.8 *	32.9 *	42.8 *	62.8 *	76.8 *	102.9 *	62.1 *	99.0 *	675.3 *	643.9 *	711.7 *	796.5 *

TABLE 4.5: **Mean trend in trades between religions.** Trend is defined as the sum of annual imports and exports of a religion from and to another religion. The trend in the trade is estimated for each dyad using: $D_t = \alpha + \beta_1 trend_t + \epsilon_t$. The figures are the mean coefficient of the trend regression (β_1) across dyads of the religion pairs. *, **, and *** represent statistical significance at 1%, 5% and 10% levels respectively.

Religion	Agnostics	Buddhists	Chinese folk	Christians	Ethnoreligionists	Hindus	Jews	Muslims
Agnostics	0.17 *	0.17 *	0.23	0.14 *	0.09 ***	0.10 *	0.22	0.11 *
Buddhists	0.17 *	0.10 *	0.10 *	0.09 *	0.07 **	0.11 *	0.16	0.07 *
Chinese folk	0.23	0.10 *	0.13	0.08 *	0.01	0.06	0.12 **	0.05 *
Christians	0.14 *	0.09 *	0.08 *	0.05 *	0.00	0.07 *	0.08 *	0.05 *
Ethnoreligionists	0.09 ***	0.07 **	0.01	0.00	-0.05	0.10 **	0.14	0.01
Hindus	0.10 *	0.11 *	0.06	0.07 *	0.10 **	-0.01	0.09 ***	0.07 *
Jews	0.22	0.16	0.12 **	0.08 *	0.14	0.09 ***		0.04
Muslims	0.11 *	0.07 *	0.05 *	0.05 *	0.01	0.07 *	0.04	0.06 *

TABLE 4.6: Mean trend in trades between sects. Trend is defined as the sum of annual imports and exports of a sect from and to another sect. The trend in the trade is estimated for each dyad using: $D_t = \alpha + \beta_1 trend_t + \epsilon_t$. The figures are the mean coefficient of the trend regression (β_1) across dyads of the sect pairs. *, **, and *** represent statistical significance at 1%, 5% and 10% levels respectively.

Sect	Agnost.	Anglic.	Chine.	Ethno.	Hindus	Indep.	Jews	Lamaist	Mahayan.	Margin.	Orth.	Protes.	Catholics	Shias	Sunnis	Therav.	Unaff.
Agnostics	0.17 **	0.06	0.14 **	0.08 *	0.09 *	0.09 **	0.13 ***	-0.21	0.17 *	0.17 *	0.14 *	0.06 *	0.08 *	0.17 *	0.10 *	0.14 *	0.14 **
Anglicans	0.06	0.09 ***	0.09 ***	-0.00	0.01	0.06 ***	0.05	-0.04	0.15	0.15	0.11 *	-0.00	0.02 *	0.07	0.01	0.06	0.08
Chinese folk	0.14 **	0.09 ***	0.13	0.00	0.06 ***	0.04	0.12 **	-0.16	0.14 **	0.11	0.09 *	0.08 *	0.08 *	0.09	0.05 *	0.12 *	0.15
Ethnoreligionists	0.08 *	-0.00	0.00	-0.04	0.02	0.07 *	0.07	0.25	0.07 **	25.19	0.00	-0.02	-0.01	0.06	0.02	0.04	0.05
Hindus	0.09 *	0.01	0.06 ***	0.02	0.01	0.08 **	0.08 **	0.25	0.15 **	0.28	0.01	0.05 *	0.06 *	0.09	0.06 *	0.07 *	-0.01
Independents	0.09 **	0.06 ***	0.04	0.07 *	0.08 *	0.06 **	0.05	-0.01	0.16 ***	0.19 **	0.12 **	0.05 *	0.05 *	0.23 **	0.07 *	0.03	-0.08
Jews	0.13 ***	0.05	0.12 **	0.07	0.08 **	0.05		0.29	0.16 ***	0.13 **	0.13 **	0.04	0.09 *	0.07	0.03	0.07	0.12 **
Lamaists	-0.21	-0.04	-0.16		0.25	-0.01		0.01	0.29	0.01	-0.16	0.17 ***	0.12	0.92	-0.07	0.07	0.12 **
Mahayanists	0.17 *	0.15	0.14 **	0.07 **	0.15 **	0.14 ***	0.29	0.01	0.13	0.22	0.10 *	0.06	0.12 *	0.18 **	0.10 *	0.14 *	0.12 **
Marginals	0.17	0.15	0.11	25.19	0.28	0.19 **			0.22		-0.16	0.01	-0.06	0.18 **	0.10 *	0.14 *	0.12 **
Orthodox	0.14 *	0.11 *	0.09 *	0.00	0.01	0.12 *	0.13 **	-0.16	0.10 *	-0.16	0.10 *	0.04 **	0.07 *	0.00	0.09 *	0.12 *	0.12 **
Protestants	0.06 *	-0.00	0.08 *	-0.02	0.05 *	0.05 *	0.04	0.17 ***	0.06	0.01	0.04 **	0.03 **	0.02 **	0.07 **	0.02	0.09 *	0.01
Roman Catholics	0.08 *	0.02 *	0.08 *	-0.01	0.06 *	0.05 **	0.09 *	0.12	0.12 *	-0.06	0.07 *	0.02 **	0.04 *	0.02	0.04 **	0.06 *	0.07 *
Shias	0.17 *	0.07	0.09	0.06	0.09	0.22 **	0.07	0.92	0.18 **		0.00	0.07 **	0.02	0.10	0.06 **	0.07	-0.00
Sunnis	0.10 *	0.01	0.05 *	0.02	0.06 *	0.07 *	0.03	-0.07	0.10 *	0.02	0.09 *	0.02	0.04 *	0.06 **	0.06 *	0.04 *	0.06 *
Theravadins	0.14 *	0.06	0.12 *	0.04	0.07 *	0.03	0.07	-0.07	0.14 *	-0.01	0.12 **	0.09 *	0.06 *	0.07	0.04 **	0.09 **	0.11
Unaffiliated	0.14 **	0.08	0.15	0.05	-0.01	-0.08	0.12 **		0.12 **		0.12 **	0.01	0.07 *	-0.00	0.06 *	0.11	-0.02

4.2.1 Common Religion of Dyads

Table 4.7 provides the results for this section and they are in line with our expectations based on the findings in the previous sections. We previously found that having a common religion and common sect has a divergence effect on income levels. If two countries with the same religion have diverging income levels, we would expect them to have decreasing bilateral trade. Accordingly, having a common religion decreases the trend coefficient for bilateral trade. This means that for countries that have the same primary religion, their bilateral trade trend is lower compared to other dyads.

The control variables are also meaningful and as expected. For countries of the EU, there is higher trend coefficient for bilateral trade. In terms of the Islamic religiosity variable that is based on Islamic banking deposits, countries with increased Islamic banking, religiosity have higher trend coefficients for bilateral trade. The coefficient is the second highest in the list (in absolute value).

In terms of individual religions, Christian states that had divergence in income levels have decreasing trend in bilateral trade. The income levels and bilateral trade are two different variables that come from two different datasets. The findings related to the trend in bilateral trade confirm the findings in income level convergence. This is also true for Muslims. In the previous sections we found that Muslims had income level convergence. In terms of bilateral trade, Muslims have increasing trend in bilateral trade among themselves. This is another confirming result.

For the individual sects, Protestants and Catholics have statistically significant and negative coefficients. Thus, they have decreasing trend in bilateral trade. On the other hand, Sunnis have a positive coefficient indicating an increasing trend in bilateral trade. These findings again confirm previous section results.

TABLE 4.7: **Effect of individual religions and sects on bilateral trade for country dyads for 1950-2009 period.** Bilateral trade is calculated by adding the imports and exports (chained 2005 prices) between the countries of the dyad for each year. Bilateral trade for each dyad is regressed with a time trend variable across years. The trend coefficient for each dyad is the cross-sectional dependent variable for the models in the table. A negative trend coefficient means decreased trade and a positive trend coefficient means increased trade between dyads. A positive coefficient in the table means that the variable has an increasing effect on bilateral trade. A negative coefficient in the table means that the variable has an decreasing effect on bilateral trade. Common religion, common sect, common language and membership variables are binary variables. Distance is the log of average distance between the countries' main cities. Government spending and consumption are differences between countries of the dyads. *, ** and *** represent statistical significance at 1%, 5% and 10% levels respectively.

	Bilateral Trade			
	1	2	3	4
Distance	-0.058	-0.045	0.032	-0.061
Level of democracy	-0.006	-0.003	0.010	0.003
Consumption	-3.854 *	-3.772 *	-4.209 *	-3.910 *
EU members	1.974 *	1.817 *	2.374 *	1.682 *
Islamic religiosity	2.919 *	2.690 *	1.372 *	2.255 *
Common religion	-0.531 *			
Common sect		-0.178		
Buddhists			2.927 **	
Chinese folk			3.542	
Christians			-1.222 *	
Ethnoreligionists			-2.651 ***	
Hindus			-2.078	
Muslims			1.783 *	
Agnostics				1.086 *
Chinese folk				2.371
Ethnoreligionists				-2.189 *
Hindus				-1.423
Independents				0.403
Orthodox				0.030
Protestants				-0.677 *
Roman Catholics				-0.639 *
Shias				-1.539
Sunnis				0.745 *
Theravadins				-0.178
Constant	6.525 *	6.190 *	5.898 *	6.358 *
N	9898	9898	9898	9898
R ²	0.212	0.211	0.219	0.215
F	43.6 *	41.5 *	33.0 *	19.3 *

TABLE 4.8: **Effect of individual religions and sects on bilateral trade for country dyads for 1980-2009 period.** Bilateral trade is calculated by adding the imports and exports (chained 2005 prices) between the countries of the dyad for each year. Bilateral trade for each dyad is regressed with a time trend variable across years. The trend coefficient for each dyad is the cross-sectional dependent variable for the models in the table. A negative trend coefficient means decreased trade and a positive trend coefficient means increased trade between dyads. A positive coefficient in the table means that the variable has an increasing effect on bilateral trade. A negative coefficient in the table means that the variable has an decreasing effect on bilateral trade. Common religion, common sect, common language and membership variables are binary variables. Distance is the log of average distance between the countries' main cities. Government spending and consumption are differences between countries of the dyads. *, ** and *** represent statistical significance at 1%, 5% and 10% levels respectively.

