International Affairs and Global Strategy
ISSN 2224-574X (Paper) ISSN 2224-8951 (Online)
Vol 4, 2012

FDI and Terrorism: Co-integration & Granger Causality

Hafsa Rasheed* Muhammad Tahir
Institute of Managemnet sciences,Bahaudin Zakaria university, Multan, Pakistan.
*Email: hafsa_hafsa92@hotmail.com

Abstract

Terrorist activities not only effects that particular region or country's infrastructure, but it also effects the financial well being of that country. Because such terrorist activities create instability and uncertainty in the country. This results loss of foreign investors' confidence in that economy, thus decreasing the level of foreign investments. Similarly Pakistan is also facing this bitter reality of decreased foreign direct investment due to an increase in terrorist activities.

Variables: FDI , Terrorism

1. Introduction

Terrorism means illegal use of any resources in an economy, like smuggling, or it also includes any attacks that cause damage to the country. Terrorist activities not only destroy the financial well being of any economy but also destroys the physical infrastructure and individuals' confidence in that particular economy. With the increasing trend of globalization countries are trying to attract more and more foreign direct investment to flourish their economies. But its only possible when foreign investors are willing to invest in that particular country. And foreign investors always like to invest in those countries in which they feel their transactions as secure one. So any country like Pakistan, facing bitter realities of having war on terror, is the victim of this fact. So increasing level of terrorism cause hurdles for the economy to flourish. All this is due to the emerging concept of doing business globally. Because it's the fact that, if at one hand it has created opportunities for countries to expand their markets, but on the other hand it has also created ease for having illegal activities to be done more soundly. Because the increasing size of markets have also increased the security issues in about all economies of the world. And Pakistan is also among one of these economies.

2. Literature review:

If we look back to last two to three decades, we can easily conclude that economic integration has rapidly been increased during this time period. The only reason for this is the advancement in the information and communication technologies. Because these advancements has rapidly decreased the cost of doing business in global markets, as well as increasing opportunities for doing business.(Agrawal, 2011)

Due to increase in these business activities, GDP of about all countries involving in these business activities has shown a positive sign. Also FDI and financial inflows from international markets has also been exploded during this era. But all these activities are not only a positive sign for any country but also showing a negative impact on each of these economies. Because as the cross boarder trade has been increased dramatically, it has given opportunities to the terrorist to have illegal activities to be done more easily. Also international monitoring and inspection has become too much difficult.(Mirza & Verdier, 2007)

We can also see in an opposite perspective that terrorist activities have an impact on the economic activities of any country. Because any country having great ratio of terrorist activities would have negative impact on its economic activities, whether its financial growth, foreign investment or its trade inflows and outflows. Since this relation has been developed, many authors and researchers has put great attention on this topic. Literature concludes that most of the countries give much importance to FDI and takes it as an important tool for economic growth of the country. Because FDI provides not only capital but also expertise, technology, income and market access to these countries.(Alomar, M. E. S, & M.I.T, 2011)

This is observed that FDI is effected by many other factors prevailing in the economy, like technological

advancements, political instability, changes in laws and regulations, any change in tax policies, interest rates and innovation policies etc.(Muckley, 2007)

The only reason for adverse impact of terrorism on FDI is the lost confidence of investors. Due to increased uncertainness and instability in the economy investors feel insecure about their investment and their returns.(Gaibulloev & Sandler, 2008)

Global media has played a significant role in developing perception of the world about increasing uncertainties in the economic markets as a result of terrorism. So due to increased awareness about these issues, investors are now well informed about the economic or regulatory situations in the particular countries. So investors do critical analysis of all these situations before investing in international markets. (Glozer, 2006)

Increased terrorism has both political and economic consequences. If we look at the economic consequences, we can easily observe that terrorism has adverse impacts like, decreased inflows of foreign direct investments, damage in infrastructure, cost incurred in security, loss in trade, disturbed balance of payments, increased insurance premiums, and also delays in the travels, creating problems for local as well as foreign passengers. Beside all these issues we are just focusing on the relation between terrorism and foreign direct investment.(Bandyopadhyay, Sandler, & Younas, 2011)

