Emergence of Asia: Reforms, Corporate Savings and Global Imbalances

Jingting Fan   Şebnem Kalemli-Özcan

University of Maryland

IMF, University of Maryland, NBER, and CEPR

2013 IMF-Bank of Korea Conference

Big Picture

- Past two decades have witnessed large and persistent current account surpluses and deficits in the world economy.

- Deficit side–industrial economies

- Surplus side–emerging economies (Asia and Middle East)

- Magnitudes have been reduced since the onset of global financial crisis but it is still debated if these reductions are temporary or permanent

  ⋆ (Blanchard and Milesi-Ferretti (2009)).

- More important than ever to understand the causes of such imbalances.

Theoretical Explanations

Two views:

1. Imbalances is a result of unsustainable behavior of certain agents (governments) and hence must be eventually reversed
   - Dooley, Folkerts-Landau, Garber (2007).
   - Recently policy circles in the light of the current EM slowdown.

2. Imbalances is a result of a equilibrium behavior of rational agents so can persist. **Financial frictions/underdeveloped markets** is the key culprit.

   - Several theories focusing on different frictions; demand or supply of funds; savings or investment implications

     - Caballero, Fahri, Gourinchas (2008), Song, Storesletten, Zilibotti (2011), Mendoza, Quadrini, Rios-Rull (2009), Buera and Shin (2011).
     - Aguiar and Amador (2011), Benigno and Fornaro (2012).

   - **Policy implication:** Emerging markets must undertake financial reform, which will reduce global imbalances.

Theoretical Explanations

Two views:

1. Imbalances is a result of unsustainable behavior of certain agents (governments) and hence must be eventually reversed
   - Dooley, Folkerts-Landau, Garber (2007).
   - Recently policy circles in the light of the current EM slowdown.

2. Imbalances is a result of a equilibrium behavior of rational agents so can persist. **Financial frictions/underdeveloped markets** is the key culprit.

   - Several theories focusing on different frictions; demand or supply of funds; savings or investment implications
     - Caballero, Fahri, Gourinchas (2008), Song, Storesletten, Zilibotti (2011), Mendoza, Quadrini, Rios-Rull (2009), Buera and Shin (2011).
     - Aguiar and Amador (2011), Benigno and Fornaro (2012).

   - **Policy implication:** Emerging markets must undertake financial reform, which will reduce global imbalances.

Empirical Explanations

Empirical evidence so far cannot differentiate between views and theories:

- All models match aggregate trends; looking at macro trends cannot differentiate between these micro-founded models

- Models differ in micro mechanisms but only few empirical papers use micro data and the ones that do are static whereas global imbalances is a dynamic phenomena

- Almost all empirical papers focus on China, whereas during 2000s many other Asian countries have similar patterns in terms of growth and net capital outflows

This Paper

We test the key prediction of models with financial frictions using firm-level data from several surplus Asian countries, using the natural experiment of financial reform

Current Account (% GDP)

Source: World Economic Outlook Database, IMF
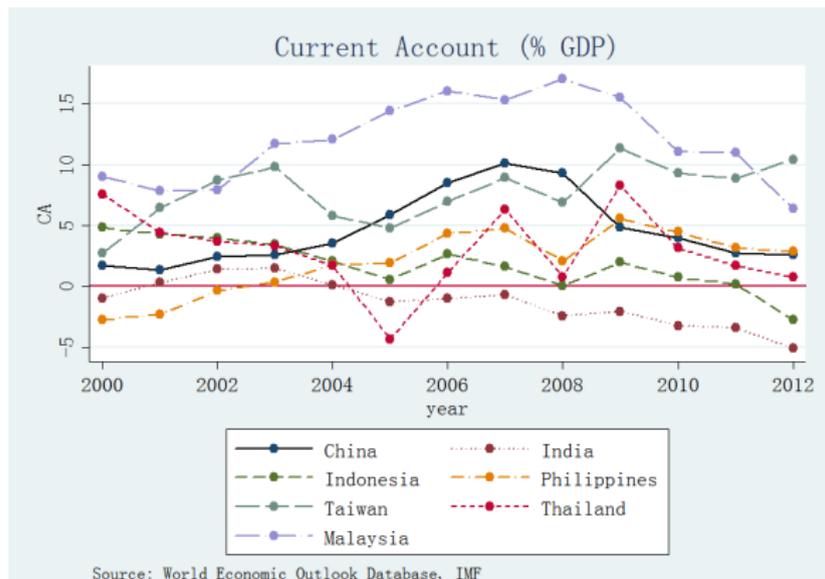
Key Results

- Upon financial reform, SOEs save more and invest less relative to private firms.

