

Catalytic IMF? A Gross Flows Approach

**Aitor Erce (European Stability Mechanism)
(joint work with Daniel Riera)**

Macro-Financial Linkages & Current Account Imbalances Vienna, July 2015

Disclaimer: The views on this presentation are the authors and should not be reported as those of The European Stability Mechanism

Crisis Resolution, IMF Lending and Capital Flows

Official lending in exchange for conditionality is at the basis of the current crisis resolution framework → IMF as a Lender of Last Resort

(+) By providing financial resources and facilitating policy adjustment, official assistance programs reduce the potential for sharp investors' reactions (Cottarelli and Giannini, 2002)

This is the (so-called) **catalytic effect of official assistance**

(-) If official lending bails-out private creditors, how can it catalyse private inflows? (IMF, 2013)

Catalysis is theoretically an option but has proved empirically elusive

In theory, catalysis can work

Morris and Shin (2006), Corsetti et al. (2006) or Zwart (2007)

Still, empirical evidence of catalysis is at best mixed

Gosh et al. (2002), Edwards (2003), Saravia (2013)

Catalysis has been found on some circumstances

Eichengreen et al (2005), Broto et al. (2012), Erce (2012)

- **Empirical work has focused on net flows or specific market segments**

- **Theory work has focused on catalysis vis-a-vis foreign creditors**

Our approach: Focus on the Gross Flows composing the Net Flow

The literature on capital flows has recently started to focus on the heterogeneous dynamics of the (gross) components of the current account

- Cowan et al. (2007) or Broner et al. (2013)

Improved understanding of the driving forces behind net inflows

We bridge these two literature strands by asking ourselves the following:

What is the effect of IMF lending on gross capital flows?

(At least) Three ways of looking at this:

Capital entering vs. exiting the country (Janus and Riera-Crichton, 2015)

Resident vis-a-vis foreign investors (Broner et al., 2013)

A combination of the above

Our story in a nutshell

- Catalysis is not to be found on foreign creditors. IMF loans do not ease the foreign flow.
- Catalysis is very significant vis-à-vis residents
 - Reduces fresh outflows
 - Induces retrenchment
- While IMF catalysis is found on portfolio flows, the domestic banks story seems to be the “big story”
- Domestic catalysis is stronger during debt crises and foreign catalysis weaker during banking and currency crises

Data

- 50+ countries, quarterly data 1990Q1-2009Q4
- IMF programs: IMF website. Only SBA & EFF. A wealth of information
- Capital flows: IMF's Balance of Payments data
- Other controls: HY & FFR (DataStream), Capital mobility (Chinn-Ito), Real GDP (WEO)

A very quick look at the data

Table 1: IMF Program Summary Stats

Variable	Observations	Mean	Std. Dev	Min	Max
IMF Ongoing Dummy	4332	0.231	0.421	0	1
IMF Program Size (SDR Mill)	147	1318.1	3229.9	11.6	22821.1
IMF Program Size (Rel Quota)	147	121.7	223.8	15	1938.5
IMF Amount Drawn (SDR Mill)	105	1459.3	3266.4	4	17199.6
IMF Amount Drawn (Rel to Total)	105	0.74	0.55	0.06	4.05
IMF Original Program Duration (Months)	147	20.1	9.4	5	36
IMF Actual Program Duration (Months)	147	20.6	10.2	5	49
Final - Original Duration (Months)	147	0.48	5.6	-26	17
Paris Club Program Size (\$US Mill)	51	4382	7651.2	58	40160

Table 3: IMF programs and economic crises

	Total Onsets	Onsets per Country	Countries with Onsets
IMF Onset_Total	147	3.77	39
Paris Club Programs_Total	52	2.17	24
IMF_Onset during All Crisis	83	2.59	32
IMF_Onset during Currency Crisis	51	1.89	27
IMF_Onset during Banking Crisis	41	1.78	23
IMF_Onset during Sovereign Dom. Crisis	15	1.67	9
IMF_Onset during Sovereign Ext. Crisis	36	2.25	16

Building gross flows measures

By residence:

$$Net\ Inflow_{it} = \Delta Liabilities_{it} - \Delta Assets_{it} = Gross\ Foreign\ Inflows - Gross\ Domestic\ Outflows$$

