

THE EFFECT OF INFLATION TARGETING ON FOREIGN DIRECT INVESTMENT IN DEVELOPING COUNTRIES

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Research Questions

- Does inflation targeting (**IT**) **positively affect** foreign direct investment (**FDI**) flows to **developing countries**?
- Does the **relationship** between inflation targeting and FDI flows **hold** during **times of stress**?

Outline

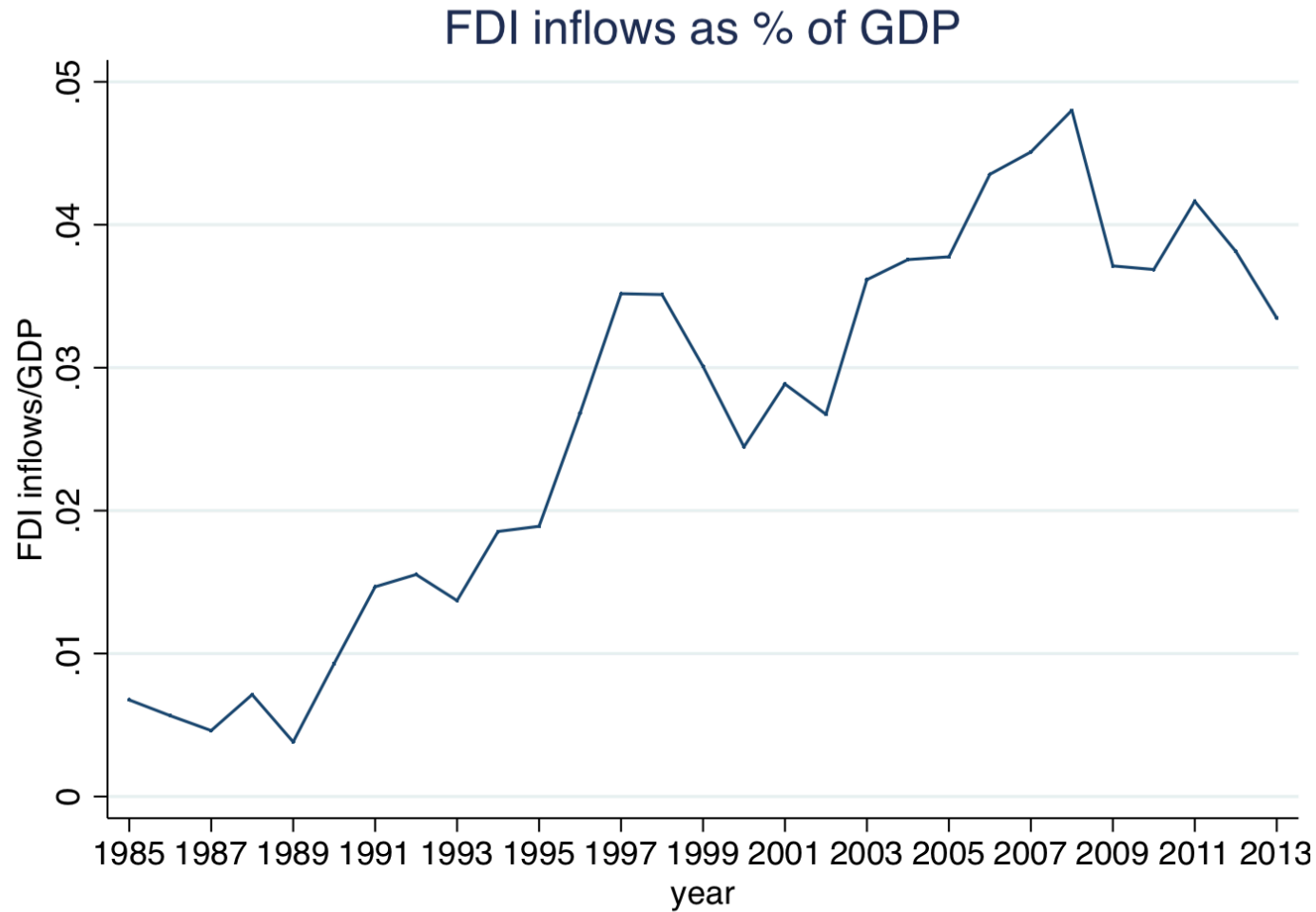
- Motivation
- Literature review
- Data
- Results
- Conclusion