- Estimates are economically significant ranging from 20 to 40 percent increase in net savings depending on the reform.

Motivation
Identification Methodology and Data
Results
Robustness
Conclusion

Methodology
Data

Why Asian Countries?

- Aggregate level: We need surplus countries with productivity growth during our period with and without financial reform (treatment and control)

- Firm level: We need enough firm level heterogeneity in terms of productivity and financial frictions (SOE versus private)

Motivation
Identification Methodology and Data
Results
Robustness
Conclusion

Methodology
Data

Identification

We run the following differences-in-differences regression:

$$
\begin{aligned}
y_{i,c,j,t} = \quad & \beta SOE_{i,c,j} \times Reform_{c,t} \\
& + \phi_{j,t} + \varphi_{c,t} + \alpha_i + \xi_{i,c,j,t}
\end{aligned}
\tag{1}
$$

- $y_{i,c,j,t}$: Savings, Investment

- $SOE_{i,c,j}$: Dummy for state-owned firm

- $Reform_{c,t}$: Dummy/index for financial reform

- $\phi_{j,t}$: Sector-year effect to capture taxes, subsidies

- $\varphi_{c,t}$: Country-year effects to capture any trends in corporate saving-investment and also exchange rate and other policies

- α_i: Firm effects to capture any permanent difference between SOE and private firms such as inefficiency, bank financing, dividend practices,...

Motivation
Identification Methodology and Data
Results
Robustness
Conclusion

Methodology
Data

Financial Reforms

An overall financial liberalization index and subcomponents from
IMF (Abiad, Treseel, Detragiache (2008)).

Index improves discretely when a reform takes place, hence
corresponds to actual reform dates.

- Interest rate control: Government specify lending or deposit or
  both rates (or a band)
- Security market liberalization
- Capital account openness

Motivation
Identification Methodology and Data
Results
Robustness
Conclusion

Methodology
Data

Firm-Level Data

- ORBIS: Commercial database provided by Burea van Dijk which contains administrative data on millions of firms worldwide.

- Financial, ownership and balance sheet information in ORBIS is initially collected by local chambers of commerce and then relayed to BvD by 40 different information providers. Compulsory reporting in most European countries.

- Database starts in 1996, best coverage 2000–2012; harmonized, internationally comparable, end of year accounting.

- Universe of listed firms and most of private firms (as oppose to worldscope or compustat global that are only listed)

- For private companies info on owner with stakes exceeding 0.01%; for listed stakes exceeding 3-5%.

- Owner can also be found in the database via ID.

- We pick our 11 Asian countries out of this database for the period 2000-2012

Motivation
Identification Methodology and Data
Results
Robustness
Conclusion

Methodology
Data

Variables

- Savings: retained earnings for listed firms; other shareholders' funds: unlisted firms

  ⋆ Equity= Capital + Other shareholders' funds (retained earnings, reserves, depreciation,..)

- Investment is the change in total fixed assets or change in PPE

- Ownership: Based on ultimate and direct ownership percentages: both use percentage and direct info on government owned or not

- We normalize savings and investment by assets in the regression

Firm Savings

Table: Retained Earnings (Listed Companies)

	(1)	(2)	(3)	(4)
	Retained Earnings Over Total Assets			
Overall Score*SOE	0.0192***			
	(0.00633)			
Interest Control*SOE		0.0416***		
		(0.0137)		
International Capital*SOE			-0.0248	
			(0.0381)	
Security Market*SOE				0.0379***
				(0.0110)
Country*Year	Y	Y	Y	Y
Sector*Year	Y	Y	Y	Y
Firm Fixed Effect	Y	Y	Y	Y
Profitability[1]	Y	Y	Y	Y
Investment[2]	Y	Y	Y	Y
R^2	0.059	0.059	0.059	0.059
Observations	89246	89246	89246	89246

Clustered (at country*sector level) standard errors in parentheses.