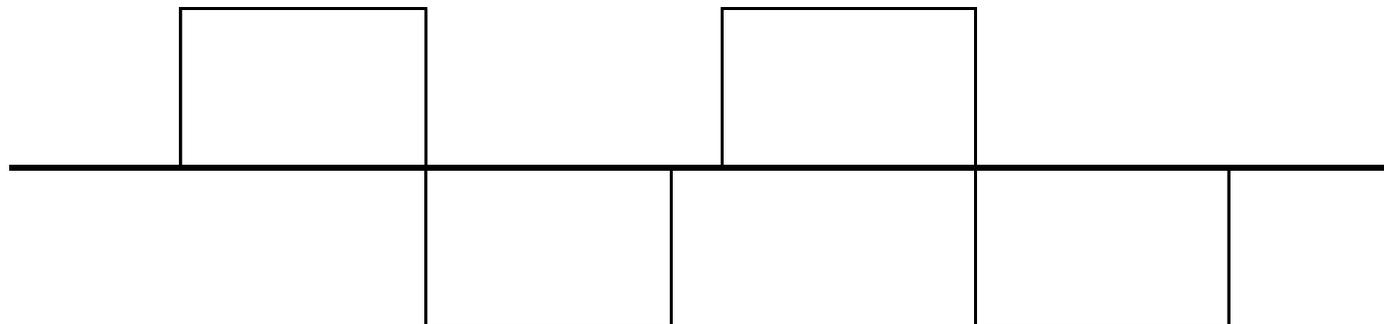
Liabilities driven by the behaviour of foreign creditors vis-à-vis the economy

Assets driven by the actions of resident investors vis-à-vis the ROW

By direction:

$$Net\ Inflow_{it} = (\Delta Liabilities_{it}^+ + \Delta Assets_{it}^-) - (\Delta Assets_{it}^+ + \Delta Liabilities_{it}^-)$$

Residents shed external asset Residents accumulate external asset Foreigners accumulate domestic asset Foreigners shed domestic asset



Econometric approach

- One-year cumulative effect of IMF program on capital flows

$$Y_{it} = \alpha_i + \delta_t + \sum_{n=1}^4 \theta_n IMF_{it-n} + \beta X_{it-1} + \mu_{it}$$

- Non-random selection complicates the interpretation of OLS results
- Use instrumental variables

$$IMF_{it} = \alpha_i + \delta_t + \gamma Z_{it-1} + \varphi X_{it-1} + \varepsilon_{it}$$

$$Y_{it} = \alpha_i + \delta_t + \sum_{n=1}^4 \theta_n \widehat{IMF}_{it-n} + \beta X_{it-1} + \mu_{it}$$

- Benchmark is normal times (standard though controversial)
- Interpretation of instrumented IMF_{it} not straight-forward

Econometric Approach. Instrumenting IMF lending

- Follow Barro and Lee (2005) and use International Political Economy-based instruments
- Various IPE theories deliver a wealth of instruments:
 - » Borrowing country politics (Edwards and Santaella (2013) or Dreher (2002))
 - » Geo-politics (Tacker (2000) or Barro and Lee (2005))
 - » Official sector politics (Papi et al, 2014)
 - » IMF internal politics (Barro and Lee (2005) or Saravia (2013))

Results IV. First step

		IMF presence	IMF presence	IMF presence	IMF presence
Domestic politics	Dictatorship dummy	-0.1216 [0.025]***	-0.1162 [0.026]***	-0.1071 [0.026]***	-0.1082 [0.026]***
	Elections dummy	-0.0118 [0.006]**	-0.0121 [0.006]**	-0.0112 [0.006]**	-0.0115 [0.006]**
Geo-politics	Presence in UN Security Council		0.0185 [0.011]*	0.0205 [0.011]*	0.0199 [0.011]*
	Alignment with the US at UN voting		0.5029 [0.266]*	0.5351 [0.260]**	0.539 [0.268]**
Official sector politics	Paris Club deal dummy			0.3092 [0.053]***	0.3108 [0.053]***
	ODA provided by the US			14,348 [0.427]***	16,639 [0.368]***
IMF internal politics	Quota at the IMF				0.0096 [0.033]
Observations		3,849	3,777	3,767	3,767
Number of countries		57	56	56	56

Standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1. All regressions also include also four lags of real GDP growth, the high yield index, Federal funds rate, Chinn-Ito Index and a crisis dummy.