FDI – One of the Most Important Sources of Finance for Developing Countries

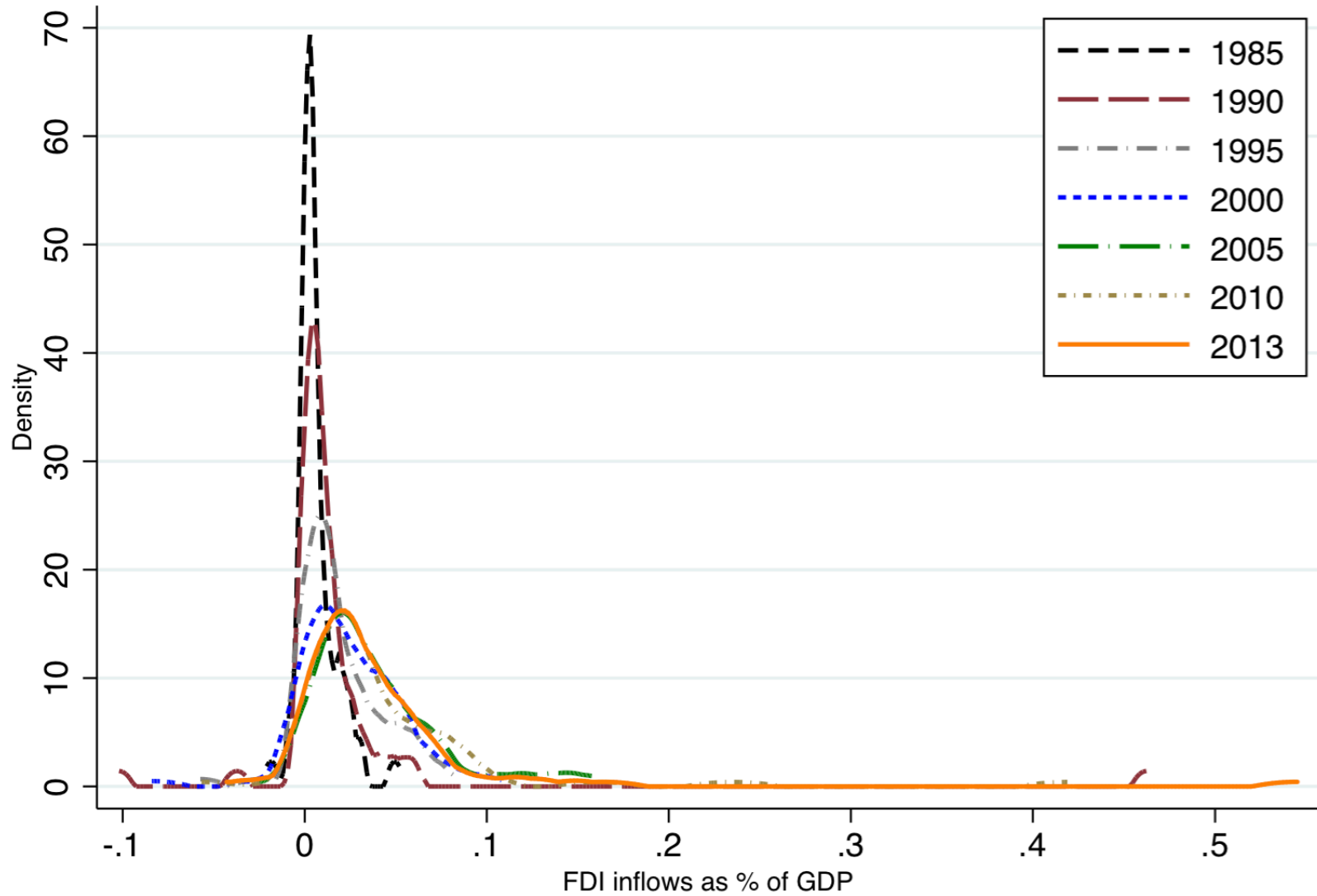
Benefits of FDI:

- Technology spillovers (Driffield and Jones, 2013)
- Job opportunities (Javorcik et al., 2017)
- Increase in output & economic growth (Javorcik et al., 2017)
- Human capital formation (Loungani and Razin, 2001)
- More competitive business environment (Harrison, 1994)

FDI – Ownership of 10% or More of the Shares in a Foreign Enterprise



Density of FDI inflows



kernel = epanechnikov, bandwidth = 0.0025

Determinants of FDI

Exogenous factors

- Size of the country (Dunning, 1993)
- Natural resources (Dunning, 1993)

Endogenous factors

- **Inflation** (Kiat, 2008; Hussani, 2011)
- Institutions (Feng, 2017)
 - Corruption
 - Democratic accountability
 - Rule of law
- Exchange rate stability (Goldberg, 2006)
- Trade openness & financial openness (Ayouni et al., 2014)

High and Unstable Inflation is Detrimental to FDI

- Distortion of economic activities (Khan and Mitra, 2014)
- Decreased profitability due to increased costs (Singh and Giri, 2016)
- High cost of capital due to high nominal interest rates (Siddiqui and Aumeboonsuke, 2014)
- Increase in volatility of prices which leads to uncertainty (Siddiqui and Aumeboonsuke, 2014)

Inflation Targeting (IT) Helps Countries to Lower and Stabilize Inflation

Goals:

- Publicly announced inflation target.
- Institutional commitment by the monetary authority.
- Transparency and accountability.

Effects of IT:

- More stable inflation (*Vega and Winkelried, 2005*)
- Anchored inflation expectations (*Filho, 2010*)
- Lower exchange rate volatility (*Rose, 2006*)
- Increased credibility of the Central Bank (*IMF, 2004*)
- Less frequent sudden stops of capital flows (*Rose, 2006*)

Fifteen Countries Adopted IT by 2013

Albania (2009)

Brazil (1999)

Chile (1999)

Colombia (1999)

Ghana (2007)

Guatemala (2005)

Indonesia (2005)

Mexico (2001)

Peru (2002)

Philippines (2002)

Serbia (2006)

South Africa (2000)

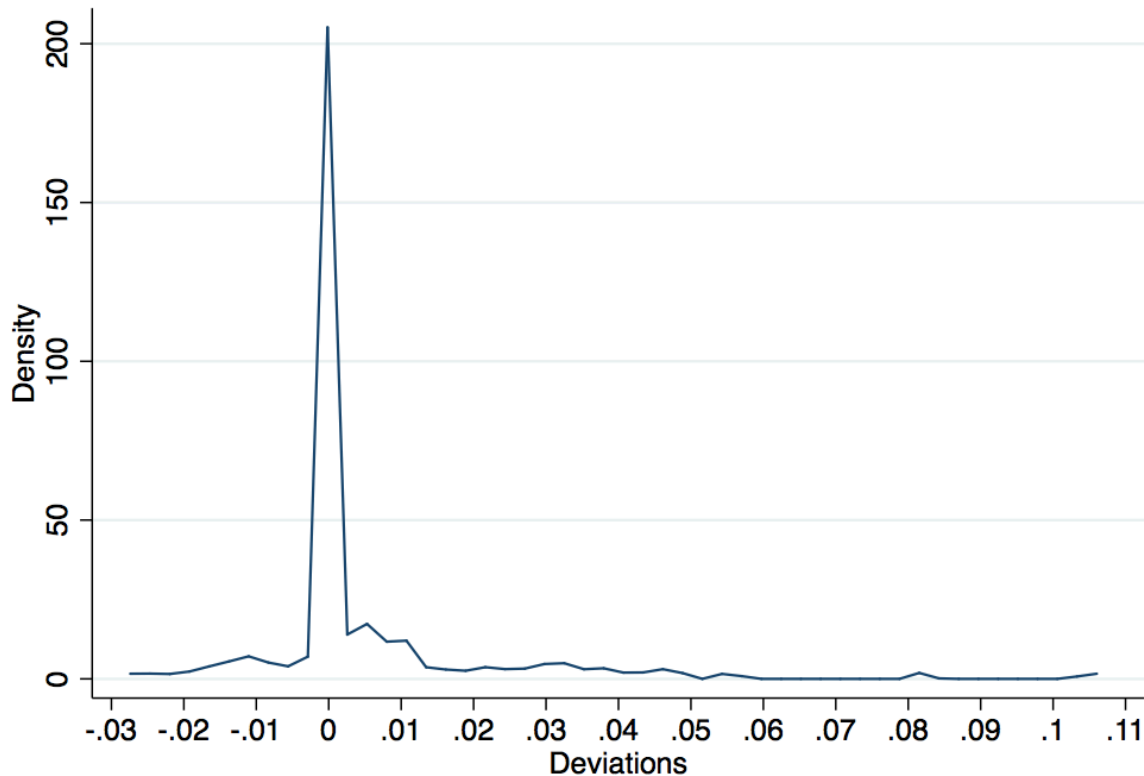
Thailand (2000)

