

Impact of Terrorism on FDI Inflows: A Case Study of OIC Countries (1990-2014)



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AUTHORSHIP STATEMENT

I _____ declare and affirm on oath that this work contains no material which has been accepted for the award of any other degree or diploma in my name, in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text. In addition, I certify that I myself have authorized this M. Phil thesis with my own work and means, and I have not used any further means except those that I have explicitly mentioned in the report.



In the Name of Allah, the Most Gracious, the Most Merciful

DEDICATED TO

My Amma and Baba

*For their endless love, support and their precious prayers;
and most of all, for the trust that they have on me
and for always believing in me and treating me like a son.*

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For the support throughout the degree,
either it was for my studies or even my personal matters;
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ABSTRACT

OIC countries face many problems and challenges in attracting the FDI inflows, out of which terrorism appears to be an important one. The present study tries to empirically estimate the impact of terrorism on FDI inflows of the OIC countries by using a panel data for a group of 43 OIC Countries during the period 1990-2014. Other than terrorism, the model of the study also includes a set of control variables as the determinants of FDI, namely, market size, inflation, infrastructure, trade openness, institutional quality, political instability, human capital, gross fixed capital and exchange rate. For the estimation purpose, Panel Cointegration method and Dynamic OLS techniques are employed in order to check for the presence of long run relationship among the variables of the model and Panel ECM is employed to check the impact during the short run. Panel causality tests are also employed to check for the direction of relationship between FDI inflows and terrorism of OIC countries. The main empirical results of the independent variable of terrorism confirm the point that terrorism discourages the FDI inflows of OIC Countries over time. Moreover, according to the long run estimates, the control variables of inflation, market size, infrastructure, trade openness, institutional quality and fixed capital show a positive and significant impact on the FDI inflows of OIC countries. However, human capital has a positive but insignificant impact on the inward FDI of these countries and exchange rate and political instability are negatively and significantly affecting the FDI inflows. During the short run, all the variables have their expected signs (relation with FDI) including terrorism, yet, only exchange rate, market size and trade openness appear to be significant. In addition, two-way causality exists among terrorism and FDI inflows of OIC countries. The most significant point of the study is the inclusion of all terrorist ridden Muslim countries together. Future research may be carried out in order to investigate the effects of terrorism on individual OIC countries to get hold of more specific and precise results.

Key Words: *FDI, Terrorism, Panel Cointegration, Panel ECM, Causality, OIC Countries*

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ABBREVIATIONS AND ACRONYMS

ADF	Augmented Dickey Fuller
ARDL	Autoregressive Distributed Lag
ARMA	Autoregressive Moving Averages
BRICS	Brazil, Russia, India and China economies
CPI	Consumer Price Index
DF	Dickey Fuller
DOLS	Dynamic Ordinary Least Square
ECM	Error Correction Mechanism
ECT	Error Correction Term
ER	Exchange Rate
FDI	Foreign Direct Investment
FMOLS	Fully Modified Least Square
GDP	Gross Domestic Product
GFC	Gross Fixed Capital
GNP	Gross National Product
GTI	Global Terrorism Index
GTIR	Global Terrorism Index Report
HC	Human Capital
HNC	Homogeneous Non-Causality
ICRG	International Country Risk Guide

IMF	International Monetary Fund
INFRA	Infrastructure
INST	Institutional Quality
IPS	Im, Pesaran and Shin
LDC	Least Developed Countries
LLC	Levin, Lin and Chu
MS	Market Size
OECD	Organization for Economic Cooperation and Development
OIC	Organization of Islamic Countries
OLI	Ownership, Location and Internalization
OLS	Ordinary Least Square
PI	Political Instability
PP	Phillips Peron
SAARC	South Asian Association & Regional Cooperation
SESERIC	Statistical, Economic and Social Research and Training Centre for Islamic Countries
TER	Terrorism
TO	Trade Openness
UNCTAD	United Nations Cooperation for Trade and Development
USD	US Dollars
VAR	Vector Autoregressive
VECM	Vector Error Correction Mechanism

CHAPTER 1

“Terrorism is a psychological warfare. Terrorists try to manipulate us and change our behavior by creating fear, uncertainty, and division in society”. (Patrick J. Kennedy)

INTRODUCTION

Recently terrorism has become a highly noticeable phenomenon especially after huge disastrous happenings, for example, September 11 attacks, in the US during 2001 or the March 11 bombings in a train in Madrid (Spain) during 2004. These events significantly shook the existing political atmosphere and lead to massive economic and political effects worldwide. There were rising concerns about the problem of terrorism due to these incidents, and it was clearly seen that terrorist attacks mark the economic consequences in short run as well as long run.¹ It results in an instant loss of capital (human and non-human) in the short run and also creates an environment of uncertainty because of which consumers and investors are both affected. While in the long run it increases the security costs and anti-terrorism expenditures along with other long run costs.

1.1. Overview of Terrorism

Terrorism is basically the vigilant use of violence and aggression or even just the threat of using them, by some individuals or certain groups to fulfill some specific kind of social and political objectives by terrorizing the common community plus the immediate targets. Terrorist activities include bombings, suicide attacks, kidnapping, hijacking, threats, assassinations and other aggressive activities (Sandler & Enders, 2008).

¹ The 2002 Joint Economic Report by Joint Economic Committee Congress of the United States

It is a worldwide phenomenon. During 2013, 87 countries faced the attacks out of which 60 countries also experienced the fatalities from these attacks. There have been more than 48,000 terrorist episodes during past 14 years in which more than 107,000 lives were lost. This global problem of terrorism is enlarged so dramatically, that just in the year 2013 almost 10000 of such events occurred and caused almost 18000 fatalities. Each one of the most effected countries marked by the Global terrorism index report 2014 seems to suffer from this problem uninterruptedly for no less than 15 years, except Syria of course (GTIR, 2014).

The economic costs linked to this severe problem of terrorism include both direct and indirect costs. Direct costs include loss of lives, injuries, damaged properties and infrastructure along loses of business and commercial activities. Whereas, the indirect costs include, security costs, decline in the growth of economy, rise in unemployment, loss of foreign investments etc.

Hence, while looking at the economic costs of terrorism, the indirect costs must also be considered along with the direct costs. Because terrorist incidents upsurge the market uncertainty of the economy due to which, foreign investment, trade, consumption and savings are all effected. These effects may last for a long time period and may worsen the conditions of developing economies.

Therefore, we can say that, terrorist activities not only cause damage to particular region and country's infrastructure but also destroy the financial wellbeing of the country (Rasheed & Tahir, 2012). Moreover, it exerts negative impact on FDI regardless of the fact whether the source country is developed or a developing economy (Anwar & Mughal, 2013).

1.2. Overview of FDI

The biggest concern of any Economy is growth and development. And foreign direct investment (FDI) of a country plays an important role in that since it is considered to be the lifeline for economic prosperity globally. Talking specifically for the developing countries, FDI is thought to be a blessing for them, since it strengthens the welfare of a country, by increasing the productivity (Shah, 2009; Azam & Ather, 2015), improving the employment situation, trade scenario, introducing new technology in the economy and last but not the least, enhancing the foreign exchange reserves (Mughal & Akram, 2011).

Moreover, Foreign Capital is the basic need of developing countries to fill up the severe gap of savings and investment they face. Back in the old days, they used to get loans for this purpose, from international commercial banks but that trend came to an end with the debt crisis of 1980s and the developing economies were convinced to restructure their policies of investment. They become conscious about the risk related to debt and found that FDI is the most sure and easy mean to attain foreign capital and it is also free of the risk. As a result, FDI became an important source of attracting foreign investors (Khachoo & Khan, 2012). The recent wave of globalization has helped the emerging economies even more to pay attention on the ways or policies that entice FDI in the economy to a greater extent due to which their economies can prosper. But, this works only when foreign investors are confident about investing in an economy; only if they are sure about the security regarding their investment and they have the surety to gain higher profits by investing their capital into that certain economy. Consequently, countries facing the problem of terrorism are hardly attractive to overseas investors due to the connected insecurity (Rasheed & Tahir, 2012).

There are many other studies as well that discussed the role of FDI in some of the OIC countries individually and concluded that FDI is the major ingredient that is used for financing the investments made in developing countries and it is also an important determinant of growth as well; Yet, the quantities of FDI inflows of some developing nations are insufficient, including the member states of OIC.

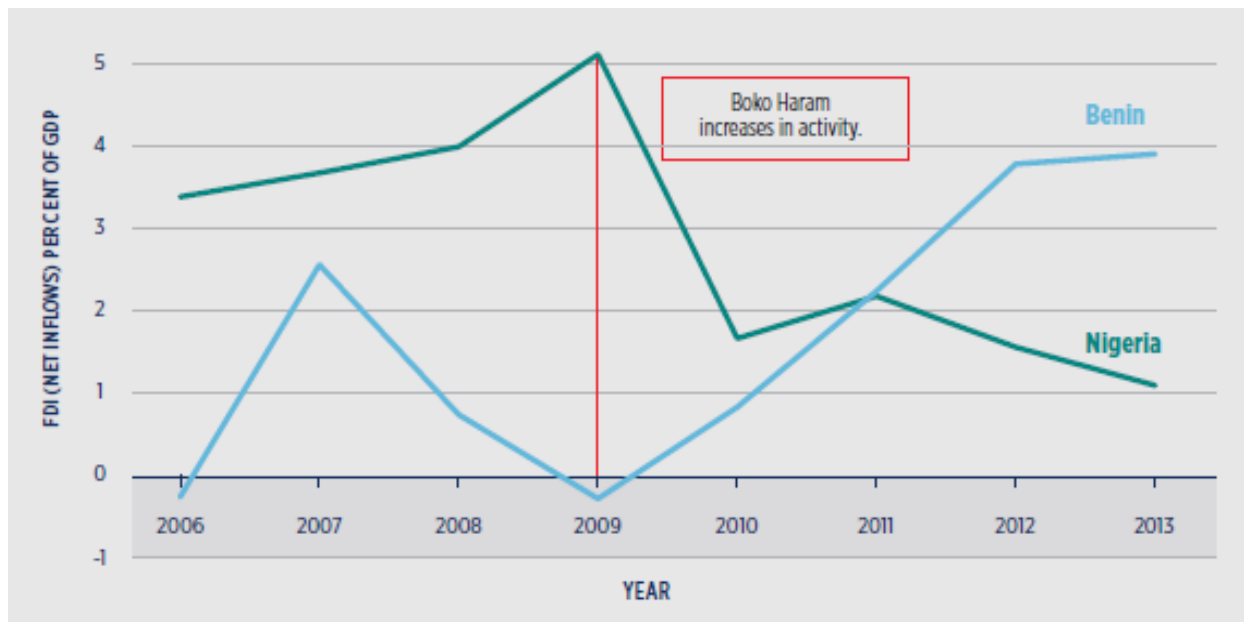
1.3. Link Between FDI and Terrorism

From the above discussion, it is clear that FDI inflows of a country hinges on the investors' sensitivity towards risk and their ability to handle those risks. As terrorism also creates a situation of economic uncertainty, therefore due to a rise in this, foreign capital is diverted from countries with high risk to the countries with low risk. Hence, it points out that terrorism events in the host country damp down the foreign investments. But still the question that specifically how this happens is worth investigating. Terrorism is expected to influence foreign direct investment because it increases the risk involved with an investment (Enders & Sandler, 2003).

Furthermore, we know that terrorism destroys the infrastructure, property and human lives. So the damage to these factors shrinks the probable returns of any investment (Bloomberg et al, 2004). Thus, it can also be presumed that a decline in FDI triggered by terrorist event will, sequentially, effect the economic growth badly. However there are exceptions as well. Some studies showed that the 9/11 terrorist attacks left a very little effect on U.S. FDI (Enders *et al.*, 2006). While some other studies recorded a decrease in FDI flows because of terrorism i.e. in Spain and Greece the FDI fell in the 1980s and 1990s for both nations (Enders & Sandler, 1996). Besides, the effect gave an even more dramatic impression

in Many Muslim OIC countries. The detailed discussion about those countries is provided in the next chapter. Here, we just take Nigeria as an example, where FDI flows of \$6.1 billion dropped in 2010 due to Boko Haram's (a famous terrorist organization) acts of terrorism (Adebayo, 2014). This has been represented in Figure 1.3 below:

Figure 1.3: Percentage changes in FDI of Nigeria and Benin from 2006-2013



Source: GTIR, Institute for Economics & Peace, 2014

The graph shows the percentage FDI of two neighboring OIC countries. We can clearly see that, due to an increase in the terrorist activities of Boko Haram (a famous terrorist organization) in the year 2009, the FDI percentage of Nigeria sharply fell from 5 % to 1 % suddenly whereas that of Benin started to increase. On the contrary, we can take UAE and Maldives as the best examples to support the point that even some of the OIC countries are progressing so well because they don't face the problem of terrorism at all.

Hence, all the evidence shows that investing in the economies that are more fragile and have more volatile behavior towards these activities (developing economies), is a lot more risky. Same will be the case for OIC countries as well, due to the high risks of terrorism that they have been facing since last 15 years.

1.4. Research Questions

Terrorism is expected to influence foreign direct investment because it increases the risk involved with an investment (Enders & Sandler, 2003). Many other authors also delivered theoretical and empirical insights, that there is a significant negative impact of terrorism on FDI inflows of a country (Agrawal, 2011; Rasheed & Tahir, 2012; Shah & Faiz, 2015). Conclusions of all these studies were almost similar. For that reason, various research questions can be raised up, which consist of:

- Does terrorism affect the FDI inflows in case of OIC countries as well?
- If it does, what is the terrorism's effect on the FDI inflows of OIC countries?
- What are the factors other than terrorism that play an important role in determining FDI inflows of OIC countries?
- How can the influence of terrorism be reduced on FDI inflows of these countries?

1.5. Objectives of the Study

This study mainly aims to detect the impact of terrorism on the major capital inflows or foreign direct investment in some of the prominent Muslim countries (OIC member states).

Specific objectives of the study are:

- i. To describe the importance and present situation of Terrorism and FDI inflows in the selected countries.
- ii. To analyse the extent of change in FDI inflows of OIC countries due to increasing terrorism during the study period 1990-2014.
- iii. To shed light on other potential factors as well that draw FDI inflows to OIC countries.
- iv. To suggest the policy measures to improve FDI inflows of terrorism ridden OIC countries and also the measures that can reduce terrorism in these countries.

1.6. Significance of the Study

Many studies have been carried out to examine the impact of terrorism on economic growth, trade and FDI flows of different countries. Similarly, a lot of research has been conducted by different researchers specifically on the terrorism and FDI link worldwide, mostly for the developing countries. Most of that research also considered Muslim countries and OIC member states individually. But there is insufficient research evidence for many of these countries. Moreover, all the OIC member states have yet never been considered together with respect to terrorism and its impact on FDI inflows of these countries. This study will examine “how terrorism affects the inward flow of FDI in Muslim countries (OIC member states)?”

Therefore, this study will be extremely useful for researchers, policy makers, educators and investors because this study will enhance their knowledge about deteriorating

impact of terrorism on the overall economic wellbeing of the Muslim nations; It will also provide a platform to policy makers to evaluate the cost of terrorist events on FDI and then suggest some policies to tackle the problem of rising terrorism in those countries and to take measures to attract the foreign investors to invest in these countries.

The scope of the study is bounded to the 43 selected OIC Countries that are listed in the Appendix A, for the time period of 25 years i.e. 1990-2014. 15 out of 58 of the OIC member states have been excluded from the study (listed in Appendix A) due to two main reasons i.e. non-availability of data for some countries and lack of terrorist activities in others. This limits the size of the sample but still the sample size and data are still enough for our analysis.

1.7. Scheme of the Study

In order to achieve the target of the study, the remaining study is distributed into further chapters. Chapter 2 provides the comprehensive review of literature related to the study. Chapter 3 gives an overview of the terrorism and FDI situation of the OIC countries while Chapter 4 offers theoretical framework required for building the model in detail. Chapter 5 consists of the research methodology of the study in detail; therefore, this chapter further consists of 4 subsections. Subsection 5.1 gives the data description and detail of variables, 5.2 presents the econometric model in detail and 5.3 provides the estimation methodology that will be used. Further, Chapter 6 will provide the results of the study along with the necessary discussion of results. And the last chapter, Chapter 7, gives the conclusion of the study along with policy recommendations.

CHAPTER 2

LITERATURE REVIEW

Early work on FDI was more likely to supervise the violent conflict phenomenon; concentrating either on the political threats related to corruption & government actions or on measureable economic factors, for example, per capita income and inflation. But in recent years, due to rising terrorism, the focus has been shifted to the macroeconomic impact of terrorism and it has been explored in various contexts.