Results IV. Second Step

Table 6: IV Estimation (second stage): Impact of AP on Aggregate Gross Flows

	Total Gross Flows	Private Gross Flows	Private Gross Inflows	Private Gross Outflows	CIF	COD
IMF Onset	-0.356	-1.072	-1.673	-0.565	-2.469	-1.357
P-Value of Joint Significance	0.636	0.146	0.041**	0.511	0.004***	0.008***

Regressions include also four lags of real GDP growth, the high yield index, Federal funds rate, Chinn-Ito Index and a crisis dummy.

Table 7: IV Estimation (second stage): Impact of AP - Four-way Gross Flows

	Private inflow from Liabilities	Private inflow from Assets	Private outflow from Assets	Private outflow from Liabilities
IMF Onset	-2.526	1.64	-0.468	-0.389
P-Value of Joint Significance	0.002***	0.022**	0.527	0.602

Regressions include also four lags of real GDP growth, the high yield index, Federal funds rate, Chinn-Ito Index and a crisis dummy.

Results IV. Second Step

Table 8: IV Estimation (second stage): Impact of AP on Gross Flows by type

	FDI inflows	FDI outflows	Portfolio investment inflows	Portfolio investment outflows	Other investment inflows	Other investment outflows
IMF Onset	-1.1776	0.654	-0.64	-0.676	-1.632	-1.68
P-Value of Joint Significance	0.024**	0.9239	0.417	0.413	0.034**	0.041**

Regressions include also four lags of real GDP growth, the high yield index, Federal funds rate, Chinn-Ito Index and a crisis dummy.

Econometric approach. Dynamic response

■ Dynamic response of gross flows to the signing of a program

- IV - Linear Projection Methods (Jorda et al., 2014)

- » h-step ahead cumulative treatment effect (h=0,1,...,12)