Turkey (2006)

Uruguay (2002)

Did Inflation Targeting Actually Work?

Deviations of actual inflation from the official CB targets



- Brazil, 2003 **✗**
 - IT range: **1.25% – 5.25%**
 - Actual inflation: **9.3%**
- Colombia, 2010 **✓**
 - IT range: **2% - 4%**
 - Actual inflation: **2.3%**

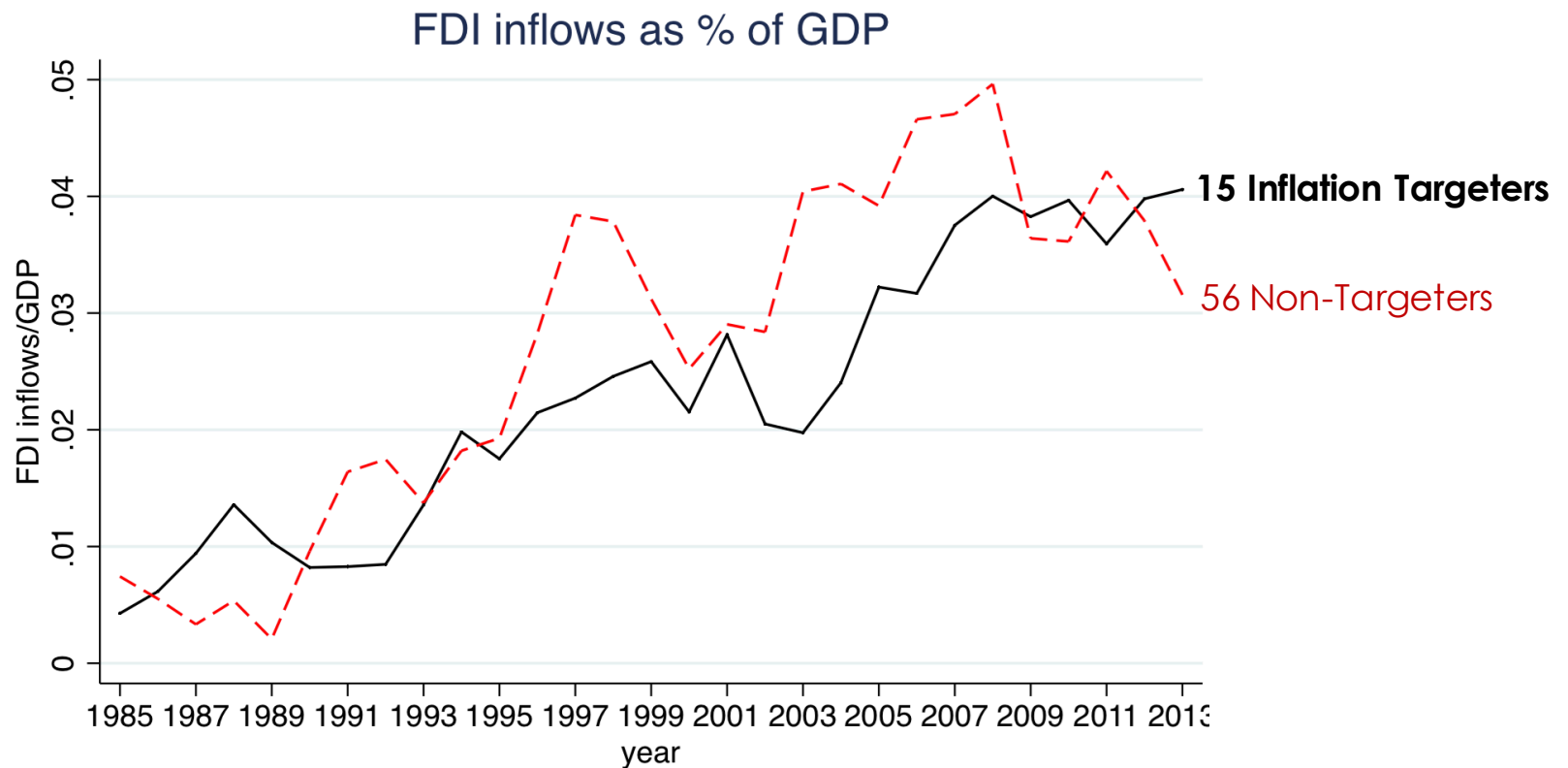
kernel = epanechnikov, bandwidth = 0.0010