2.1. Terrorism and Its Macroeconomic Impact

Specifically, in context of economic growth or economic prosperity of a nation and other important macroeconomic variables, the problem of terrorism has widely been explored. Some of the related studies are presented below:

Gupta *et al.* (2002) selected some low- and middle-income countries to analyze the fiscal effects of armed conflict and terrorism in them. A structural model was developed with three equations for Per capita income growth, government revenue and defense expenditures respectively and a total of 22 conflict episodes were analyzed for the period 1985-1999. Generalized method of moments was used for estimation purpose and the results showed that armed conflict is related with higher inflation and lower growth. Moreover, it has negative impact on tax revenues and investment. It was also found that high rate of conflicts and terrorism lead to higher defense expenditures, at the cost of macroeconomic stability instead of lower expenditure on education and health. Econometric estimates showed consistency with the hypothesis that conflict and terrorism present a significant negative influence on

growth due to the variations in the composition of government expenditure. They concluded that there is room for a substantial "peace dividend" for countries that are capable to resolve conflicts and eliminate terrorism.

Bloomberg *et al.* (2004) practically attempted to study the impact of terrorism on 177 countries, using an unbalanced panel data set consisting of annual observations for the time span of 1968-2000. They used cross-sectional and panel growth regression along with a structural VAR model and found that there are negative effects of terrorism on economics growth of the selected countries. They also found that there is a shift of resources from investment to government expenditure due to higher terrorism. Moreover, they also found that even if terrorist events were more frequent in developed countries (like OECD countries), but had a less significant impact than that in developing countries.

Eckstein and Tsiddon (2004) analyzed the terrorism's effects on the economy of Israel by using a quarterly data for the years 1970-2003. They measured the impact of terror on GNP per capita, exports, consumption and investment by constructing a simple index for terror outcomes in Israel. By performing a simple VAR analysis, they showed that the index of terror affects all the macroeconomic variables significantly. i.e. due to a rise in terrorist events, investment decreases and income and consumption also decrease in the long run. Their analysis also supported that terror negatively affects the short run dynamics of the economy as well and this effect of terror cannot be easily eliminated with time. Hence, the estimated results of the study show that terrorism has a large impact on the aggregate economy. Estimates showed that the per capita output would have been much greater than the present (10% higher) if Israel had not faced the problem of terrorism in the course of last 3 years.

Gaibulloev and Sandler (2008) presented panel data estimates for 18 Western Europe countries to determine the effects of domestic and transnational terrorism separately, on per capita income growth for the period 1971–2004. They combined both domestic and transnational terrorist events with the purpose of attributing growth effects to both extensive classes of terrorism. Results showed that each additional transnational terrorist event per million persons decreases economic growth by approximately 0.4% whereas domestic terrorism's effect on growth is about half of this size, which is considerably small. Moreover, these negative effects of domestic and transnational terrorism on growth are rooted from their adverse impact on investment shares. They argue that government spending on counter terrorism activities or efforts crowds out the investment that promotes economic growth. They also showed that the corridor through which both the domestic and transnational terrorism influence economic growth are different i.e. transnational terrorism effects growth by crowding out investment, whereas domestic terrorism effects through increasing the government expenditure more on counterterrorism activities rather than on productive or developmental activities.

Enders and Sandler (2008) shared parallel views as they compared the effect of terrorism on developed and developing countries. They argued that due to the possession of vast economies, any terrorist activity results in transferring the resources among various sectors of the developed countries, conversely, this is not the situation in the developing countries due to which any major terrorist action endangers the economic growth. Since developed countries have healthier markets and institutions, so they can absorb the effects of terrorism and can also provide essential fiscal and monetary incentives for this purpose, however developing countries may be lacking this ability. Also, developing countries are

further dependent on other countries; therefore, any economic shock brought by terrorism in other countries will also affect the economic growth of these developing countries.

Gaibulloev and Sandler (2009) also examined the impact of terrorism on Asia's per capita growth for the years 1970-2004. They found a significant growth restraining influence of terrorism. Also, as compared to developed countries, the effect seemed to be stronger in the developing ones because of the flexibility of the developed countries towards terrorism due to their vigorous economies. Terrorist events produced by international conflicts were found to be half as effective in declining the economic growth as compared to those generated by internal conflicts. The central growth declining influence originates from the crowding out of investment and crowding in government expenditures associated with the terrorist activities. Moreover, terrorism not only affects the country of the respective event, but also has an impact on the neighboring countries' economy.

Gaibulloev and Sandler (2011) explored the effects of domestic and transnational terrorism on per capita income growth of 51 African countries by using the data for the period 1970–2007, and also accounted for spatial (cross-sectional) dependence and conflicts (both internal and external). Fixed-effects panel results suggested that there is a significant but ambiguous, marginal impact of transnational terrorism on per capita income growth. The study also concluded that similar results proved to be true for two diverse terrorist event datasets. However, per capita income growth was not affected by the domestic terrorist events. Alternative variables were also used for terrorism showing a little qualitative change in the results. It can also be concluded from the study that developing countries' economies proved to be more resistant to terrorism than they had been generally believed; because of the ambiguous impact of transnational terrorism on growth of African countries.

Gries *et al.* (2011) also explored the causality among terrorism and economic growth by using Hsiao-Granger method to test causality for panel data of seven Western European countries for the years 1950 to 2004. They found that the causality runs from economic growth to terrorism as well as from terrorism to growth. Poor economic growth causes the terrorism through the channel exhibited in low opportunity costs of violence, which in turn increases the conflicts' rate and consequently terrorism. On the other hand terrorism causes low economic growth because allocation and accumulation of resources is negatively affected by terrorism. Results show that significant economic and political events intensely affect the pattern of terrorism and economic growth. Moreover, it is the economic growth that causes the terrorism, in most countries cases; however, their economies are sufficient strong to survive such terrorist attacks.

Meierrieks and Gries (2013) ran successive Granger causality tests to determine causal relationship among terrorism and economic growth using a panel data of a total of 160 countries for the period 1970-2007 and found that the causality between growth and terrorism varies over time and space. They claimed that by shifting ideological and geographical patterns in terrorism linked with the end of the Cold War, chronological causal heterogeneity can be clarified. They explained diverse mechanics of this causality and attributed it to various country specific features like, the level of economic and political development, culture, intensity of terrorist events and political instability of the country. A country's robustness to the terrorism shocks is governed by these factors. The economic growth seemed to sway off terrorism for the Cold war period; from Latin American countries which were in development position and were politically instable. Moreover, terrorism was

found to be harmful to the growth of Islamic and African countries that had low levels of trade openness and high levels of political instability.

Shahbaz et al. (2013) investigated the causal relationship of terrorism and economic growth of Pakistan for the period 1973–2010 by including capital and trade openness in the production function and by applying the ARDL bound testing method of cointegration to inspect the long-run relationship of both variables. They also used the VECM Granger causality approach to examine the direction of causality among them. The empirical results confirmed the presence of long-run relationship among the both variables and the Granger causality results indicated that economic growth is granger caused by terrorism. Feedback effect was also found between terrorism and trade openness and there existed a bidirectional relationship between capital terrorism.

Hyder *et al.* (2015) argued that recently Pakistan is facing the perils of terrorism that is increasing day by day due to several linguistic, religious and ethnic conflicts. The socio-economic structure of Pakistan is very much influenced by these conflicts. Solow growth model was used in the study to estimate the impact of terrorism on economic growth of Pakistan by using Global Terrorism Database for the data of terrorism for the period 1981-2012 and Cointegration analysis was done. The analysis suggested that terrorism negatively affected the economic growth of Pakistan and it was also found to be the most significant and major sponsor in decreasing the economic growth, among all the variables selected. On the other hand, study also found that foreign assistance provided to Pakistan in the form of grants, aid and debt rescheduling had a positive influence on the economic growth.

2.2. Terrorism and FDI

Similarly, to study the relationship between terrorism and FDI particularly, some theoretical and empirical research has also been done, accompanied by the orthodox location control variables, for instance, market size, exchange rate, trade openness, inflation, infrastructure and economic growth in diverse contexts and regions. An overview of few specific studies, carefully chosen, is provided underneath:

Enders and Sandler (1996) presented a time series analysis for measuring the impact of terrorism on FDI in Spain and Greece. They employed a transfer function and a VAR model for quantifying the relation in Spain and Greece respectively and arrived at the conclusion that terrorist events had a persistent, significant and negative impact on net FDI. They also concluded that FDI is discouraged by an annual amount of 13.5 percent in Spain and 11.9 percent in Greece due to 1 years' worth of terrorism. On the basis of these results it was also established that the smaller countries which are facing a persistent risk of terrorism, experience reduced investment and economic growth as the economic cost.

Enders *et al.* (2006) investigated the degree to which transnational terrorist attacks transformed U.S. foreign direct investment. Time-series analysis showed that 9/11 generally did not have a long lasting effect on U.S. FDI flows. Post-9/11, only a few countries demonstrated a drop in U.S. FDI flows, which experienced successive terrorist attacks; and except for Turkey, the impact was not long-lived. The study also inspected the influence that terrorist attacks against U.S. interests had on the stock of U.S. FDI, using a panel of countries. They found that in OECD countries, such attacks had a significant, but minor, impact on these stocks. Turkey and Greece exhibited the major declines 6.5% and 5.7% (of

their average U.S. FDI stocks) respectively. In contrast, for non-OECD countries, no such effect was visible.

Lutz and Lutz (2006) suggested that terrorist events have severe economic costs for the countries where they occur. They analyzed the data of 23 Latin American countries between the years 1969 and 1988 and pointed out that terrorist events modestly effect the FDI of these economies and the effect is negative in nature. Hence, they proposed that there is a considerable reduction in Latin American economies' ability to induce inward FDI because of terrorism.

Wagner (2006) argued theoretically that the behavior of foreign investors hinge on a number of features, that include orthodox wisdom, prior experience, awareness and lenience towards economic and political risk, and long-term objectives, and is difficult to predict. He presented a survey on the literature on “the effects of terrorism on FDI” to analyze whether or not it has an impact on FDI flows and concluded that terrorism has the potential to be primarily considered while making investment decisions depending on the destination of investment. Any sensible foreign investor will detach the statistics from literature to reach at an investment decision grounded on reality on the basis that is reliable with its investment purposes.

Blomberg and Mody (2007) considered 43 host countries and 12 source countries and studied the influence of violence on bilateral FDI flows and trade among them for the periods of 1980's and 1990's by using a Gravity model. Their work mainly focused on the impact of various conflicts and forms of violence on horizontal and vertical FDI and FDI divided by level of development in a country. The overall results of the research indicated a significant

negative impact of violence on FDI and trade, and a weakly significant positive association of the host country violence (in a developed country) with FDI. Moreover, an increase in violence in a host country seemed to induce a transfer to vertical FDI from horizontal FDI (in developing countries).

Evrensel and Kutan (2007) focused on studying the impact of political instability and risk on FDI of Indonesia and measured “political instability” by using social unrest, armed conflict, average number of killings and riots, and ethnic tensions. They examined the relation of FDI with these different types of social violence during 1992-2001 by taking data for 26 provinces of the country. They also generated a “political risk index” by using language, street violence, religious and ethnic fractionalization, and protests. The results indicated that only some specific forms of social violence that seem to affect the future profits of multinational firms, play a role in damaging them. Hence they gave a hypothetical expectation that any kind of social violence diminishes the FDI flows merely after it interrupts the process of production, and decreases the present value of the estimated expected profits of a firm.

Agrawal (2011) explained that investors in different sectors respond differently to terrorism and their ability to react to risk is influenced by other economic and political factors as well. He performed a sector wise analysis of the impact of transnational terrorism on FDI inflows in developed countries by using annual data from 1985-2009. Results of the study showed a statistically significant and negative association among terrorist events and total FDI inflows. From the list of 12 wide industrial sectors, FDI inflows for trade and repair, manufacturing, and construction seemed to have a statistically significant negative association with terrorist events.

Alomar and El-Sakka (2011) also discussed that terrorism negatively effects economic growth, investment in the country and trade flows. In his study he tested the impact of terrorism on FDI inflows by using panel data for a group of 136 LDC receiving countries. Three government barriers to FDI that are terrorism, population and GDP of the recipient countries were included in the model. The results of panel unit root tests displayed that the variables of the panel do not have unit root, except for GDP. However, GDP was found to be stationary at its first difference. Panel data for the 136 countries was found to be cointegrated by using Pedroni based cointegration tests. Augmented Dickey Fuller tests also gave the same results. Moreover, a negative significant impact of all the three government barriers on FDI inflows was found by employing Panel ECM. The negative and significant impact of terrorism on the FDI inflows was the most important result found.

Power and Choi (2012) argued over the effects of business-related and non-business-related terrorism. According to them, the former category of terrorism negatively affects FDI because it causes damage to multinationals' buildings, kills their employees and destroys their products. However, the latter category of terrorism does not prompt similar implications and therefore it has less influence on FDI of a country. They used a cross-sectional data for 123 developing countries for the period 1980-2008 and employed three altered estimation techniques. The estimation results disclosed that type of transitional terrorism harming the multinational business organizations is causing a decrease in FDI but the other type of transitional terrorism is irrelevant in this context.

Rasheed and Tahir (2012) concluded in their study that FDI in a country decreases due to an increase in terrorism and the loss of investors' confidence in the particular economy is the most understandable cause for this. Terrorist activities create uncertainty and

instability in a country due to which financial well-being of that country is also affected; Pakistan is facing the same situation and to analyze this, they applied Granger Causality and cointegration on FDI and terrorism of Pakistan using the data for the years 200-2011. Both variables were found to be stationary at level. So they were not found to be co-integrated with each which showed that the two variables were moving in opposite direction. i.e. if the level of terrorism increased, FDI decreased and vice versa. Moreover, results of the causality test showed that two-way causality existed between terrorism and FDI of Pakistan.

Shahbaz *et al.* (2012) also examined the association among terrorism and FDI of Pakistan by using data for the years 2000 to 2011. Simple OLS model was used for estimation purpose. The results of the study revealed negative association among both variables. It was found that terrorism have negative and a significant effect on FDI of Pakistan. i.e. due to an increase in the number of terrorist events, foreign investors do not show a positive interest to invest their money in Pakistan.

Anwar and Mughal (2013) inspected the adjustment reaction of different international financial flows in developing countries after 9/11 incident of terrorism. ARMAX technique was employed to analyze the impact of terrorism on the inflows of FDI in Pakistan, and also on portfolio investments, exports receipts and migrant remittances by using monthly data from January 2003 to June 2013. It was found that as a result of increase in terrorist activities, FDI of Pakistan falls substantially but exports and portfolio investment did not show a noticeable change. Comparatively, migrant remittances displayed a substantial increase. The results were found to be robust to the alternations in indicators or definitions of terrorism and also to the inclusion of several macroeconomic variables. Thus, the findings

point out that in an economy that suffers from terrorism, foreign private capital outflows while domestic producers stay put.

Anwar and Afza (2014) were motivated to find out the influence of terrorism and political instability on inflow of FDI in Pakistan, accompanied by the location control variables for instance infrastructure, market size, trade openness, exchange rate, inflation and investors' incentive. They employed unit root tests for time series and then Least squares method to estimate the model. Findings of the study demonstrated that terrorism and political instability negatively affect the FDI. However, additional control variables including market size (measured by GDP), infrastructure (measured by gas generation), investor incentives and trade openness tend to boost up the inflows of FDI. Moreover, exchange rate and inflation displayed a negative impact on FDI.

Bandyopadhyay *et al.* (2014) s' study concentrated on the two main types of terrorism i.e. transnational terrorism and domestic terrorism and used a dynamic panel data framework to investigate the relationship of FDI with both types of terrorism. The study utilized the data of 78 developing nations for the period 1948-2008. The findings explained that all types of terrorism dampen the FDI of the countries. Moreover, transnational terrorist events seemed to have more destructive impacts on FDI in comparison to the domestic terrorist events.

Hussain *et al.* (2014) examined the association among the number of terrorist attacks (NTA) and net inflow of FDI (NIFDI) in Pakistan by using the data for 14 years i.e. from 2000 to 2013. They employed the multiple regression method to test the relationship between both variables. The result proved the existence of a negative relationship between NIFDI and

NTA in Pakistan. There was a decrease in NIFDI due to increase in NTA and consequently it was seen as a reason of undesirable interests of foreign investors in Pakistan.

Kinyanjui (2014) evaluated the relationship of terrorism and foreign direct investment for Kenya by employing a multiple regression model and taking secondary data of FDI and no. of terrorist attacks of the years 2010 to 2012. The results of the respective model of the study recognized the negative effect of terrorism on FDI of Kenya. Moreover, it was also concluded that this negative effect is because of the decline in the investors' confidence that occurs because of increase in terrorism which consequently decreases the FDI.

