

Financial Crises and International Portfolio Dynamics

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Introduction

- This paper studies the behavior of capital flows
 - Dynamics at business-cycle frequencies
 - Around periods of financial distress
- Literature focuses mostly on net capital flows
 - Net capital flows highly pro-cyclical in developing countries
 - Crises linked to large reduction (or even reversal) in net flows
- Here, focus on gross capital flows
- Provide description of capital flows from different angles
- Document stylized facts, linking them to theory and discussions

Introduction

- Net flows = inflows by foreigners – outflows by domestic agents
- CIF: inflows by foreigners
- COD: capital outflows by domestic agents
- CID: capital inflows by domestic agents
- Net flows = CIF – COD
- Net flows = CIF + CID
- Total gross capital flows = CIF – CID = CIF + COD
- Study CIF and CID separately

Introduction

- A few studies have looked at CIF and CID
- Try to do it more broadly and more systematically, emphasizing the dynamics/fluctuations
- Organization of the evidence
 - Link CIF to CID, and both to net flows
 - Behavior during good and bad times
- We cover many and different types of crises
 - Debt, exchange rate, banking crises
 - Only one and more than one crises
 - Domestic versus systemic crises
- We also look at the components of CIF and CID

Introduction

- Global financial crisis of 2008 as motivation
 - Years before the crisis, very large gross capital
 - During crisis, reduction in inflows by foreigners (CIF) and outflows by domestic agents (increases in CID)
- CIF and CID shed light on sources of fluctuations in capital flows
 - Fire sales of domestic assets to foreign investors
 - Capital flight by domestic agents
- CIF and CID shed light on nature of shocks
 - Productivity shocks
 - Worsening of investor property rights , default risk
 - Increased information asymmetries

Data

- Source: IMF's Balance of Payments Statistics Yearbooks (BOP)
- 40 years of yearly data: 1970 to 2009
- Pooled countries by income (PPP adjusted, 2005)
 - High income: GNI per capita > US\$15,000 (40 countries)
 - Middle income: US\$15,000 > GNI per capita > US\$7,500 (25 countries)
 - Low income: US\$7,500 > GNI per capita > US\$ 2,000 (38 countries)
 - Dropped small countries: GNI < US\$ 4 billion (30 countries)
 - Dropped poor countries: GNI per capita < US\$ 2,000 (46 countries)
- 103 economies

Data

- Capital flows
 - Direct investments (FDI)
 - Portfolio flows, divided into equity and debt flows
 - Other investment flows (bank flows and trade credit)
 - International reserve asset flows
- $CIF = \text{Direct investments in the reporting economy} + \text{Portfolio investment liabilities (domestic assets)} + \text{Other investment liabilities}$
- $CID = \text{Direct investments abroad} + \text{Portfolio investment assets (foreign assets)} + \text{Other investment assets} + \text{International reserve assets by the government}$

Data

- Positive values of CIF: foreigners increase their holdings of domestic assets
- Positive values of CID: domestic agents reducing their holdings of foreign assets
 - Negative values of CID: more outflows, outward investment by domestic agents
- CID and CIF scaled by trend GDP to account for their size and measure volatility relative to output
- Capital flows standardized by de-meaning and dividing each variable by the standard deviation at the country level
 - Prevents estimates from being driven by countries with large and volatile capital flows

Data

- Composite crisis indicator
 - External debt crises
 - Reinhart and Reinhart (2008), Laeven and Valencia (2008), S&P's foreign currency default
 - Domestic debt crises
 - S&P's local currency default, Reinhart and Rogoff (2008)
 - Banking crises
 - Reinhart and Rogoff (2008), Laeven and Valencia (2008), Honohan and Laeven (2005)
 - Currency crises
 - Laeven and Valencia (2008), Honohan and Laeven (2005)

Data

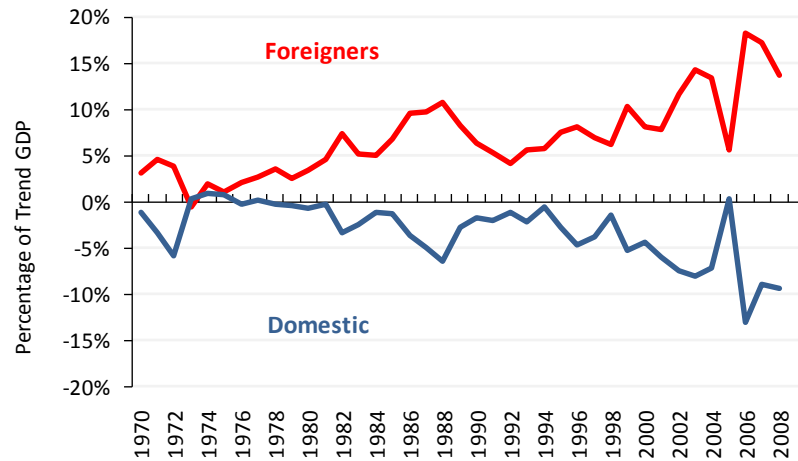
- Crises events classified into two types depending on their intensity
 - “One Crisis”
 - Beginning of one, and only one, type of crisis in a given year and no other crisis observed in the previous two years
 - “More than One Crisis”
 - Beginning of more than one type of crisis within a given year, and no such event occurred in the previous two years
- Systemic crises (in separate analysis)
 - 2008: Crisis in all countries
 - 1998: Identified crises are treated as systemic

Sample Coverage

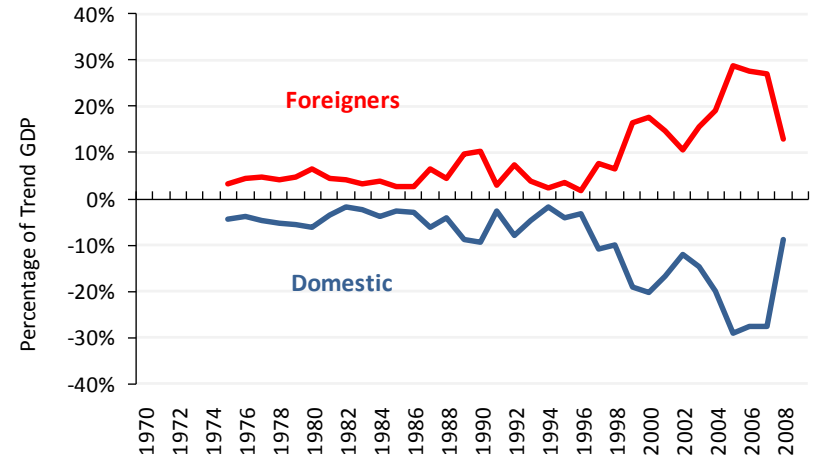
High-Income Countries		Middle-Income Countries	Low-Income Countries	
Australia	Malta	Argentina	Angola	Nicaragua
Austria	Netherlands	Bulgaria	Albania	Pakistan
Bahamas, The	Norway	Belarus	Armenia	Peru
Belgium-Luxembourg	New Zealand	Brazil	Azerbaijan, Rep. of	Philippines
Barbados	Oman	Botswana	Bosnia and Herzegovina	Paraguay
Canada	Portugal	Chile	Bolivia	El Salvador
Switzerland	Saudi Arabia	Costa Rica	China, P.R.: Mainland	Swaziland
Cyprus	Singapore	Gabon	Congo, Republic of	Syrian Arab Republic
Czech Republic	Slovak Republic	Equatorial Guinea	Colombia	Thailand
Germany	Slovenia	Croatia	Dominican Republic	Tunisia
Denmark	Sweden	Iran, I.R. of	Algeria	Ukraine
Spain	Trinidad and Tobago	Kazakhstan	Ecuador	Vietnam
Estonia	United States	Libya	Egypt	
Finland		Lithuania	Georgia	
France		Latvia	Guatemala	
United Kingdom		Mexico	Honduras	
Greece		Mauritius	Indonesia	
Hong Kong		Malaysia	India	
Hungary		Panama	Jamaica	
Ireland		Poland	Jordan	
Iceland		Romania	Sri Lanka	
Israel		Russian Federation	Morocco	
Italy		Turkey	Moldova	
Japan		Uruguay	Macedonia	
Korea, Rep.		Venezuela, R.B.	Mongolia	
Kuwait		South Africa	Namibia	