Source: Ogrokhina and Rodriguez (2018).

Effect of Inflation Targeting on FDI

- FDI
 - Long-term investment
 - Requires substantial amount of money
- Investors carefully choose where to invest
- IT → Macro-economic stability → safer environment
- IT countries - more attractive destination for FDI flows

Comparison of FDI Inflows to Targeting and Non-targeting countries



The Effect of IT on FDI: Previous Research

- 53 developing countries, 1980 – 2007, propensity scores-matching (Tapsoba, 2012)
- 50 developed and developing countries, 1996 – 2012, fixed effects regression analysis (Mason and Vranceva, 2017)
- Effect of IT on FDI in South Africa, 1970 – 2012, time series techniques of cointegration, long-run structural modelling, and variance decompositions (Valli and Masih, 2014)
- 90 countries, 1996 – 2013, matching estimations (Khan, 2016)
- There is no previous research on the effect of IT on FDI during times of stress

Bad Times – Effect of Economic Downturns on FDI Flows

Any crisis has negative effects:

- Lower economic growth
- Decreasing employment
- **Unpredictability**



- Decline in capital flows (*Kaminsky et al., 2004; Essers, 2013*)
- Credit constraints (*Kaminsky et al., 2004*)



- Developing countries do not have enough resources to stimulate the economy (*Gurtner , 2010*)

IT Countries Can Be More Successful at Attracting FDI During Financial Crises

- Nominal anchor that keeps inflation stable (*Bernanke, 2011*)
- Macroeconomic stability – more resilient to shocks (*Azangue, 2012*)
- Sound fiscal discipline (*Tapsoba, 2010*)

Data

- 71 developing countries spanning 1985 to 2013
- FDI flows as % of GDP (**UNCTAD**)
- IT dates come from **Roger (2010) and Hammond (2012)**
- GDP growth, GDP, inflation, natural resources, credit to GDP ratio, and trade (**World Bank (WDI) & IMF**)
- Financial openness (**Chinn and Ito, 2006**)
- Exchange rate flexibility (**Ilizetki, Reinhart, and Rogoff, 2017**)
- Institutions (**International Country Risk Guide**)