[1] Measured as Profit/Total Asset

[2] Increase in Fixed assets/Total Assets

Table: Other Share Holders' Fund (Listed Companies)

	(1)	(2)	(3)	(4)
	"Other Shareholders' Fund" Over Total Assets			
Overall Score*SOE	0.0176***			
	(0.00633)			
Interest Control*SOE		0.0379***		
		(0.0134)		
International Capital*SOE			-0.0266	
			(0.0391)	
Security Market*SOE				0.0352***
				(0.0109)
Country*Year	Y	Y	Y	Y
Sector*Year	Y	Y	Y	Y
Firm Fixed Effect	Y	Y	Y	Y
Profitability[3]	Y	Y	Y	Y
Investment[4]	Y	Y	Y	Y
R^2	0.046	0.046	0.046	0.046
Observations	89525	89525	89525	89525

Clustered (at country*sector level) standard errors in parentheses.

---

[3] Measured as Profit/Total Asset

[4] Increase in Fixed assets/Total Assets

Table: Other Share Holders' Fund (Full Sample)

	(1)	(2)	(3)	(4)
	"Other Shareholders' Fund" Over Total Assets			
Overall Score*SOE	0.0156**			
	(0.00725)			
Interest Control*SOE		0.0280*		
		(0.0156)		
International Capital*SOE			-0.00923	
			(0.0367)	
Security Market*SOE				0.0327***
				(0.0125)
Country*Year	Y	Y	Y	Y
Sector*Year	Y	Y	Y	Y
Firm Fixed Effect	Y	Y	Y	Y
Profitability[5]	Y	Y	Y	Y
Investment[6]	Y	Y	Y	Y
R^2	0.024	0.024	0.024	0.024
Observations	667659	667659	667659	667659

Clustered (at country*sector level) standard errors in parentheses.

---

[5] Measured as Profit/Total Asset

[6] Increase in Fixed Asset/Total Asset

Motivation
Identification Methodology and Data
Results
Robustness
Conclusion

Threats to Identification
Other Robustness

Threats to Identification

- Selection at treatment: Not applicable since firms do not switch
- No visible difference in prior trends in savings
- Control group countries with no reforms also control for such trends if any (Japan, Korea, Hong Kong, Singapore).
- Placebo reforms find no difference in savings: Fake reforms are at least one year before actual reform and three years after previous reforms

Motivation
Identification Methodology and Data
Results
Robustness
Conclusion

Threats to Identification
Other Robustness

Table: Placebo Test

	(1) Retained Earnings (Listed)	(2) OSFD (Listed)	(3) OSFD(Full)
Placebo Reform * SOE[7]	0.0169	-0.0134	-0.0212
	(0.0484)	(0.0368)	(0.0370)
Profit_Asset	Y	Y	Y
Investment	Y	Y	Y
Country*Time	Y	Y	Y
Sector *Time	Y	Y	Y
Firm Fixed Effects	Y	Y	Y
R^2	0.053	0.047	0.022
Observations	84314	88990	647069

Clustered (at country*sector level) Standard errors in parentheses

---

[7]The placebo reforms are India, 2003 and Philippines, 2004

Motivation
Identification Methodology and Data
Results
Robustness
Conclusion

Threats to Identification
Other Robustness
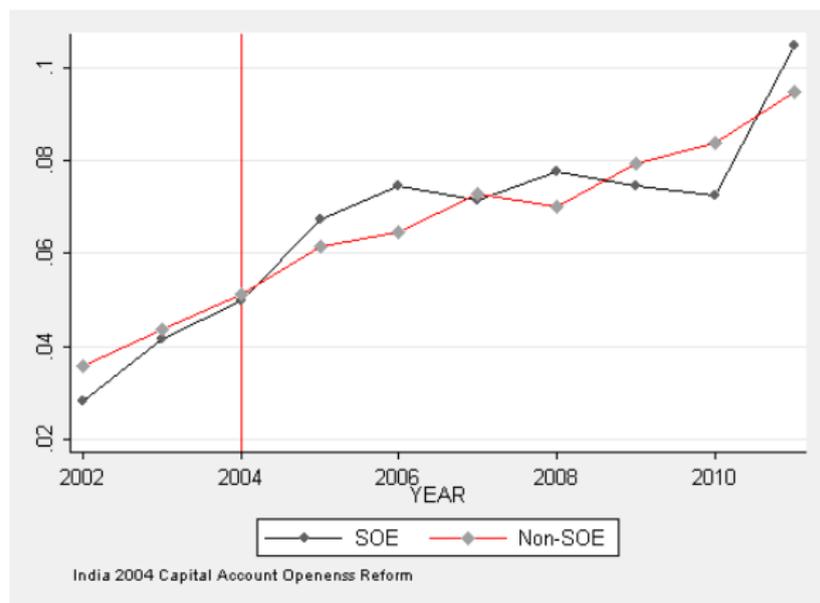
Figure: Median Saving Rate for Indian Listed Companies