- » First step as previously

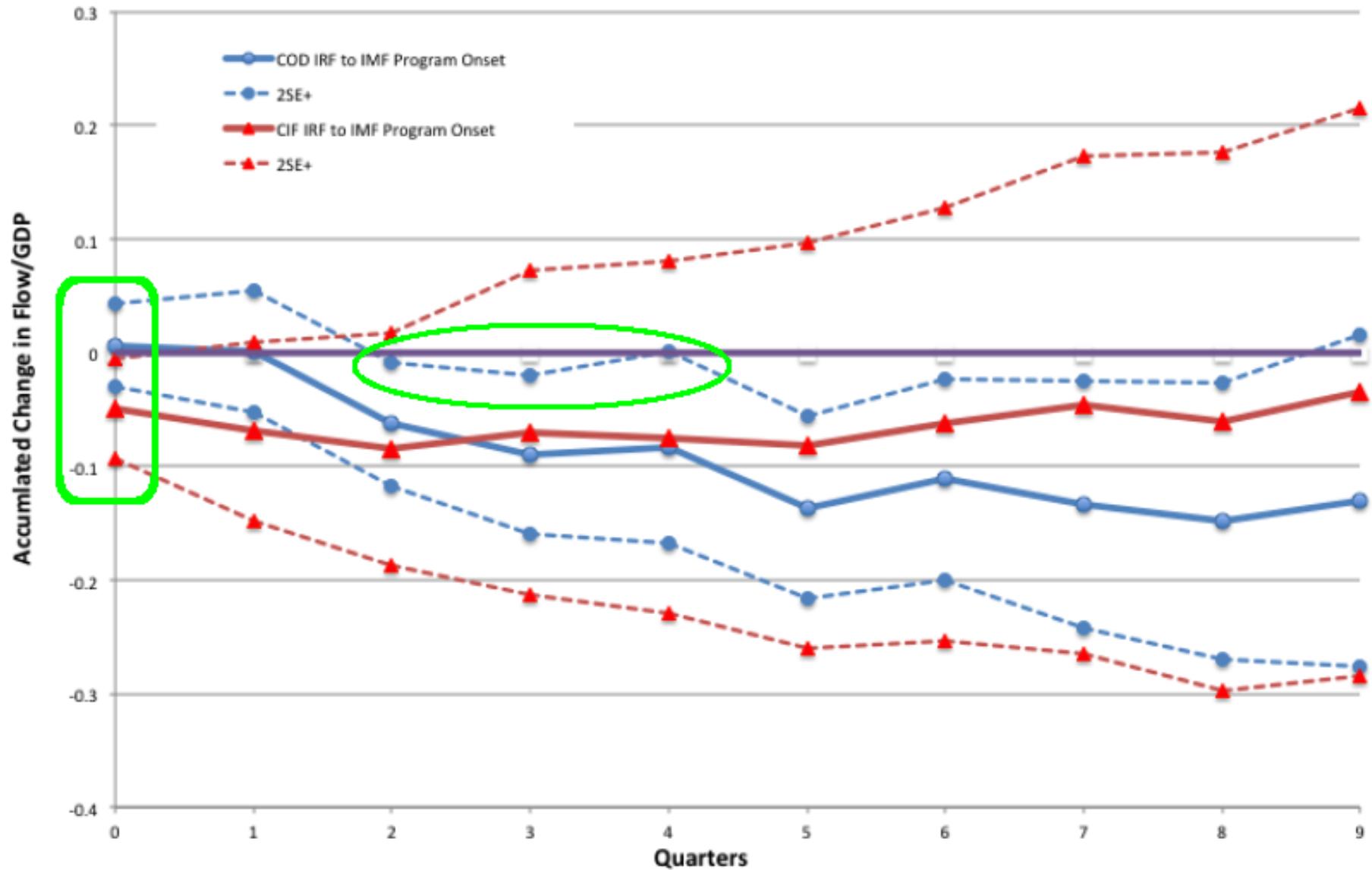
- » Robust single-equation IRF

$$\Delta Y_{i,t+h} = \alpha_{i,h} + \beta_{E,h} \widehat{IMF}_{it} + \chi_{E,h}(L) \Delta Y_{i,t-1} + \Psi_{E,h}(L) \Delta X_{i,t-1} + t_h + \sigma_{th} + \mu_{i,t,h}$$

- » Flexible (effect depending on crisis type)

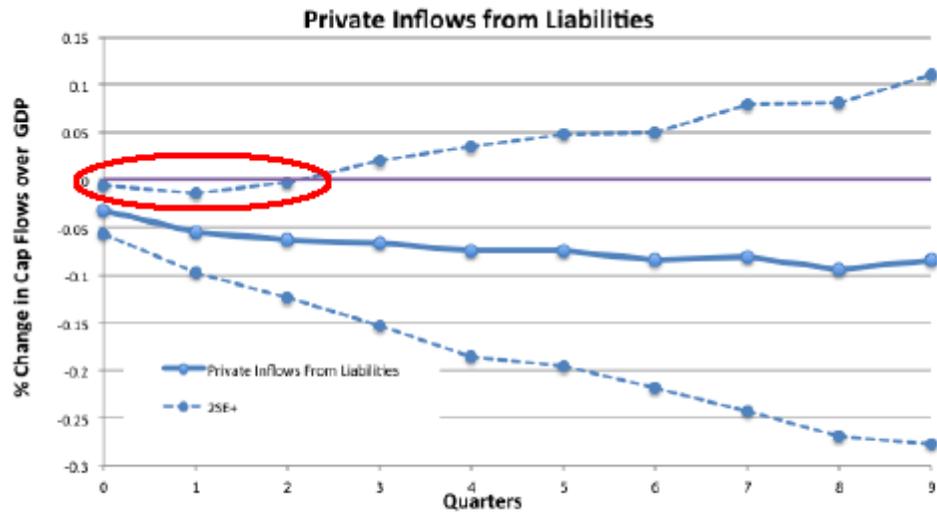
$$\Delta Y_{i,t+h} = \alpha_{i,h} + \beta_{1,h} \widehat{IMF}_{it} + \beta_{2,h} \widehat{IMF}_{it} * CD_{i,t} + \dots + \mu_{i,t,h}$$