Capital Flows by Foreign and Domestic Agents

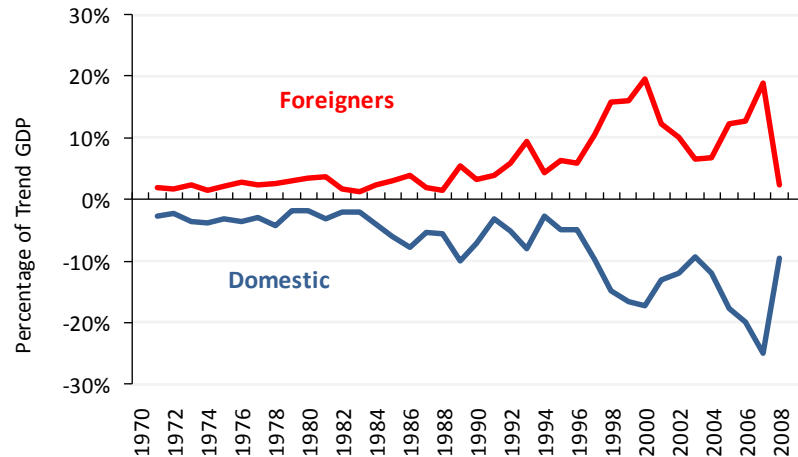
Australia



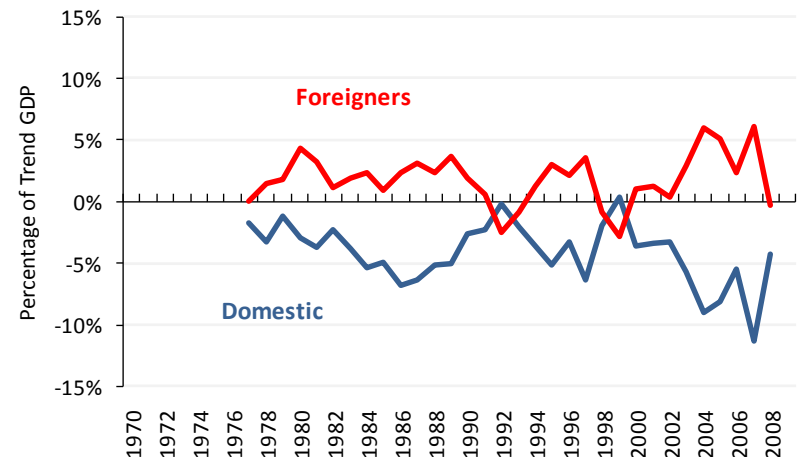
France



Germany

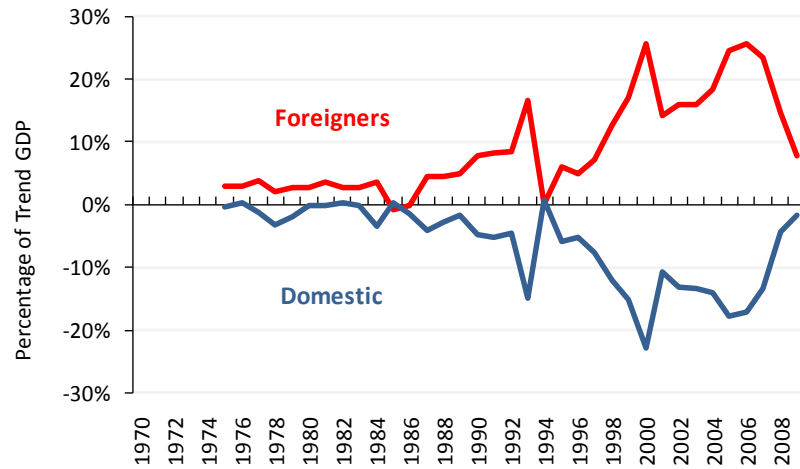


Japan

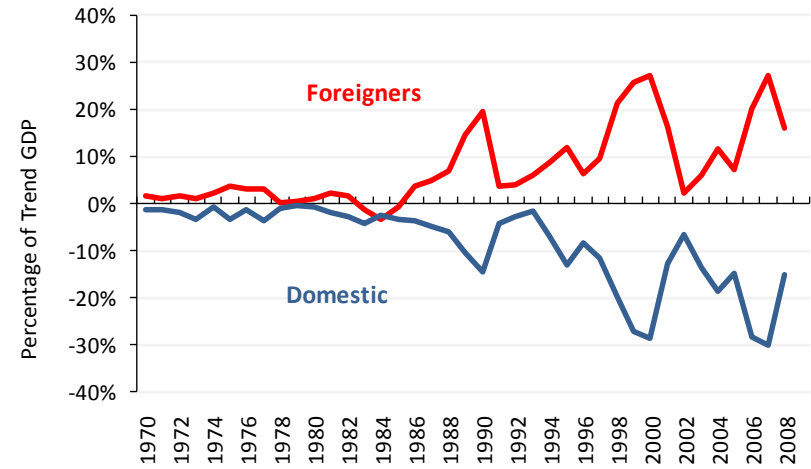


Capital Flows by Foreign and Domestic Agents

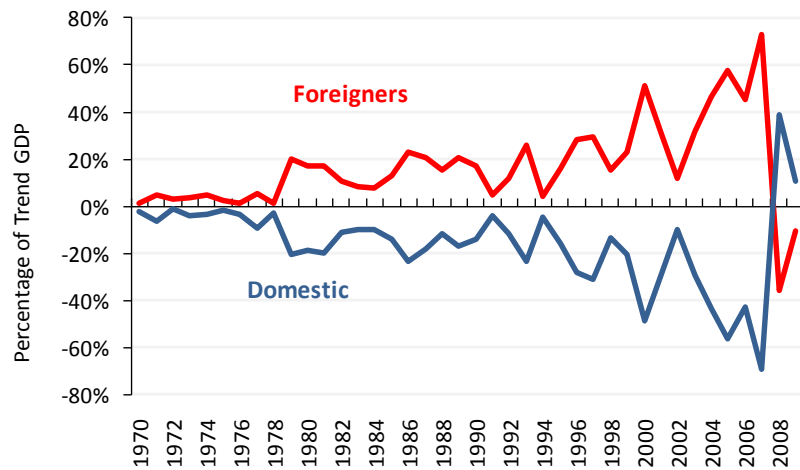
Spain



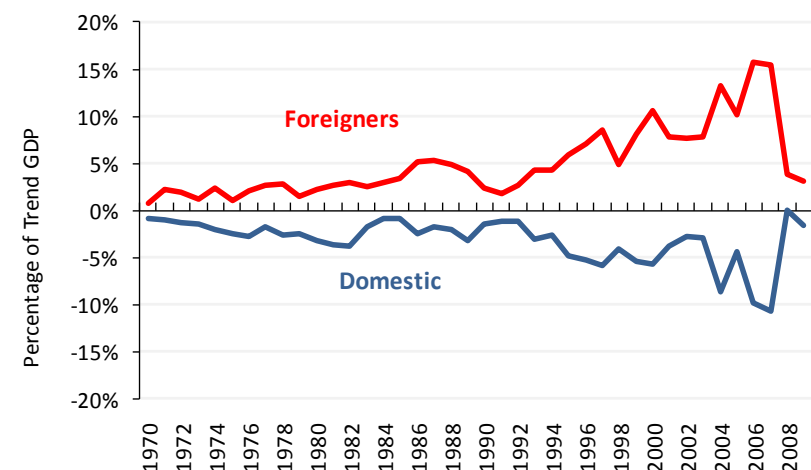
Sweden



United Kingdom

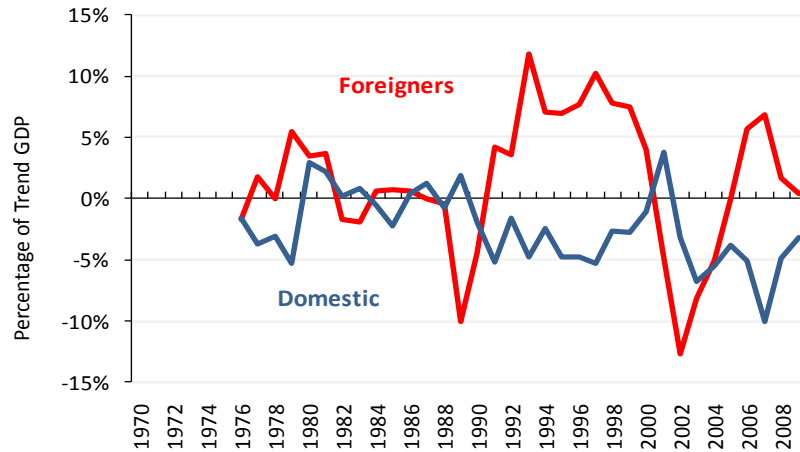


United States

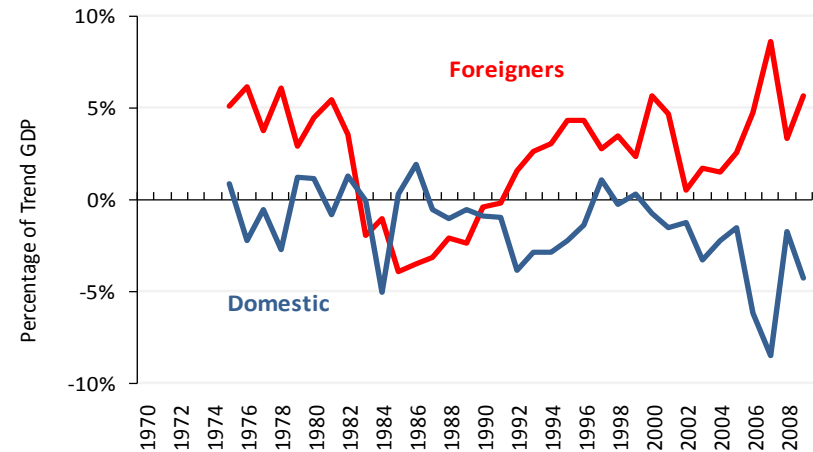


Capital Flows by Foreign and Domestic Agents

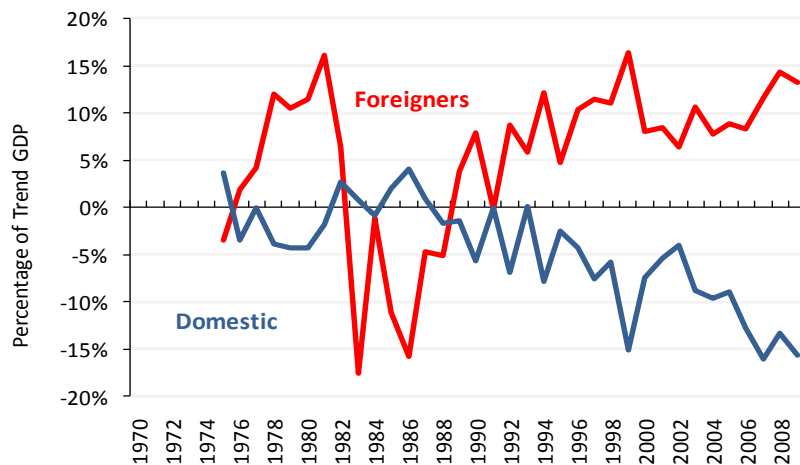
Argentina



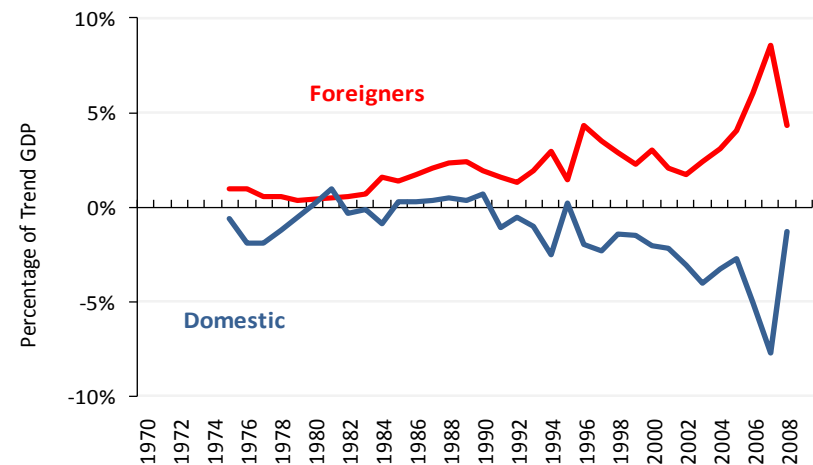
Brazil



Chile

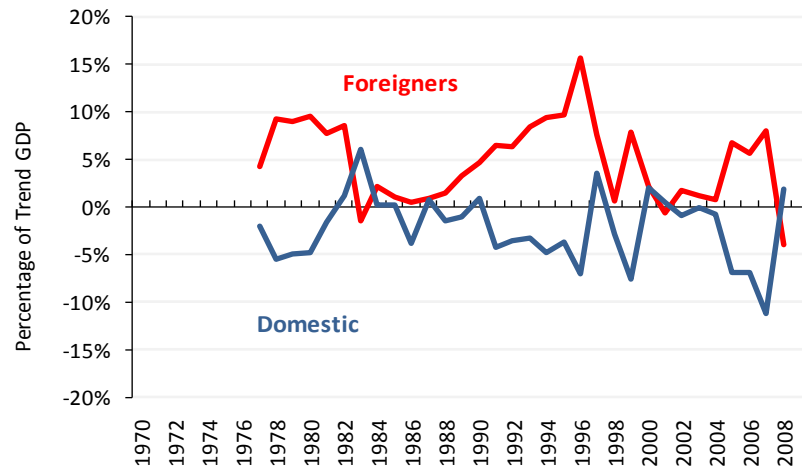


India

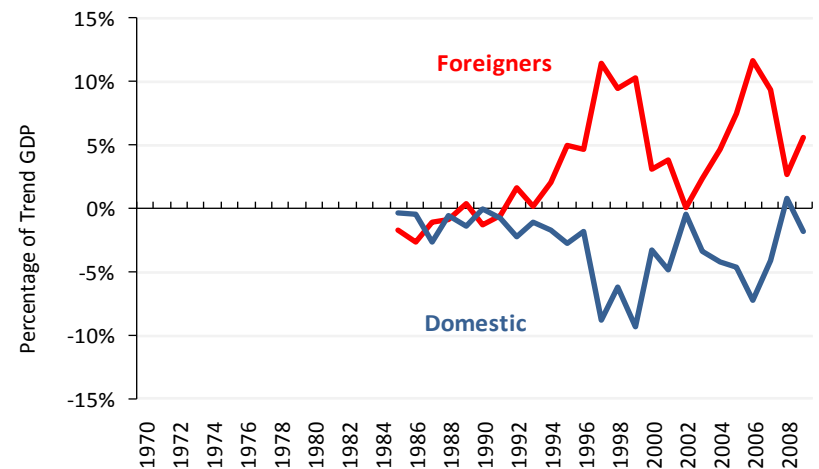