Shah and Faiz (2015) aimed to study the impact of terrorism on FDI inflows of SAARC countries, accompanied by other important location variables. Five of the SAARC member nations, explicitly, Pakistan, India, Bangladesh, Nepal, and Sri Lanka were selected and a panel estimation method was used for the years 1980-2012. The findings revealed that there is a positive and significant all other control variables on inward FDI of SAARC countries except exchange rate volatility and terrorism, which had a statistically significant and negative link with the dependent variable. These empirical findings established the fact that FDI and economic growth are seriously threatened by terrorism in these economies.

Shahzad *et al.* (2015) used quarterly data on FDI, economic growth and terrorism for Pakistan for the years 1988-2010 and examined the causal relationship and cointegration among them. They empirically analyzed the data by dividing it into two sub-periods i.e. pre 9/11 (1988–2001) period and post 9/11 period (2002–2010). Long run cointegration was founded to exist between terrorism, FDI and economic growth. Granger causality results specify the bidirectional causality between FDI and economic growth for both sub-periods.

Variance decomposition and impulse response analysis were also done to support these findings. Application of modernization theory for explanation of FDI and economic growth relationship is also maintained. In conclusion, the study reveals a deteriorating impact of terrorism on FDI.

Najaf and Ashraf (2016) verified the crucial role of foreign direct investment in the growth and development of the under developed and developing countries. The study tried to prove that FDI is the cause of reducing unemployment, covering the gap among saving and investment, bringing new technology and raising the GDP of the nations, by applying OLS and ARMA techniques on the time series data from 1981 to 2011 and taking Pakistan as the case study. They analyzed the effect of terrorism, gas shortage and political instability on FDI of Pakistan and proved that political instability and terrorism has a negative relation with FDI whereas gas generation has a positive relation. Moreover, the control variables of Exchange rate and interest rate were also found to have a negative relation with FDI inflows.

2.3. Literature on FDI Determinants

Some important literature regarding the determinants of FDI has also been reviewed. It will facilitate us to include other important control variables that are important in determining the FDI of a country, in the model of the study. FDI implicitly depends on diverse factors. A lot of empirical research has been done which gave a long list of variables that effect FDI inflows, including the economic, social, geographical and political factors.

Some of those studies have also been presented to explain the factors determining FDI inflows in individual OIC countries. For example, Sen and Mohsin (2010) studied the factors that decelerated the stock of FDI in Bangladesh during 1986 to 2008. The results of

their study revealed that low infrastructure, violent activities in urban areas, political conflicts, unpredictability of economic policies and bureaucracy are the fundamental restraints. Similarly, Wafure and Nurudin (2010) investigated the factors that determine FDI in Nigeria by using the ECM technique to examine the relation of FDI with those factors. The factors examined included market size, political instability, deregulation, infrastructure and exchange rate stability; all of them appeared to determine the FDI of Nigeria. In the identical year, Shahrudin *et al.* (2010) also studied the factors affecting FDI in Malaysia by using ARDL framework for the years 1970-2008. The study used GDP growth rate, money supply, market size, Government expenditure on infrastructure, openness, exchange rate, taxes, inflation, and a dummy variable for financial crisis. GDP growth rate and money supply were found to have a positive and significant impact with FDI inflows.

Based on determinants of FDI in Malaysia that were found to be successful in bringing FDI to the country, Moniruzaman *et al.* (2014) tried to examine those determinants in the case of Iran. He adopted the same model of the previous study on Malaysia and employed multiple regression analysis to decide if the determinants are equally significant for Iran as well. He found that in case of Iran, none of those determinants had a significant impact on the flow of FDI except the government expenditure. Therefore, he suggested that there is a need to investigate FDI of Iran from an altered perspective. Another study of Bekhet and Al-Smadi (2014) analyzed four macroeconomic factors that have an effect on FDI inflows of Jordan for the years 1980-2011 and also attempted to determine the causal relationship among those various FDI determinants. Those factors were Inflation, GDP, Money supply, and Exchange rates. The results of their study suggested that cointegration

exists among all those variables and various directions of causality were also found among them.

Some similar kind of literature is also available in context of Pakistan. Including the studies of Azam and Luqman (2006) and Azam and Kahttak (2009) which evaluated political instability and human capital's impact on FDI stocks of Pakistan and found a positive and significant relation of FDI and human capital however a positive nonetheless insignificant relation of FDI and political instability. Similarly, the study of Zaman *et al.* (2011) also tried to find the determinants of FDI by using labor cost, market size, inflation, trade balance and a service sector variable of Pakistan, and concluded that wages are negatively associated to FDI while market size, trade balance and inflation have a positive relation with it. Saleem *et al.* (2013) also studied the impact of inflation on FDI along with economic growth and found a positive impact of inflation on FDI.

Moving on, both the studies of Awan *et al.* (2011) and Rehman *et al.* (2011) tried to study the effect of infrastructure on FDI inflows in case of Pakistan, by including exchange rate and market size in the model. Both studies found a significant and positive influence of infrastructure on FDI inflows, concluding that infrastructure encourages FDI inflows; the other two variables also had the expected relation with FDI. Hakro and Gumro (2011) also used Infrastructure along with human capital in their study and found some similar results about both variables.

Apart from the studies on individual countries, some studies on large groups of countries have also been done specifically in the context of developing countries. Busse and Hefeker (2007) explored the indicators of FDI for a large sample of developing countries

from the year 1984 to 2003. Their study's results revealed that religious tensions in a country, its governmental stability and the democratic accountability are the most vital political risk indicators that impact FDI.

Demirhan and Masca (2008) also employed an econometric model for studying the factors that are important in attracting FDI to developing countries, for the time period of 5 years i.e. from 2000 to 2004. According to the findings of their study, trade openness, market size and availability of infrastructure in an economy are positively related with FDI of those countries. Moreover, inflation rate and tax rate presented a negative relation. Similarly, labor cost and Risk factor had a positive and negative sign respectively but they were both insignificant in determining FDI. Similarly,

Simsek *et al.* (2010) tried to examine the reasons due to which all the developing nations attract a different quantity of FDI. They considered many factors for this purpose for the case of 26 developing countries during 1996-2006. The results showed that all the variables employed i.e. real GDP growth rate, inflation, trade openness, economic freedom, political rights, current account deficit and corruption appeared to have a significant role in determining FDI.

Rihab and Lotfi (2011) also examined dominant variables that define the FDI inflows in 71 developing countries. They used dynamic panel data method for this purpose and took the data for seven years from 2001 to 2006. The results of their study showed that human capital, openness of the economy, GDP and governance quality are positively related with FDI inflows of those countries and were also significant. On the contrary, corruption was found

to be negatively related with FDI inflows. In addition, political stability and inflation variables were also employed and they remained insignificant in determining FDI inflows.

In a similar study, Aseidu (2006) also used panel data of 22 African countries for the years 1984-2000 in order to study the relation of market size, government policies, political instability, natural resources and institutional quality of those countries on FDI. The major findings were that the existence of natural resources and larger markets encourage FDI inflows for a country. Similarly, lower level of inflation, good quality infrastructure, and educated population, openness of an economy, less corruption, more political stability and more reliability of legal systems also encourage FDI inflows.

Likewise, Vijaykumar *et al.* (2010) also examined the reasons of FDI inflows in BRICS countries by using annual panel dataset from the years 1975 to 2007. The study found that the employed variables of Market size, Infrastructure, Labor cost, Currency value (exchange rate) and Gross Fixed Capital formation to be the impending factors that bring FDI inflows to the BRICS countries. The variables of Economic Stability, economic growth, trade openness seemed to be insignificant in determining the FDI inflows of these countries.

All of the above mentioned studies pointed out various factors that determine or affect the FDI inflows in the individual OIC member states and examined the impact that these variables on the FDI inflows of those countries. However, there is only a single study of Sudarsono (2008) which inspected numerous variables which effect FDI inflows, specifically in the context of OIC countries in which he tried to identify the determinants of foreign direct investment in OIC countries. He employed a panel econometric model for 16 Asian and 18 African OIC member states for the time period 1980-2000. The factors used in

his model were market size, trade openness, exchange rate, Government consumption and Consumer price index (CPI). All of them were found to be significant in determining FDI except the Government consumption expenditure.

2.4. Critical Review

The assessment of the above mentioned studies evidently advocates the negative impact of terrorism on FDI inflows of different countries. Besides terrorism, the vital location determinants of FDI are correspondingly conferred in different contexts. Nevertheless, these factors and their impact vary from region to region.

Currently, various OIC member states are confronting severe dilemma of terrorism and it is anticipated to affect the FDI inflows in those countries because they are losing the confidence of foreign investors which in turn is deteriorating the economic and political conditions of those countries. Yet, it can clearly be seen that there is a very small amount of literature that have inspected the relationship of FDI and terrorism primarily in case of the Muslim countries or the OIC member states. Hence, there is a dire need to recognize the empirical relationship between FDI flows and terrorism, particularly for these Muslim countries in the modern geopolitical context. Therefore, more advanced and exclusive work on terrorism along with the key factors effecting FDI flows in terrorism ridden Muslim countries needs to be done.

Consequently, the present research is the first one to test the relationship of terrorism with FDI inflows in OIC member states for the period 1990 to 2014. Hence, it pursues to seal the hole of the literature in this context.

CHAPTER 3

TERRORISM AND FDI SITUATION OF OIC COUNTRIES

The Organization of Islamic Cooperation (OIC) (formerly Organization of the Islamic Conference) is an inter-governmental body having 58 states as members and is extended to four continents. The Organization guarantees to safeguard and protect the interests of the Muslim world. In short, it is the joint expression of the Muslim world in the promotion of global peace and harmony amongst various nations of the world.

3.1. Terrorism in OIC Countries

It is a misconception in the World that Muslim countries are the cause of terrorism. In fact, the majority of countries that are facing the problem of terrorism include a large number of OIC countries. “Over 80 per cent of the lives lost to terrorist activities in 2013 were in only five countries - Iraq, Afghanistan, Pakistan, Nigeria and Syria.”² All five of them are Muslim countries and OIC member states. Hence, Muslim countries are as much affected by terrorism, as the other countries of the World are.

The terrorism ranking of the OIC countries in the countries of the world has been specified by the Institute for Economics and Peace on the basis of the score given by Global Terrorism Index developed by them for the year 2014 (Table 3.1). The ranking has been done on the basis of Impact of terrorism in a certain country. The scores assigned range from 0 (No records) to 10 (highest impact).

²Global Terrorism Index Report 2014, Institute for Economics and Peace.

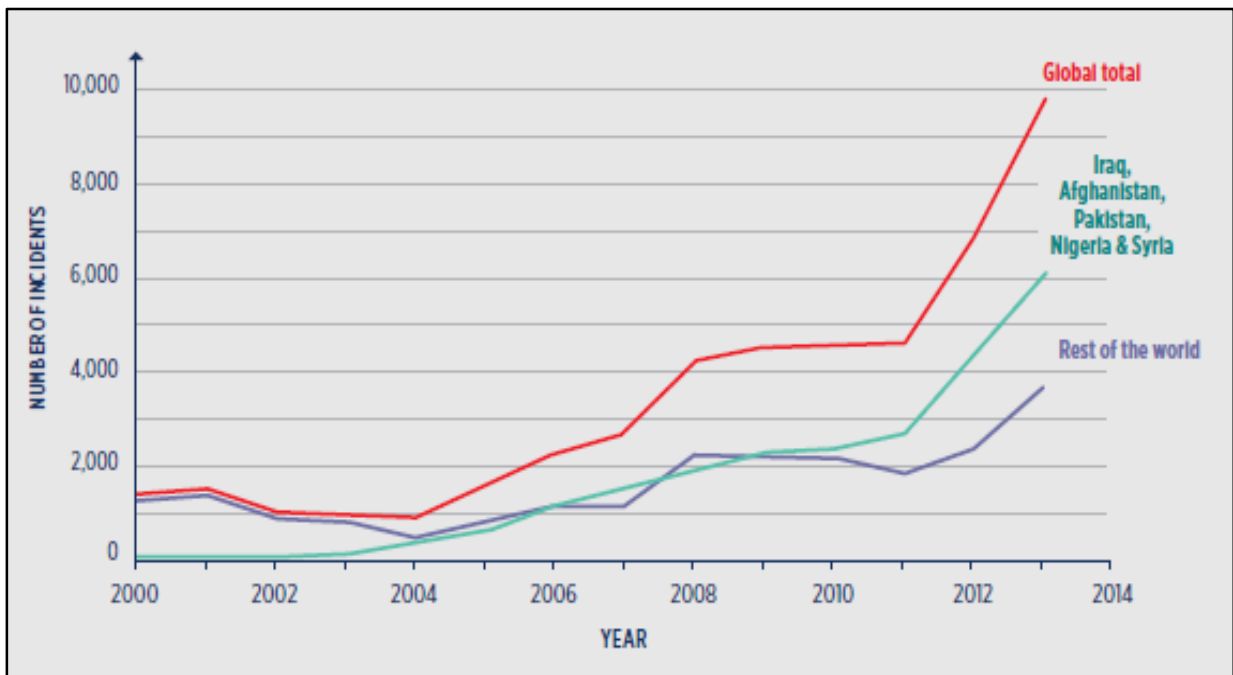
Table 3.1: Terrorism Ranking and GTI Scores of OIC Countries

Country	Rank	Score of GTI	Country	Rank	Score of GTI
Iraq	1	10	Morocco	67	2.11
Afghanistan	2	9.39	Tajikistan	68	1.99
Pakistan	3	9.37	Jordan	70	1.76
Nigeria	4	8.58	Cameroon	75	1.45
Syria	5	8.12	Guinea	81	1.12
Yemen	8	7.31	Burkina Faso	87	0.7
Egypt	13	6.5	Mauritania	91	0.56
Lebanon	14	6.4	Guinea Bissau	97	0.35
Libya	15	6.25	UAE	100	0.29
Turkey	17	5.98	Albania	107	0.19
Sudan	19	5.77	Uzbekistan	111	0.14
Algeria	21	5.52	Kyrgyzstan	112	0.1
Mali	22	5.29	Azerbaijan	117	0.06
Bangladesh	23	5.25	Chad	118	0.05
Iran	28	4.9	Kuwait	119	0.04
Indonesia	31	4.67	Benin	124	0
Bahrain	34	4.41	Djibouti	124	0
Mozambique	36	4.01	Gabon	124	0
Cote d'Ivoire	40	3.76	Gambia	124	0
Senegal	45	3.55	Guyana	124	0
Tunisia	46	3.29	Oman	124	0
Malaysia	48	3.04	Qatar	124	0
Uganda	52	2.93	Sierra Leone	124	0
Saudi Arabia	55	2.71	Togo	124	0
Niger	58	2.59	Turkmenistan	124	0
Kazakhstan	65	2.37			

Source: GTIR, Institute for Economics & Peace, 2014

And it is also reported that 60% of the total terrorist attacks of 2013 happened to occur in those five countries only (GTIR, 2014). Figure 3.1 shows the trend of the terrorist attacks worldwide, since 2000 to 2014. It can be clearly seen that these five countries lie above the rest of the world not when it comes to no. of terrorist incidents.

Figure 3.1: Global Terrorist Incidents from 2000 to 2013



Source: GTIR, Institute for Economics & Peace, 2014

The terrorist activities in Iraq, gained a high pace at the same time when US invaded Iraq. Ever since then, the country has stayed unstable. Pakistani and Afghani borders are also facing a situation of unrest due to the intensification of terrorism in past years.

The situation worsened in Pakistan in 2007, after the murder of Benazir Bhutto and loss of lives has also increased there by 20% in just last two years. Similarly, the rise of terrorism mainly became significant from 2009 onwards in Nigeria and it was ranked the fourth in the category of highest number of fatalities due to terrorism in recent three years.

The fifth one in the list, Syria, stood to have largest %age of increase in terrorist activities from 1998 to 2010 with total 27 deaths per year. But, after the start of Civil war in 2011, the number rose to 100 during 2011 and 2012; and it increased tremendously in 2013 i.e. 1000 deaths.

Moreover, in the report, Institute for Economics and Peace has also recognized 13 countries that are at the risk of further increase in the terrorist events in the near future. 6 of the Muslim countries are included in that list of 13 countries, namely, Bangladesh, Cote d'Ivoire Ethiopia, Iran, Mali and Uganda; and they all are also the members of OIC except Ethiopia. The report further revealed that on the basis of fatalities and injuries, all the worst 50 terrorist attacks of the year 2013 occurred only in the OIC countries, namely, Nigeria, Syria, Pakistan, Afghanistan, Iraq, Algeria, Yemen, Lebanon, Turkey and Somalia. And only 3 out of 50 of those worst attacks occurred in non-OIC countries namely, Kenya, Central African Republic and Dem. Republic of Congo.