Motivation
Identification Methodology and Data
Results
Robustness
Conclusion

Threats to Identification
Other Robustness

Extra Robustness

- Results are not driven by entry-exit since we obtain similar results from continuing firms
- Cluster at different levels
- Windsorize versus trimming
- Different saving and investment variables; different normalizations
  - ⋆ Gross savings=profits+depreciation−dividends
  - ⋆ Net savings=gross savings−investment
- China focus
- First differences instead of fixed effects
- Drop sovereign wealth funds
- Drop global financial crisis years

Motivation
Identification Methodology and Data
Results
Robustness
Conclusion

Summary
Alternative Explanations

Summary

- Using a differences-in-differences methodology and firm-time level data from 11 surplus Asian countries during 2000s, we test the financial friction view of global imbalances.

- We find that upon removal of financial frictions state owned firms save more and invest less than private firms, as expected.

- Estimates are economically significant ranging from 20 to 40 percent increase in net savings depending on the reform.

- Results cast doubt on the connection between higher savings of private firms due to credit constrains and net capital outflows

Motivation
Identification Methodology and Data
Results
Robustness
Conclusion

Summary
Alternative Explanations

Possible Explanations for the Results

- Focus is only on corporate savings.

- Measurement of financial frictions via reforms:

  - ⋆ When financial frictions removed investment should surpass savings leading to capital inflows according to several models
  - ⋆ It might be that our reform measures may not capture a big reduction in financial frictions

- Political economy/role of government: The negative relation between capital flows and productivity as documented by Gourinchas and Jeanne (2012) is due to sovereign-to-sovereign flows

  - ⋆ Evidence: Alfaro, Kalemli-Ozcan, Volosovych (2012): Private capital flows are positively correlated with productivity, whereas public capital flows are negatively correlated, driving the overall negative correlation.
  - ⋆ Theory: Benigno and Fornaro (2012)

Motivation
Identification Methodology and Data
Results
Robustness
Conclusion

Summary
Alternative Explanations

Possible Explanations for the Results

- Vertical production structure–Savings: If SOEs operate in capital intensive upstream sectors as a monopoly then when private firms in downstream sectors become more productive with reforms, they can extract more rent and hence have higher profits and savings, which will go out as capital outflows.

  - ⋆ Li, Liu, Wang (2012), Song, Storesletten, Zilibotti (2011).
  - ⋆ Hsieh and Song (2012).

- Compositional effect–Investment:

  - ⋆ If the pool of unproductive guys is large then financial reform can lead to capital outflows since high productivity firms crowd out investment of low productivity firms; a large enough fall in investment triggers capital outflows.
  - ⋆ Martin and Ventura (2012), Matsuyama (2011).

Motivation
Identification Methodology and Data
Results
Robustness
Conclusion

Summary
Alternative Explanations

Table: Retained Earnings: Continuing Firms from 2002-2011

	(1)	(2)	(3)	(4)
	Retained Earnings Over Total Assets			
Overall Score*SOE	0.0161***			
	(0.00524)			
Interest Control*SOE[8]		0.0305***		
		(0.0107)		
International Capital*SOE [9]			-0.00772	
			(0.0248)	
Security Market*SOE[10]				0.0277***
				(0.00901)
Country*Year	Y	Y	Y	Y
Sector*Year	Y	Y	Y	Y
Firm Fixed Effect	Y	Y	Y	Y
Profitability[11]	Y	Y	Y	Y
Investmnet[12]	Y	Y	Y	Y
R^2	0.097	0.097	0.096	0.097
Observations	49708	49708	49708	49708

Clustered (at country*sector level) standard errors in parentheses.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Motivation
Identification Methodology and Data
Results
Robustness
Conclusion

Summary
Alternative Explanations

Table: Financial Reforms During 2002-2005

	China	India	Indonesia	Malaysia	Philippines	Taiwan	Thailand
Overall Reform	2002 2004	2004	2003	2003 2004	2005	2002 2003	-
Interest Controls	2002 2004	-	-	2004	-	-	-
International Capital	-	2004	-	-	-	-	-
Securities Market	2004	-	-	2003	-	2003	-
Any Reversal	-	-	-	-	-	-	2003

---

[12]The reform (reversal) dates are the years when the countries experience increase (decrease) in either overall financial reform index, or its three dimensions we focus on (Interest Controls, Capital Account Openness, and Security Market Reform). Each dimension is rated on the scale of 0-3 based on whether the financial market is fully depressed (0), partially depressed (1), partially liberalized (2), fully liberalized (3). The overall reform is simply the sum of the scores of each sub-dimension.