Capital Flows by Foreign and Domestic Agents

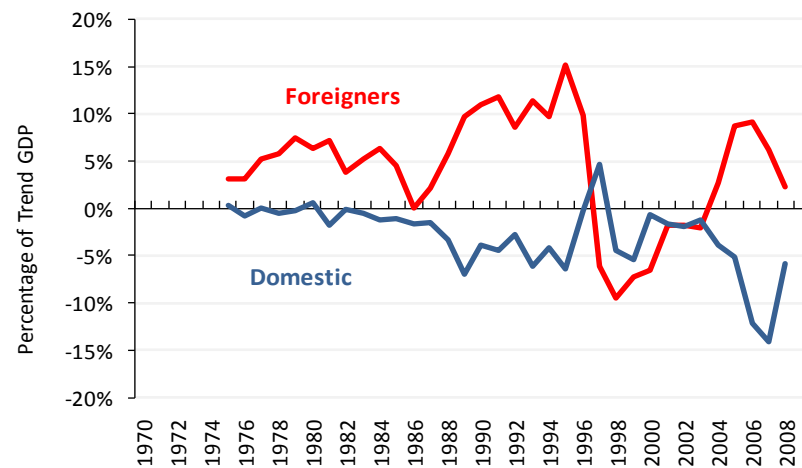
Philippines



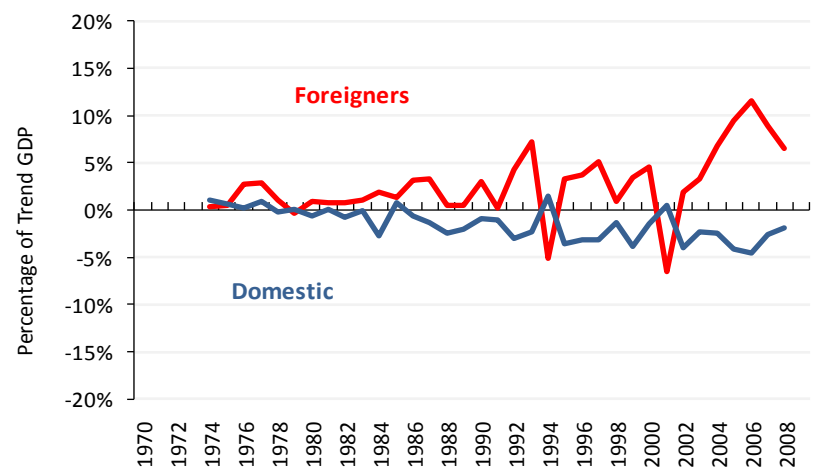
South Africa



Thailand



Turkey



Capital Flows: Summary Statistics

Median Average

	High-Income Countries	Middle-Income Countries	Low-Income Countries
Capital Inflows by Foreigners (CIF)	8.89	4.83	4.07
1970s	4.73	5.08	5.62
1980s	4.79	0.83	3.99
1990s	7.00	3.96	4.43
2000s	15.16	5.58	4.22
Capital Inflows by Domestic Agents (CID)	-8.33	-3.78	-2.87
1970s	-3.43	-3.34	-2.07
1980s	-3.78	-1.40	-0.54
1990s	-6.56	-2.80	-2.54
2000s	-17.71	-6.44	-3.73
Net Capital Inflows (CIF + CID)	0.64	1.29	2.08
1970s	1.64	3.37	3.54
1980s	1.42	0.39	2.71
1990s	0.87	0.82	1.28
2000s	-0.18	1.90	0.56
No. of Countries	39	26	38