Results LP. Foreign versus resident flows

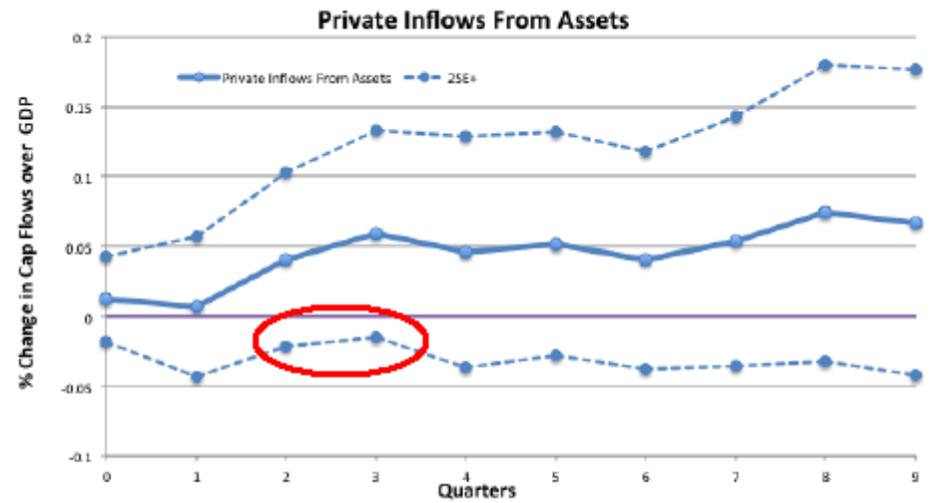


Results LP. Direction & residence