Estimation Strategy

$$FDI_{i,t} = \alpha_i + \gamma_t + \beta \cdot IT_{i,t} + \delta \cdot X_{i,t} + \varepsilon_{i,t}$$

- Difference-in-differences approach
- $FDI_{i,t}$ - foreign direct investment in country i and year t
- $IT_{i,t}$ - dummy variable in country i and year t
- $X_{i,t}$ - inflation, GDP growth, GDP, exchange rate flexibility, credit to GDP ratio, trade, financial openness, and institutions, such as corruption, law and order, democratic accountability, internal and external conflict.
- α_i - a country fixed effect
- γ_t - a time fixed effect

Results

	Total Effect	Bad Times	Good Times
	(1)	(2)	(3)
IT	0.0099* (0.0053)		
IT bad		0.0102** (0.0045)	0.007 (0.005)
IT good		0.012* (0.006)	0.010 (0.006)
Non IT bad		-	-0.003 (0.002)
Non IT good		0.003 (0.002)	-
FE (country, year)	YES	YES	YES
Controls	YES	YES	YES
Within-R ²	0.175	0.176	0.176
Observations	1239	1239	1239

Robust standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01.

Bad Times

$$\text{FDI}_{i,t} = \alpha_i + \gamma_t + \beta_1 \cdot \text{IT_bad}_{i,t} + \beta_2 \cdot \text{IT_good}_{i,t} + \beta_3 \cdot \text{non_IT_good}_{i,t} + \delta \cdot X_{i,t} + \varepsilon_{i,t}$$

- $\text{IT_bad}_{i,t}$ - DV: 1 – IT country in bad times; 0 - otherwise
- $\text{IT_good}_{i,t}$ - DV: 1 – IT country in good times; 0 - otherwise
- $\text{non_IT_good}_{i,t}$ - DV: 1 – non-IT country in good times; 0 – otherwise
- **$\text{non_IT_bad}_{i,t}$** is omitted from this equation
- Method from Kaminsky et al. (2004):
 - *Good times: growth of real $\text{GDP}_i > \text{median growth of real } \text{GDP}_i$*
 - *Bad times: growth of real $\text{GDP}_i < \text{median growth of real } \text{GDP}_i$*

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 - *Bad times: growth of real $\text{GDP}_i <$ median growth of real GDP_i*

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Robustness Checks

- Financial development index
- Political risk index
- Population
- Currency crises

Conclusion

- IT **increases FDI** by almost **1 p.p.** compared to non-IT countries
- IT **increases FDI** by **1 p.p.** compared to non-IT countries during **bad times**
- **No significant difference** in FDI to IT and non-IT countries during **good times**



- Another **positive effect** of IT policy – **increased FDI flows**
- The **overall effect** of IT is driven by **bad times**

QUESTIONS?

Results – Alternative Specifications

	Total Effect	Bad Times	Good Times
	(1)	(2)	(3)
IT/ IT bad/ IT good	0.009*	0.012**	0.007
Institutions	(0.005)	(0.006)	(0.006)
Within-R ²	0.122	0.128	0.129
Observations	1376	1376	1376
IT/ IT bad/ IT good	0.010*	0.010**	0.010
Population	(0.005)	(0.004)	(0.006)
Within-R ²	0.175	0.175	0.175
Observations	1264	1264	1264
FE (country, year)	YES	YES	YES
Controls	YES	YES	YES

Robust standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01.

Results – Alternative Specifications

	Total Effect	Bad Times	Good Times
	(1)	(2)	(3)
IT/ IT bad/ IT good	0.008	0.009*	0.008
Financial Development	(0.006)	(0.005)	(0.007)
Within-R ²	0.163	0.164	0.164
Observations	1262	1262	1262
IT/ IT bad/ IT good	0.010**	0.039*	0.010**
Currency Crises	(0.005)	(0.022)	(0.005)
Within-R ²	0.165	0.168	0.168
Observations	1256	1256	1256
FE (country, year)	YES	YES	YES
Controls	YES	YES	YES

Robust standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01.