

Terrorist Attacks and FDI flows Between Investors and Hosts

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Motivation

- ▶ FDI is important for receiving economies (Driffield and Love 2007; Passoa, 2008; Alfaro, Kalemli-Ozcan, and Sayek, 2009)
- ▶ The volume of FDI is increasing in last two decades.
- ▶ Why some countries are attractive destination for investors?

The Global Business Policy Council Survey showed that terrorism risk is one of the most significant factor deterring FDI. (Abadie and Gardeazabal, 2008)

Literature

- ▶ Terrorism has a negative effect on FDI (Sandler and Enders, 1996; Chen and Siems, 2004; Blomberg, Hess and Orphanides, 2004; Eckstein and Tsiddon, 2004; Frey, Luechinger, and Stutzer, 2007; Abadie and Gardeazabal, 2008; and Llusa and Tavares, 2010)
- ▶ Filer and Stanišić (2012) studying over 160 countries over 25 years we show that:
 - ▶ Terrorist attacks decrease FDI (do not affect External Debt or Portfolio Investments);
 - ▶ Terrorism has a negative spillover effect.

Research Questions

- ▶ How big is the decrease of investment from one country to another due to attacks? For long does the effect dissipate?
- ▶ How important are perceived security conditions for investors?
- ▶ Are there any spillover effects of terrorism among investors?
- ▶ If some investors are hurt, do other benefit?

Data

Country-pair data:

- ▶ FDI outflow from country from investor to host at year t .
- ▶ 23 sending paired with 52 receiving countries (1995-2010) from UNCTAD dataset.
- ▶ Three classifications of terrorist attacks: domestic, international and pair attacks.

Problem:

- ▶ Large share of missing observations (63%).

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Solutions:

- ▶ Replace missing with zeros (X)
- ▶ Apply sample selection correction method (✓)

Model

How much to invest? (Razin, Rubinstain, and Sadka, 2004):

$$Y_{i,j,t} = \mathbf{X}_{i,j,t}\beta + U_{i,j,t} \quad (1)$$

$(Y_{i,j,t})$ FDI flow from investor to host in time t ; $(X_{i,j,t})$ vector of explanatory variables (economic; institutional; geographic); $(U_{i,j,t})$ normally distributed errors.

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Assumption: for all observables, profits are more than zero.

$$D_{i,j,t} = \begin{cases} 1 & \text{if } Z_{i,j,t} > 0; \\ 0 & \text{otherwise} \end{cases} \quad (2)$$

$$Z_{i,j,t}^* = Y_{i,j,t} - C_{i,j,t}, \quad (3)$$

Model

The costs of the investment ($C_{i,j,t}$) decrease if:

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Where to invest?

$$Z_{i,j,t} = \mathbf{X}_{2,i,j,t}\gamma + V_{i,j,t}, \quad (4)$$

where $X_{2,i,j,t}$ includes $\mathbf{X}_{i,j,t}$ from (1) and fixed costs of investment costs.

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There are two stages of investment:

- ▶ Where to invest? (equation 4)
- ▶ How big the investment should be? (equation 1)

Estimation Model

I apply Maximum Likelihood Heckman sample correction method to estimate the effect of terrorist attacks and FDI flow between investors and hosts:

$$E(Y_{i,j,t} | X_{i,j,t}, D_{i,j,t} = 1) = \mathbf{X}_{i,j,t}\beta + \beta_\lambda \lambda, \quad (5)$$

where λ is the inverse Mill's ratio controlling for the sample selection bias.

Heckman ML of FDI flow and terrorism with country pair and year fixed effects (1995-2010).

VARIABLES	FDI flow	Selection	FDI flow	Selection	FDI flow	Selection
Domestic a.*	-0.0001 (0.001)	-0.0001 (0.001)	-0.002** (0.001)	0.001 (0.001)	-0.001 (0.001)	-3.07e-05 (0.0003)
Interna. a.*	0.005 (0.006)	0.005 (0.004)	-0.001 (0.006)	0.009** (0.004)	-0.005 (0.006)	0.008** (0.004)
Pair attacks	0.046 (0.186)	0.0402 (0.081)	0.0655 (0.179)	0.0438 (0.0905)	-0.006 (0.189)	0.042 (0.082)
Pair attacks*	-0.362** (0.167)	-0.159** (0.069)	-0.465** (0.215)	-0.154** (0.074)	-0.429** (0.172)	-0.157** (0.067)
(...)						
KAOPEN s.		0.142** (0.060)		0.0916 (0.0638)		0.143** (0.060)
FDI dummy*		0.922*** (0.04)		0.907*** (0.044)		0.925*** (0.039)
Armed Conf.	-1.012*** (0.228)	0.183* (0.104)				
Tertiary			0.022*** (0.006)	-0.005** (0.003)		
Natural Dis.					-0.018* (0.01)	0.003 (0.004)