Motivation
Identification Methodology and Data
Results
Robustness
Conclusion

Summary
Alternative Explanations
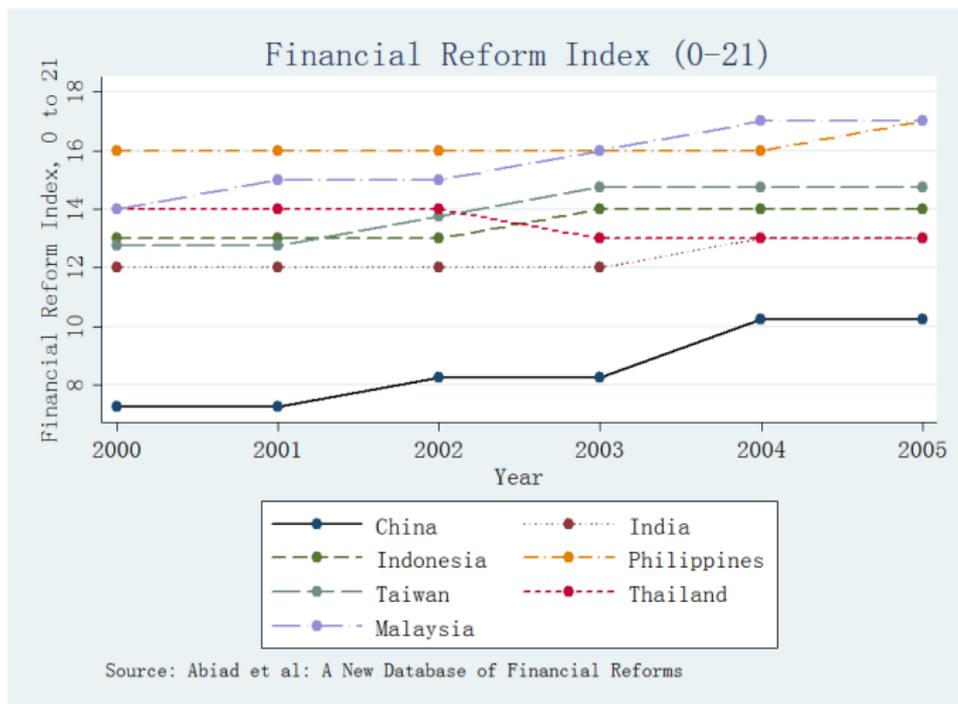
Figure: Overall Financial Reforms

Motivation
Identification Methodology and Data
Results
Robustness
Conclusion

Summary
Alternative Explanations

Representativeness of ORBIS Data

- For OECD, Andrews and Cingano (2012) align the sample of firms with the distribution of the firm population as reflected in confidential national business registers by using re-sampling weights based on the number of employees in each industry-size class cell in confidential data, which essentially scales-up the number of ORBIS observations in each cell.

- Alternative: Build several random samples to reflect countries economic size and repeat regressions obtaining similar results

- Use stratified samples where country weights are equal to their GDP

- Use a propensity score matched sample where if country A has the least number of firms relative to GDP, then we sample same number of firms relative to GDP for other countries. But we sample firms that are matched in terms of observable to the firms in the country with worst coverage.