	Bilateral Trade			
	1	2	3	4
Distance	0.253 **	0.288 **	0.411 *	0.344 *
Level of democracy	-0.069 *	-0.064 *	-0.042 *	-0.047 *
Consumption	-4.255 *	-4.122 *	-4.817 *	-4.335 *
EU members	2.590 *	2.392 *	3.255 *	2.442 *
Islamic religiosity	3.539 *	3.164 *	0.962 ***	2.397 *
Common religion	-0.731 *			
Common sect		-0.117		
Buddhists			4.215 **	
Chinese folk			4.672	
Christians			-1.834 *	
Ethnoreligionists			-1.248	
Hindus			0.349	
Muslims			3.135 *	
Agnostics				1.106 **
Chinese folk				3.571
Ethnoreligionists				-0.817
Hindus				0.108
Independents				0.944
Orthodox				-1.220
Protestants				-1.000 *
Roman Catholics				-0.977 *
Shias				-3.263 **
Sunnis				1.676 *
Theravadins				3.921
Constant	4.678 *	3.999 *	3.532 *	3.497 *
N	9896	9896	9896	9896
R ²	0.176	0.175	0.187	0.180
F	35.3 *	33.0 *	31.8 *	17.3 *

4.2.2 Religious Diversity of Dyads

The empirical evidence so far established that while convergence in income levels may have different interpretations, trade and economic cooperation between common religion and sect members is quite visible. In fact, the evidence for economic causality and bilateral trade are in support of each other.

As the final step of the present study, we evaluate the religious pluralism, diversity and possible conflicts for their effect on the bilateral trade between dyads. Similar to effect of common religion and sect on convergence, the effect of religious diversity on convergence had possibly different interpretations. The trade cooperation, on the other hand, resulted in more definite results. For the religious diversity variable, our argument is that religiously diverse countries are a different group compared to countries where there is no religious diversity (i.e. single religion countries). Thus, if these countries have social and religious similarities to become a part of this group, they should also have higher trade and economic cooperations. The second argument for the reason behind the religiously diverse countries' cooperation is that since there is more economic cooperation between countries of common religions, having multiple religions would increase the likelihood of having a common religion match. In other words, if country X is a Christian country and has 10 percent Muslims living in it, then country X has a higher number of countries to cooperate with (i.e. Christian and Muslim countries) compared to a country where there are only Christians living.

The initial evaluation is based on having religious pluralism, diversity and possible conflict for any primary religion pairs. Table 4.9 provides the results for this section. While religious pluralism increases the trend in bilateral trade, religious conflict decreases it. This is intuitive and in line with previously reported evidence of economic convergence.

TABLE 4.9: **Effect of religion and sect diversity on bilateral trade for country dyads for 1950-2009 period.** Bilateral trade is calculated by adding the imports and exports (chained 2005 prices) between the countries of the dyad for each year. Bilateral trade for each dyad is regressed with a time trend variable across years. The trend coefficient for each dyad is the cross-sectional dependent variable for the models in the table. A negative trend coefficient means decreased trade and a positive trend coefficient means increased trade between dyads. A positive coefficient in the table means that the variable has an increasing effect on bilateral trade. A negative coefficient in the table means that the variable has an decreasing effect on bilateral trade. Common religion, common sect, common language and membership variables are binary variables. Distance is the log of average distance between the countries' main cities. Government spending and consumption are differences between countries of the dyads. Religious (sect) diversity is a binary variable which is assigned a value of one if country dyads that have multiple religions (sect) with 5%, 15% or 20% presence in the country. *, ** and *** represent statistical significance at 1%, 5% and 10% levels respectively.

	Bilateral Trade			
	1	2	3	4
Distance	-0.025	-0.030	-0.004	-0.130
Level of democracy	-0.005	-0.002	0.001	-0.004
Consumption	-3.733 *	-3.728 *	-3.829 *	-3.848 *
EU members	1.708 *	1.764 *	2.114 *	1.536 *
Islamic religiosity	2.649 *	2.549 *	2.449 *	2.664 *
Religious pluralism (5%)	0.681 *			
Religious diversity (15%)	0.004			
Religious conflict (20%)	-1.346 *			
Sect pluralism (5%)		0.306		
Sect diversity (15%)		-0.587 *		
Sect conflict (20%)		-0.404		
Buddhists			2.733 ***	
Chinese folk			3.476	
Christians			-0.691 *	
Ethnoreligionists			-2.709 ***	
Hindus			-1.893	
Muslims			0.785 **	
Agnostics				1.130 *
Chinese folk				2.286
Ethnoreligionists				-2.090 *
Hindus				-1.523
Independents				0.355
Orthodox				-1.515
Protestants				-0.567 **
Roman Catholics				-0.862 *
Shias				-1.361
Sunnis				-0.107
Theravadins				-1.054
Constant	5.670 *	5.925 *	5.849 *	7.090 *
N	9898	9898	9898	9898
R ²	0.213	0.212	0.212	0.214
F	34.6 *	33.6 *	25.1 *	18.9 *

TABLE 4.10: **Effect of religion and sect diversity on bilateral trade for country dyads for 1980-2009 period.** Bilateral trade is calculated by adding the imports and exports (chained 2005 prices) between the countries of the dyad for each year. Bilateral trade for each dyad is regressed with a time trend variable across years. The trend coefficient for each dyad is the cross-sectional dependent variable for the models in the table. A negative trend coefficient means decreased trade and a positive trend coefficient means increased trade between dyads. A positive coefficient in the table means that the variable has an increasing effect on bilateral trade. A negative coefficient in the table means that the variable has an decreasing effect on bilateral trade. Common religion, common sect, common language and membership variables are binary variables. Distance is the log of average distance between the countries' main cities. Government spending and consumption are differences between countries of the dyads. Religious (sect) diversity is a binary variable which is assigned a value of one if country dyads that have multiple religions (sect) with 5%, 15% or 20% presence in the country. *, ** and *** represent statistical significance at 1%, 5% and 10% levels respectively.

	Bilateral Trade			
	1	2	3	4
Distance	0.298 *	0.305 *	0.354 *	0.261 **
Level of democracy	-0.065 *	-0.063 *	-0.056 *	-0.059 *
Consumption	-4.112 *	-4.093 *	-4.242 *	-4.217 *
EU members	2.323 *	2.384 *	2.948 *	2.268 *
Islamic religiosity	3.135 *	3.082 *	2.723 *	2.946 *
Religious pluralism (5%)	0.368			
Religious diversity (15%)	0.191			
Religious conflict (20%)	-1.257 **			
Sect pluralism (5%)		0.065		
Sect diversity (15%)		-0.431		
Sect conflict (20%)		0.174		
Buddhists			3.762 ***	
Chinese folk			4.565	
Christians			-1.273 *	
Ethnoreligionists			-1.255	
Hindus			0.581	
Muslims			1.992 *	
Agnostics				1.197 **
Chinese folk				3.431
Ethnoreligionists				-0.874
Hindus				-0.065
Independents				0.869
Orthodox				-3.443 **
Protestants				-0.710 **
Roman Catholics				-1.514 *
Shias				-3.491 **
Sunnis				1.114 *
Theravadins				1.414
Constant	3.725 *	3.830 *	3.534 *	4.412 *
N	9896	9896	9896	9896
R ²	0.175	0.175	0.178	0.180
F	25.7 *	25.0 *	22.3 *	17.0 *

While a 5 percent minority increases the bilateral trade trend coefficient of having a common religion partner, it also implies religious pluralism. However, having 20 percent or more increases the possibility of a divided religious structure. On the other hand, for the sects, only the sect diversity measure is statistically significant and negative.

Combined with the results for religious pluralism, having another religion with 5 percent presence explains trade cooperation. However, having multiple sects diversity with 15 percent presence explains less trade cooperation. Thus, evidently, the existence of multiple sects is considered to be a reason for possible tension. Having multiple religions with 20 percent presence is also considered to be a reason for possible tension.

For Buddhists and Muslims, having multiple religions living in the country with 5 percent presence, they have higher increasing bilateral trade with similarly situated countries. However, Christians and Ethnoreligionists have decreasing trend of bilateral trade similarly situated countries. The effect for Christians is limited to Protestant and Catholics.

Chapter 5

Conclusion

5.1 Concluding Remarks

Huntington (1993) and Fukuyama (1989) agree that religion is a uniting factor for intra-civilizations and dividing factor for inter-civilizations. We provide evidence that while Christian states are economically diverging, Muslim states are converging. We also provide evidence that there is inter-religion economic cooperation that is higher than intra-religion cooperation.

In an effort to understand the effect of religion in countries' cooperation, the present study provides empirical evidence. There are several problems with evaluating intra-religion cooperations. Evaluations of cooperation within economic unions such as the EU, OECD or military unions such as NATO explain changes in economic levels. Since these unions are established for increased economic and military cooperation, studies evaluate whether membership to these unions serve the intended purpose. The member countries also have several common denominators. For instance, for the EU, the countries are located within Europe. Thus, proximity, economic, social, and cultural similarities already exist. There are also already established economic ties within the continent. In fact the intent of the EU is to enhance cooperation.

Groups based on religion, on the other hand, have diverse membership. They may not have anything in common other than the religion. They could be located on different continents, speak different languages, and have quite diverse GDP per capita levels. Evaluating convergence of income levels for EU members, Luxembourg and Ireland are usually taken out of the sample. With them included in

the sample, it seems as if there is no convergence in the EU. With them excluded from the sample, there is convergence. We also proved this point. For the religions however, we have many more countries to exclude before we see evidence of convergence. This is selection bias.