3.2. FDI Inflows of OIC Countries

There are a lot of economic growth models that propose that FDI is expected to have positive effects on economic growth. In particular, the sustainability of FDI inflows has a particular importance for ensuring the high economic growth rates (UNCTAD, 2010). FDI is also a key to enhance capital stocks in the host countries in terms of size and quality.

Due to the globalization wave that was in full swing during the 1990s, several countries encompassing the OIC members states as well, converted into more open economies to increase the FDI flows in their economies. As a result, the OIC countries

became capable of enlarging the volume of FDI inflows by becoming more open to foreign investors in the two recent decades i.e. the FDI potential and performance both increased.

Nevertheless, the magnitude of that increase was very limited and on average it was reasonably poor as compared to the other developing and developed countries. Up till now, OIC countries, that constitute a substantial number of developing countries, have attracted an insufficient amount of FDI inflows.

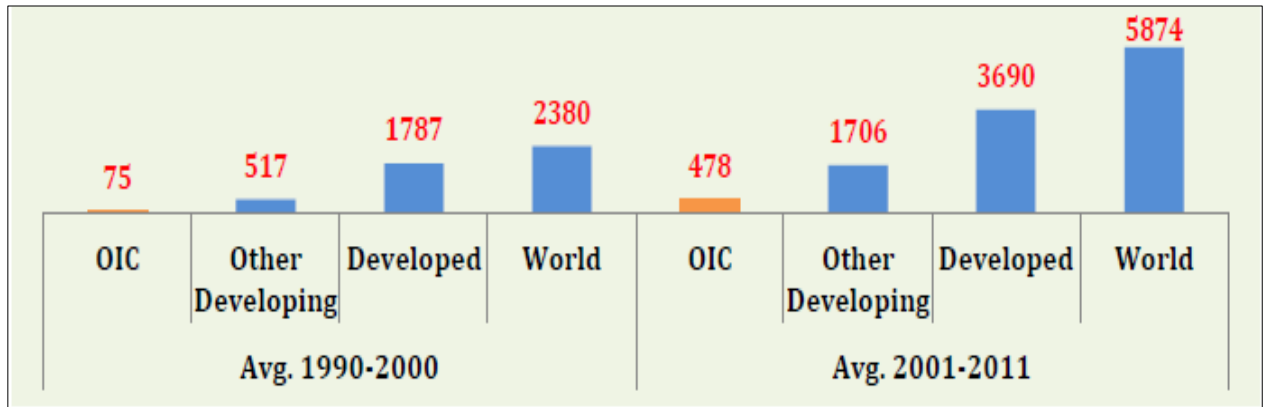
Some of the recent statistics show that from a total of 166 billion dollars, OIC countries happened to attract only 16.4 billion dollars i.e. they attracted just 10% of the total FDI inflows to the developing countries in 1998. That too accumulated in just a few of these countries.

Adding to this, some international events also went against OIC countries, including the Iraq War, September 11 attacks, major growths reported in various developing economies like Brazil, China and India; these events also distracted the investors towards non-OIC developing economies.

Therefore, despite the fact that there are some worthy performers in OIC countries as well, the overall average FDI performance of these countries declined in comparison to other developing countries. Some important facts regarding the FDI inflows to the OIC countries in contrast to the other developing countries are presented in the Figure 3.2 (A) and 3.2 (B).

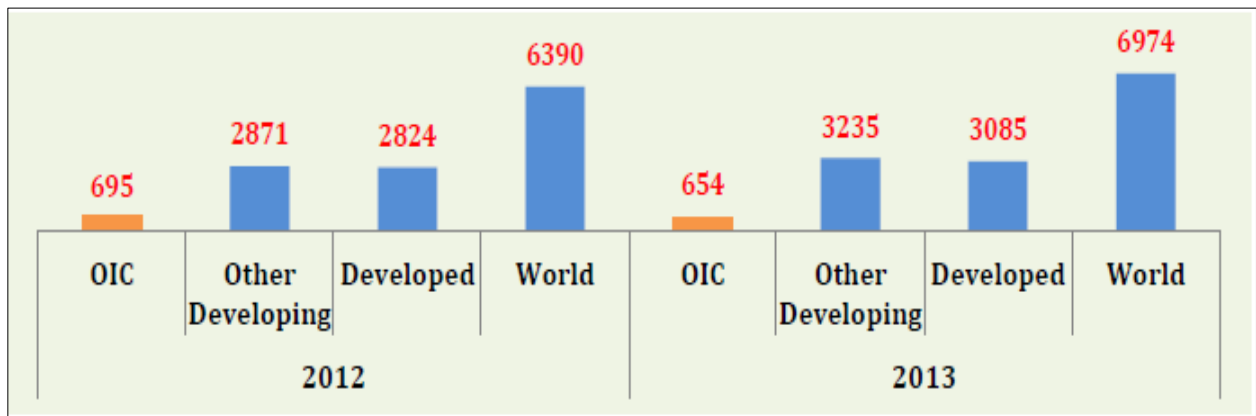
Both figures show the progress of net FDI inflows of the OIC member countries from 1990 to 2013. Figure 3.2 (A) reveals a long term picture by emphasizing on the average of two periods (1990-2000 and 2001-2011) while Figure 3.2 (B) demonstrates that for the latest data of 2012 and 2013. Moreover, both Figures show the amount of FDI in million dollars.

Figure 3.2 (A): Net FDI inflows in OIC countries – Averages for 1990-2000 & 2001-2011



Source: OIC Outlook Series, November 2014, SESRIC.

Figure 3.2 (B): Net FDI inflows in OIC countries – For 2012 & 2013



Source: OIC Outlook Series, November 2014, SESRIC.

It can obviously be seen from the figure 3.2 (A) that all groups of countries went through a phase of a noteworthy appreciation in their net FDI inflows. Consequently, the global net FDI inflows augmented from 2380 million dollars to 5874 million dollars during the periods 1990-2000 and 2001-2011 periods. An outstanding rise in the net inflows of both the developed and developing countries other than OIC can be seen during this period. Similarly, the same situation can be seen in the trend of net FDI inflows of the OIC countries

as well i.e. the average value of net FDI inflows summed up to a total of 478 million dollars from just 75 million dollars.

3.2.1. Individual FDI Performance of OIC Countries

In terms of individual country performance of the OIC countries in 2013, it was seen that Indonesia and Turkey were the best performer countries in terms of attracting FDI inflows. These two countries achieved to secure net FDI inflows amounted up to 18.4 billion USD and 12.8 billion USD, respectively (Figure 3.2.1 (A)).

Malaysia, United Arab Emirates, Kazakhstan and Saudi Arabia followed Indonesia and Turkey by attracting FDI inflows USD 12.3 billion, 10.4 billion, 9.7 billion and 9.2 billion, respectively. The OIC average net FDI inflows was recorded at USD 654 million in 2013 that 32 OIC countries attracted more FDI inflows than this amount.

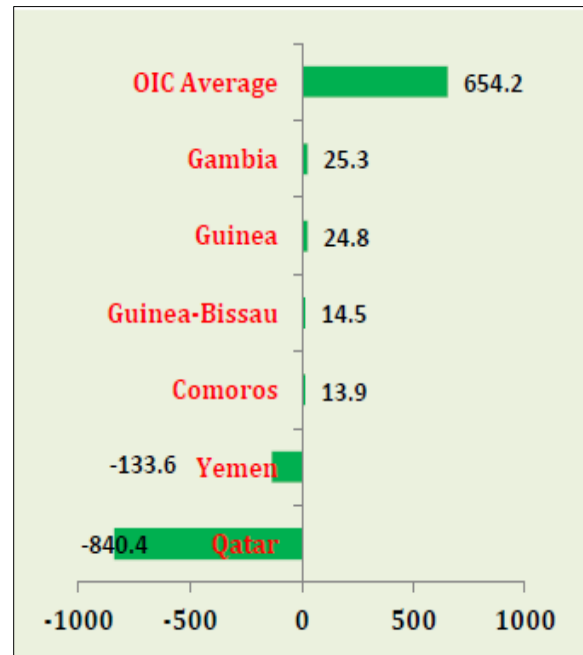
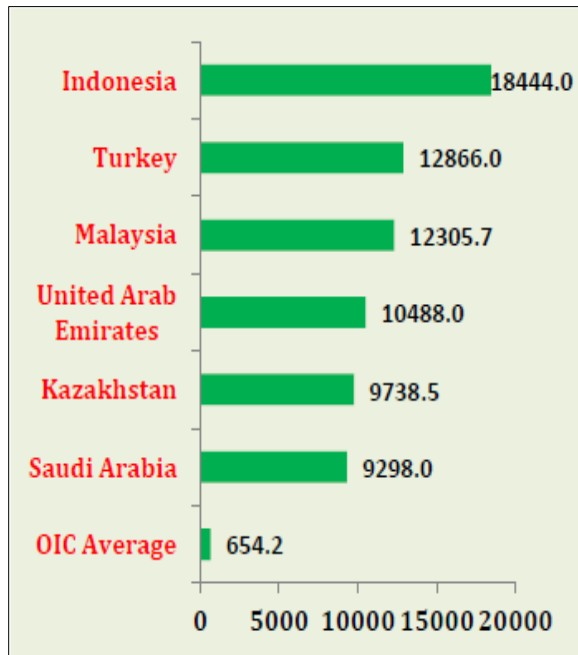
The worst performer OIC countries in 2013 were Yemen and Qatar in terms of net FDI inflows (Figure 3.2.1 (B)). It was also observed that FDI inflows to OIC countries are concentrated in only a few of them. In 2013, top-performer six OIC countries shown in Figure 3.2.1 (A) attracted 54 per cent of all net FDI inflows recorded in the OIC group.

This analysis shows that the OIC countries have improved their FDI performance in the last two decades. Yet there is more room for improvement. It also becomes evident that the OIC countries hosted remarkably lower amount of FDI inflows compared with other developing countries. Furthermore, the figures portray that FDI inflows to the OIC countries are not distributed evenly. Many OIC countries attract only negligible amount of FDI inflows, whereas countries like Indonesia, Malaysia, Saudi Arabia and Turkey perform better.

Figure 3.2.1 (A): FDI best performers

Figure 3.2.1 (B): FDI Worst performers

performers



Source: OIC Outlook Series, November 2014, SESRIC.

Hence, the OIC group of countries experienced a minor amount of rise in net FDI inflows as compared to other developing and developed countries. This too happened mostly due to the reduction in trade barriers, improved infrastructure facilities and betterment of physical and human capital in many OIC countries since 1990s; because these factors formed economic integration of OIC member countries with the other economies of the world in the terms of trade, financial flows and tourism.

Although, in the long term outlook, the OIC countries displayed a decent performance in enticing the FDI inflows and accommodating substantial sum of foreign investors.; yet, the other side of the picture also shows that OIC countries are the group that attracts the lowest

amount of FDI inflows as compared to other developing and developed groups of countries and the world as well.

Also, during 2012 and 2013, there has been a decrease in the net FDI inflows of these countries. Both the figures suggested that policies of the OIC countries, regarding FDI, had flaws in them. Particularly, these were unfortunate institutional restructurings related to trade and FDI, restricted amount of investment in infrastructures, inadequate public services such as education and health, which elevated the fears of most foreign investors.

Adding to this, some international events also went against OIC countries, including the Iraq War, September 11 attacks, major growths reported in various developing economies like Brazil, China and India; these events also distracted the investors towards non-OIC developing economies. Therefore, despite the fact that there are some worthy performers in OIC countries as well, the overall average FDI performance of these countries declined in comparison to other developing countries.

Hence, it can be concluded that the OIC countries are facing the consequences of some major international issues due to which they mostly underperform and they still have an enormous gap to fulfill to reach to their potential FDI inflows. This is indeed a disappointing picture of the overall investment situation of the whole group of OIC countries. Therefore, there is a need for the OIC countries to minimize the risk factor and create an environment that is suitable enough for the foreign investors to invest in.

CHAPTER 4

THEORETICAL FRAMEWORK

Theoretical framework will help us in constructing the model for FDI of OIC member states threatened by Terrorism. It will also facilitate us to include other important control variables in the model that determine FDI. Hence, theoretical circumstances on the determinants of FDI are reviewed in this chapter in addition to relation of terrorism with FDI.

Foreign direct investment is considered to be an important source for driving economic growth. The importance of FDI started to grow mainly because of the globalization wave that begun after the World War II, mainly during the 1960's. Since then, a lot of empirical research has been done and many theories have been put forward for explaining the movement of capital across countries.

All of those theories gave a long list of factors that can possibly explain the flows of foreign direct investment, with reference to both the micro (e.g. organizational aspects) and the macro dimensions (e.g. resource allocation) that include all the economic, social, geographical and political factors. The micro dimension includes factors intrinsic to the company itself, such as ownership advantages, cost reduction and economies of scale; whereas the macro dimension concerns market specific factors such as barriers to entry, availability of resources, political stability, country risk and market size, among others (Faeth, 2009).

Primarily, the origination of FDI was described by using the theory of capital market and the theory of portfolio investments. According to them, the cardinal factor due to which

capital flows occur between countries is the difference of interest rates of the countries. And it was also pointed out that if there is no uncertainty or risk, capital is more likely to flow towards the countries with highest return. Yet, this framework was unsuccessful in integrating the ultimate difference among the portfolio investment and direct investment. Further construction of an appropriate theory of FDI was attempted to be made during the 1960s. Many academicians tried to mix their theoretical works with the FDI theories (Rayome & Baker, 1995).

Hence, many such theories underlined diverse factors leading towards the movement of capital across countries. Moreover, half of those theories assumed the market imperfections to be the cause of FDI flows while the others assumed the oligopolistic and monopolistic advantages as well. Furthermore, some of the FDI theories also linked the FDI and international trade.

The study reviews all the theoretical approaches and published studies available for FDI in order to identify the most robust factors that attract FDI to an economy. A summary of all available FDI theories (with factors and contributors) is provided in the chronological order in the Table 4 on the next page.

Conclusively we can see that a variety of theoretical models tried to explain FDI or the investment decisions of multinational firms and a lot of empirical studies that assess the determinants of investment in a particular region are also available. All of them give a variety of determinants involving both the micro (organizational) and macro (resource allocation) aspect. However, there is no general agreement on a single theory so far. Therefore, it is not possible to pick a single theory for explaining FDI and the study can also not be established

on a single theoretical model. Hence, a combination of factors that explain FDI should be made from the available variety of models.

Table 4: Summary of All Available FDI Theories and Determinants

Theory	Contributor	Determining Factors
HO Theory McDougall-Kemp Theory	Heckscher and Ohlin (1933) McDougall (1960) Kemp (1964)	High returns Low labor cost Exchange risk
Product life cycle theory	Vernon (1966)	Low production cost
Behavior theory	Aharoni (1966)	Fear of loss of competitive advantages
Market imperfections theory	Kindelberger (1969) Hymer (1976)	Ownership advantages Government incentives Economies of Scale
Product differentiation theory	Caves (1971)	Imperfect competition
Oligopoly market theory	Knickerbocker (1973)	Following rivals Responding to domestic market competition
Internalization theory	Buckley and Casson (1976) Hennart (1982, 1991) Teece (1981, 1985)	Market inefficiency Know-how
Eclectic Paradigm (OLI Theory)	Dunning (1977, 1979)	Ownership advantages Location aspects Internalization advantages
New Theory of trade	Krugman (1983) Helpman (1984, 1985) Markusen (1984, 1999) Deardorff (2001) And many more.	Market size Transport costs Factor endowments Barriers to entry
Institutional Approach	Root and Ahmed (1978) Bond and Samuelson (1986) Black and Hoyt (1989) Hubert and Pain (2002)	Political variables Tariffs Tax rate Financial and economic incentives

Source: FEP working paper³

³Assunção, S., Forte, R., & Teixeira, A. A. (2011). *Location determinants of FDI: A literature review* (No. 433). Universidade do Porto, Faculdade de Economia do Porto.

In view of the fact that, the study is aimed to find the relation of FDI with a single factor of terrorism; it only considers the macro aspect of FDI determinants as control variables because they are found to be better in explaining the flow of FDI to a specific location (or a country). Therefore, the study uses a combination of three of the above mentioned theories. They are as follow:

- i. Location dimension of Eclectic/OLI paradigm
- ii. New trade theory
- iii. Institutional Approach

All of the above mentioned theories are briefly explained below along with a list of determinants (and their nature of relation) that will be included in the model of the study based on each theory.