Terrorism directly creates risk and anxiety in the prevailing economy that makes individuals more conscious about their expected returns linked with any transaction. Investors think it as a harmful investment. So this increased ambiguity decreases the demand patterns and shifts the investments in some other markets. Also if governments take steps against these terrorist activities or taking measures to prevent these activities it increases the cost for government. So this increased terrorism puts a challenge for emerging concept of globalization.(Mirza & Verdier, 2007)

Now if we look in the context of Pakistan, Pakistan being a state of having “war on terror” has increasing adverse consequences on its economy. And these consequences are not only for any single sector whether it effects almost every sector of Pakistani economy like agriculture, business, industrial, services, tourism etc. all of these sectors are having adverse impact of terrorism, the only difference is the change in the intensity. Because some sectors are more effected and the others are less.(Tayyeba Gul, A. Hussain, Shafiquallah Bangash, & Khattak, 2010)

All these terrorist activities has a negative impact on the inflow of foreign direct investment in Pakistan. We have concluded this by literature. Now we are going to study this fact by collecting data on these two important variables.

3. Data and methodology

We have collected data for number of terrorist attacks and FDI from 2003 till 5 June 2011.

- Data for terrorist attacks from 2003-june 2011 was obtained from (http://www.satp.org)
- Data for Foreign Investment inflows in Pakistan ($Million) was obtained from, Board of investment: Prime minister’s secretariat Government of Pakistan.

The key variables of our study are No. of terrorist attacks in Pakistan and FDI. We have applied co integration and Granger Causality on these. For this we have applied time series modelling and ADF test.

Co-integration

Ho: FDI and Terrorism are not co-integrated

Hi: FDI and Terrorism are co-integrated

Granger Casualty:

Ho: $\gamma 1 = \gamma 2 = 0$

H1: $\gamma 1 = \gamma 2 \neq 0$

Model:

Yt = α+ β1X1+ Єt

Where

Yt = FDI

α = constant

β = rate of change in FDI due to terrorism

Єt = error term

3.1 Results

Co-integration:

Unit-root tests (terrorist attacks)

The sample is: 2003 - 2011

LT.A: ADF tests (T=6, Constant; 5%=-3.55 1%=-5.25)

D-lag	t-adf	beta Y_1	sigma	t-DY_lag	t-prob	AIC	F-prob
2	-4.462*	0.42798	0.3087	1.350	0.3095	-2.116	
1	-4.142*	0.40564	0.3484	3.170	0.0505	-1.802	0.3095
0	-2.042	0.47715	0.6294			-0.6648	0.1203

Unit-root tests (FDI)

The sample is: 2003 - 2011

LFDI$ mil: ADF tests (T=6, Constant; 5%=-3.55 1%=-5.25)

D-lag	t-adf	beta Y_1	sigma	t-DY_lag	t-prob	AIC	F-prob
2	-9.100**	0.071699	0.06010	3.516	0.0722	-5.389	
1	-5.272**	0.37572	0.1315	7.401	0.0051	-3.751	0.0722
0	-1.269	0.43005	0.4998			-1.126	0.0072

EQ(1) Modelling LFDI$ mil by OLS-CS (using fdi.xls)

The estimation sample is: 2003 - 2011

	Coefficient	Std.Error	t-value	t-prob	Part.R^2
Constant	4.63152	1.012	4.58	0.003	0.7496
LT.A	0.402426	0.1304	3.09	0.018	0.5763

Sigma	0.493612	RSS	1.70557064
R^2	0.576263	F(1,7) =	9.52 [0.018]*
Log-likelihood	-5.28549	DW	0.784
No. of observations	9	no. of parameters	2
Mean(LFDI$ mil)	7.71162	Var (LFDI$ mil)	0.44723

Residuals [2003 - 2011] saved to fdi.xls

Unit-root tests (using fdi.xls)

The sample is: 2003 - 2011

Residuals: ADF tests (T=6, Constant; 5%=-3.55 1%=-5.25)

D-lag	t-adf	beta Y_1	sigma	t-DY_lag	t-prob	AIC	F-prob
2	-2.089	0.10098	0.1644	0.5340	0.6467	-3.377	

1	-4.230*	0.30788	0.1435	5.604	0.0112	-3.577	0.6467
0	-0.4851	0.80423	0.4207			-1.470	0.0763

Y = "LFDI$ mil";

Z = Constant, "LT.A";