TABLE 5.1: **Trend-convergence for the Muslim dyads.** RGDPCH is the real GDP per capita growth, OPENK is the growth of openness, SIPRI is the growth of military spending share of the GDP and POLITY is the growth of political regime measure. All variables are ratios to the world averages which are population weighted. Annual percentage difference between countries are calculated ($D_{t,i}$, where t is per year and i is per dyad) for pairs of countries. $D_{t,i}$ for each dyad is regressed with a time trend variable across years. The trend coefficient for each dyad is the cross-sectional dependent variable for the models in the table. A negative trend coefficient means convergence and a positive trend coefficient means divergence between dyads. A positive coefficient in the table means that the variable has an increasing effect on the trend coefficient and therefore it has a divergence effect. A negative coefficient in the table means that the variable has a decreasing effect on the trend coefficient and therefore it has a convergence effect. *, ** and *** represent statistical significance at 1%, 5% and 10% levels respectively.

Variable	Mean Coefficient	% Negative	% Positive
RGDPCH	-0.152 *	0.502	0.334
OPENK	-0.220 *	0.416	0.287
SIPRI	-0.993 *	0.424	0.130
POLITY	2.723 *	0.213	0.501

To deal with the diversities within the religious groups, we suggest an alternative measure for convergence. We take the annual differences in variables (i.e. GDP per capita) between dyads and estimate the existence of time trend. If the coefficient for the time trend is negative, than countries of the dyad have decreasing difference through years. The coefficient for the time trend also shows the speed of convergence. By averaging the coefficients across dyads, we calculate the mean convergence within the group. This is similar to the σ -convergence measure. However, with the σ -convergence there is decreasing or increasing standard deviation across members. With the trend-convergence, we have a mean level of convergence

and percentage of converging and diverging dyads within the group. Thus, trend-convergence captures multiple dimensions of the convergence.

TABLE 5.2: **Trend-convergence for the Christian dyads.** RGDPCH is the real GDP per capita growth, OPENK is the growth of openness, SIPRI is the growth of military spending share of the GDP and POLITY is the growth of political regime measure. All variables are ratios to the world averages which are population weighted. Annual percentage difference between countries are calculated ($D_{t,i}$, where t is per year and i is per dyad) for pairs of countries. $D_{t,i}$ for each dyad is regressed with a time trend variable across years. The trend coefficient for each dyad is the cross-sectional dependent variable for the models in the table. A negative trend coefficient means convergence and a positive trend coefficient means divergence between dyads. A positive coefficient in the table means that the variable has an increasing effect on the trend coefficient and therefore it has a divergence effect. A negative coefficient in the table means that the variable has a decreasing effect on the trend coefficient and therefore it has a convergence effect. *, ** and *** represent statistical significance at 1%, 5% and 10% levels respectively.

Variable	Mean Coefficient	% Negative	% Positive
RGDPCH	0.444 *	0.274	0.606
OPENK	-0.624 *	0.555	0.244
SIPRI	0.303 *	0.342	0.367
POLITY	-10.854 *	0.505	0.170

There is, however, a problem with all convergence measures (including the trend-convergence) namely its interpretation. If two countries have similar growth rates through years and there is a limited pattern in the difference, then the countries will have no convergence. However, since both countries are growing in a similar pace and since we have a reason to believe that these countries are growing in a similar pace due to their cooperation, then the convergence measure simply is not sufficient for our purposes. As a remedy, we suggest two alternative measures to capture cooperation. First, we estimate whether there is economic causality between the two countries. As a second measure, we estimate the trend in bilateral trade between the two countries. Granger (1969) type economic causality gives us a test result: country X's economic growth causes country Y's economic growth.

Trend in bilateral trade also gives us a test result: bilateral trade between country X and country Y is increasing.

There is also a unique question of religiosity. This is not an easy question to answer. A person who is born into a family of religion X is usually considered to be affiliated with religion X. That is usually the case. However, the present study is suggesting that people (and therefore countries) act on their religious affiliation to the point that they chose cooperation partners based on their religious affiliations. Thus, we are not really interested in knowing who is affiliated with what religion. We need to measure who believes in what religion and who acts on their religious affiliations. Several measures exist in the literature: number of churches, number of clergy members etc. However, these measures can be imposed by governments and they can be superficial. Just because the government is affiliated with religion X and has been financially and politically supporting the religion does not necessarily mean that the citizens of the country have increased religiosity. This would be more applicable to countries where level of democracy is lower. As a remedy, we suggest a new measure. However, it is limited to Muslims. We measure the ratio of Islamic banking deposits to the commercial bank deposits in a country and estimate trends in this ratio. An increasing trend is higher Islamic religiosity. Since Islamic banking is voluntary and much more risky (no deposit insurance) than traditional commercial banking, increasing preference for Islamic banking would indicate increased religiosity. In other words, increased tendency of people to act on their religious beliefs.

The evidence points to lower convergence and divergence between common religions and common sects. However, there is economic convergence among Muslims. This is evidence of polarization in the world.

We can also conclude that there is more convergence between different religion and sect country dyads. This, on the other hand, is an evidence against the so called “clash of civilizations”.

In terms of increased bilateral trade, there is sufficient evidence to prove that while common religion and common sect dyads among non-Muslims have decreasing trade cooperation, Muslim dyads have increasing trade cooperations. There is also increased cooperation between the countries with increased Islamic religiosity. The effect is second to the effect of EU membership. These results are obtained after controlling for the common control variables such as distance, language, organizational memberships, level of income, level of democracy, level of military spending, government spending and consumption share of GDP.

For future studies, if the data permit, the evaluation of religiosity for all major religions would further our understanding of certain group dynamics. However, the measure has to be the choice of the public and not government imposed. We believe that certain governmental policies interfere with some of the religiosity measures.

5.2 Possible Explanations for Economic Convergence between Islamic Countries

Our results indicate a convergence among Muslim countries and a divergence among Christian countries. These results are confirmed with the evaluation of bilateral trade as well. In this section, we discuss possible reasons for the economic convergence and increased bilateral trade between Muslim countries.

5.2.1 Economic Sanctions

Increased economic cooperation between Muslim countries could partly be due to the economic sanctions, as an unintended consequence, imposed upon them by

Christian countries.¹ Muslim countries, as the receiver of economic sanctions, may have no other option but to turn to their “brothers” for economic relations. If there are restrictions in economic trade, Islamic nations would have to turn to other nations who do not impose economic sanctions. For instance, if sanctions are imposed on Libya, it would have to work with countries who are still willing to work with Libya despite the economic sanctions. As an oil producing country, with relatively higher income per capita levels, Libya is a potential economic partner to countries that are perhaps recipients of sanctions themselves and with lower income per capita levels.

Sanctions are “actions initiated by one or more international actors (the senders) against one or more others (the receivers) with either or both of two purposes: to punish the receivers by depriving them of some value and/or to make the receivers comply with certain norms the senders deem important” (Galtung, 1967, p. 379). Some contend that, in terms of influencing “the receivers,” economic sanctions are for the most part ineffective (Galtung, 1967; Adler-Karlsson, 1968; Baldwin, 1985; Doxey, 1971; Wallensteen, 1968; Drury, 1998; Elliott, 1998; Kaempfer and Lowenberg, 1999; Drezner, 1998, 2000).

In contrast, Hufbauer et al. (1999) find that sanctions prove to be successful about one-third of the time when they aim at moderate foreign policy goals. Blanchard and Ripsman (1999) condition the effectiveness of economic sanctions to the “costs” of compliance and defiance. If the costs of defiance (for the receiver) are lower than the costs of compliance, the effectiveness of economic sanctions will be substantially reduced. Also, Marinov (2005, p. 565) argues for the success of eco-

¹As examples of the list of countries that are economically sanctioned by US can be accessed via <http://www.treasury.gov/resource-center/sanctions/Programs/Pages/Programs.aspx> and by UK can be accessed via http://www.hm-treasury.gov.uk/fin_sanctions_currentindex.htm

conomic sanctions through “the destabilizing effects” of sanctions on the incumbent leaders in the receiving countries.

5.2.2 Colonizations and Effect of “Umma”

Economic convergence among Islamic countries may partly be due to impact of colonization. The post WWII period witnessed a renewed nationalism and ensuing independence movements throughout Africa, South America, and large segments of Asia which, with the exception of South America, hold large numbers of Muslim populations.

Even though there is no consensus about the nature of Islamic movements (Lewis, 1993; Pipes, 2001; Cavatorta, 2005; Esposito, 1998; Lapidus, 1997; Keddie, 1994; Halliday, 1995; Roy, 1999; Denoeux, 2002) which gained momentum after the decolonization of many Muslim countries, “*umma*” which refers to “one Islamic nation,” projects a political and economic integration throughout the Islamic world.² Islam considers all Muslims as part of “*Umma*” regardless of their nationalities, which is in total opposition of the Western nomenclature “nation state”.

Our findings in terms of the economic convergence among Muslim countries may be partly due to one of the most fundamental concepts of Islam. In a highly polarized post September 2001 world, the “perceived war on Islam” by many Muslim societies, and the lack of dialogue and cooperation between the West and Muslim countries should perhaps be considered as a uniting factor among Muslim countries. Perhaps Islamic nations are reverting back to their original teachings: “*umma*.”

Acemoglu et al. (2002, p. 1244) find that colonization of the non-European areas by the imperialistic European powers had a diverse impact, which they call “reversal of fortune,” in the colonized world. They hold that in areas which were

²Although “*umma*” is used in reference to several different concepts in Qur’an

densely populated, European states kept indigenous institutions to extract those areas' wealth by forced labor of the indigenous people. In areas which was scarcely populated and welcomed large numbers of European immigrants after colonization, they established new institutions which were protective of property rights. Under these latter institutions, trade and industry have flourished. When the industrial revolution arrived, these economies were better equipped to adapt. As a result, those areas which were richer by the 1500's, such as South America and India, compared to Europe, became increasingly underdeveloped.