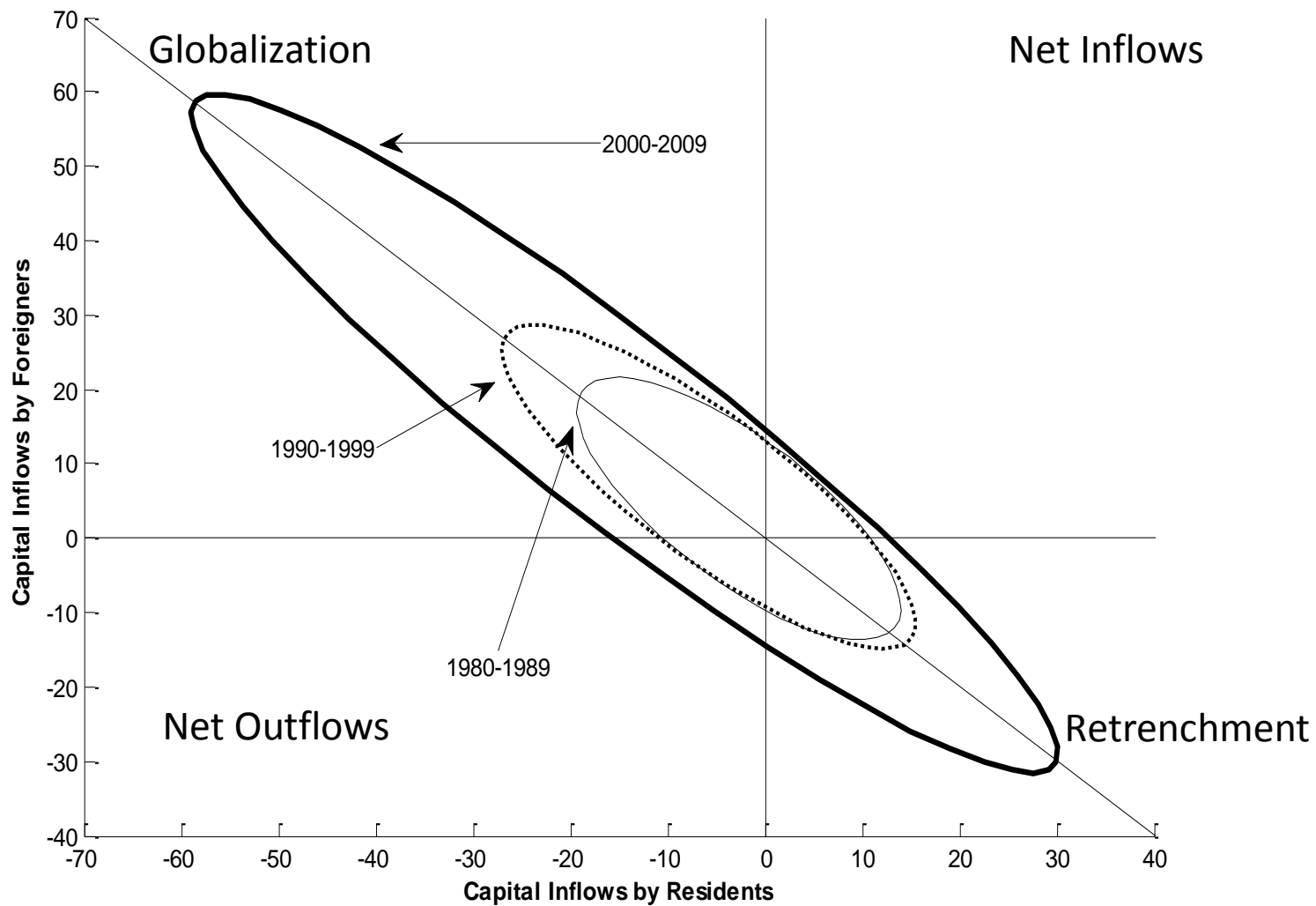
Units are in percentage of trend GDP. The sample period is 1970 to 2009

Capital Flows: Summary Statistics
Median St. Deviation

	High-Income Countries	Middle-Income Countries	Low-Income Countries
Capital Inflows by Foreigners (CIF)	7.81	6.06	5.21
1970s	2.66	3.07	2.29
1980s	3.47	4.03	3.37
1990s	5.54	4.12	4.16
2000s	9.16	4.96	3.93
Capital Inflows by Domestic Agents (CID)	8.05	5.10	3.87
1970s	2.29	2.96	1.77
1980s	3.09	2.71	2.06
1990s	5.32	3.32	3.03
2000s	8.13	4.86	3.35
Net Capital Inflows (CIF + CID)	3.92	5.62	5.51
1970s	2.41	3.94	3.09
1980s	2.71	5.56	4.11
1990s	2.79	4.23	4.18
2000s	3.60	3.94	4.37
No. of Countries	39	26	38

Units are in percentage of trend GDP. The sample period is 1970 to 2009

Gross vs. Net Capital Flows



Capital Flows by Foreign and Domestic Agents

Country-Trend Dummies						
	High-Income Countries		Middle-Income		Low-Income Countries	
	CIF	CID	CIF	CID	CIF	CID
CID	-0.81 *** [0.042]		-0.48 *** [0.067]		-0.25 *** [0.058]	
CIF		-0.81 *** [0.042]		-0.48 *** [0.066]		-0.25 *** [0.058]
No. of Countries	39	39	26	26	38	38
No. of Observations	1,300	1,300	702	702	1,050	1,050
R-squared	0.65	0.65	0.24	0.24	0.06	0.06

Country-Trend Dummies and Year Dummies

	High-Income Countries		Middle-Income		Low-Income Countries	
	CIF	CID	CIF	CID	CIF	CID
CID	-0.73 *** [0.055]		-0.38 *** [0.063]		-0.26 *** [0.057]	
CIF		-0.64 *** [0.061]		-0.37 *** [0.076]		-0.24 *** [0.053]
No. of Countries	39	39	26	26	38	38
No. of Observations	1,300	1,300	702	702	1,050	1,050
R-squared	0.67	0.71	0.37	0.38	0.18	0.25

Data from 1970-2009. Flows normalized by trend GDP

Robust standars errors are in brackets

Cyclicality in Capital Flows

	High-Income Countries					
	CIF	CID	CIF-CID	CIF	CID	CIF-CID
GDP Cycle (Real GDP/ Trend GPD)	8.30 *** [2.465]	-5.01 *** [1.684]	13.31 *** [3.717]			
GDP Growth				2.00 [1.397]	-3.14 ** [1.206]	5.15 ** [2.008]
No. of Countries	39	39	39	39	39	39
No. of Observations	1,287	1,287	1,287	1,298	1,298	1,298
R-squared	0.01	0.02	0.01	0.04	0.01	0.03
	Middle-Income Countries					
	CIF	CID	CIF-CID	CIF	CID	CIF-CID
GDP Cycle (Real GDP/ Trend GPD)	8.23 *** [1.923]	-2.22 * [1.257]	10.45 *** [2.547]			
GDP Growth				5.14 *** [0.904]	-3.84 *** [0.837]	8.98 *** [1.467]
No. of Countries	26	26	26	26	26	26
No. of Observations	681	681	681	686	686	686
R-squared	0.10	0.06	0.11	0.10	0.02	0.07
	Low-Income Countries					
	CIF	CID	CIF-CID	CIF	CID	CIF-CID
GDP Cycle (Real GDP/ Trend GPD)	5.28 *** [1.406]	-1.07 [1.339]	6.36 *** [2.153]			
GDP Growth				3.52 *** [0.853]	-3.62 *** [0.689]	7.14 *** [1.282]
No. of Countries	38	38	38	38	38	38
No. of Observations	1,042	1,042	1,042	1,047	1,047	1,047
R-squared	0.03	0.03	0.05	0.03	0.00	0.01

Data from 1970-2009. Flows normalized by GDP. Country trend dummies are included in all regressions.