4.1. Location dimension of Eclectic/OLI paradigm

The major contribution of Dunning's eclectic paradigm to the literature was to bring together several complementary theories, identifying a set of variables (ownership, location and internalization) that shape the activities of multinational firms (Dunning & Lundan, 2008).

He presented an all-inclusive approach which included the customary trade theories as well the internalization theory and also systematized the benefits for firms that operate internationally, connecting them to the chosen entry modes (Faeth, 2009). According to him, it is advantageous for a firm to decide about FDI when the ownership (O), location (L) and internalization (I) advantages are simultaneously present.

Since the study is just considering the determinants of FDI that are linked to the macro aspects, it just considers the location dimension of Dunning’s OLI paradigm. Location dimension of FDI is important for a firm when its existence in a particular market gives it benefit it from the settings of that market, such as: tax regimes; lower costs of production and transportation; market size; access to the markets, and lower level of risk. Therefore, a firm chooses to invest in a particular location based on the conditions that prevail there and that are supposed to be in its favor.

All the determinants that are found in the literature to be associated with this theory are listed in the Table 4.1. Of all the mentioned determinants, production cost variable is not included in the model of the study due to unavailability of data for “wages” of most of the countries involved in the present study.

Table 4.1: Determinants of FDI according to Location Dimension of OLI Paradigm

Determinants	Proxies	Impact	Supporting Literature
Uncertainty and risk factor	Conflicts Religious tensions Terrorism	Negative	Enders and Sandler (1996) Eckstein and Tsiddon (2004) Lutz and Lutz (2006) Wagner (2006) Busse and Hefeker (2007) Demirhan and Masca (2008) Agrawal (2011) Alomar and El-Sakka (2011) Power and Choi (2012) Shahbaz et al. (2012) Shahbaz et al. (2013) Anwar and Mughal (2013) Anwar and Afza (2014) Hussain et.al (2014) Kinyanjui (2014) Shah and Faiz (2015)

Infrastructure	Energy production Electricity consumption/production Gas consumption/production	Positive	Asiedu (2006) Demirhan and Masca (2008) Sen and Mohsin (2010) Wafure and Nurudin (2010) Vijayakumar et al. (2010) Awan et al. (2011) Rehman et al. (2011) Hakro and Gumro (2011) Lodhi et al. (2013) Anwar and Afza (2014) Danish and Akram (2014) Shah and Faiz (2015)
Human capital	Total labor force	Positive	Asiedu (2006) Azam and Kahttak (2009) Hakro and Gumro (2011) Rihab and Lotfi (2011)
Economic stability	Inflation rate Price level/CPI	Negative or Positive	Asiedu (2006) Zaman et al. (2011) Sudarsono (2008) Demirhan and Masca (2008) Simsek et al. (2010) Vijayakumar et al. (2010) Rihab and Lotfi (2011) Saleem et al. (2013) Anwar and afza (2014) Danish and Akram (2014)
Fiscal Stability	Exchange Rate	Negative	Sudarsono (2008) Wafure and Nurudin (2010) Rehman et al. (2011) Mughal and Akram (2011) Awan et al. (2011) Anwar and Afza (2014) Moniruzaman et al. (2014) Shah and Faiz (2015) Najaf and Ashraf (2016)
Production costs	Wages	Positive	Demirhan and Masca (2008) Vijayakumar et al. (2010)

Source: Author's Compilation

4.2. New Trade Theory

Another alternative theoretical framework centered on Kindleberger (1969), Hymer (1976) and Caves's (1971) theoretical models (cited in Faeth, 2009) emerged as the "new theory of trade" that pooled the ownership and location advantages with technology and factor endowments of a country.

Table 4.2: Determinants of FDI According to New Trade Theory

Determinants	Proxies	Impact	Supporting Literature
Market Size	GDP	Positive	Asiedu (2006) Zaman et al. (2011) Demirhan and Masca (2008) Sudarsono (2008) Vijayakumar et al. (2010) Wafure and Nurudin (2010) Alomar and El-Sakka (2011) Rehman et al. (2011) Rihab and Lotfi (2011) Mughal and Akram (2011) Awan et al. (2011) Lodhi et al. (2013) Anwar and Afza (2014) Shah and Faiz (2015)
Trade openness	Total trade volume as a ratio of GDP	Positive	Asiedu (2006) Demirhan and Masca (2008) Sudarsono (2008) Simsek et al. (2010) Vijayakumar et al. (2010) Rihab and Lotfi (2011) Shahbaz et al. (2013) Anwar and Afza (2014) Shah and Faiz (2015)
Availability of Capital	Gross Fixed Capital	Positive	Lodhi et al. (2013) Danish and Akram (2014)
Factor endowments	Natural resources	Positive	Asiedu (2006)

Source: Author's Compilation

Hence, this new theory is an addition to Dunning's eclectic paradigm in that it aims to correlate the three variables OLI (ownership, location, internalisation) with technology and a country's characteristics in a coherent manner (Markusen, 2002).

Several other empirical works have also been published in this context including the studies of Helpman (1984, 1985) and Markusen (1984, 1997). Just like the previous theory, all the determinants associated with the new trade theory, available in the literature are also listed in Table 4.2 above. Out of all the mentioned determinants, factor endowments are not to be included in the model because of the same reason of unavailability of data in case of the countries that are under observation; because almost all of them are developing nations and a lot of them lack the data for most of their important variables as well.

4.3. Institutional Approach

Rounding off the theoretical analysis, the impact of political variables in the context of FDI is also explained in the light off Institutional approach. This theory points out to the fact that firms carry out their operations in some complex kind of circumstances that are challenging and uncertain; therefore, decisions of a firm will also depend on such institutional factors that influence it one way or another.

FDI can be considered as a "game" or a "contest" whose "players" are some multinational firms or governments of host countries, and the institutions of those countries are the "rules of the game". Hence, it can be said that a firm's policies and its overall FDI performance in the market is totally dependent on its institutions i.e. on its "rules of the game".

Many different variables are used as the political and institutional determinants in the available literature. All of them appeared to have a considerable impact on the FDI flows of a country and they are important in stimulating its development. The Table 4.3 gives the detail about those determinants. Both of these variables are included in our model.

Table 4.3: Determinants of FDI According to Institutional Approach

Determinants	Proxies	Impact	Supporting Literature
Political instability	Type of regime Duration of regime/Governance Government stability	Negative	Busse and Hefeker (2007) Evrensel and Kutan (2007) Azam and Kahttak (2009) Sen and Mohsin (2010) Wafure and Nurudin (2010) Rihab and Lotfi (2011) Anwar and Afza (2014) Najaf and Ashraf (2016)
Institutional Quality	Effectiveness of rule of law	Positive	Asiedu (2006) Rihab and Lotfi (2011)

Source: Author's Compilation

Conclusion

As discussed above, all the available theoretical and empirical work on the FDI gave a series of determinants that describes the direct investment of multinational firms in a particular region. Amongst all of them, the determinants linked with the location dimension of the Eclectic/OLI paradigm, the institutional approach and the new trade theory fell under the spotlight. However, most of those studies have not produced reliable results for most of the determinants and in fact; most of them have not found any statistically significant association of some of the determinants with FDI. Furthermore, some of them have also neglected most of the important determinants which shows that not all of them are reliable

when it comes to the quality of study. Adding to this, it was also established that maximum number of those studies were carried out only on some specific countries or regions. Therefore, the present study tries not only to include a large number of countries from different regions of the globe but also considers all the above mentioned important determinants in order to study the robust relation of terrorism with FDI inflows by considering all other important variables as well. Moreover, further detail of the variables of the model and its functional form is provided in the later chapter of empirical methodology.

CHAPTER 5

RESEARCH METHODOLOGY

After formulating the study plan and setting specific objectives, devising an appropriate methodology to conduct and complete the study is very important step. This chapter provides the research methodology in detail. It includes the variables and data description and the estimation methodology in detail. Also, the present study uses a panel data analysis due to some important advantages that it holds i.e. it clearly takes into account heterogeneity of cross-section data as it allows the presence of individual specific effects.

Not just this, but there is a range of advantages which support the use of panel data (Hsiao, 2005). It increases the information available, gives more variability and less co-linearity among variables; increases the degrees of freedom and also increases the efficiency. Furthermore, in order to study the dynamic changes such as FDI inflows, the overtime repetition of a cross-section of the observations is more suitable.

5.1. Variables and Data Description

First of all, a brief description of the variables of the model, their definitions and information regarding their data sources is provided in this chapter.

5.1.1. Variables

Based on previously discussed FDI theories and literature; the study devices a set of variables that might be important in influencing the FDI inflows of the OIC country. This section of the study describes FDI and all those variables/ factors in detail.

➤ **Dependent variable**

Foreign Direct Investment

FDI is the dependent variable of the study. It is measured as “Net FDI inflows in US\$”. The data for all the countries of our sample is obtained from United Nations Corporation of Trade and Development (UNCTAD).

UNCTAD defines FDI on the basis of the definitions given by International Monetary Fund (IMF) and Organization of Economic Corporation and Development (OECD). It is defined as, “an investment involving a long-term relationship and reflecting a lasting interest and control of a resident entity in one economy (foreign direct investor or parent enterprise) in an enterprise resident in an economy other than that of the foreign direct investor (FDI enterprise, affiliate enterprise or foreign affiliate)”.⁴

➤ **Independent variable**

Terrorism

The basic independent variable in this study is Terrorism, and it is measured as “no. of terrorist incidents in a given year”. Regardless of the severity of an incident, each of terrorist incidents will be considered as one incident i.e. no difference will be made between an incident that causes a severe damage and an apprehended one. Data for terrorist incidents is taken from the Global Terrorism Database.

Terrorism is defined as “violence, or the threat of violence, calculated to create an atmosphere of fear and alarm...terrorist acts are intended to produce effects beyond the

⁴United Nations World Investment Report (UNCTAD, 1999)

immediate physical damage of the cause, having long-term psychological repercussions on a particular target audience.”⁵ The relationship of terrorism with the dependent variable FDI is expected to be negative because terrorism is expected to increase the overall risk of an international investment; as a result foreign investors lose their confidence in that particular host economy, consequently the level of foreign investment decreases in that country (Rasheed & Tahir, 2012).

Thus, the Null hypothesis and Alternative hypothesis of the study regarding the relationship of these two variables are stated as follows:

Ho: There is no relationship among terrorism and FDI of selected OIC countries

H1: There is a relationship among terrorism and FDI of selected OIC countries

This expectation is in agreement with the existing empirical evidence on the long-run deteriorating impact of terrorism on FDI of developed countries (Enders & Sandler, 2006; Lutz & Lutz, 2006) as well as on the FDI of developing countries (Alomar & El-Sakka, 2011; Rasheed & Tahir, 2012; Anwar & Mughal, 2013; Kinyanjui, 2014; Shah & Faiz, 2015).

➤ **Control Variables**

Although, control variables themselves are not of the primary interest for a study, however, they strongly influence the estimation results. Therefore, they are very important in order to test the relationship among the dependent and independent variables. All the control variables previously selected on the basis of theoretical framework are briefly defined here.

⁵Memorial Institute for the Prevention of Terrorism: Terrorism Knowledge Base

Market Size

Market Size is a very important explanatory variable for this study since it is a prominent determinant for market seeking foreign investment. Any emerging economy offers increased number of opportunities for profitable investment. Therefore; economy with a larger market size will be receiving more FDI inflows as compared to the economies with smaller market size. Hence, it is expected to have a positive and significant relation with FDI inflows. Market size is measured by “Gross Domestic Product (GDP)” of a country.

Price level (CPI)

Higher price level in an economy is an indication of economic instability of the economy or a non-suitable monetary policy in that economy. Also, it is known that Inflation (high price level) is essentially a fiscal risk factor which may affect the FDI undesirably. Therefore, it is expected that it is an important determinant of FDI inflows and is expected to have a negative relation with it. The variable is measured by “Consumer Price Index” of each country.

Exchange Rate

Exchange rate of a country is considered as the value of currency of one country in terms of the currency of another country. It shows the strength of a country’s currency. Therefore, exchange rate volatility shows the instability of the currency of a country. If there is depreciation of the currency of the host country, the purchasing power of foreign investors rises therefore FDI inflows to the country will rise and vice versa. Therefore, expected relation of exchange rate with the FDI inflows is negative. The variable will be measured by

the “domestic currency per US\$” i.e. exchange rate of currency of each country in terms of US \$.

Infrastructure

The well established and quality infrastructure is yet another important determinant of FDI inflows, which is also included in the study. Better infrastructure escalates the efficiency of the investments and hence stimulates inflows of FDI. Hence, a positive relationship is expected in the study to exist among FDI and Infrastructure. The proxy which will be used for this variable is “Energy Production” in a country.

Human Capital

Human capital is a basically the economic worth of expertise of an employee. i.e. the education, experience and skills of an employee have a specific “economic value” for an organization or for the economy as a whole. The “level” of human capital of the host country is thought to be very important in determining the FDI inflows in that country. Developing countries can attract more and more FDI if they focus on building up their human resource. Therefore, a positive relation is expected between FDI and human capital and the variable is measured as the “total labor force” present in a country at a given year.

Gross Fixed Capital

Fixed capital indicates the capital stock in the host country and the availability of infrastructure. Improved environment for investment in a transition economy attracts greater FDI inflows. Hence, more availability of capital in an economy can be thought of as a positive factor for bringing foreign investments into the economy which leads to higher

economic growth that further turns out to advance the Gross capital formation again. Therefore, a positive relation is expected in the study. “Domestic gross fixed capital formation” (as a percentage of GDP) is used in the study as GFC.

Trade Openness

Another key variable that determines FDI is trade openness. The impact of trade openness on FDI hinges on the nature of investment. If investments are export oriented, the multinational firms will prefer to locate it in an economy that is more open. Mostly, FDI is export oriented. But, it may also involve the imports of complementary, intermediate and capital goods. In both cases, trade volume is boosted. Therefore, trade openness is usually predicted to have a positive and significant relation with FDI. The openness of an economy is mostly measured as “Sum of exports and imports as percentage of GDP” i.e. the ratio of total trade to GDP. So we will measure it as:

$$\text{Trade openness} = \frac{\text{Exports} + \text{Imports}}{\text{GDP}}$$

Political Instability

Instinctively political stability is also an essential factor that attracts investment to the economy. However, the observed relationship amongst political instability and FDI flows is uncertain. For example some of the studies found no relationship between FDI flows and political instability whereas some of them found an inverse relationship between the two variables. This study expects a negative relation between the two variables in line with the fact that political instability decreases the FDI since it increases uncertainty in the economy, according to some of the above mentioned studies. The study will use the proxy measure of

Government stability for this, which measures the “likelihood of political stability” generated by ICRG, that ranges between -2.5(weakly stable) to 2.5(highly stable).

Institutional Quality

It is normally defined as the degree or extent to which institutions of a country can work properly and deliver for the security and certainty of a certain task. It is strongly believed to play a major role in enticing the foreign investors to invest in a particular country because, the more reliable and established the institutions will be, the more returns will be generated on any kind of foreign investment. There will be no fear of loss of investment. Hence, a positive relation of FDI is expected with this variable. The variable is measured by the proxy of “Economic institutional quality (relative factor scores)” available in the Journal of Institutional Economics.

5.1.2. Data description

The present research will use the annual data of 43 out of 57 OIC member states for the sample period of 25 years from 1990 to 2014. The list of selected countries can be found in Appendix A. The states that are excluded from the study are either excluded because of unavailability of data or because they are not facing the problem of terrorism at all.⁶ The data for FDI inflows has been taken from the United Nations Corporation of Trade and Development (UNCTAD) and the data on terrorist incidents has been taken from Global Terrorism Database. Data for all other variables is retrieved from the UNCTAD, ICRG (international country risk guide), SESRIC (Statistical, Economic and Social Research and Training Centre for Islamic Countries) and The Journal of Institutional Economics.

⁶ Only those OIC countries are considered who had GTI Score higher than 0.1 (Table 3.1, Page 29) and those who seemed to be facing the problem of terrorism constantly.

A summary of all the variables, along with their proxies, data sources and units of measurement, is presented in the Table 5.1.2 given in Appendix (B).

5.2. Model

In accordance with the discussions of the former sections, we will now propose an estimation model through which terrorism and other selected variables are going to determine the FDI inflows of the OIC countries. Moreover, the study will not analyze the influence of terrorism and other control variables on the FDI inflows of each country; rather it will check the impact as a whole in the context of Muslim countries (OIC Member states).

The model that is defined in the study represents Foreign Direct Investment as a function of Terrorism, along with Market Size (GDP), Consumer Price Index (CPI), Exchange Rate, Infrastructure, Human Capital, Gross Fixed Capital Formation, Trade Openness, Political Instability & Institutional quality of the host country.