Hibbs et al. (2004) emphasize the importance of geography and natural endowments in terms of economic development. Even after controlling for the impact of institutions, geography holds its position as a "make or break" factor in the differential economic development of different regions of the world. Geography and natural endowments transformed some areas into agrarian societies earlier than other regions which were less fortunate in terms of geography and natural endowments. This condition encouraged innovation, industrialization and economic growth.

Chanda and Putterman (2007) find some common ground between these two contradicting views. Their findings show that before the year 1500, early transition to agriculture was crucial in terms of economic development, a finding in line with Hibbs et al. (2004). They also find evidence for Acemoglu et al. (2002, p. 1244) argument of "the reversal of fortune". However, their argument differs from Acemoglu et al. (2002) for the period after decolonization. Chanda and Putterman (2007, p. 19) contend that:

"However, unlike AJR [Acemoglu et al. (2001) and Acemoglu et al. (2002)], we break the data at the year 1960 and find that the reversal process, which they extend right through 1995, was actually being undone during the post-World War II period, during which the effects of

European expansion and colonialism appear finally to have been wearing off. During 1960–1998, old agrarian societies like China, Taiwan, South Korea, and (more recently) India began to catch up with earlier industrializers, while most of the new states of sub-Saharan Africa, much of Latin America, and other countries that were less advanced with respect to agrarian state development, urbanization and population density in 1500, experienced slow or no net economic growth”.

Chapter 6

Case Study of the Turkish Accession to the EU: Are Religious Parties More Successful?

6.1 Introduction

Turkey is a country whose population is predominantly Muslim. While the building blocks of the republic are based on secularism, recent years has witnessed a rise in Islamic tendencies in Turkish politics. The concept of “Moderate Islam” was pronounced by the US and by the major EU countries. If the elected party in Turkey is “religious right” but are “moderate Islamists”, it is the part of the democratic process. Just as any one of the many political parties may be elected, a religious right party may also be elected. In fact, the Justice and Development Party (JDP) was elected in 2002 by receiving 34.28 percent of the vote and later in 2007 by receiving 46.58 percent of the vote.¹

This unprecedented victory for a religious right party brought many questions with it: 1) Are religious political parties pro-EU (or pro-western)? 2) As Turkey gets more religious, does EU membership become harder? 3) Do Islamic roots prohibit Turkey from accession to the EU anyway? Ataturk’s Turkey is built on pro-western values. Membership in the EU is just another step in this direction. Alliance with the US and membership to the NATO are also vital for this purpose. Now that Turkey has a religious right party in the government, is Turkey going to continue in the same direction or is it going to turn elsewhere? For the other side of the debate, will the western world be as receptive to Turkey as it was before?

¹Source for the elections is the Turkish Statistics Institute available through http://www.tuik.gov.tr/VeriBilgi.do?tb_id=42&ust_id=12

Turkey is a unique case study to test the effects of religion on political and economic process. The diversity of political parties and governments provide opportunity for comparison. As a NATO member, ally of the US, and the EU's customs partner, it is part of the western world. The Turkish military is also prominent in making sure that Turkey stays within the pro-western direction. On the other hand, Turkey is also a member of the Islamic Development Organization and most of its population is Muslim. Based on the rise in religious tendencies in Turkey within the last few years, Turkey also provides a unique case for a time-series comparison. Comparison between different governments with different levels of religious tendency allows for the testing of the impact of religion in a time-series as well as in a cross-sectional analysis.

Any study that measures the impact of religion faces a challenge; how to measure religious tendency? This challenge is coupled with the potentially varying religious tendency of the public and religious tendency of the government. Several traditional measures are discussed in this study, including number of mosques, the government's budget for religious affairs, Qur'an courses, etc. However, each of these proxies of religious tendencies has its bias. Turkey also provides a unique proxy for the public's as well as the government's religious tendencies. In Turkey, Islamic banking and traditional commercial banking are kept separate. In countries like Malaysia and Indonesia, both banking systems are integrated and it is extremely hard to separate one from the other. However, for Turkey, the two systems are separate, providing a unique opportunity to measure the tendency of the public to divert their funds from traditional commercial banking to Islamic banking. Utilizing this proxy, change in public religious tendency is measured.

In terms of the government's religious tendencies, the proxy is more complicated. For instance, during the Erbakan's 54th government, the government's religious ten-

dency has increased noticeably and caused a military intervention. In fact, almost all previous governments' extremist tendencies met with military intervention either as a military coup or as a warning of such. Also, several political parties were closed by the Constitutional High Court. However, the JDP's 58th, 59th and 60th governments did not meet any military resistance. In fact, the only time the Turkish military warned JDP -before the 2007 elections- is alleged to be the reason for the JDP's unprecedented victory. Even the Constitutional High Court did not close the JDP based on evidently proven allegations. This time, the High Court penalized the JDP with a fine which is, in effect, acknowledgment that the JDP became un-secular. The difference between the two JDP governments, the 59th and the 60th, is considered to be the difference between religious right party government and government with high religious tendencies.

These two unique proxies provide a variable for level of religious tendency; an opportunity to compare two periods. A period with a low level of religious tendency is compared to a period with a high level of religious tendency. In order to test the political and economic impact of religion, financial market data is utilized. If the Turkish public believes that the EU and Turkey are integrated, they will expect European markets to influence the Turkish market. In other words, if the European markets Granger (1969) type cause the Turkish market, this implies that Turkish market is integrated with the European markets. Such time series analysis, along with the different levels of religious tendencies, allows evaluation of impact of religion on international integration.

While the Turkish market is highly and statistically significantly correlated with the European as well as with the American markets, the correlations are especially visible after 1997. However, in terms of the causality, it is interesting to note that there is a significant difference between the Erdogan's 59th and 60th governments,

as expected. For the first term, as part of the democratic process, a religious right party is welcomed in terms of Turkey's continued international integration through the EU and the US markets. However, for the second term, after the level of religious tendency increased and became evident, the integration with the EU discontinued. This is also the time that Turkish public opinion started to turn away from Turkey's EU bid.

The next section provides theoretical background in effects of religion on politics and economy as well as impact of economic union membership (EU in specific). Within the third section, Turkish-EU relations are briefly evaluated with a historical perspective. The fourth section provides the discussion about the religious tendencies in Turkey and provides the evidence necessary to establish the increase in Islamic tendencies. Within the fifth section international integration is evaluated empirically and conclusion is provided with the empirical results. Appendix provides the informative tables as well as empirical result tables.

6.2 Literature Review

Several arguments are made in this study. First, it is the differences in religion that ultimately affects the EU's willingness to have Turkey as an equal partner. Second, such differences also alters the ways and the levels at which Turkey cooperates with other EU member countries politically, economically and socially. Third, as the Turkish public and government become more religious, its international integration is severed. Fourth, having a different religion (and thus a different social and cultural background) within an economic union is a factor that affects the economic and political convergence and co-integration.

Studies such as [Nelsen et al. \(2001\)](#) argue that there is different support levels for the EU by different divisions of Christianity. However, there is a gap in the lit-

erature to argue religion as an underlying reason for and against union integration, due to its difference to the religion of other members. One of the main reasons for such a gap in the literature is the availability of data. For instance, Davis et al. (2007) provide² General Social Surveys results for the period between 1972 and 2006. In this survey the questions about religion are intended to measure public opinion about issues such as abortion that are related to religion. Also, some of the questions are intended to measure the religiosity of the participants. Use of this dataset may prove to be useful in evaluating the hypothesis argued by Nelsen et al. (2001). However, it still falls short of providing the link between religiosity's impact on political decision making. Just because a social group is classified under a religious denomination it does not necessarily mean that its religiosity influences its political decision making process. However, absent survey data, different assumptions are needed. We may need to assume that if a person is a church- or a mosque- participant then that person's religiosity is high. However, we still do not have a reliable measure for how much a persons' religiosity affects their political decisions. We also cannot reliably measure a persons' secular tendencies. While a person can be quite religious, he/she could be a strong supporter of secular views. Therefore, even if survey data existed for Turkey, we still would not be able to use it reliably as long as we cannot measure the impact of religiosity on political decision making.

The argument in this study is based on a premise that as social differences increase between nations, countries will not be able to take full economic advantage of the economic unions. This will result in nations forming unions with similar cultures. Considering religion as a dominant factor on cultures, religion becomes

² The data is available through <http://www.icpsr.umich.edu/cocoon/ICPSR/STUDY/04697.xml>

a separating or uniting factor between countries. For Turkey's bid for EU membership, this is the case. The EU as a Christian club is socially and religiously different than Turkey. As Turkey moves culturally closer to the western world, EU nations will be more receptive. However, if Turkey moves towards Islamic culture, towards more Middle Eastern culture, then EU nations will be skeptical towards Turkey's admission to the union.

Earlier studies that evaluate the economic impact of the EU find positive effects for member countries (i.e. Coe and Moghadam, 1993; Ben-David, 1994; Kokko, 1994; Henrekson et al., 1997; Economidou et al., 2006; Kutan and Yigit, 2007; Cuaresma et al., 2008) In line with these findings, Ben-David (1996) shows that positive effects of EU membership are evident for candidate countries as well. Contrary to this evidence, mainly based on methodological arguments, it has also been argued that membership may have a negative economic impact as well (i.e. Badinger, 2001; Estrin et al., 2001). The absorption capacity of a country is argued by Lucas (1993); Xu (2000); Krueger and Lindahl (2001); Narula (2001); and Balasubramanyam et al. (2002) as a condition to benefit from the economic unions. However, religion is not specifically argued as either a deterrent or a motivator for becoming part of or taking advantage of an economic union.