Robust standard errors in brackets

Capital Flows: Tranquil vs. Crisis Periods

	Capital Flows/GDP		
	High-Income Countries	Middle-Income Countries	Low-Income Countries
Capital Inflows by Foreigners (CIF)			
Non-Crises Years	13.59	6.82	4.90
Crises Years	6.57	-5.21	3.67
Capital Inflows by Domestic Agents (CID)			
Non-Crises Years	-13.73	-6.13	-3.28
Crises Years	-3.85	5.42	-1.62
Net Capital Inflows (CIF + CID)			
Non-Crises Years	-0.14	0.68	1.62
Crises Years	2.72	0.20	2.04
No. of Countries	39	26	38

Data from 1970 to 2009. Flows are normalized by trend GDP.

Capital Flows around Crises

	High-Income Countries		Middle-Income Countries		Low-Income Countries	
	CIF	CID	CIF	CID	CIF	CID
Year t - 2	0.24 *	0.18 **	0.14	0.08	0.22	0.16
	[0.129]	[0.082]	[0.102]	[0.115]	[0.154]	[0.113]
Year t - 1	0.21	0.27	0.00	0.35 ***	0.32 **	0.04
	[0.200]	[0.180]	[0.129]	[0.097]	[0.154]	[0.122]
Crisis Year	-0.06	0.55 ***	-0.27 *	0.64 ***	-0.07	0.36 ***
	[0.131]	[0.102]	[0.157]	[0.125]	[0.159]	[0.117]
Year t + 1	-0.41 ***	0.64 ***	-0.28 *	0.04	-0.24 *	0.03
	[0.098]	[0.116]	[0.161]	[0.153]	[0.129]	[0.117]
Year t + 2	-0.28 **	0.39 ***	-0.30 **	0.11	-0.21	0.14
	[0.121]	[0.130]	[0.116]	[0.127]	[0.128]	[0.110]
No. of Crises	46	46	66	66	85	85
No. of Countries	39	39	26	26	38	38
No. of Observations	1,108	1,108	567	567	867	867
R-squared	0.03	0.05	0.05	0.07	0.04	0.04
Median Country Std. Dev.	7.81	8.55	6.04	5.56	5.02	3.31
Wald Tests:						
Crisis Year Vs. Avg. Previous 2 Years	7.12 ***	13.39 ***	5.92 ***	6.93 ***	10.38 ***	3.72 *
P-Value	0.01	0.00	0.02	0.01	0.00	0.06

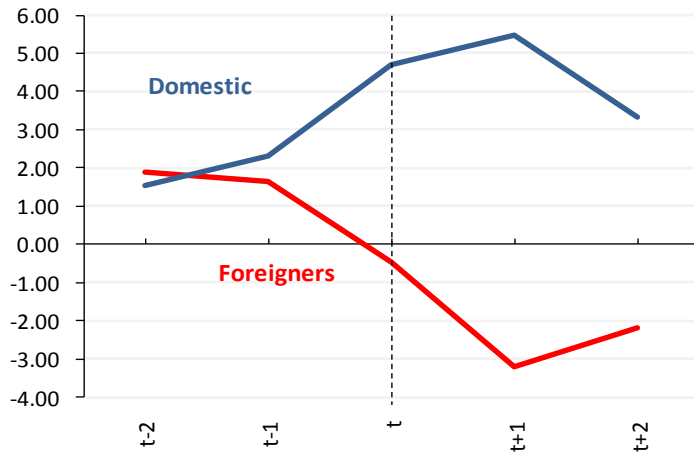
Data from 1970-2005. Flows normalized by trend GDP. Country trend dummies are included in all regressions

Robust standard errors are in brackets

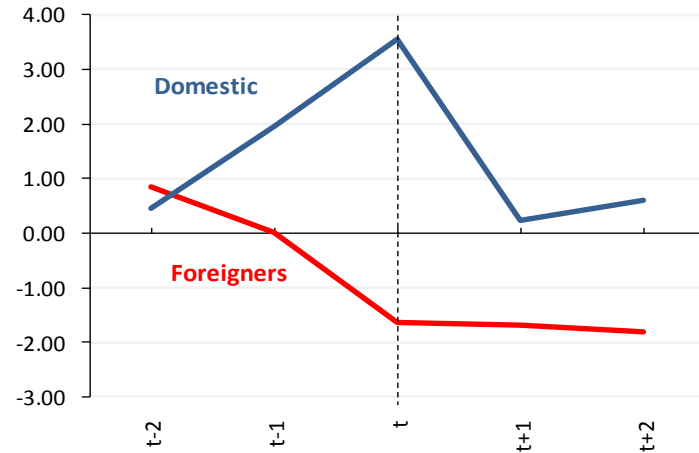
Capital Flows around Crises

Percent of GDP

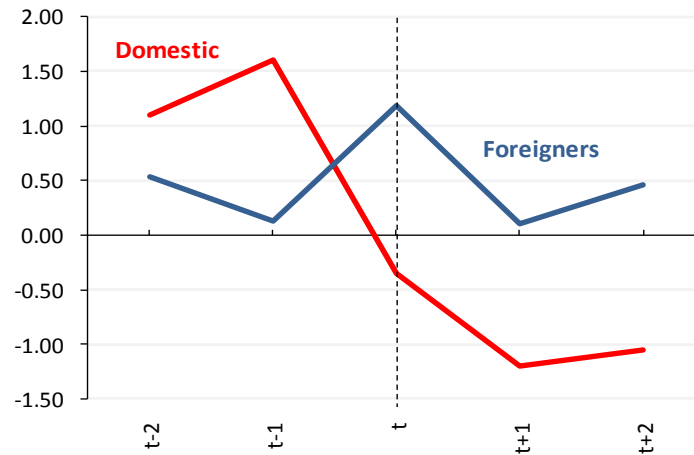
High-Income Countries
Capital Inflows



Middle-Income Countries
Capital Inflows



Low-Income Countries
Capital Inflows



Capital Flows around Crises of Different Intensities

	High-Income Countries		Middle-Income Countries		Low-Income Countries	
	CIF	CID	CIF	CID	CIF	CID
One Crisis Episodes						
Year t - 2	0.21 *	0.21 **	0.23 *	0.03	0.17	0.28 ***
Year t - 1	0.17	0.29	-0.03	0.46 ***	0.25 *	0.12
Crisis Year	-0.09	0.56 ***	-0.12	0.46 ***	-0.08	0.32 **
Year t + 1	-0.43 ***	0.71 ***	-0.18	0.12	-0.18	0.01
Year t 2 1	-0.27 **	0.42 ***	-0.22	0.17	-0.15	0.18
More than One Crisis Episodes						
Year t - 2	1.61 ***	0.21 **	0.06	0.27	0.33	-0.03
Year t - 1	1.39 ***	-1.06 ***	0.19	0.37	0.36	0.08
Crisis Year	0.24	-0.25	-0.93 ***	1.18 ***	-0.60 *	0.59 **
Year t + 1	0.11	-1.20 ***	-0.74 ***	-0.10	-0.74 ***	-0.23
Year t 2 1	0.24	-0.24	-0.58 ***	-0.30 **	-0.50 **	-0.03
No. of Only One Crisis Episodes	45	45	49	49	74	74
No. of More than One Crisis Episodes	2	2	24	24	25	25
No. of Countries	39	39	26	26	38	38
No. of Observations	1,082	1,082	563	563	861	861
R-squared	0.04	0.07	0.11	0.13	0.07	0.05
Median Country Std. Dev.	7.81	8.55	6.04	5.56	5.02	3.31
Wald Tests: Only One Crisis Episodes						
Crisis Year Vs. Avg. Previous 2 Years	6.56 ***	14.2 ***	2.00	2.30	5.35 **	0.88
P-Value	0.01	0.00	0.17	0.14	0.03	0.35
Wald Tests: More than One Crisis Episodes						
Crisis Year Vs. Avg. Previous 2 Years	4.82 **	0.55	22.78 ***	14.02 ***	12.59 ***	3.30 *
P-Value	0.03	0.46	0.00	0.00	0.00	0.08