Hence the model of our study can be presented as below:

$$\text{FDI} = f(\text{terrorism, market size, consumer price index, exchange rate, infrastructure, human capital, gross fixed capital, trade openness, political instability, institutional quality})$$

The study will be using a panel data model to analyze the effect of terrorism on FDI inflows of the selected OIC countries. And the data will be log transformed (except political instability and institutional quality) by means of taking natural logarithm of all the variables to fulfill the linear regression assumption which states that the variables must be normally distributed.

Moreover, log linearization will help in decreasing the probability of existence of heteroskedasticity in the data and hence it will provide better results of estimation as well.

A general representation of a panel data model of the study is as follows:

$$Y_{it} = \beta_i + \sum_{i=1}^{43} \sum_{t=1}^{25} X_{it} + \mu_{it} \dots\dots\dots (1)$$

Where,

Y_{it} is the dependent variable i.e. FDI inflows in this case and X_{it} is a vector of independent variables of the study.

“i” is the subscript for country which varies from 1 to 43 i.e. i=1,2,3 . . . 43

And “t” is the subscript for year that varies from 1990 to 2014 i.e. t=1985, 1986...2014

Hence, after transforming the data into logarithmic form, the functional form of the model of the study can be represented as:

$$\begin{aligned} \ln FDI_{it} = & \beta_0 + \beta_1(\ln TER)_{it} + \beta_2(\ln MS)_{it} + \beta_3(\ln CPI)_{it} + \beta_4(\ln ER)_{it} + \\ & \beta_5(\ln INFRA)_{it} + \beta_6(\ln HC)_{it} + \beta_7(\ln GFC)_{it} + \beta_8(\ln TO)_{it} + \beta_9(\ln PI)_{it} + \\ & \beta_9(\ln INST)_{it} + \mu_{it} \dots\dots\dots (2) \end{aligned}$$

Where,

$\ln FDI$ is the natural log of Net FDI inflows and $\ln TER$ is the natural log of Terrorism. Similarly, $\ln MS$, $\ln CPI$, $\ln ER$, $\ln INFRA$, $\ln HC$, $\ln GFC$ & $\ln TO$ are the natural logarithms of market size, consumer price index, exchange rate, infrastructure, human capital, gross fixed capital formation and trade openness respectively; while PI and $INST$ represent political instability and institutional quality respectively.

β_0 is the constant term

μ_{it} is the error term

And $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7, \beta_8$ are elasticity coefficients of the variables, since “ln” represents the natural logarithm of the variables, whereas, β_9 & β_{10} are simple coefficients.

5.3. Estimation Technique

The basic objective of the present study is to examine the long run and short run impact of terrorism on FDI inflows of the OIC countries by estimating the panel model presented above. The main advantage of panel models is that they make more information available, and thus more degrees of freedom, and more efficient, and they allow identifying effects that cannot be detected in simple time series or cross-section data models (Alomar, 2011).

As we know that the concerned data set is panel, having 43 cross-sections (OIC member states) and 25 periods of time (1990-2014) so we should have an estimation technique that suits the best to the form of data we have.⁷ The variables of the model might have the problem of multi-collinearity and endogeneity because some of them are also determined by each other theoretically; as we have already seen from theory that most of the dependent variables are either determining each other or they are affected by other independent variables.

⁷ Panel is considered homogeneous on the basis of the variable of terrorism i.e. only those countries facing terrorism are included in the model.

Moreover, by finding out the correlation matrix⁸, we can also see that correlations exist among some of the regressors, which may also lead to inconsistent results. To deal with such problems, the study will follow the Panel Cointegration technique. It has also been recommended by Pesaran and Shin (1999), because it takes care of all the endogeneity, multi-collinearity, and heterogeneity problems and it has been used by Shah and Faiz (2015). Once the existence of Cointegration among variables is proved, it is valid to run any regression for estimation.

The above model is estimated by using the cointegrated panel data estimation method i.e. Dynamic Ordinary Least Square for analyzing the long run impact and Panel Error Correction Method to check the impact in short run.

Now, there are some pre requisite steps for applying the Panel Cointegration Technique, which need to be carried out; these pre requisites include applying some tests. These are the tests for checking Stationary of the panel data (to check if the variables of the model are integrated at the same order).

It is obligatory to confirm the stationarity of a series while dealing with data that varies overtime. Because, regressing two non-stationary series will give spurious results. Inconsistent and biased parameters may be obtained from this kind of regression.

Hence, before checking the presence of Cointegration in the panel data, it is important to investigate about the presence of unit roots in the data series. Different unit root tests are applied for that purpose.

⁸Correlation matrix of the variables is presented in the Appendix C.

After checking for the unit roots, Panel Cointegration test (Kao test) will be applied to verify the long relationship among the variables. If the data is found to be cointegrated, DOLS and Panel ECM will be applied for finding out the long run elasticities and short run estimates respectively.

5.3.1. Panel unit root tests

As discussed earlier, the first step of this analysis is to confirm the stationarity of data i.e. if the variables are stationary at level, at first difference or at the second difference. Moreover, the necessary condition for cointegration is that the variables must be non-stationary and integrated of same order i.e. they must be $I(1)$. For this purpose various panel based unit root tests are available and they are basically, extended from Dickey Fuller and Augmented Dickey fuller tests for panel data unit root testing. Most of them are just the extension of ADF test for they take account of it as a regression component.

Basically, two groups of these panel unit root tests exist; one group considers the persistence parameters chosen constant through the cross-section (LLC, Breitung and Hadri tests) i.e. they consider common unit root process while the other group considers those parameters to be different for each cross-section specific (IPS, Fisher-ADF and Fisher-PP tests) i.e. they consider individual unit root process for each cross section. All of them possess their own advantages and disadvantages.

Each one of them may give different outcome for the identical panel series. Therefore, to ensure the reliability of the stationarity results or be more confident about them the study used two most important tests out of all the available unit root tests; namely, Im, Pesaran and Shin (2003) test and Levin, Lin and Chu (2002) test.

The detailed discussion of these tests is given below:

➤ **The Levin, Lin and Chu (LLC) test (2002)**

Levin and Lin developed this test in 1992 for identifying unit root in the panel data. Initially in 1992 it was presented in working paper but later in 2002 it was finally published in collaboration with Chu (co-author). They suggested that an individual unit root test is appropriate only for small samples because of the limited power compared to the alternative hypothesis and its deviations from equilibrium are highly persistent. On contrary, LLC is believed to be a powerful unit root test as compared to ADF unit root test used for every single cross section. This test is basically an extension of Dickey Fuller test.

The equation of the test is presented below:

$$\Delta Y_{i,t} = \alpha_i + \rho Y_{i,t-1} + \sum_{k=1}^n \varphi_k Y_{i,t-1} + \delta_i t + \theta_t + \mu_{it}$$

Where,

α_i And θ_t indicate that the model allows for two ways fixed effects. Both time effects and fixed effects are incorporated. Moreover, the null and alternative hypotheses of the test are given below:

$$H_0 : \rho = 0$$

$$H_0 : \rho < 0$$

i.e. the null hypothesis of the test states that a common unit root exists for each individual time series in contrast to the alternative hypothesis that each series is stationary. And under the assumption of the test, ρ follows a standard normal distribution.

➤ **Im, Pesaran and Shin (IPS) test (2003)**

Im, Pesaran and Shin recommended a unit root test in 1997 for the panels which combine information from both the time series and the cross section dimension. But it was officially published in 2003.

This test is just an extension of the LLC test which introduces heterogeneity on the constant ρ_i of the $Y_{i,t-1}$; however, IPS unit root test is preferred over the LLC unit root test because it has more power. It is based on the Augmented Dickey-fuller (ADF) test statistics simply by averaging it across groups and it uses separate test for each of the N cross sections.

It offers separate results for all i sections and permits distinctly specified parametric values, residual variance and lag lengths. Moreover, they formulated the model under restrictive assumption that ρ_i follows standard normal distribution.

The equation of the test is presented below:

$$\Delta Y_{i,t} = \alpha_i + \rho_i Y_{i,t-1} + \sum_{k=1}^n \varphi_{ik} Y_{i,t-k} + \delta_i t + \theta_t + \mu_{it}$$

And the null and alternative hypothesis' are:

$$H_0 : \rho_i = 0 \quad (\text{for all } i)$$

$$H_0 : \rho_i < 0 \quad (\text{for at least one } i)$$

i.e. the null hypothesis of the test states that the series has a unit root in contrast to the alternative hypothesis that at least one fraction of the series is stationary.

5.3.2. Panel cointegration tests

As explained above in the Panel unit root tests that at least two variables should be integrated at the same (highest) order, in order to proceed for cointegration (Banerjee *et al.* 1993). Therefore, once our variables are found to be integrated of same order, the next step will be to apply panel cointegration test for the determination of long run impact of terrorism on FDI inflows of OIC countries (including other explanatory variables as well) or to check the existence of cointegration.

For this purpose, a very few tests are available which vary according to the forms of data i.e. time series data, cross-sectional data and panel data. The study is concerned to run such test for a panel data (as required). Therefore, Kao (1999) Cointegration Test is employed in the present study to investigate the existence of Panel Cointegration among the variables. The test is described in detail below:

➤ The Kao Test

Kao Cointegration test was developed in 1999 to test the co-integration for the homogeneous panels. Therefore, this test is based on the assumption that all cross-sections involved in the panel contain the identical co-integrating vectors. Moreover, the test statistics are calculated by pooling all individual residual series in the panels. This test is based on Augmented Dickey fuller (ADF) and Dickey fuller (DF) tests. The model of the test is given as:

$$Y_{it} = \alpha_i + \beta X_{it} + \hat{\mu}_{it}$$

Where, $\hat{\mu}_{it}$ are the estimated residuals of the model mentioned above.

Moreover, by using the least squares dummy variables estimation method (LSDV), Kao derived two types of co-integration tests based on residuals.

The first test is DF type test which is applied on residuals. It is constructed on the equation given below:

$$\hat{\mu}_{it} = \rho \hat{\mu}_{it-1} + \hat{v}_{it}$$

OLS estimation method of ρ is specified as:

$$\hat{\rho} = \frac{\sum_{i=1}^N \sum_{t=2}^T \hat{\mu}_{it} \hat{\mu}_{it-1}}{\sum_{i=1}^N \sum_{t=2}^T \hat{\mu}_{it}^2}$$

Null hypothesis of the test is that $\rho = 1$ and this hypothesis is tested by using the following t-statistic:

$$t_{\rho} = \frac{(\hat{\rho} - 1) \sqrt{\sum_{i=1}^N \sum_{t=2}^T \hat{\mu}_{it}^2}}{1/(NT) \sum_{i=1}^N \sum_{t=2}^T (\hat{\mu}_{it} - \hat{\rho} \hat{\mu}_{it-1})^2}$$

The second test is an ADF test which is based on the equation:

$$\hat{\mu}_{it} = \hat{\mu}_{it-1} + \sum_{j=1}^p \varphi_j \Delta \hat{\mu}_{it-j} + e_{itp}$$

Where, p is carefully chosen in such a way that e_{itp} error terms remain serially uncorrelated. This test has the typical ADF t-stats with $\rho = 1$ in the simple form of ADF equation.

The Kao test's basic specifications of the null and alternative hypothesis are as underneath:

$$H_0 : \rho = 1$$

$$H_0 : \rho < 1$$

Additionally, all the statistics mentioned above, follow the standard normal distribution.

5.3.3. Dynamic ordinary least square (DOLS)

After the identification of the presence of cointegration among the variables of the model, Dynamic Ordinary least square (DOLS) technique recommended by Kao and Chiang (2000) can be used to estimate the long run relationship between the panel series. There are two more ways of estimating the long run relation. One is, fully modified OLS (FMOLS), recommended by Phillips and Moon (1999) and Pedroni (1995) and the other is Biased corrected OLS. But the study uses the DOLS method because of the advantage that it gives the minimum bias results as compared to the other estimation methods (Mark & Sul, 2003). DOLS have advantage over the FMOLS because it is a parametric estimator and this estimator enjoys the computational and convenient explanatory ease (Song, *et al.* 2008). Moreover, both the past and the future values of the explanatory variables are used in this model.

Consider the regression equation given below:

$$FDI_{it} = \alpha_i + \gamma X_{it} + \sum_{k=-l}^q \lambda_{ik} \Delta X_{i,t-k} + v_{it}$$

Where, X_{it} is the vector of all the independent variables, hence it consists of terrorism and all other control variables as well. Similarly, γ consists of parameters related with independent variables, α_0 is the common intercept for all cross sections.

Whereas, $\Delta X_{i,t-k}$ consists of leads and lags of differentiated form of independent variables up to k and ranges from $-l$ to q and λ_{ik} is the vector of parameters related to $\Delta X_{i,t-k}$. And v_{it} is the vector of error terms and it is assumed to be uncorrelated with the leads and lags of differenced independent variables.

The above equation is the general equation of DOLS through which the basic model of the study will be estimated to obtain the long run coefficients. It is known as Panel Dynamic Ordinary Least Square equation. It is estimated by using the OLS method for panel data however incorporating the leads and lags of the independent variables in the differenced forms make it dynamic. Moreover, the test statistics of DOLS have asymptotically normal distribution (Mark & Sul, 2003).

5.3.4. Error correction mechanism (ECM)

After the detection of cointegration and estimation of the long run coefficients, Error correction model (ECM) is developed for the short run dynamics.

In order to obtain the short run impact of terrorism and other control variables on FDI inflows, the study used the Error correction model based on the methodology proposed by Westerlund (2007) which estimates both the short run as well as the long run impact.

The basic purpose of the model is to incorporate the error correction term into the model to detect the speed of adjustment after an external shock i.e. to measure that how much time will be taken in order to bring the dependent variable back to its equilibrium level, once it has been deviated from its equilibrium because of some external shock.

The error correction term that is utilized in the ECM model is derived from DOLS equation mentioned previously. i.e:

$$v_{it} = FDI_{it} - \alpha_i - \gamma X_{it} - \sum_{k=-l}^q \lambda_{ik} \Delta X_{i,t-k}$$

From this equation, $v_{i,t-1}$ is calculated and then it is used in the error correction model mentioned below. Moreover, the residuals of DOLS through which error correction term is derived, must be stationary at level. For this purpose we also apply unit root on the residuals of DOLS and verify their stationarity before incorporating the ECT in the ECM model.

Error Correction Model for the present study can be presented as:

$$\Delta FDI_{it} = \alpha_i + \beta v_{i,t-1} + \sum_{l=1}^L \sum_{k=1}^K \delta l_i \Delta X_{i,t-k} + \pi_{it}$$

The equation mentioned above covers the short run impacts (like ΔFDI and ΔX) and the error correction term as well ($v_{i,t-1}$). Here, δ represents the vector of parameters linked to the short run variables and it is also known as “impact multiplier” as it measures the immediate impact of any change in the independent variables on the dependent variable; and l and k represent the no. of variables and no. of lags of variables in the short run respectively.

The most important term here is β , which is the co-efficient of adjustment i.e. coefficient of the error correction term which will tell that how much time will be required to bring dependent variable back at equilibrium if a shock disturbs the independent series of the model.

5.3.5. Panel causality tests

After the determination of long run and short run relationships, we move towards detecting the causal relationship among the dependent and independent variables of our model. i.e. to determine the direction of causality among FDI inflows and terrorism of OIC countries and also that of FDI inflows and other control variables.

➤ **Dumitrescu and Hurlin (2012) Panel Causality Tests**

In order to find pair wise causality among variables of our model, we will use Dumitrescu and Hurlin (2012) Panel Causality Tests, which is based on a very simple non-causality test of Granger (1969) for heterogeneous panel data models. This test is applicable on both micro and macro panels with large number of observations (N) over a shorter period of time (T). The test statistic of this test is based on the statistic of Granger non causality test i.e. individual Wald statistics averaged over the cross-sections. This statistic was found to be converging towards a standard normal distribution. Hence, we can say that they proposed a standardized test statistic generated by approximating the moments of the Wald test statistic. Moreover, Monte Carlo experiments showed that the standardized panel statistics have very good small sample properties, even in the presence of cross-sectional dependence (Dumitrescu & Hurlin, 2012). The panel causality test of Dumitrescu and Hurlin (2004, 2012) is grounded on the estimation of a time-stationary VAR model given below:

$$Y_{it} = \sum_{k=1}^p \gamma_i^{(k)} Y_{i,t-k} + \sum_{k=0}^p \beta_i^{(k)} X_{i,t-k} + \mu_{it}$$

Where, μ_{it} is a composite error term i.e. $\mu_{it} = \alpha_i + \varepsilon_{it}$; it contains both individual specific effects and the errors.