The empirical evidence evaluates Turkey's level of religious tendency in relation to Turkey's integration with the EU and its co-integration with EU members. However, there are different methodological views as to the measure of integration. Dowrick and Duc-Tho (1989); Barro (1991); Barro and Sala-i Martin (1992); de Melo et al. (1992); Henrekson et al. (1997) provide evidence for a β -convergence which is more of a convergence measure between union members than their integration. If the members have statistically significant stationarity, then they should

be converging. In this study, Granger (1969) type causality is used as a measure of integration instead of converge measures, since Turkey is not a member country.

6.3 Turkey and the EU

The European Union (EU) has a total real GDP of \$11.5 trillion³ and a population of about 488 million. With 27 sovereign countries as members, it is a challenge to economically and politically unite. By the end of 1995, Belgium, Germany, France, Italy, Luxembourg, the Netherlands, United Kingdom, Ireland, Denmark, Greece, Spain, Portugal, Austria, Finland and Sweden were EU members. Considering the alliance structure of the WWII, the EU has faced several challenges even at its initial stages. However, these countries also had quite a lot in common, including their geopolitical situations, economical co-integrations, cultures, shared histories and, their religion.

Turkey has been an applicant country for EU membership since 1959. It has formed and honored a trade union with the EU since 1995. However, no full membership is in sight. While Turkish governments would like Turkey to be considered a European country, the majority of Turkey's land is in Asia. Turkey would be the second biggest country within the EU in terms of its population. However, Turkish GDP per capita and GDP growth would be the lowest among EU member countries. Turkey is also a predominantly Muslim country.

Since 1995, as a trade union partner of EU, Turkey was expected to improve its economy, its socio-political institutions, and, most importantly, its level of democracy. However, the level of improvement is not sufficient for Turkey's full accession to the EU. There are several reasons for the lack of progress for Turkey. As a country that is a frequent target of terrorism, Turkey had a significant defense budget

³Heston et al. (2009) provide economic data for 188 countries for the time period 1950-2004 with the Penn World Table (PWT)

against Islamic (i.e. IBDA-C Hisbullah), Kurdish (i.e. PKK), and Armenian (i.e. ASALA) terrorist organizations. Turkey also had to defend its guardianship rights in Cyprus, for which it had to fight against Greek aggression in 1967 and once again in 1974. Since 1974, Turkey has had to finance the peace and the safety of the Northern Cyprus Turkish Republic. While these costs are economic, there are also political costs involved with such issues as terrorism and Greek aggression against Turkey over Cyprus and Aegean Sea territorial rights. According to the 1960 Cypriot constitution, Cyprus (Turkish or Greek) as a whole cannot be a member to an international unions (or organizations) if one of the guarantor states (Greece and Turkey) is not a member to that union. Accordingly, membership of South Cyprus to EU is accepted by the EU despite this agreement, even though two of the signatory parties to the initial peace agreement are EU members (Greece and the U.K.).

Since 1995, the resistance of EU towards Turkey, coupled with the veto powers held by Greece and South Cyprus, did not allow Turkey to take full advantage of the customs union agreement. Turkey, as the successor state of the Ottoman Empire, is charged with the directives of Ataturk to be westernized. Islamic roots within the society and the social impact of religion have taken their toll on such quest. Over the recent years, after a religious government was elected democratically in Turkey (2002), the EU was in full support of “moderate Islam”. Such support, however, resulted in powerful Islamic government which eventually diverted its focus from EU membership towards other Islamic neighbors. It also damaged its relationship with Israel in favor of the Palestinian Hamas.

TABLE 6.1: **Financial Assistance (in millions) by EU to Turkey.** Source: Directly taken from the Undersecretariat of the Prime Ministry for Foreign Trade available through www.dtm.gov.tr/dtmadmin/upload/AB/TeknikMevzuatDb/

Financial Assistance (1963-1995)	Commitment	Utilized	Percent utilized
Credits	1,152	927	80.47%
Grants	453	78	17.22%
Total	1,605	1,005	62.62%
Financial Assistance (1996-1999)	Commitment	Utilized	Percent utilized
Credits	1,507	557	36.96%
Grants	768	52	6.77%
Total	2,275	609	26.77%

In terms of financial relations between Turkey and the EU, there are three periods ⁴: 1) 1963-1995, 2) 1996-1999 and 3) 1999-2006. Table 6.1 provides the financial assistance by the EU to Turkey for the first and the second periods.

Accordingly, while the EU's commitment to low interest credits and grants increase in the second period (after the customs union), utilization of credits is only 36.96 percent and the utilization of grants is only 6.77 percent. According to the Undersecretariat of the Prime Ministry for Foreign Trade, an additional 750 million EURO credit facility as part of the customs union agreement could not be utilized by Turkey due to Greece's veto. An additional 375 million EURO grant also could not be utilized due to Greece's veto.

Ozcan (2005) reports that for the period between 2000 and 2006 the grant commitment by the EU for Turkey was 1.7 billion EURO. For the same period, the grant commitment by EU for Romania is 5.1 billion EURO, for Bulgaria 2.8 billion EURO and for Poland 15.3 billion EURO. The financial assistance for the EU member states are also significantly higher than utilized credits and grants by Turkey who is only a customs union member. According to Ozcan (2005), Spain received

⁴According to Undersecretariat of the Prime Ministry for Foreign Trade available through www.dtm.gov.tr/dtmadmin/upload/AB/TeknikMevzuatDb/TR_AB_Mali_iliskileri_Tarihi.doc

200 billion EURO (1986-2006), Portugal received 85 billion EURO (1986-2006) and Greece received 90 billion EURO (1981-2006).

6.4 Religious Tendencies in Turkey

Since there is no certain measure of religious tendencies for societies (and for individuals), several proxies are utilized in this study. However, some of the obvious proxies that are common in the literature have certain biases. For instance, Table 6.2 provides the number of mosques in Turkey. According to these data, 73,772 mosques in 1998 have increased to 79,096, an increase of 7.22 percent. However, based on the annual increase, each year's increase is less than 1 percent whereas the Turkish population increase is estimated to be more than 1.5 percent per year.⁵ Thus, it can be concluded that the number of people per mosque is increasing. There are also statistics available for the participants of Qur'an courses, which would be a good measure of public religious tendency. However, since the penalties for running an unofficial Qur'an course are very minimal, the accuracy of official figures is doubtful. Another official figure to use as a religious proxy is the budget provided for the Presidency of Religious Affairs in Turkey. However, this institution may need more budgetary share to promote decreasing religious tendencies. Thus, it is not safe to consider the increasing budget of this institution as an indication

of increasing religious tendency. In this study, a more reliable measure is proposed. In 1984, the first Ozal government allowed operations of Islamic banks. While none of the commercial banks worked with an "Islamic banking window" similar to practices in Malaysia and Indonesia, specialized "financial houses" were established.⁶ In other words, unlike other countries where commercial banks and Islamic banks were hard to distinguish, in Turkey they were kept separate. In fact, until the Erdogan government in

⁵http://www.tuik.gov.tr/PreTablo.do?tb_id=39&ust_id=11

⁶Please refer to Participation Banks Association of Turkey at <http://www.tkbb.org.tr/en/> for more information about the Islamic banking in Turkey.

TABLE 6.2: **Number of Mosques in Turkey**. Source: Presidency of Religious Affairs available at <http://www.diyenet.gov.tr/english/default.asp>

Year	Number of mosques	Change
1998	73,772	
1999	74,356	0.79%
2000	75,002	0.87%
2001	75,369	0.49%
2002	75,941	0.76%
2003	76,445	0.66%
2004	77,151	0.92%
2005	77,777	0.81%
2006	78,608	1.07%
2007	79,096	0.62%

2005, these “special finance houses” were not allowed to use the name “bank”. It was also illegal to use the name Islamic bank’. While deposit insurance privileges were available to the depositors of commercial banks, special finance houses opted out of the deposit insurance due to Shari’ah rules about the Islamic banking. Due to frequent financial crises around the world and in Turkey (i.e. Thai and Russian crisis of 2001), deposit insurance became quite valuable for the depositors. This limited the special finance houses’ growth. With the Erdogan government, in 2005, special finance houses were given a bank status and brought under the deposit insurance umbrella (even though Shari’ah laws did not change or receive new interpretation). Their name was changed from “special finance house” to “participation bank”. However, commercial banks and participation banks were still kept separate.

Table 6.3 provides the quarterly changes in deposits collected (converted to USD) by commercial banks and participation banks operating in Turkey.⁷ It can be argued that the limited growth of Islamic banks in Turkey before 2005 was due

⁷In our analysis, we use the monthly data which can be obtained from the Central Bank of Turkey (<http://www.tcmb.gov.tr/>). We provide the quartely data for compactness purposes.

to the lack of deposit insurance. Thus, it had no bearing on the religious preferences of the public in their day-to-day trade and savings. Also, it can be argued that Turkish investors were new to the idea and that this unfamiliarity kept it limited. In 2001, the license of the largest “special finance house”, Ihlas Finance House⁸ (IFH) was revoked. Since 2001, IFH is still liquidating and deposit repayments are pending. Thousands of depositors lost their life saving due to the absence of deposit insurance. IFH liquidation is another reason why Islamic banks in Turkey could not flourish. Turkish Islamic banks have offered deposit insurance since 2005, removing the most important challenge in their growth. The figures in Table 6.3 show that since 2006, commercial banks have grown 3.85 percent per quarter for a total of 47.59 percent, while Islamic banks have grown 6.60 percent per month for a total of 94.99 percent. Considering the leveled playing field for commercial and Islamic banks, the higher growth rate shows the tendency of public to consider Islamic finance as an alternative to traditional banking.

Along with the religious tendencies of the general public, the recent Erdogan government’s religious tendency also needs to be evaluated. While most of the parliamentary representatives of the Justice and Development Party either came from Virtue Party (Fazilet Partisi) which has been closed by the Constitutional High Court⁹ due to its un-secular and radical religious acts, Prime Minister Recep Tayyip Erdogan has served a prison term due to citing a religious poem that calls for Islamic movement. More recently, in 2008, the Justice and Development Party was tried by the Constitutional High Court for its actions against secularism. Some parliamentary representatives of the Justice and Development Party were accused of pro Shari’ah speeches and actions. The Constitutional High Court ruled not

⁸Please refer to <http://www.ifk.com.tr/> for more information about the history and liquidation process of this special finance house.