Estimate ("OLS-CS", 2003, 1, 2011, 1);

Granger Casualty:

EQ(1) Modelling LFDI$ mil by OLS (using fdi.xls)

The estimation sample is: 2003 - 2011

	Coefficient	Std.Error	t-value	t-prob	Part.R^2
Constant	7.71162	0.2364	32.6	0.000	0.9925

Sigma	0.709319	RSS	4.02506838
R^2	0		
Log-likelihood	-9.14937	DW	0.411
No. of observations	9	no. of parameters	1
Mean (LFDI$ mil)	7.71162	var(LFDI$ mil)	0.44723

EQ(2) Modelling LFDI$ mil by OLS (using fdi.xls)

The estimation sample is: 2003 - 2011

	Coefficient	Std.Error	t-value	t-prob	Part.R^2
Constant	4.63152	1.012	4.58	0.003	0.7496
LT.A	0.402426	0.1304	3.09	0.018	0.5763

Sigma	0.493612	RSS	1.70557064
R^2	0.576263	F(1,7) =	9.52 [0.018]*
Log-likelihood	-5.28549	DW	0.784
No. of observations	9	no. of parameters	2
Mean (LFDI$ mil)	7.71162	var(LFDI$ mil)	0.44723

4. Interpretation

First of all we have found whether these variables are stationary or non-stationary, in order to find co-integration among these variables.

So we applied unit root test on both of these variables but the results showed that both of these variables are showing stationary. So these two variables are not co-integrated with each other. So we are accepting our null hypothesis Ho that FDI and Terrorism are not co-integrated . Which means that the two variables would move in an opposite direction?

So we can conclude that with the increasing level of terrorism FDI would decrease. While decreased level of terrorism would cause FDI to flourish.

When we look for granger causality of both variables, we found that not only FDI is granger cause to terrorism but also terrorism is granger cause to FDI.

We have concluded this by analysing the results obtained from Pc-Give. By analysing these results we can find that when we add terrorism in the model the model moves towards good fitting. Because we can see that RSS has decreased in the unrestricted model while value of R^2 has increased.

5. Conclusion:

Different authors have concluded in their literature that FDI and terrorism has a relation in a way that FDI

is affected by the level of terrorism in the country. As terrorism increases FDI decreases due to certain reasons. The most obvious reason is the loss in investors' confidence in that particular economy. Communication and technological advancements has made it easy to have cross border transactions. But at the same time it has increased difficulties and uncertainties in these transactions. Any economy like Pakistan having war on terror losses the investor's attraction towards its financial markets. Because investors feel more risk about their transactions and their related returns in such economies. So we study these facts through different models. After analysing the data and results we can conclude that terrorism has an impact on foreign direct investment of any country. The level of foreign direct investment is impacted by the level of terrorism. Our results also show that they move in opposite directions. Means that if terrorism increases FDI would decrease and vice versa.

References:

Agrawal, S. (2011). The Impact of Terrorism on Foreign Direct Investment: Which Sectors are More Vulnerable?

Alomar, M. E. S, & M.I.T (2011). The Impact of Terrorism on the FDI Inflows to Less Developed Countries: A Panel Study. *European Journal of Economics, Finance and Administrative Sciences, 28*.

Bandyopadhyay, S., Sandler, T., & Younas, J. (2011). Foreign direct investment, aid, and terrorism: an analysis of developing countries. *Unpublished manuscript, Center for Global Collective Action, University of Texas at Dallas*.

Gaibulloev, K., & Sandler, T. (2008). The impact of terrorism and conflicts on growth in Asia, 1970â€“2004. *Working Papers*.

Glozer, E. (2006). FDI and Terrorism: An Analysis of the Impact of the â€˜Intifadaâ€™on Foreign Direct Investment in the State of Israel.

Mirza, D., & Verdier, T. (2007). International trade, security and transnational terrorism: Theory and empirics. *CEPR Discussion Paper No. DP6174*.

Muckley, C. (2007). Terrorism, Tourism and FDI: Estimating a lower bound on the Peace Dividend in Northern Ireland.

Tayyeba Gul, A. Hussain, Shafiquallah Bangash, & Khattak, S. W. (2010). Impact of Terrorism on the Financial Markets of Pakistan. *European Journal of Social Sciences, 18*.