The basic assumption here is that $\gamma_i^{(k)}$ (the coefficients of autoregressive terms) and $\beta_i^{(k)}$ (the coefficients of regressors) are constant for all $k \in [1, N]$. Moreover, $\gamma_i^{(k)}$ is assumed to be identical for all individual while $\beta_i^{(k)}$ could have individual dimension.

Further, the causality is investigated in this test under four different types of hypotheses suggested by them specifically for the panel data, namely, Homogeneous Causality (HC), Homogeneous Non Causality (HNC), Heterogeneous Causality (HEC) and Heterogeneous Non Causality (HENC). The softwares available for estimation purposes use the Homogeneous non-causality hypothesis as the default hypothesis.

Homogeneous non causality (HNC) hypothesis

This hypothesis basically tests if all the $\beta_i^{(k)}$'s are simultaneously null for all i (individual) and k (lags) or not. It can be written as:

$$H_0 : \beta_i^{(k)} = 0 \text{ For all } i \in (1, N) \text{ \& for all } k \in (1, P) \text{ i.e. No causality from X to Y}$$

$$H_1 : \beta_i^{(k)} \neq 0$$

The test statistic used under this hypothesis is as follow:

$$F_{hnc} = \frac{\frac{1}{Np} (RSS_2 - RSS_1)}{RSS_1 / [NT - N(1 + p) - p]}$$

Where, RSS_1 is the residual sum of square under the null hypothesis whereas RSS_2 is the restricted sum of square. If the hypothesis is rejected then it means that the causal relationship exists i.e. x causes y homogeneously.

CHAPTER 6

RESULTS AND DISCUSSION

This chapter gives the detailed results of all the tests mentioned in the previous chapter along with the descriptive statistics of the data. Empirical results of the FDI inflows model by using the panel data techniques of unit root tests (IPS, 2003; LLC, 2002; ADF) cointegration test (Kao, 1999), DOLS (Kao & Chiang, 2000) and Error Correction Mechanism are all interpreted and discussed in detail. Moreover, significance of the estimated parameters and their respective signs are discussed in the light of existing literature.

6.1. Descriptive Statistics

Table 6.1 given in the Appendix (C), represents the descriptive statistics of all the variables of the model for the selected OIC countries. The central values of the data are measured by both mean and median. Mean values of FDI inflows and Terrorist incidents for OIC countries are 1492.7599 and 59.7916 respectively. Whereas, mean values of all other control variables of Exchange rate, Market size (GDP), Consumer price index, Human capital political instability, gross fixed capital, trade openness, institutional quality and infrastructure are 360.9653, 61570.6747, 97.5216, 10884769.6, 8.0180, 15375.042, 82.1313, 2.2757, 39.1047 respectively. Similarly, median values of FDI inflows and terrorism are 207.55 and 12 respectively, while for all other variables they are 66.52, 12561.33, 93.8826, 4357327, 8.125, 2823.4393, 65.3517, 2 and 16.1193 in the sequence mentioned before. Only CPI and institutional quality seem to be normally distributed as their mean and median values

are almost same, however, mean and median values of all other variables have noticeable differences.

The table also shows the maximum and minimum values for all variables of the data. We can see that the maximum amount of terrorist events is 3935 and the minimum amount of such events is 10. Also, FDI inflows rise up to 39455.9 million US dollars for the OIC countries, and they fall as short as -4550.37 million US dollars. Similarly maximum and minimum values of all other variables can also be seen in the table.

Talking about the Standard deviation of a variable, it shows the spread of the data of a variable from its central value. FDI inflows and terrorist activities are scattered 4002.4362 and 230.1389 units from their mean values. While Exchange rate, Market size(GDP), Consumer price index, Human capital political instability, gross fixed capital, trade openness, institutional quality and infrastructure are scattered around their mean values up to 794.8511, 125778.9012, 52.8598, 19145635.86, 2.1245, 35175.5629, 92.1795, 0.8501, 52.5903 standard units respectively. We can see that Institutional quality and political instability has the minimum spread.

Skewness of the data of variable tells about its symmetry position and its value must be close to zero. Somehow, institutional quality and political instability seem to have zero skewness while, all the other variables seem to be positively skewed.

Similarly, kurtosis shows the peak of the data of a variable and it must have a value around 3. We can see that, only Infrastructure has a kurtosis close to 3. Institutional quality and political instability seem to have a negative kurtosis value and all the other variables have very large kurtosis values.

6.2. Correlation Matrix

As we know that variables of the model seem to be correlated somehow, and many of them are also determined by each other as well. We have seen that theoretically so far. In order to have some numerical estimates for this purpose, we can estimate the correlation matrix and see the correlations among variables through those estimates. The correlation matrix is presented in Table 6.2 in Appendix (C).

6.3. Estimation Results

The estimation results are presented and discussed below:

6.3.1. Panel unit root tests results

As a first step of panel analysis, we performed three unit root tests including Im, Pesaran and Shin (2003) and Levin, Lin and Chu (2002) unit root test in order to determine the stationarity or the order integration of all the involved variables. All the series are log transformed to smooth the series, except political instability and institutional quality variables and all tests are applied by including individual trend and intercept terms.

The results of these tests are reported in the Table 6.3.1. Results suggest that all the variables are non-stationary at level except Trade openness (we can't reject the null hypothesis of unit root), under both tests. i.e. only trade openness is stationary at level (does not contain unit root) while all other variables appear to be stationary at the first difference.

As we know, the equality of the orders of integration of at least two series at highest order is necessary for cointegration (Hualde, 2005; Banerjee *et al.*, 1993). And here, all the variables are I(1) except one; Hence, this leads us to the conclusion that we can move towards cointegration testing. These results are consistent with the studies of Alomar (2011), Anwar and Afza (2014), Shah and Faiz (2015) and Shahzad *et al.* (2015).

Table 6.3.1: Panel Unit root Test Results

Variable	Test	Level		1st difference		Conclusion
FDI	LLC	0.71646	(0.7631)	-8.10062*	(0.0000)	I(1)
	IPS	0.03417	(0.5136)	-8.51539*	(0.0000)	I(1)
TER	LLC	9.90050	(1.0000)	-1.79417**	(0.0364)	I(1)
	IPS	6.88499	(1.0000)	-10.0743*	(0.0000)	I(1)
CPI	LLC	3.14761	(0.9992)	-2.56757*	(0.0051)	I(1)
	IPS	5.85391	(1.0000)	-2.95936*	(0.0015)	I(1)
ER	LLC	61.8489	(1.0000)	2.90322	(0.9982)	I(1)
	IPS	-1.30979	(0.0951)	-10.3747	(0.0000)	I(1)
GFC	LLC	1.75639	(0.9605)	-9.05989*	(0.0000)	I(1)
	IPS	4.02822	(1.0000)	-8.19039*	(0.0000)	I(1)
HC	LLC	4.14412	(1.0000)	-2.23468**	(0.0127)	I(1)
	IPS	5.04098	(1.0000)	-4.53042*	(0.0000)	I(1)
INFRA	LLC	0.10279	(0.5409)	-6.08599*	(0.0000)	I(1)
	IPS	-0.54209	(0.2939)	-6.24345*	(0.0000)	I(1)
INST	LLC	0.83045	(0.7969)	-9.33106*	(0.0000)	I(1)
	IPS	-0.24371	(0.4037)	-9.70318*	(0.0000)	I(1)
MS	LLC	1.02800	(0.8480)	-6.97868*	(0.0000)	I(1)
	IPS	3.86116	(0.9999)	-6.21590*	(0.0000)	I(1)
PI	LLC	-2.22546**	(0.0130)	-11.1015*	(0.0000)	I(1)
	IPS	0.41820	(0.6621)	-11.0157*	(0.0000)	I(1)
TO	LLC	-8.77045*	(0.0000)	-14.6668*	(0.0000)	I(0)
	IPS	-3.59917*	(0.0002)	-16.4038*	(0.0000)	I(0)

Note:

- (***) (**) (*) denote the statistical significance of the test statistic at 10 %, 5%, and 1% level of significance.
- The values in the parenthesis show the p-values of the tests.
- Schwarz information Criteria is selected for the automatic selection of optimal lag length.
- All unit root tests are applied by including both intercept and trend.

6.3.2. Kao cointegration test results

After the variables are found to be integrated of order 1, we proceed to examine the cointegration or the existence of long run relationship among the variables of the model, by using the Kao (1999) test. The outcomes of the Kao test are represented in the Table 6.3.2. The results report that both statistics of the Kao test (ADF t-stats and Residuals) are found to be significant at 1 % level of significance. Therefore, the Kao test confirms the existence of cointegration among our variables.

Table 6.3.2: Kao Cointegration Test Results

Series: FDI TER CPI ER GFC HC INFRA INST PI MS TO

Sample: 1990 2014

Included observations: 1075

ADF t-statistic	Prob. Value	Ho	Decision
-10.87841*	0.0000	No Cointegration	Reject Ho
Residual Variance	0.041103		
HAC Variance	0.040481		

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(RESID)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RESID(-1)	-0.640189*	0.036309	-17.63168	0.0000

Note:

- Automatic lag length selection based on SIC with a max lag of 5
- Newey-West automatic bandwidth selection and Bartlett kernel
- (*) indicates significance at 1% level of significance

Hence, cointegration test results confirm that there exists a long run relationship among our variables. These results are also in accordance with Alomar (2011), Anwar and Afza (2014), Shah and Faiz (2015) and Shahzad *et al.* (2015); even after addition of more

variables in the model, cointegration exists between FDI inflows and terrorism. However, our result contradicts with the findings of Rasheed and Tahir (2012), who found no cointegration relation among both variables of FDI and terrorism.

6.3.3. Dynamic OLS results

As we know that the variables of our data are cointegrated, therefore, in order to find out the long run parameters we will use the Dynamic Ordinary Least Squares (DOLS) technique. The results of DOLS estimations are described in Table 6.3.3.

Table 6.3.3: Dynamic Ordinary Least Square Results

Series: FDI TER CPI ER GFC HC INFRA INST PI MS TO				
Dependent Variable: FDI				
Variable	Parameter	T-Statistics	Standard Error	Prob. Value
TER	-0.102509	0.031270*	-3.278135	0.0011
CPI	0.124419	0.047486*	2.620114	0.0090
ER	-0.323484	0.110132*	2.937228	0.0034
GFC	0.124231	0.062572*	1.985413	0.0476
HC	0.000256	0.000157**	1.632435	0.1031
INFRA	0.033774	0.079926	0.422568	0.6728
INST	0.041955	0.015382*	2.727481	0.0066
MS	0.191155	0.095946*	1.992319	0.0468
PI	-0.013917	0.005702*	-2.440587	0.0150
TO	0.398847	0.138873*	2.872030	0.0042
R-squared	0.882218		Mean dependent var	3.774446
Adjusted R-squared	0.844519		S.D. dependent var	0.235556
S.E. of regression	0.092882		Sum squared resid	4.555122
Long-run variance	0.010535		Durbin Watson Stats	2.321088
F-statistic	15.65559		Prob. (F-statistic)	0.000000

Note:

- Automatic leads and lags specification (based on AIC criterion, max=*)
- Bartlett kernel, Newey-West fixed bandwidth used for coefficient covariances
- (*) and (***) indicate significance at 1% and 10% level of significance

It can be clearly seen from the table that terrorism is negatively and significantly affecting the FDI inflows of the OIC countries, which is also consistent with theory because terrorism makes the investors lose their confidence in the host country and as a result foreign investment of that country falls. These results are also Shah and Faiz (2015) and many others⁹. Moreover, the estimated value -0.102509 shows the terrorism elasticity of FDI inflows, which is negative, showing that if terrorism increases by 1 %, FDI inflows decrease by 10.25 % for the Panel of terrorism ridden OIC countries. The reason could also be that, we have selected a panel of developing countries and the ones that face terrorism at one time or another. Results of all other variables are also in accordance with the expectations and are supported by the theoretical studies.¹⁰

However, the result of CPI is not according to the expectations. A negative relation between FDI and CPI/Price level was expected in line with the studies of Sudarsono (2008), Simsek *et al.* (2010), Anwar and Afza (2014), Danish and Akram (2014) and Shah and Faiz (2015). According to the DOLS results, a positive and highly significant relation exists between FDI inflows and CPI of OIC countries; if prices/ CPI increase by 1 %, FDI inflows increase by 12.44%. This result is in contradiction with above mentioned studies, however, it is supported by the studies of Zaman *et al.* (2011) and Saleem *et al.* (2013).

In contrast to this, Exchange rate seems to have a negative and highly significant impact on the FDI inflows i.e. if Exchange rate rises by 1 %, the FDI inflows fall by 32.34%. Similarly, Political instability also seems to have a negative and significant impact on FDI inflows but its effect appears to be very little; a unit increase in political instability

⁹ Enders and Sandler (1996), Eckstein and Tsiddon (2004), Enders *et.al* (2006), Lutz and Lutz (2006), Wagner (2006), Agrawal (2011), Alomar and El-Sakka (2011), Power and Choi (2012), Shahbaz *et al.* (2012), Shahbaz *et al.* (2013), Anwar and Mughal (2013), Anwar and Afza (2014), Hussain *et.al* (2014), Kinyanjui (2014).

¹⁰See table. A summary of all the variables along with their expected relation with FDI inflows and the supporting literature are mentioned in the table in appendix.

causes the FDI to fall by 1 % (it is not in the form of elasticity because political instability was not log transformed).

All other variables including gross fixed capital, human capital, infrastructure, market size, trade openness and institutional quality appear to have a positive relation with FDI inflows of OIC countries. A single percentage point increase in all these variables causes the FDI to rise by 12.42%, 0.025%, 3.37%, 19.11%, 39.88% and a unit increase in institutional quality causes it to rise by 4 % (institutional quality is not log transformed) respectively. Hence we can say that, the more fixed capital an economy has, the more human capital it has, the more developed the infrastructure is, the bigger the market is and the more open and economy is, the more inflows of FDI will be attracted towards it. However, the impact of human capital does not appear to be highly significant and the amount of its impact is also very small i.e. 0.025%. This may be because of following possible reasons:

- The selected countries are mostly the developing nations, so the amount of children and old age entities in the composition of total population and total labor force of these nations may possibly dominate.
- Unskilled labor force is in majority, so it cannot contribute actively and efficiently to the production process and hence are of low productivity.

6.3.4. ECM results

After the estimation of model using DOLS, we got the long run estimates of our FDI model. Now we need to have a better picture by estimating the short run results as well. For this purpose, we need to move towards error correction mechanism. For ECM, we need error correction term first, whose lag will be introduced with the differenced variables in order to get the short run result. Error correction term is obtained from saving the residuals of the

DOLS model. As a prerequisite, we check the stationarity of those residuals by applying unit root test on them. If the residuals are stationary at level, it further confirms the existence of cointegration and long run relation among variables. Now, these stationary residuals can be utilized in the ECM model then.

The results of unit root test on the residuals of DOLS or the Error correction term are given in Table 6.3.4 (A) below. It can be clearly seen that the error correction term is stationary at level, under all three tests. All t-statistics are highly significant. Hence, we can introduce this term in the ECM estimation.

Table 6.3.4 (A): Residuals Unit Root Test Results

Panel unit root test: Summary				
Series: ECT				
Exogenous variables: None				
Test	Statistics	Prob. Value	Cross Sections	Observations
LLC	-14.4008*	0.0000	25	562
ADF - Fisher Chi-square	293.814*	0.0000	25	562
PP - Fisher Chi-square	317.802*	0.0000	25	573

Note:

- a. Automatic selection of maximum lags
- b. Automatic lag length selection based on SIC: 0 to 4
- c. Newey-West automatic bandwidth selection and Bartlett kernel
- d. (*) indicates the significance at 1% level of significance.

Now we introduce the lag of this error correction term in the model along with all variables at their first difference to obtain error correction results and short run dynamics. The results of ECM are presented in Table 6.3.4 (B). It can be clearly seen that the error correction term is negative and highly significant, which indicates that short run relationship

also exist between FDI inflows and terrorism of OIC countries, and also that there is adjustment of error in the long run i.e. any external shock will be adjusted slowly but surely over time. However, it shows only 16.73% correction of error. These results are also in accordance with the previous study of Alomar and El-Sakka (2011).

Talking about the short run estimates of variables, all the variables have their expected signs. i.e. terrorism, CPI, exchange rate and political instability have the expected negative relation with FDI inflows while gross fixed capital, human capital, infrastructure, institutional quality, market size and trade openness are positively related to FDI inflows in the short run.