⁹June 22, 2001 available at www.anayasa.gov.tr

TABLE 6.3: Quarterly change in the deposits collected (converted to USD) by commercial and Islamic banks operating in Turkey. Source: Central bank of Turkey and available through <http://www.tcmb.gov.tr/>

Date	Commercial Banks		Islamic Banks	
	Total Deposits (Billions of USD)	Change	Total Deposits (Billions of USD)	Change
2006 - Q1	176.8		6.2	
2006 - Q2	178.6	0.99%	6.6	5.56%
2006 - Q3	175.5	-1.71%	6.7	2.14%
2006 - Q4	189.9	8.15%	7.5	11.29%
2007 - Q1	206.2	8.62%	8.0	6.68%
2007 - Q2	225.2	9.20%	9.2	15.11%
2007 - Q3	242.7	7.78%	10.4	12.61%
2007 - Q4	267.8	10.32%	12.1	16.57%
2008 - Q1	282.6	5.54%	12.9	6.74%
2008 - Q2	285.0	0.86%	13.5	5.10%
2008 - Q3	305.3	7.12%	14.3	5.88%
2008 - Q4	261.0	-14.50%	12.2	-15.13%

to close the political party, but to impose a fine. This ruling is considered to be evidence of the religious tendency of the current Turkish government.

6.5 International Integration and Increased Religious Tendencies?

Within the previous sections the discussion established the ongoing relationship between Turkey and the EU as well as the increased religious tendencies of the Turkish public and the current government. In this second section, the emphasis is towards establishing the different levels of integration with the western world during different Turkish governments. The traditional integration literature measures integration through either co-integration or correlation.

In this study, the underlying assumption is that the public builds an opinion about the domestic market based on international and domestic events. A higher level of integration leads to Granger (1969) type causation. The domestic market simply follows the foreign market. If the Turkish economy or Turkish financial

markets are dependent on US financial markets, then it will follow the US markets. Instead, if it is dependent on the European financial markets, then it will simply follow the European markets. The daily data provides robustness and reliability over traditional methods that employ quarterly or monthly economic variables. While the correlation between the markets provides an alternative measure of integration, causality shows market dependence.

6.6 Data

Data are obtained from Reuters' Quotecenter application for several financial markets along with Istanbul Stock Exchange (Istanbul Menkul Kıymetler Borsası) (IMKB). European market indices include; FTSE 100 (FTSE) from the U.K., DAX (GDAXI) from Germany, CAC 40(FCHI) from France, and SMI (SSMI) from Switzerland. Since the EU and the US are competing markets, causality of the US markets towards IMKB is also examined. American market indices include NYSE composite (NYA), NASDAQ composite (IXIC), S&P 500 (GSPC) and Dow Jones Industrial Average (DJI).

The daily data are available for IMKB beginning on October 30, 1987. Thus, other markets are also limited to the period starting from October 30, 1987 and ending in December 31, 2008. This period starts with the second Ozal government and covers 15 Turkish governments up to the current government. Table 6.4 provides the correlations between IMKB and foreign markets. It is interesting to note the statistically significant correlation of IMKB with German, French and Swiss markets for 47th (Akbulut gov.), 48th (Yilmaz gov.), and 49th (Demiral gov.) governments during November 1989 and June 1993 period. During this time, IMKB has no correlation with the American markets. Almost no correlation exists between IMKB and foreign markets evaluated here for the period between June 1993

and June 1997. This period's governments are 50th – 54th. Only the 54th government, which is the Erbakan government, can be categorized as religious right. After June 1997, the correlation between IMKB and both European and American markets is evident, except for the short-lived Ecevit's 56th and Gul's 58th governments, which lasted less than 5 month each.

It is interesting to note that correlations have generally positive but alternating signs. Overall European markets average statistically significant correlation coefficient is 0.2861 while it is 0.2192 for the American markets. During the second Erdogan government, the statistically significant correlation coefficients' average is increased to 0.3894 for the American markets and 0.6695 for the European markets. Based on the correlations between IMKB and the European and the American markets, it can be concluded that Turkish financial markets are becoming more and more integrated with the western world.

6.7 Model and Empirical Findings

At this stage the question is the impact of different governments on international integration, and specifically with the EU. The correlation analysis is also extended to causality to evaluate the dependence of Turkish markets on the European and the American markets. However, it is expected that during some Turkish governments, the US markets will have causing effect and during some other Turkish governments, the EU markets will have causing effect. There are two hypotheses;

Hypothesis 6.1. *Foreign financial markets do not Granger (1969) type cause Turkish financial markets?*

Hypothesis 6.2. *Religious tendencies of the governments do not matter in the Granger (1969) type causality from the US and the EU markets?*

TABLE 6.4: Correlations of foreign financial markets included in the study with the Istanbul Stock Exchange. Source of the data is Reuters' Quotecenter application. European market indices include; FTSE 100 (FTSE) from the U.K., DAX (GDAXI) from Germany, CAC 40(FCHI) from France and SMI (SSMI) from Switzerland. American market indices include; NYSE composite (NYA), NASDAQ composite (IXIC), S&P 500 (GSPC) and Dow Jones Industrial Average (DJI). Source for the governments: Grand National Assembly of Turkey available through http://www.tbmm.gov.tr/kutuphane/e_kaynaklar_kutumetler.html. Source for the prime ministers: Grand National Assembly of Turkey available through <http://www.tbmm.gov.tr/kutuphane/baskanlarimiz.html>. ”**”*” refers to statistical significance at 1%, ”***” at 5% and ”**” at 10%.

Government	Term	Coalition?	Prime Minister	NYA	IXIC	GSPC	DJI	FTSE	GDAXI	FCHI	SSMI
46 II. Ozal Huk.	12/21/1987	No	Turgut OZAL	0.0465	0.0764	0.0447	0.0500	0.0372	0.3713	0.1291	0.2102
47 Akbulut Huk.	11/9/1989	No	Yildirim AKBULUT	0.0556	0.0528	0.0485	0.0427	0.0768	0.2785	-0.0343	0.2382
48 I. Yilmaz Huk.	6/23/1991	No	A. Mesut YILMAZ	0.0635	0.1151	0.0604	0.0343	0.1183	-0.0734	-0.0050	-0.1104
49 VII. Demirel Huk.	11/21/1991	No	Suleyman DEMIREL	-0.0447	-0.0795	-0.0387	-0.0112	-0.0364	-0.0674	-0.0234	-0.0470
50 I. Ciller Huk.	6/25/1993	Yes	Dr. Tansu CILLER	0.0008	-0.0333	0.0043	0.0230	0.0426	-0.0414	-0.3061	0.1709
51 II. Ciller Huk.	10/5/1995	No	Dr. Tansu CILLER	-0.0708	0.0702	-0.1174	-0.1077	-0.0225	-0.0205	0.0378	0.0665
52 III. Ciller Huk.	10/30/1995	Yes	Dr. Tansu CILLER	-0.1245	-0.0687	-0.1195	-0.1374	-0.0245	-0.0205	0.0378	0.0665
53 II. Yilmaz Huk.	3/6/1996	Yes	A. Mesut YILMAZ	0.0099	0.0264	-0.0089	-0.0214	0.1369	0.1089	0.2396	0.0818
54 Erbakan Huk.	6/28/1996	Yes	Dr. Necmettin ERBAKAN	-0.0785	-0.0248	-0.0833	-0.0946	-0.1559	-0.0590	-0.0609	-0.0866
55 III. Yilmaz Huk.	6/30/1997	Yes	A. Mesut YILMAZ	0.2647	0.2600	0.2259	0.2289	0.4103	0.3634	0.4250	0.3994
56 IV. Ecevit Huk.	1/11/1999	No	Bulent ECEVIT	-0.1290	-0.1403	-0.1357	-0.1271	0.0203	-0.0456	-0.1045	0.0578
57 V. Ecevit Huk.	5/28/1999	Yes	Bulent ECEVIT	0.0828	0.1364	0.0912	0.0707	0.1713	0.1801	0.1912	0.1428
58 Gul Huk.	11/18/2002	No	Abdullah GUL	0.0846	0.0811	0.0922	0.0866	0.0351	0.0948	0.1086	-0.0455
59 Erdogan Huk.	3/14/2003	No	Recep Tayyip ERDOGAN	0.2002	0.1356	0.1307	0.1226	0.3414	0.2843	0.3038	0.2630
60 II. Erdogan Huk.	8/29/2007	No	Recep Tayyip ERDOGAN	0.4290	0.3550	0.3888	0.3848	0.6878	0.6624	0.6841	0.6438

In order to test the first hypothesis, Granger (1969) type causality using a vector autoregressive (VAR) model (Sims, 1980) is estimated. For each exchange, in order to establish stationarity, daily returns for stock exchanges' indices are calculated. This return is calculated for each day and for each of the stocks indices included in the study. Since four European markets and four American markets are included in the sample, the VAR model is estimated for each of the eight markets. Since these eight markets are potentially correlated with each other, foreign markets are evaluated one by one for their Granger (1969) type causality with the IMKB. Also, since the sample period starts from December 1987 and ends at December 2008, it includes 15 Turkish governments. Thus, the above model is re-estimated for each of the eight foreign markets and each of the 15 Turkish governments for a total of 120 Granger (1969) type causality estimations.

In order to select the correct lag lengths for the IMKB returns and for the foreign markets, each estimation (for each index and for each government) is estimated using a high number of lag lengths following Enders (2003). Then, based on the statistical significance of the highest lag length, lags that are not statistically significant are eliminated. This method is repeated until the AIC (Akaike, 1974) criterion is minimized and white noise residuals are obtained. Also, as a robustness check to this method Ng and Perron (2001) method is used to find the highest lag length. The Granger (1969) type causality is tested using a Wald test (Enders, 2003) which evaluates the combined significance of potentially causing variable's coefficients.