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VARIABLES	FDI share	Selection	FDI share	Selection	FDI share	Selection
Domestic a.*	-0.002** (0.001)	1.96e-05 (0.0004)	-0.002** (0.001)	-1.78e-05 (0.0004)	-0.002** (0.001)	-0.0001 (0.0004)
Interna. a.*	-0.004 (0.006)	0.008** (0.004)	0.001 (0.006)	0.0107** (0.004)	-0.006 (0.006)	0.004 (0.003)
Pair attacks	-0.116 (0.204)	0.0415 (0.082)	-0.243 (0.255)	-0.0471 (0.083)	-0.102 (0.212)	0.0584 (0.085)
Pair attacks*	-0.331** (0.165)	-0.174** (0.073)	-0.308* (0.183)	-0.147** (0.073)	-0.336** (0.168)	-0.168** (0.0743)
(...)						
KAOPEN s.		0.141** (0.062)		0.138** (0.062)		0.223*** (0.046)
FDI dummy*		0.904*** (0.039)		0.888*** (0.04)		0.147** (0.06)
Attacks a/ US			-0.126** (0.049)	-0.0273 (0.023)		
Attacks a/ UK					0.103 (0.201)	0.312*** (0.106)

Heckman ML of FDI, terror, governance indicators, pair and year fixed effects (1995-2010).

VARIABLES	FDI flow	Selection	FDI flow	Selection	FDI flow	Selection
Domestic a.*	0.001 (0.001)	0.0001 (0.0004)	-0.0016* (0.001)	-0.0001 (0.0004)	-0.001 (0.001)	3.76e-05 (0.0004)
Interna. a.*	0.004 (0.006)	0.007** (0.004)	-0.0055 (0.006)	0.0071* (0.004)	-0.005 (0.006)	0.0073* (0.004)
Pair attacks	0.0543 (0.192)	0.137 (0.0975)	0.0150 (0.189)	0.149 (0.0991)	0.0192 (0.190)	0.139 (0.0995)
Pair attacks*	-0.354** ((0.176)	-0.137** (0.0646)	-0.400** (0.176)	-0.133** (0.0627)	-0.403** (0.175)	-0.140** (0.0654)
(...)						
KAOPEN s.		0.136** (0.0621)		0.137** (0.0622)		0.136** (0.0620)
FDI dummy*		0.923*** (0.0401)		0.904*** (0.0400)		0.918*** (0.0402)
Pol. Stability	0.595*** (0.117)	0.0301 (0.0586)				
Reg. Quality			0.310** (0.154)	0.272*** (0.0697)		
Cont. of Corrupt.					0.211* (0.128)	0.129** (0.0623)

Terrorist attacks and FDI

Pair attacks significant and robust, *international* and *domestic* have ambiguous effect on FDI flow between countries.

Probability of investment:

- ▶ I find some evidence that international attacks can cause opportunistic behavior of investors who are not directly jeopardized (needs further investigation with more detailed data).

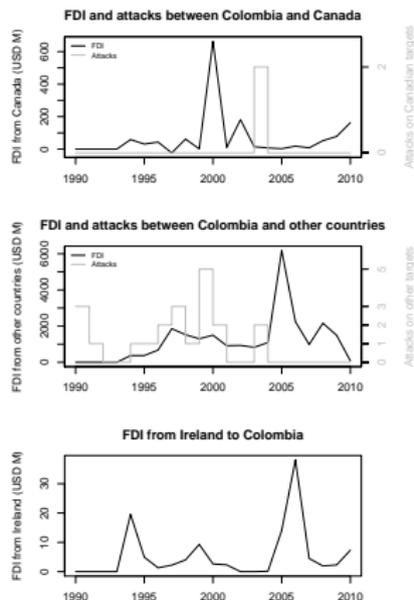


Figure: FDI and terrorist attacks in Colombia from 1990-2010

Terrorism and FDI flow

Investment size:

- ▶ Pair attacks from hosts to investors decrease the size of the investment. Increase of attacks by one standard deviation (9 times the average) decreases attacks by 12 to 14 percent. The effect dissipates in two years. This results is robust.
- ▶ I find negative spillover effects of terrorism among investors.

Economic variables and FDI flow

Probability of investment:

- ▶ Where investors have more comparative advantage over hosts, investment probability is higher (educational gap and GDP level).
- ▶ Common language and distance are significant factors for probability of investment.

Investment size:

- ▶ Accumulated stock of FDI is significant predictor of future investment.
- ▶ More capital openness attracts investments.

Governance indicators and FDI flow

Probability of investment:

- ▶ Host's control of corruption, tax regulation, government effectiveness increase probability of receiving an investment.

Size of the investment:

- ▶ Host's political stability has the highest impact on the size of the investment (while having no effect on the probability of an investment).
- ▶ Improvements of host's regulatory quality, control of corruption, and voice and accountability significantly increases FDI.

Thank you!