Motivation
Identification Methodology and Data
Results
Robustness
Conclusion

Summary
Alternative Explanations

Table: Percent Observations

Sample	Variable	Observations	SOEs	% SOE
Listed	Retained Earnings	82956	14707	18
All	OSFD	679834	21434	3
Listed-Continuing Firms	Retained Earnings	49708	10963	22
All-Continuing Firms	OSFD	214627	11603	5

Motivation
Identification Methodology and Data
Results
Robustness
Conclusion

Summary
Alternative Explanations

Figure: Investment

Motivation
Identification Methodology and Data
Results
Robustness
Conclusion

Summary
Alternative Explanations

Figure: Savings

Motivation
Identification Methodology and Data
Results
Robustness
Conclusion
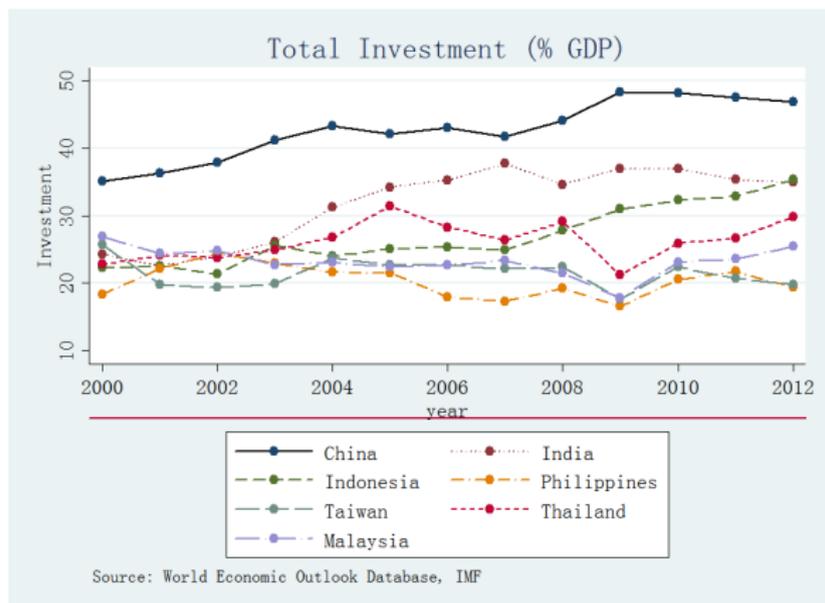
Summary
Alternative Explanations

Table: Corporate Savings: Chinese listed companies

	(1)	(2)	(3)	(4)
	Gross Savings		Retained Earnings	
Overall Score*SOE	-0.000224	0.00418**	0.00181**	0.0207**
	(0.000182)	(0.00163)	(0.000915)	(0.00928)
Firm Fixed Effects	-	Y	-	Y
Firm Size	Y	Y	Y	Y
Year Fixed Effects	Y	Y	Y	Y
Sector Fixed Effects	Y	Y	Y	Y
R^2	0.130	0.034	0.110	0.010
Observations	6748	6748	7499	7499

Clustered (at country*sector level) standard errors in parentheses.

Motivation
Identification Methodology and Data
Results
Robustness
Conclusion

Summary
Alternative Explanations

Table: Investment (Listed Companies)

	(1)	(2)	(3)	(4)
	Fixed Asset Investment Over Total Assets			
Overall Score*SOE	-0.0261**			
	(0.0125)			
Interest Control*SOE		-0.0296		
		(0.0229)		
International Capital*SOE			-0.0616	
			(0.0481)	
Security Market*SOE				-0.0603**
				(0.0278)
Country*Year	Y	Y	Y	Y
Sector*Year	Y	Y	Y	Y
Firm Fixed Effect	Y	Y	Y	Y
Profitability[13]	Y	Y	Y	Y
R^2	0.107	0.107	0.107	0.107
Observations	87584	87584	87584	87584

Clustered (at country*sector level) standard errors in parentheses.

---

[13]Measured as Profit/Total Asset

Motivation
Identification Methodology and Data
Results
Robustness
Conclusion

Summary
Alternative Explanations

Table: Investment (Full Sample)

	(1)	(2)	(3)	(4)
		Fixed Asset Investment Over Total Assets		
Overall Score*SOE	-0.0323***			
	(0.0115)			
Interest Control*SOE		-0.0354*		
		(0.0203)		
International Capital*SOE			-0.114***	
			(0.0391)	
Security Market*SOE				-0.0665**
				(0.0259)
Country*Year	Y	Y	Y	Y
Sector*Year	Y	Y	Y	Y
Firm Fixed Effect	Y	Y	Y	Y
Profitability[14]	Y	Y	Y	Y
R^2	0.036	0.035	0.035	0.036
Observations	634155	634155	634155	634155

Clustered (at country*sector level) standard errors in parentheses.

---

[14] Measured as Profit/Total Asset