Table 6.5 provides the results for the estimation of the Granger (1969) type causality using VAR model (Sims, 1980) as specified above for each of the 15 Turkish governments since 1987 and for each of the eight foreign markets. It is interesting to note that during the Akbulut's 47th, Yilmaz' 55th and Erdogan's

59th governments, (either all or majority of) the European and American markets Granger cause the Turkish market. This is evidence towards international integration. During the Demirel's 49th, Ciller's 50th and 52nd, Yilmaz' 53rd, Erbakan's 54th, Ecevit's 56th and Gul's 58th governments, there is no causality from either the EU markets or the US markets.

During Yilmaz' 48th, Ecevit's 57th and Erdogan's current (60th) governments, while the US markets Granger cause the Turkish market, EU markets do not. Interestingly, while during Erdogan's 59th government the causality was both from the European and the American markets, during his 60th government there is no causality from the European markets. This difference between 59th and 60th governments, in terms of causation from the European markets, provides the answer for the second hypothesis. Within the initial parts of this study, it was argued that religious tendencies are on the rise since 2006 for the Turkish public. It was also argued that for the Justice and Development Party, religious tendency was officially declared by the Constitutional High Court in 2007. Thus, it is concluded that for the 59th government, a religious party in government is part of the democratic process. Within the increasing international integration of the Turkish republic, international markets welcome the level of democracy in Turkey. Thus, in this period, Turkish markets were highly integrated with the US as well as with the EU markets.

During the 60th government, however, the international worries over the rise of Islam in Turkey and the Justice and Development Party's self confident policies slow Turkey's EU process and start the disintegration process. Thus, along with the slowing EU talks and pending reforms, Turkish markets lose confidence in the EU markets and focus solely on the long-time ally, the US.

TABLE 6.5: Granger causality estimation results. Source of the data is Reuters' Quotecenter application. European market indices include; FTSE 100 (FTSE) from the U.K., DAX (GDAXI) from Germany, CAC 40(FCHI) from France and SMI (SSMI) from Switzerland. American market indices include; NYSE composite (NYA), NASDAQ composite (IXIC), S&P 500 (GSPC) and Dow Jones Industrial Average (DJI). L refers to lag of 1, 2 or 3. FR refers to the foreign market estimated. *** refers to statistical significance at 1%, ** at 5% and * at 10%.

Government	Term	FR	L1:IMKB	L2:IMKB	L3:IMKB	L4:IMKB	L1:FR	L2:FR	L3:FR	L4:FR	C	R2	Wald
46 II. Ozal Gov.	12/21/1987 - 11/9/1989	NYA	0.3515 ***	-0.1715 ***	0.0393	0.0655	0.0616	0.1455	-0.3451 **	-0.0808	0.0015	0.1363	7.6390
		IXIC	0.3566 ***	-0.1537 ***	0.0393	0.0657	0.1148	-0.0178			0.0016	0.1181	0.3044 *
		GSPC	0.3517 ***	-0.1714 ***	0.0377	0.0661	0.0552	0.1462			0.0015	0.1369	7.9603 *
		DJI	0.3499 ***	-0.1701 ***	0.0377	0.0661	0.0342	0.0864			0.0016	0.1371	8.0164 *
		FTSE	0.3670 ***	-0.1454 ***			-0.0928	-0.2575 *			0.0017	0.1302	3.7852 ***
47 Akbulut Gov.	11/9/1989 - 6/23/1991	NYA	0.2384 ***	-0.1196 **			0.6157 ***	0.0961		0.0022	0.0934	11.0575 ***	
		IXIC	0.2387 ***	-0.1163 **			0.4456 ***	0.1438		0.0023	0.0877	8.7561 ***	
		GSPC	0.2398 ***	-0.1193 **			0.5664 ***	0.0891		0.0022	0.0933	11.0276 ***	
		DJI	0.2377 ***	-0.1175 **			0.6219 ***	0.1071		0.0022	0.1011	14.2102 ***	
		FTSE	0.2273 ***	-0.0768			0.1150	0.3280 *		0.0015	0.0615	3.1719 *	
48 I. Yilmaz Gov.	6/23/1991 - 11/20/1991	GDAXI	-0.0362	-0.0272			0.5452 **	0.3032		-0.0009	0.0519	5.9090 *	
		FCHI	0.1497 **	0.0092			0.3885 ***	0.2216		0.0001	0.0752	10.9017 ***	
		SSMI	-0.0580	-0.0447			0.5639 **	0.6705 **		-0.0042	0.0742	10.3216 ***	
		NYA	0.1746 *	-0.0782			-0.5559	0.8753 **		-0.0003	0.0822	6.1800 ***	
		IXIC	0.1967 **	-0.0943			-0.6060 *	0.9238 ***		-0.0007	0.1154	9.8740 ***	
49 VII. Demirel Gov.	11/21/1991 - 6/25/1993	GSPC	0.1732 *	-0.0766			-0.4812	0.7816 **		-0.0003	0.0808	6.0336 **	
		DJI	0.1691 *	-0.0685			-0.4609	0.6894 *		-0.0002	0.0746	5.3788 *	
		FTSE	0.1660	-0.1199			-0.7398 *	0.0899		0.0006	0.0594	3.1551 *	
		GDAXI	0.1170	-0.1714			0.2283	0.2851		0.0002	0.0550	1.9798	
		FCHI	0.1292	-0.1218			-0.1644	0.0591		0.0016	0.0293	0.1958	
50 I. Ciller Gov.	10/5/1995 - 10/30/1995	SSMI	0.0759	-0.0104			0.0579	0.2308		0.0000	0.0152	0.7139	
		NYA	0.1197 **	0.0050			-0.1557	0.0921		0.0028 *	0.0159	0.4740	
		IXIC	0.1235 **	0.0009			0.0849	-0.1366		0.0028 *	0.0165	0.6619	
		GSPC	0.1200 **	0.0047			-0.1162	0.0871		0.0028 *	0.0157	0.3862	
		DJI	0.1219 **	0.0043			-0.1681	0.1347		0.0028 *	0.0174	0.9771	
51 II. Ciller Gov.	10/5/1995 - 10/30/1995	FTSE	0.1357 ***	-0.0942 *			0.0384	-0.0877		0.0032 **	0.0246	0.3690	
		GDAXI	0.1456 ***	-0.1048 **			0.0470	-0.0196		0.0023	0.0279	0.0837	
		FCHI	0.1555 ***	-0.1058 **			-0.0420	-0.0356		0.0027 *	0.0318	0.2107	
		SSMI	0.1557 ***	-0.0956 *			0.1236	-0.0667		0.0025 *	0.0298	0.5544	
		NYA	0.2411 ***	-0.0435			0.0588	0.0879		0.0021	0.0547	0.1725	
52 III. Ciller Gov.	10/30/1995 - 3/6/1996	IXIC	0.2402 ***	-0.0417			-0.0234	0.1448		0.0021	0.0555	0.5980	
		GSPC	0.2410 ***	-0.0435			0.0600	0.1045		0.0021	0.0549	0.2518	
		DJI	0.2414 ***	-0.0434			0.0126	-0.0617		0.0022	0.0546	0.0790	
		FTSE	0.2466 ***	-0.0824 *			0.1919	0.1733		0.0017	0.0623	2.1716	
		GDAXI	0.2750 ***	-0.0969 **			-0.2055	0.1230		0.0015	0.0765	3.0976	
53 III. Ciller Gov.	10/30/1995 - 3/6/1996	FCHI	0.2623 ***	-0.0653			0.0061	0.0049		0.0014	0.0639	0.0040	
		SSMI	0.2773 ***	-0.0911 **			0.1659	-0.0208		0.0016	0.0720	1.1899	
		NYA	-0.1300	-0.0874 **			1.2244	2.2328 *		0.0044	0.1964	3.8615 ***	
		IXIC	-0.1309	-0.3175 **			1.6641 ***	-0.9329 *		0.0009	0.8580	72.6248 ***	
		GSPC	-0.0911	-0.1096			1.3039	1.7093		0.0030	0.1501	2.7795	
54 III. Ciller Gov.	10/30/1995 - 3/6/1996	DJI	-0.0962	-0.0506			1.4529	1.5800		0.0027	0.1600	2.9995	
		FTSE	-0.6191 ***	-0.1883			0.8513	2.3049 ***		0.0046	0.6808	31.4019 ***	
		GDAXI	-0.1991	0.0155			0.8114 *	1.0947 **		0.0068	0.3219	7.5359 **	
		FCHI	-0.0038	-0.0089			0.2506	0.0468		0.0017	0.0090	0.1051	
		SSMI	-0.0771	-0.0795			0.4297	1.0628		0.0007	0.1039	1.8107	
NYA	0.0474	0.0532			-0.1383	-0.9937 *		0.0050	0.0540	3.8986			

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Table 6.5 – continued from previous page