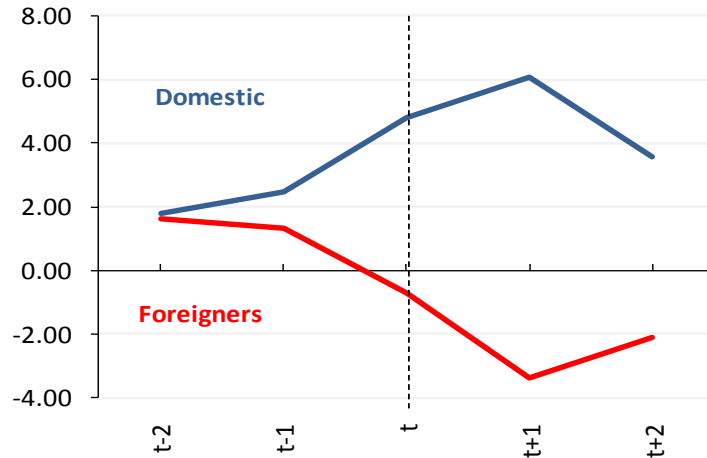
Data from 1970-2005. Flows normalized by trend GDP. Country trend dummies are included in all regressions

Capital Flows Around Crises of Different Intensities

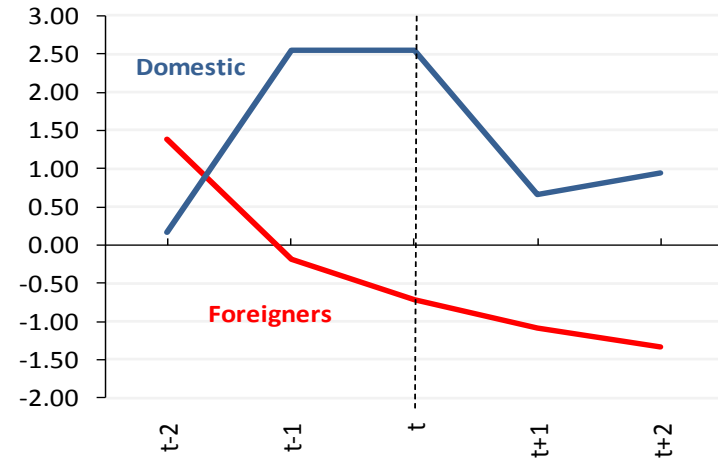
Percent of GDP

Only One Crisis

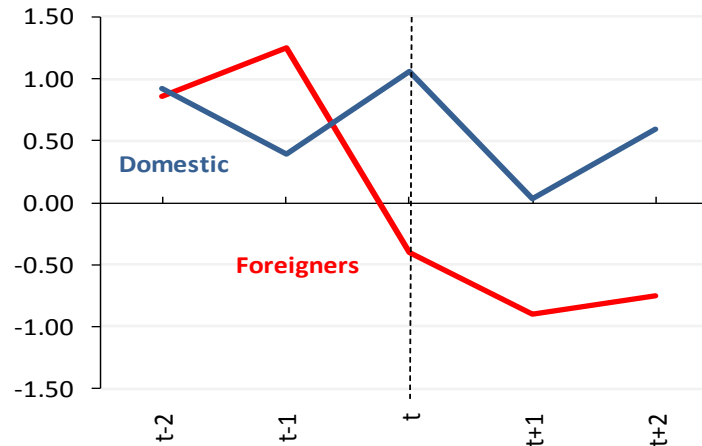
High-Income Countries
Capital Inflows



Middle-Income Countries
Capital Inflows



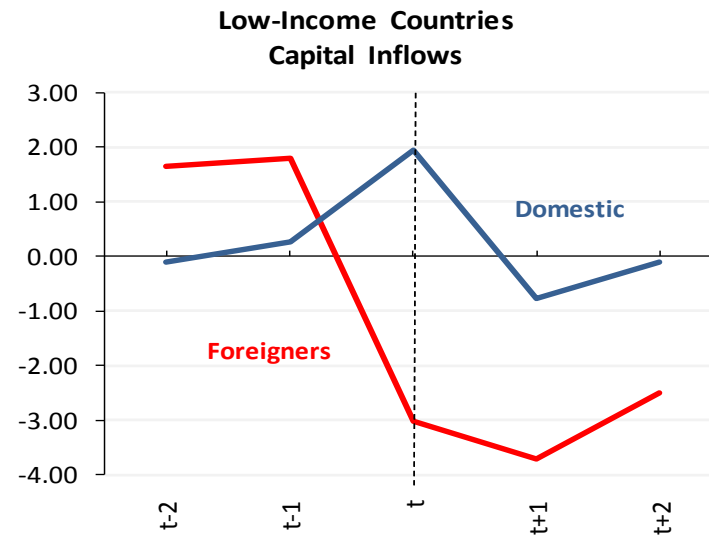
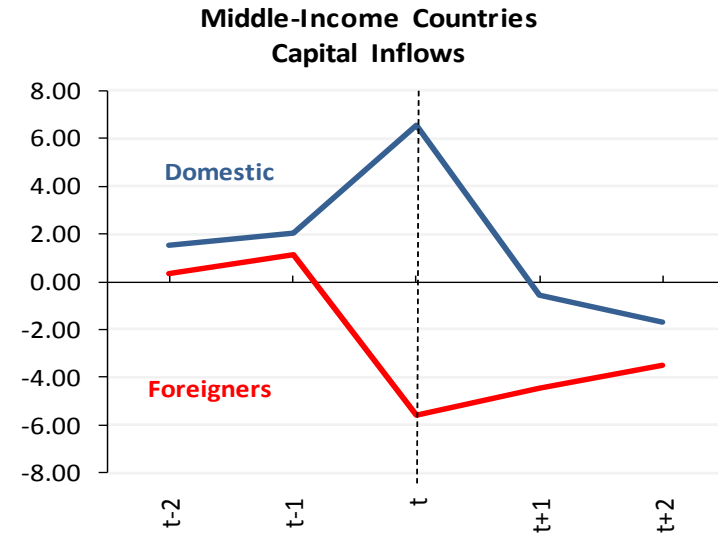
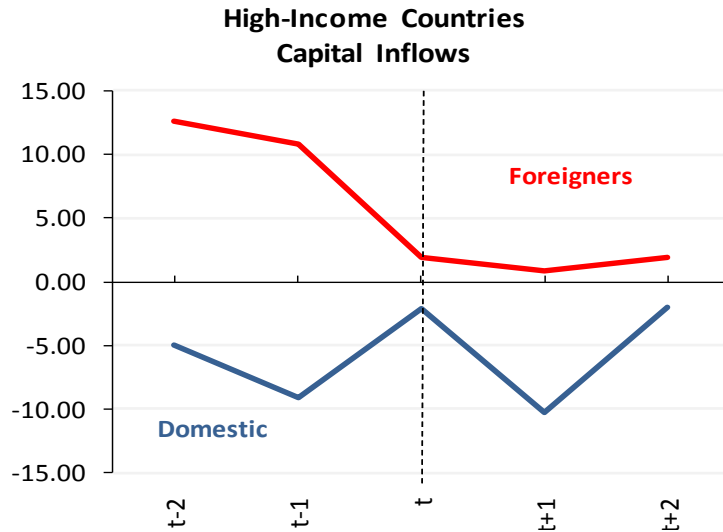
Low-Income Countries
Capital Inflows



Capital Flows Around Crises of Different Intensities

Percent of GDP

More than One Crisis



Components of Foreign Capital Flows around Crises of Different Intensities

	High-Income Countries			
	CIF			
	PI - Equity	PI - Debt	OI	DI
One Crisis Episodes				
Year t - 2	-0.19 **	-0.01	0.46 ***	-0.31 ***
Year t - 1	-0.20	-0.17	0.45 **	-0.39 ***
Crisis Year	-0.34 ***	-0.20	0.16	-0.37 ***
Year t + 1	-0.29 ***	-0.34 ***	-0.22	-0.43 ***
Year t 2 1	0.06	-0.22 *	-0.19	-0.29 **
More than One Crisis Episodes				
Year t - 2	0.01	1.21 ***	1.36 ***	-0.19 ***
Year t - 1	0.11	1.61 ***	0.96 ***	-0.05
Crisis Year	-0.37 *	1.14 ***	0.07	0.04
Year t + 1	-0.25	0.08	0.28	0.38
Year t 2 1	0.08	-0.53 *	0.38	0.29
No. of Only One Crisis Episodes	43	45	45	45
No. of More than One Crisis Episodes	2	2	2	2
No. of Countries	36	38	39	39
No. of Observations	981	1,038	1,082	1,082
R-squared	0.02	0.03	0.05	0.04
Median Country Std. Dev.	1.08	2.84	5.09	2.23
Wald Tests: Only One Crisis Episodes				
Crisis Year Vs. Avg. Previous 2 Years	4.82 **	0.53	4.14 **	0.02
P-Value	0.03	0.47	0.05	0.89
Wald Tests: More than One Crisis Episodes				
Crisis Year Vs. Avg. Previous 2 Years	24.55 ***	2.31	4.46 **	1.53
P-Value	0.00	0.14	0.04	0.22