However, not all these estimates appear to be significant in short run. Only Exchange rate, market size and trade openness are highly significant in the short run. The main variable of Terrorism appears to be insignificant in the short run; it does affect FDI inflows negatively but the impact is not very significant. This might be because of the following reasons:

- Terrorism may not affect the FDI inflows immediately but after some period of time. Future investments might get affected but present or past investments do not easily vanish.
- Foreign aids and grants provided to the host country might diminish the severity of the situation for the time being and the negative effect of terrorism does not appear to be very significant.

Moreover, CPI have the expected negative relation with FDI inflows in the short run, which means that with an increase in prices, FDI inflows fall in the short run. However, this effect also appears to be insignificant which may be because of the fact that changes in

price level/CPI affect the foreign investments in the long run; it does not have an immediate impact.

Similarly, insignificant impact of gross fixed capital, human capital, infrastructure and institutional quality can also be explained with the fact that all these variables cause the FDI inflows to change in the long run, in short run their impact does not matter.

Table 6.3.4 (B): ECM Results

Dependent Variable: D(FDI)
Method: Panel Least Squares

Variables	Coefficient	Std. Error	t-Statistic	Prob. Value
D(TER)	-0.022458	0.037560	0.597910	0.5501
D(CPI)	-0.038693	0.092764	-0.417115	0.6768
D(ER)	-0.078847	0.025630	-3.076364*	0.0022
D(GFC)	0.002841	0.008658	0.328132	0.7429
D(HC)	0.008478	0.078839	0.107539	0.9144
D(INFRA)	0.046817	0.050958	0.918738	0.3586
D(INST)	0.002841	0.008658	0.328132	0.7429
D(MS)	0.054510	0.013835	3.939967*	0.0001
D(PI)	-0.132907	0.080130	-1.658641***	0.0977
D(TO)	0.422272	0.172687	2.445297*	0.0148
ECT(-1)	-0.167377	0.024018	-6.968753	0.0000
R-squared	0.722945		Mean dependent var	0.008311
Adjusted R-squared	0.686950		S.D. dependent var	0.220527
S.E. of regression	0.219425		Akaike info criterion	-0.176604
Sum squared resid	27.05874		Schwarz criterion	-0.093079
Log likelihood	61.59706		Hannan-Quinn criter.	-0.144023
Durbin-Watson stat	2.809453			

Note:(*) and (***) indicate significance at 1% and 10% level of significance

6.3.5. Causality test results

In order to verify the robustness of results of the study and to see the direction of causality among the FDI inflows and Terrorism in OIC countries, we move towards the Dumitrescu and Hurlin (2102) panel causality test which is based on the “Granger non-causality test” in order to test the causality of heterogeneous panel data sets established by Dumitrescu and Hurlin in 2012. The null hypothesis of the test is “homogeneous non-causality” from one variable (X) to another variable (Y) in bivariate context.

Hence, the null hypothesis states that the cross section units in the panel do not have a causal relationship. Moreover, we have tested the causality just between FDI inflows and terrorism, as they are the only variables of concern in the present study; causality of control variables have not been checked or discussed. The results of causality test are presented in Table 6.3.5. The results suggest a bi-directional causality among FDI inflows and terrorism, as the Z-statistics of both null hypothesis are significant at 1% level of significance.

Table 6.3.5: Panel Causality Test Results

Pairwise Dumitrescu-Hurlin Panel Causality Tests			
Sample: 1990 2014			
Lags: 4			
Null Hypothesis	W-Stats	Z-Stats	Prob. Value
FDI does not homogeneously cause TER	6.44838	2.40739*	0.0161
TER does not homogeneously cause FDI	16.2614	16.7389*	0.0000

Note: (*) indicates significance at 1% level of significance.

So we can say that, Terrorism homogeneously causes the FDI inflows in OIC countries and vice versa. Our results of causality are in line with Rasheed and Tahir (2012) but they contradict the results of Shahzad *et al.* (2015).

CHAPTER 7

CONCLUSION AND POLICY RECOMMENDATIONS

7.1. Conclusion

OIC countries face many problems and challenges in attracting the FDI inflows, out of which violence and social conflicts appear to be very important ones. It can also very obviously be seen that any sort of violence would limit the FDI inflows; however, the association of terrorism with FDI has massively grown since last two decades and reveals the diverse elements (investors profile, amount of risk that can be born and other pacifying factors) that are important in creating a favorable environment in an economy where firms may consider to invest with the aim of reducing the costs by hitting different marketplaces.

More specifically, terrorism has turned out to be “run-of-the-mill” dispute for a large number of developing countries as an outcome of Sep 11, 2001 terrorist attacks. The OIC countries are also confronting some serious obstacles in attracting the FDI inflows out of which terrorism seems to be the major FDI restraining factor for these countries.

The present study tried to empirically estimate the impact of terrorism on the FDI of OIC countries by using a panel data for the period 1990-2014. Along with terrorism, some of the important FDI determinants were also considered while constructing the model of FDI. For the estimation purpose, Panel Cointegration method and Dynamic OLS techniques were employed in order to check for the presence of long run relationship among the variables of the model and ECM was employed to check the impact of those variables on FDI in the short

run. Panel causality tests were also employed to check for the direction of relationship between FDI inflows and terrorism of OIC countries.

According to the estimates, the control variables of inflation, market size, infrastructure, trade openness, institutional quality and fixed capital were found to be significant determinants of the FDI inflows of OIC countries in the long run and they showed a positive impact on FDI inflows. However, human capital had a positive but insignificant impact on the inward FDI of these countries. Moreover, Exchange rate and political instability were found to be negatively affecting the FDI inflows and they also had a significant relation with it.

Lastly, in consonance with the past studies, the main empirical results of the independent variable of terrorism confirmed the point that terrorism damages the financial wellbeing of the OIC countries and discourages the FDI inflows over time. i.e. FDI inflows demonstrated a considerable fall due to an increase in the terrorist activity; which indicated that the investors from all the most important sources and regions intensely respond to the bouts of terrorist activities. This happens mostly because of the fact that FDI typically embodies an enduring commitment to the host country and consequently necessitates the presence of trust in the settings of the economy; conversely, the element of uncertainty linked with terrorism eats away that trust and makes the investors to explore for less risky avenues to invest (Gaibulloev & Sandler, 2011). The findings of our study are in line with those of Shah and Faiz (2015), Enders and Sandler (1996), Agrawal (2011), Alomar and El-Sakka (2011), Shahbaz *et al.* (2012), Shahbaz *et al.* (2013), Anwar and Mughal (2013), Anwar and Afza (2014), Hussain *et al.* (2014) and Kinyanjui (2014). On the other hand, in the short run,

all the variables had their expected signs (relation with FDI) including terrorism, yet, only a few of them appeared to be significant i.e exchange rate, market size and trade openness.

The results of the study might not be radical because of the conceded limitations of the study; yet they are found to be consistent with the fundamental economic concept regarding the relation of “risk” and “investment” and they surely take the previous research to an additional level of understanding. This study was basically formulated to see the effect that terrorism has on the economic and financial wellbeing of the Muslim (OIC) countries; therefore, the most significant thing in this study is inclusion of all terrorist ridden Muslim countries together. Future research may be carried out in order to investigate the effects of terrorism on individual OIC countries to get hold of more specific and precise results.

7.2. Policy Recommendations

On the basis of the above conclusion, it is anticipated that OIC countries should take suitable measures in order to recover their situations of investment. The policy makers of these countries should pay considerable attention to the elimination of terrorism, to abolish the insecurity and risk factor and to improve the law and order situation to attract more and more investors and accurately recognize their potential of inward FDI.

The results of the study inform the policymakers about the damage of terrorism in some particular OIC countries and also indicate the countries where counter-terrorist measure are most needed and where they will give the highest economic payback. Thus, the findings of the study lead to some strong policy recommendations that would lead to create a favorable environment conducive to the flow and presence of FDI in the long-term with a

view to increasing FDI inflows to OIC countries. These recommendations are made at both the national and OIC cooperation levels. They are as follows:

7.2.1. At national level

At the national level, following important steps can be taken by the OIC member countries individually:

- The terrorist attacks cause a greater damage to less developed economies; or the effects of transnational terrorism are more pronounced in developing countries (Blomberg & Mody, 2005). And most of the OIC countries under the study are developing ones. Thus, these countries clearly require the efforts to boost up the counter-terrorist activities, more importantly the one where economic interests of foreign investors are excessive.
- Foreign investors either withdraw their investment or refrain from investing in the countries that face persistent terrorist activities. Governments of those countries must not expect to attract a considerable amount of FDI inflows until unless the situation of security in their countries is not fighting fit or efficiently regulated, therefore, potent efforts need to be made in this regard.
- Although the businesses or the firms are not directly targeted by the terrorists, yet the firms have to bear the price of increased insecurity ultimately. Therefore, the enhanced performance of prevailing industries not only improves the economic situation but also generates a disincentive for the terrorists by increasing the “opportunity cost” of terrorism for them.

- A productive scheme of strategies should be prepared to arrange for a healthier environment for business and investments instead of wooing or flattering the investors. Furthermore, those businesses should be let to establish more and more so that they could create employment in the economy and expand the production. Thus, these countries need to build up a sufficient and efficient regulatory framework that can facilitate in starting new businesses, protecting the investors and dealing with the disputes that arise.
- Considering the results of the present study, policy makers can also estimate about the cost of fighting terrorism. Spending wealth in fighting terrorism can be seen as a worthwhile reason; since, an increase in terrorism appears to negatively and significantly affect the FDI of a country. Moreover, the quantifications provided in the study can also assist the policymakers in perceiving approximately how many resources and efforts should be assigned to the counter terrorist activities.
- FDI receiving OIC countries must also restructure their trade barriers and policies in order to expand the trade flow with the outer world and also to encourage the FDI inflows towards their local economy. Therefore, efforts should be made to facilitate the flow of financial resources across borders, particularly FDI, through the gradual removal of restrictions on capital movements and ensuring investment protection and guarantees, developing less burdensome business regulations and well-defined ownership rights, and encouraging the establishment of special economic zones and free trade zones.
- Foreign investors still seem to be unaware of the main policies, development plans, needs and potentials of economic sectors of many OIC countries. Therefore, and adequate

amount of investment promoting capabilities should be built up for the sake of nation branding and image building of these countries.

- These FDI receiving OIC countries also need to remove troublesome governments in order to recover their governing structure and to create a FDI conducive business environment. Moreover, a noticeable reduction in the political risks and conflicts in OIC countries may also help in bringing the economic stability back to the countries and thus providing the investors with better and increased venues to invest.
- Adequate amount of quality infrastructure, better institutions and skilled human capital are also required along with modern technologies to enhance the productive capacities and thus attract more and more foreign investors towards these nations. Therefore, establishing the infrastructure facilities conducive to industrial development, enhancing local manpower skills and seeking technological upgrade would help a lot in this regard.

7.2.2. At OIC cooperation level

The Islam factor and its false and malicious association with terrorism is the key factor for The OIC in framing its efforts for dealing with the problem of terrorism. The OIC, as an organization working for the well-being of the Islamic countries, can work on the following agendas to eliminate terrorism and promote the FDI inflows in OIC member countries:

- It should respond, to the implicit and explicit statements associating Islam with terrorism, in a defensive manner and not let the world target the Muslim nations in the fight against terrorism.

- Moreover, the organization should also take a proactive approach and cooperate with the efforts of other international organizations fighting against terrorism and it should also take some effective steps on its own in order to prevent the terrorist acts, enforcing the relevant laws and also to bring the perpetrators to justice.
- It should also help the member nations in opening the bilateral, multilateral and regional investment agreements and treaties of a mutually beneficial nature among the OIC member countries themselves, to facilitate capital flows and to boost intra-OIC and foreign investment.
- In addition, it should also provide assistance to the member nations to build a common platform where they could accumulate the databases on “investment in the OIC countries”, including all the information on investment opportunities, potential investors, etc. and that can also help in sharing experiences among member countries for the development of conducive business environment and appropriate regulatory frameworks for the promotion of both intra-OIC investment and foreign investment.

As a concluding remark, it can be stated that, fighting the sever problem of terrorism should be set as a priority on both the national and international levels as well at the OIC cooperation level with the aim of freeing the OIC countries from this evil and also for creating a terrorism free world in order to improve the FDI inflows of all countries and to lead to the enhanced economic prosperity generally. Also, OIC member countries should exert their efforts in enhancing their attractiveness from the prospective of foreign investors through strengthening a combination of both sets of FDI determinants (economic determinants as well as institutional and policy-oriented factors).

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APPENDIX

Appendix A

List of Selected Countries:

Afghanistan, Albania, Algeria, Bahrain, Bangladesh, Benin, Cameroon, Chad, Djibouti, Egypt, Guyana, Guinea, Guinea-Bissau, Indonesia, Iran, Iraq, Ivory Coast, Jordan, Kazakhstan, Kuwait, Lebanon, Libya, Malaysia, Mali, Mauritania, Morocco, Mozambique, Niger, Nigeria, Pakistan, Saudi Arabia, Senegal, Sierra Leone, Somalia, Sudan, Suriname, Syria, Tajikistan, Tunisia, Turkey, Togo, Uganda, Yemen,

List of excluded countries:

Azerbaijan, Brunei, Burkina-Fuso, Comoros, Gabon, Gambia, Kyrgyzstan, Maldives, Oman, Palestine, Qatar, Turkmenistan, United Arab Emirates, Uzbekistan

Appendix B

Table 5.1.2: Summary of All Variables & their Proxies, Units and Data Sources

Sr. No.	Variable	Proxy	Units	Data Source
1.	FDI Inflows	FDI flows (Inward)	Million US \$ at current prices	UNCTAD
2.	Terrorism	No. of terrorists incidents	Units	GTD
3.	Market Size	Gross Domestic Product	Million US \$ at current prices	UNCTAD
4.	Consumer Prices	CPI	Index numbers (Base 2005)	UNCTAD
5.	Exchange rate	Market rate (end of period)	National Currency per US \$	IFS
6.	Infrastructure	Energy Production	Units	SESRIC – BASEIND
7.	Human Capital	Labor Force (total)	Units	SESRIC – BASEIND
8.	Gross Fixed Capital	Gross fixed capital formation	Million US \$ at current prices	SESRIC – BASEIND
9.	Trade openness	(Exports + Imports)/GDP	Million US \$ at current prices	UNCTAD
10.	Political Instability	Government Stability	Ranges from - 2.5(Weak) to 2.5(strong)	ICRG
11.	Institutional Quality	Absolute economic institutional quality	Simple Averages	Journal of Institutional Economics

Appendix C

Table 6.1: Descriptive Statistics of Data

Variable	Mean	Median	STD	Max	Min	Skewness	Kurtosis	Total Obs.
Fdi	1492.7599	207.55	4002.4362	39455.9	-4550.37	5.2528	35.0285	1075
Ter	59.7916	12	230.1389	3935	10	9.4591	116.3585	1075
Er	360.9653	66.52	794.8511	7227.67	0	4.8237	29.6954	1050
Ms	61570.6747	12561.33	125778.9012	876719.3	354.3326	3.7626	16.3984	1075
Cpi	97.5216	93.8826	52.8598	516.5171	0.0864	2.0351	10.3750	1050
Hc	10884769.6	4357327	19145635.86	124061112	143686	3.3590	12.3433	1075
Pi	8.0180	8.125	2.1245	12	0.6666	-0.5922	-0.0830	923
Gfc	15375.042	2823.4393	35175.5629	322000	16.6152	4.6038	26.5171	1075
To	82.1313	65.3517	92.1795	1489.6995	6.3929	8.8004	102.8676	1075
Inst	2.2757	2	0.8501	4.345	0	0.3428	-0.3583	925
Infra	39.1047	16.1193	52.5903	250.08	0.02	2.0396	3.9287	750

Table 6.2: Correlation Matrix

	FDI	CPI	ER	GFC	HC	INFRA	INST	MS	PI	TER	TO
FDI	1.0000										
CPI	0.3064	1.0000									
ER	-0.0999	0.0218	1.0000								
GFC	0.5776	0.3417	-0.1802	1.0000							
HC	0.2000	0.0842	-0.1931	0.5032	1.0000						
INFRA	0.4886	0.2940	-0.2462	0.8166	0.3866	1.0000					
INST	-0.1343	-0.2744	-0.2206	0.0206	-0.1336	-0.0402	1.0000				
MS	0.5981	0.3558	-0.1844	0.9431	0.5071	0.8435	-0.0200	1.0000			
PI	0.0675	0.0261	-0.0723	-0.0595	-0.1193	0.0262	-0.0596	-0.0662	1.0000		
TER	0.0115	0.1882	0.2327	0.0483	0.1148	0.0711	-0.1500	0.1162	-0.1609	1.0000	
TO	-0.0524	0.0191	0.0879	-0.1028	-0.1867	-0.0688	-0.1438	-0.1223	-0.0987	-0.0392	1.0000