Government	Term	FR	L1.I MKB	L2.I MKB	L3.I MKB	L4.I MKB	L1.FR	L2.FR	L3.FR	L4.FR	C	R2	Wald		
53 II. Yılmaz Gov.	3/6/1996	6/28/1996	IXIC	0.0447	0.0512			-0.1618	-0.4566 *			0.0033	0.0453	3.1604	
			GSPC	0.0425	0.0383			-0.2070	-0.9103 **				0.0049	0.0600	4.4240
			DJI	0.0684	0.0201			0.1133	-0.8755 **				0.0048	0.0592	4.3597
			FTSE	0.0550	0.1180			0.2447	-0.2392				0.0028	0.0219	0.4209
			GDAXI	0.0503	0.1108			-0.0806	-0.2002				0.0034	0.0202	0.2801
			FCHI	0.0935	0.0893			-0.2707	-0.0052				0.0031	0.0288	0.8944
			SSMI	0.0549	0.0979			-0.2848	-0.2430				0.0036	0.0240	0.7279
			NYA	-0.0022	0.1019			-0.0159	-0.0209				0.0010	0.0096	0.0045
			IXIC	-0.0024	0.1068			-0.0949	-0.0817				0.0011	0.0125	0.2024
			GSPC	-0.0022	0.1017			-0.0129	-0.0257				0.0010	0.0097	0.0065
54 Erbakan Gov.	6/28/1996	6/30/1997	DJI	-0.0022	0.1171			-0.1904	-0.0773			0.0011	0.0150	0.3704	
			FTSE	0.0061	0.0758			0.1164	0.3725			0.0014	0.0214	0.8572	
			GDAXI	0.0782	0.0985			-0.5756 *	-0.0716			0.0004	0.0480	2.9176	
			FCHI	0.1256	0.0102			-0.1580	0.3437			0.0009	0.0340	1.4464	
			SSMI	0.1030	0.0854			-0.3686	0.0511			0.0011	0.0392	1.8968	
			NYA	0.0928	0.0253			0.3338	0.0916			0.0027	0.0193	2.3975	
			IXIC	0.0840	0.0282			0.0510	0.1823			0.0031 *	0.0146	1.3601	
			GSPC	0.0938	0.0249			0.2884	0.0566			0.0028	0.0178	2.0602	
			DJI	0.0965	0.0246			0.2908	0.0019			0.0029	0.0176	2.0313	
			FTSE	0.0722	0.0669			0.0973	0.1599			0.0032 *	0.0115	0.4981	
55 III. Yılmaz Gov.	6/30/1997	1/11/1999	GDAXI	0.0886	0.0534			0.0968	0.2465			0.0029	0.0183	1.8095	
			FCHI	0.0831	0.0253			0.1598	0.0774			0.0033 *	0.0126	1.1039	
			SSMI	0.0847	0.0313			0.2554	0.3695			0.0024	0.0284	4.4704	
			NYA	-0.0875	0.0442			0.7944	0.0180		0.1688		0.0000	0.0619	20.7584
			IXIC	-0.0900	0.0402			-0.0214	0.0470			-0.0004	0.0566	19.3110	
			GSPC	-0.0771	0.0452			0.5738	0.0470			-0.0001	0.0601	20.0762	
			DJI	-0.0828	0.0482			0.7084	0.0224		0.1157		0.0066	0.0411	0.3013
			FTSE	-0.0494	0.0451			0.3855	0.0500			0.5027	0.0001	0.0576	19.6779
			GDAXI	-0.0294	0.0447			0.7855	-0.1167		0.1784		-0.0001	0.0575	13.9045
			FCHI	-0.0402	0.0525			0.1348	0.0194				0.0001	0.0062	1.3297
56 IV. Ecevit Gov.	1/11/1999	5/28/1999	SSMI	-0.0307	0.0128			0.2053	-0.0110			0.0004	0.0427	10.4089	
			NYA	-0.1101	0.1528			0.1060	0.1139			-0.0006	0.0633	17.0798	
			IXIC	-0.1127	0.1446			0.1060	-0.0572		0.0757		0.0068 *	0.0379	0.0626
			GSPC	-0.1112	0.1523			-0.0797	-0.0572				0.0066	0.0411	0.3013
			DJI	-0.1011	0.1459			-0.0442	-0.1086				0.0066	0.0411	0.3013
			FTSE	-0.0588	0.1661			0.7681	0.0150				0.0068	0.0400	0.2243
			GDAXI	-0.0732	0.1307			0.7681	-0.2147				0.0081 *	0.0902	5.0854
			FCHI	-0.0525	0.1237			-0.1265	0.0806				0.0079 *	0.0269	0.3142
			NYA	-0.0625	0.1244			-0.1265	-0.4343				0.0082 *	0.0659	3.0914
			SSMI	-0.0297	0.1244			0.3999	-0.4343				0.0083 *	0.0268	0.3098
57 V. Ecevit Gov.	5/28/1999	11/18/2002	NYA	0.0297	-0.0194			0.4710	-0.0996			0.0021	0.0296	20.7639	
			IXIC	0.0173	-0.0217			0.2753	-0.0556			0.0020 *	0.0437	32.0013	
			GSPC	0.0278	-0.0181			0.4355	-0.0901			0.0021 *	0.0352	25.1574	
			DJI	0.0320	-0.0186			0.4192	-0.0915			0.0020	0.0310	21.8178	
			FTSE	0.0090	0.0169			0.1725	-0.1070		0.1609 *		0.0010	0.0116	7.5615
			GDAXI	0.0165	0.0400			0.1211	-0.0506				0.0012	0.0068	3.7681
			FCHI	0.0205	0.0322			0.1011	-0.0504				0.0017	0.0046	2.2962
			SSMI	0.0221	0.0366			0.0648	-0.0275		0.0905		0.0008	0.0052	1.5138
			NYA	-0.1537	-0.1950 *			-0.3708	-0.2022				-0.0071 *	0.0964	1.9344
			IXIC	-0.1554	-0.2160 *			-0.1777	-0.1607				-0.0067 *	0.0869	1.2471
58 Gul Gov.	11/18/2002	3/14/2003	GSPC	-0.1523	-0.2002 *			-0.3163	-0.1832			-0.0069 *	0.0943	1.7809	
			DJI	-0.1515	-0.2010 *			-0.3156	-0.1664			-0.0069 *	0.0928	1.6707	
			FTSE	-0.1325	-0.1575			-0.3128	-0.0305				-0.0057 *	0.0754	2.3581
			GDAXI	-0.1696	-0.1589			-0.2743 *	-0.0500				-0.0072 *	0.1037	3.3524
			FCHI	-0.1299	-0.1376			-0.2080	-0.0979				-0.0059	0.0642	1.5393
			SSMI	-0.1552	-0.0798			-0.5046	-0.1465				-0.0088 **	0.0910	4.7958
			NYA	-0.0650 **	0.0304			0.6417	0.0830				0.0009	0.0693	72.2270
			IXIC	-0.0389	0.0328			0.4378	0.0305				0.0011 *	0.0580	59.4422

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Table 6.5 – continued from previous page

Government	Term	FR	L1.IMKB	L2.IMKB	L3.IMKB	L4.IMKB	L1.FR	L2.FR	L3.FR	L4.FR	C	R2	Wald
		GSPC	-0.0502	0.0359	0.0331		0.6366 ***	0.1222			0.0010 *	0.0701 *	73.0817 ***
		DJI	-0.0437	0.0331	0.0331		0.6033 ***	0.1145			0.0010 *	0.0601	61.8146 ***
		FTSE	-0.0367	0.0337	0.0337		0.2335 ***	-0.0774			0.0012 **	0.0115	10.9769 ***
		GDAXI	-0.0418	0.0339	0.0339		0.1658 ***	-0.0761			0.0012 **	0.0133	13.0324 ***
		FCHI	-0.0487	0.0137	0.0137		0.2002 ***	0.0262			0.0013 **	0.0112	10.9538 ***
		SSMI	-0.0377	0.0235	0.0235		0.1375 **	-0.0082			0.0013 **	0.0051	4.0767 ***
		NYA	-0.1030 *	0.0198	0.0198		0.3497 ***	-0.0124			-0.0016	0.1017	38.4040 ***
		IXIC	-0.1070 *	0.0028	0.0028		0.4012 ***	0.0391			-0.0016	0.1260	49.1552 ***
		GSPC	-0.1073 *	0.0144	0.0144		0.3941 ***	0.0120			-0.0016	0.1181	45.5893 ***
		DJI	-0.1071 *	0.0125	0.0125		0.4249 ***	0.0238			-0.0015	0.1153	44.3283 ***
		FTSE	0.0524	0.0103	0.0103	0.0373	0.0190	-0.0793	-0.1867 **	0.0170	-0.0020	0.0292	5.3552 ***
		GDAXI	-0.0144	-0.0104	-0.0104	-0.0100	0.1066	-0.0428	-0.1295		-0.0022 *	0.0244	4.7646
		FCHI	0.0400	0.0110	0.0110	0.0333	0.0360	-0.0634	-0.1586 *	-0.0271	-0.0021	0.0284	4.8502
		SSMI	0.0296	0.0087	0.0087	0.0112	0.0348	-0.1269	-0.1713 *	-0.0563	-0.0024 *	0.0367	6.8659

60 II. Erdogan Gov. 8/29/2007

6.8 Conclusion

Challenges exist to measure the effect of religion on politics and economics. The traditional proxies for the level of religious tendency are not free of bias. Islamic banking (vs. commercial banking) in Turkey provides a unique measure of public religious tendency. Also, a government that is elected to office twice and penalized by the Constitutional High Court on the second time is also unique. It provides a measure for the level of government's religious tendency as defined by law. Two reliable measures of religion and international integration, the EU in particular, are evaluated for Turkey. European and American financial markets' causality towards the Turkish market is evaluated. The underlying assumption is that; if the public perceives the foreign market to be integrated then the foreign market will be followed. The [Granger \(1969\)](#) type causalities are estimated for 15 Turkish Governments, for 4 European markets and for 4 American markets.

The evidence shows that the Turkish government, especially the Justice and Development Party (JDP), became more religiously oriented. The public also became more religious as evident by the Islamic banking deposits as well as increased votes for the JDP on the 2007 elections. In terms of the impact of religion on the international integration, if Turkey is internationally integrated then it is influenced by the US. However, the impact of the EU varies. For two governments of Erdogan, 59th and 60th, the integration with the EU disappeared as Erdogan's party's religious orientation became evident. Even though the markets are still correlated, the causality did not exist for the 60th government. This implies that as Turkey moves away from its secular status, its economic and political ties with the western world are severed. Also, as JDP became more "Islamist", it may no longer be perceived as a welcomed part of the democratic process. As for future research, it may be interesting to evaluate the similar venue for other major religions.

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