Data from 1970-2005. Flows normalized by GDP. Country trend dummies are included in all regressions

PI: Portfolio Investments; OI: Other investments; DI: Direct Investments

Components of Domestic Capital Flows around Crises of Different Intensities

	High-Income Countries				
	CID				
	Res	PI - Equity	PI - Debt	OI	DI
One Crisis Episodes					
Year t - 2	0.30 **	0.21 *	0.36 ***	-0.11	0.26 **
Year t - 1	0.05	0.42 ***	0.53 ***	0.00	0.28 **
Crisis Year	0.07	0.47 ***	0.60 ***	0.24 **	0.38 ***
Year t + 1	0.16	0.48 ***	0.45 ***	0.30 *	0.48 ***
Year t 2 1	-0.11	0.25	0.29 **	0.37 ***	0.22
More than One Crisis Episodes					
Year t - 2	0.07	0.10	-0.12	-1.52 *	-0.35
Year t - 1	0.05	0.03	-0.69	-1.98 ***	-0.61
Crisis Year	0.85	0.17 **	0.81 ***	-2.17 ***	-0.38
Year t + 1	-1.63 ***	0.09	0.19	0.26	-0.29
Year t 2 1	-0.19	0.20 **	0.64 ***	-0.51	0.24
No. of Only One Crisis Episodes	45	45	45	45	45
No. of More than One Crisis Episodes	2	2	2	2	2
No. of Countries	39	38	38	39	39
No. of Observations	1,082	1,037	1,039	1,082	1,082
R-squared	0.02	0.05	0.07	0.05	0.04
Median Country Std. Dev.	2.14	1.23	2.27	3.56	1.93
Wald Tests: Only One Crisis Episodes					
Crisis Year Vs. Avg. Previous 2 Years	0.38	7.71 ***	9.74 ***	9.94 ***	2.78 *
P-Value	0.54	0.01	0.00	0.00	0.10
Wald Tests: More than One Crisis Episodes					
Crisis Year Vs. Avg. Previous 2 Years	2.98 *	1.41	2.81 *	0.62	1.77
P-Value	0.09	0.24	0.10	0.44	0.19

Data from 1970-2005. Flows normalized by GDP. Country trend dummies are included in all regressions

PI: Portfolio Investments; OI: Other investments; DI: Direct Investments; Res: International Reserve Assets

Components of Foreign Capital Flows around Crises of Different Intensities

	Middle-Income Countries			
	CIF			
	PI - Equity	PI - Debt	OI	DI
One Crisis Episodes				
Year t - 2	-0.13	0.21	0.14	-0.13
Year t - 1	-0.30	-0.09	0.11	-0.30
Crisis Year	-0.28 *	-0.31 *	0.06	-0.40 **
Year t + 1	-0.06	0.13	-0.13	-0.42 ***
Year t 2 1	-0.09	-0.28	-0.05	-0.26 *
More than One Crisis Episodes				
Year t - 2	-0.25	-0.01	0.18	-0.28
Year t - 1	-0.01	0.28	0.23	-0.44 **
Crisis Year	-0.10	-0.40 **	-0.83 ***	-0.65 ***
Year t + 1	-0.25 *	-0.45 **	-0.54 ***	-0.58 ***
Year t 2 1	-0.02	-0.25	-0.46 ***	-0.49 ***
No. of Only One Crisis Episodes	40	43	49	49
No. of More than One Crisis Episodes	23	24	24	24
No. of Countries	22	23	26	26
No. of Observations	482	506	563	563
R-squared	0.03	0.04	0.08	0.1
Median Country Std. Dev.	0.31	1.43	4.91	2.05
Wald Tests: Only One Crisis Episodes				
Crisis Year Vs. Avg. Previous 2 Years	0.14	3.97 *	0.12	2.23
P-Value	0.72	0.06	0.73	0.15
Wald Tests: More than One Crisis Episodes				
Crisis Year Vs. Avg. Previous 2 Years	0.01	13.24 ***	17.56 ***	2.62
P-Value	0.91	0.00	0.00	0.12

Data from 1970-2005. Flows normalized by GDP. Country trend dummies are included in all regressions

PI: Portfolio Investments; OI: Other investments; DI: Direct Investments

Components of Domestic Capital Flows around Crises of Different Intensities

	Middle-Income Countries				
	CID				
	Res	PI - Equity	PI - Debt	OI	DI
One Crisis Episodes					
Year t - 2	0.14	0.07	0.10	-0.09	0.23 **
Year t - 1	0.38 ***	0.13	0.26 **	0.16	0.39 ***
Crisis Year	0.36 ***	0.05	0.22 **	0.07	0.22
Year t + 1	0.10	0.01	0.10	-0.03	0.09
Year t 2 1	0.22	0.01	0.11	-0.06	0.14
More than One Crisis Episodes					
Year t - 2	0.31	0.27	-0.18	-0.11	0.23 *
Year t - 1	0.50 ***	0.21 *	0.36 ***	-0.03	0.05
Crisis Year	1.17 ***	0.44 ***	0.56 **	0.24	0.30
Year t + 1	-0.10	0.12	0.18	-0.27	0.36 **
Year t 2 1	-0.32 *	0.36 **	-0.37	-0.11	0.11
No. of Only One Crisis Episodes	49	43	45	49	43
No. of More than One Crisis Episodes	24	22	24	24	23
No. of Countries	26	23	24	26	23
No. of Observations	563	508	533	563	509
R-squared	0.11	0.05	0.05	0.04	0.06
Median Country Std. Dev.	2.78	0.19	0.57	2.76	0.45
Wald Tests: Only One Crisis Episodes					
Crisis Year Vs. Avg. Previous 2 Years	0.40	0.13	0.09	0.05	0.19
P-Value	0.53	0.73	0.76	0.82	0.67
Wald Tests: More than One Crisis Episodes					
Crisis Year Vs. Avg. Previous 2 Years	8.76 ***	0.63	3.49 **	1.12	0.74
P-Value	0.01	0.44	0.07	0.30	0.40

Data from 1970-2005. Flows normalized by GDP. Country trend dummies are included in all regressions

PI: Portfolio Investments; OI: Other investments; DI: Direct Investments; Res: International Reserve Assets

Components of Foreign Capital Flows around Crises of Different Intensities

	Low-Income Countries			
	CIF			
	PI - Equity	PI - Debt	OI	DI
One Crisis Episodes				
Year t - 2	-0.10	-0.05	0.38 **	-0.29 ***
Year t - 1	0.01	-0.26 **	0.46 ***	-0.23 *
Crisis Year	-0.25 **	-0.28 *	0.09	-0.27 **
Year t + 1	0.08	-0.29 ***	0.01	-0.23 **
Year t 2 1	-0.09	-0.19	-0.08	-0.18
More than One Crisis Episodes				
Year t - 2	0.24	0.24	0.31	0.05
Year t - 1	0.44 **	0.55 *	0.39	-0.10
Crisis Year	-0.08	-0.13	-0.58	-0.27 *
Year t + 1	-0.09	-0.36	-0.51 **	-0.36
Year t 2 1	0.12	-0.31	-0.35	-0.29
No. of Only One Crisis Episodes	55	63	74	74
No. of More than One Crisis Episodes	18	24	25	25
No. of Countries	30	30	38	38
No. of Observations	670	702	861	861
R-squared	0.04	0.04	0.07	0.05
Median Country Std. Dev.	0.31	0.66	4.09	1.99
Wald Tests: Only One Crisis Episodes				
Crisis Year Vs. Avg. Previous 2 Years	2.30	0.67	6.58 ***	0.02
P-Value	0.14	0.42	0.01	0.89
Wald Tests: More than One Crisis Episodes				
Crisis Year Vs. Avg. Previous 2 Years	1.40	2.83 *	10.1 ***	3.61 *
P-Value	0.25	0.10	0.00	0.07

Data from 1970-2005. Flows normalized by GDP. Country trend dummies are included in all regressions

PI: Portfolio Investments; OI: Other investments; DI: Direct Investments

Components of Domestic Capital Flows around Crises of Different Intensities

	Low-Income Countries				
	CID				
	Res	PI - Equity	PI - Debt	OI	DI
One Crisis Episodes					
Year t - 2	0.25 **	0.14 *	0.09	0.05	0.16
Year t - 1	0.17	0.09	0.05	-0.03	0.15
Crisis Year	0.27 **	-0.06	-0.04	0.17	0.22 *
Year t + 1	0.17	0.00	0.17	-0.22	0.22 **
Year t 2 1	0.18	-0.03	0.03	0.12	0.24 ***
More than One Crisis Episodes					
Year t - 2	-0.02	-0.03	0.02	-0.10	0.06
Year t - 1	0.36	0.11	0.35 **	-0.31	0.05
Crisis Year	0.76 **	0.21 **	0.27 ***	-0.05	0.23
Year t + 1	-0.15	-0.11	0.25	-0.28	0.21 *
Year t 2 1	-0.33	0.04	0.18	0.32 *	0.19 *
No. of Only One Crisis Episodes	74	65	66	74	62
No. of More than One Crisis Episodes	25	22	21	25	19
No. of Countries	38	32	31	38	33
No. of Observations	861	730	697	861	723
R-squared	0.06	0.04	0.03	0.04	0.05
Median Country Std. Dev.	2.77	0.05	0.22	1.56	0.19
Wald Tests: Only One Crisis Episodes					
Crisis Year Vs. Avg. Previous 2 Years	0.27	1.89	0.94	1.92	0.47
P-Value	0.61	0.18	0.34	0.18	0.50
Wald Tests: More than One Crisis Episodes					
Crisis Year Vs. Avg. Previous 2 Years	3.32 *	1.38	0.30	0.48	2.63
P-Value	0.08	0.25	0.59	0.49	0.12

Data from 1970-2005. Flows normalized by GDP. Country trend dummies are included in all regressions
 PI: Portfolio Investments; OI: Other investments; DI: Direct Investments; Res: International Reserve Assets

Capital Flows around Year 2008

	High-Income		Middle-Income		Low-Income	
	CIF	CID	CIF	CID	CIF	CID
Year 2006	1.36 *** [0.193]	-1.55 *** [0.156]	0.80 *** [0.214]	-1.16 *** [0.208]	0.15 [0.173]	-1.01 *** [0.171]
Year 2007	2.22 *** [0.187]	-2.25 *** [0.164]	1.75 *** [0.248]	-1.91 *** [0.232]	0.65 *** [0.225]	-1.18 *** [0.234]
Year 2008	0.36 [0.254]	-0.19 [0.266]	0.48 ** [0.221]	-0.11 [0.235]	0.59 *** [0.164]	-0.18 [0.243]
Year 2009	-0.21 [0.302]	0.14 [0.277]	0.21 [0.241]	-0.34 [0.234]	0.02 [0.387]	-0.58 [0.708]
No. of Countries	39	39	23	23	37	37
No. of Observations	132	132	81	81	110	110
R-squared	0.56	0.61	0.52	0.59	0.17	0.34
Wald Tests:						
2008 vs Avg. Previous 2 Years	22.43 ***	35.32 ***	12.96 ***	27.36 ***	0.89	12.51 ***
P-Value	0.00	0.00	0.00	0.00	0.35	0.00

Data from 2006-2009. Flows normalized by GDP

Robust standard errors are in brackets

Capital Flows around Crises

Including the 2008 Crisis

	High-Income Countries		Middle-Income Countries		Low-Income Countries	
	CIF	CID	CIF	CID	CIF	CID
Year t - 2	0.85 *** [0.115]	-0.70 *** [0.108]	0.31 *** [0.088]	-0.25 ** [0.105]	0.23 * [0.127]	-0.22 * [0.110]
Year t - 1	1.28 *** [0.166]	-1.04 *** [0.171]	0.46 *** [0.138]	-0.25 * [0.144]	0.46 *** [0.143]	-0.36 *** [0.117]
Crisis Year	0.30 ** [0.136]	0.04 [0.150]	-0.11 [0.132]	0.47 *** [0.114]	0.15 [0.116]	0.18 [0.112]
Year t + 1	-0.31 *** [0.115]	0.49 *** [0.129]	-0.27 * [0.149]	0.05 [0.135]	-0.21 [0.130]	0.03 [0.116]
Year t + 2	-0.33 *** [0.112]	0.47 *** [0.117]	-0.44 *** [0.126]	0.28 ** [0.126]	-0.21 [0.130]	0.19 [0.119]
No. of Crises	85	85	89	89	119	119
No. of Countries	39	39	26	26	38	38
No. of Observations	1240	1240	648	648	976	976
R-squared	0.16	0.12	0.08	0.06	0.04	0.03
Wald Tests:						
Crisis Year Vs. Avg. Previous 2 Years	26.65 ***	47.08 ***	15.32 ***	29.66 ***	3.47 *	14.57 ***
P-Value	0.00	0.00	0.00	0.00	0.07	0.00

Data from 1970-2009. Flows normalized by GDP. Country trend dummies are included in all regressions.

Robust standard errors in brackets

Capital Flows around Different Types of Crises

	High-Income Countries		Middle-Income Countries		Low-Income Countries	
	CIF	CID	CIF	CID	CIF	CID
Domestic Crises:						
Year t - 2	0.28 *	0.14	0.13	0.08	0.17	0.18
Year t - 1	0.25	0.25	-0.03	0.35 ***	0.27 *	0.08
Crisis Year	0.02	0.44 ***	-0.29 *	0.63 ***	-0.06	0.34 ***
Year t + 1	-0.45 ***	0.71 ***	-0.31 *	0.05	-0.21	0.05
Year t + 2	-0.27 **	0.39 ***	-0.33 ***	0.15	-0.18	0.15
Systemic Crises:						
Year t - 2	1.45 ***	-1.58 ***	0.77 ***	-1.10 ***	0.34 *	-0.94 ***
Year t - 1	2.31 ***	-2.31 ***	1.72 ***	-1.82 ***	0.79 ***	-1.17 ***
Crisis Year	0.51 *	-0.28	0.44 *	-0.06	0.59 ***	-0.14
Year t + 1	-0.06	0.05	0.14	-0.31	-0.23	-0.53 *
Year t + 2	0.15	-0.05	-1.14 ***	-0.52 ***	-0.46	-0.12
No. of Domestic Crises	46	46	65	65	81	81
No. of Systemic Crises	39	39	24	24	38	38
No. of Countries	39	39	26	26	38	38
No. of Observations	1240	1240	648	648	976	976
R-squared	0.25	0.28	0.19	0.24	0.06	0.11
Wald Tests: Domestic Crises						
Crisis Year Vs. Avg. Previous 2 Years	4.69 **	8.94 ***	5.59 **	6.72 **	8.69 ***	2.22
P-Value	0.04	0.00	0.03	0.02	0.01	0.15
Wald Tests: Systemic Crises						
Crisis Year Vs. Avg. Previous 2 Years	23.83 ***	37.4 ***	14.14 ***	27.8 ***	0.02	16.27 ***
P-Value	0.00	0.00	0.00	0.00	0.90	0.00

Data from 1970-2005. Flows normalized by trend GDP. Country trend dummies are included in all regressions

Conclusions

- Size and volatility of gross flows have increased over last four decades
 - Net capital flows do not show such an increase, since CIF and CID are highly negatively correlated
- Total gross capital are pro-cyclical
 - During expansions, foreigners increase their investment in domestic assets
 - Domestic agents increase their investment in foreign assets

Conclusions

- Total gross capital flows fall significantly during crises
 - CIF contracts significantly
 - CID expands significantly
 - Especially during severe crises and during systemic crises
 - Significant retrenchment during systemic crises

Conclusions

- The behavior of gross capital flows during crises not driven by a single component
 - Reduction in CIF mostly due to reductions of equity and other investments in developed countries
 - Reduction in CIF mostly due to reductions of debt and other investments in developing countries
 - Increase in CID mostly due to reductions of assets in equity, debt, and other investments in developed countries
 - Increase in CID mostly due to reduction in international reserves and debt portfolio in developing countries
 - Overall, FDI less responsive than other types of flows

Conclusions

- Behavior of gross capital flows sheds light on the sources of fluctuations and international capital flows
- Gross capital flows do not seem to be driven by fire sales of domestic assets to foreigners
- Nor by domestic capital flight, at least in the types of capital flows analyzed
- Capital flows do not seem to be driven by productivity shocks
 - Under those shocks: similar behavior by foreigners and domestic agents towards domestic assets

Conclusions

- Instead, crises seem to affect foreigners and domestic agents asymmetrically
- Two plausible explanations for the asymmetry
 - Crises associated with a worsening of investor property rights or default affecting foreign creditors more than domestic ones
 - Crises increase the informational asymmetry between foreigners and domestic agents

Thank you!