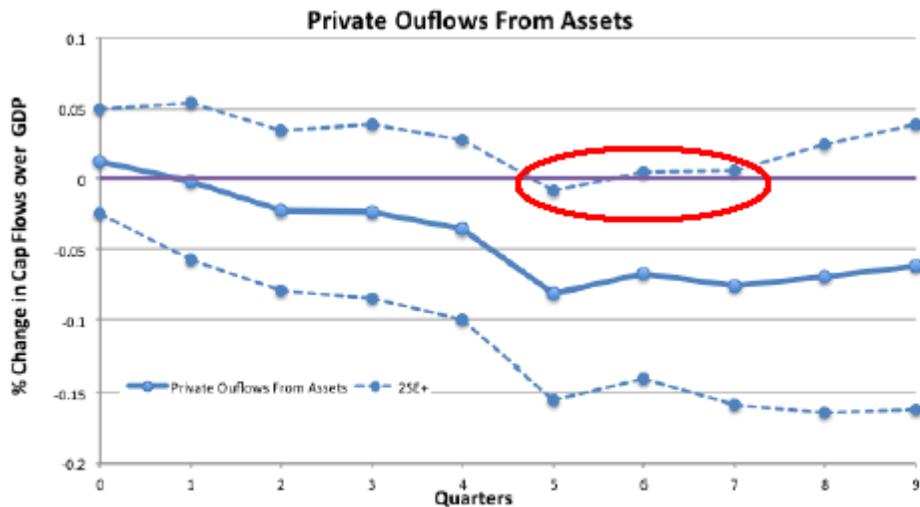
Panel A



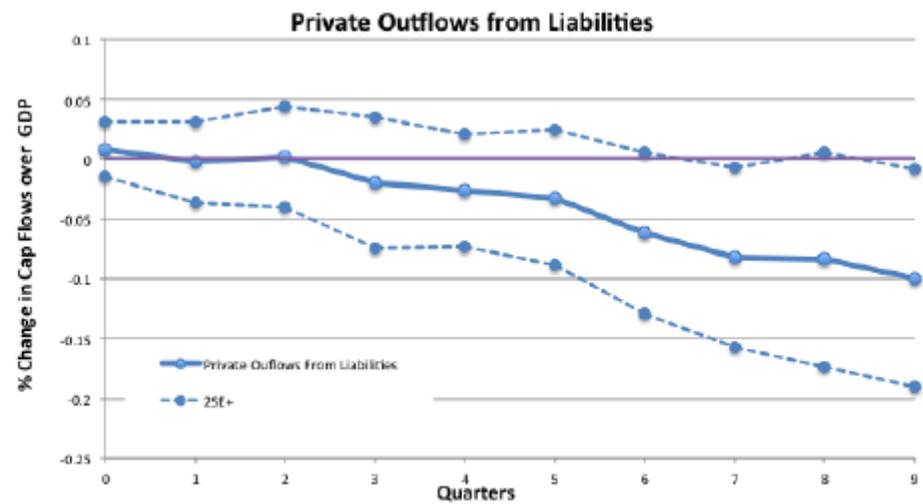
Panel B



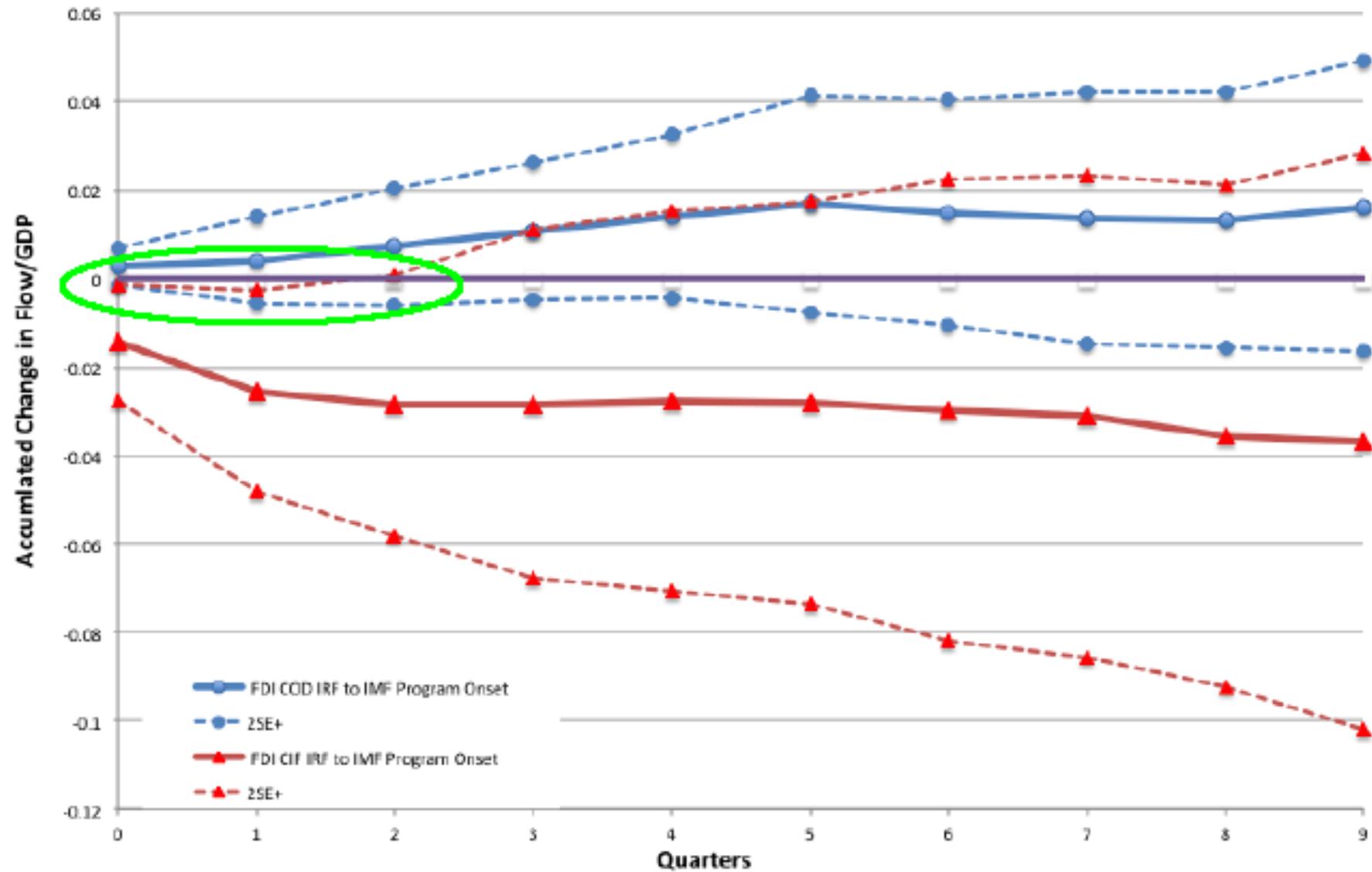
Panel C



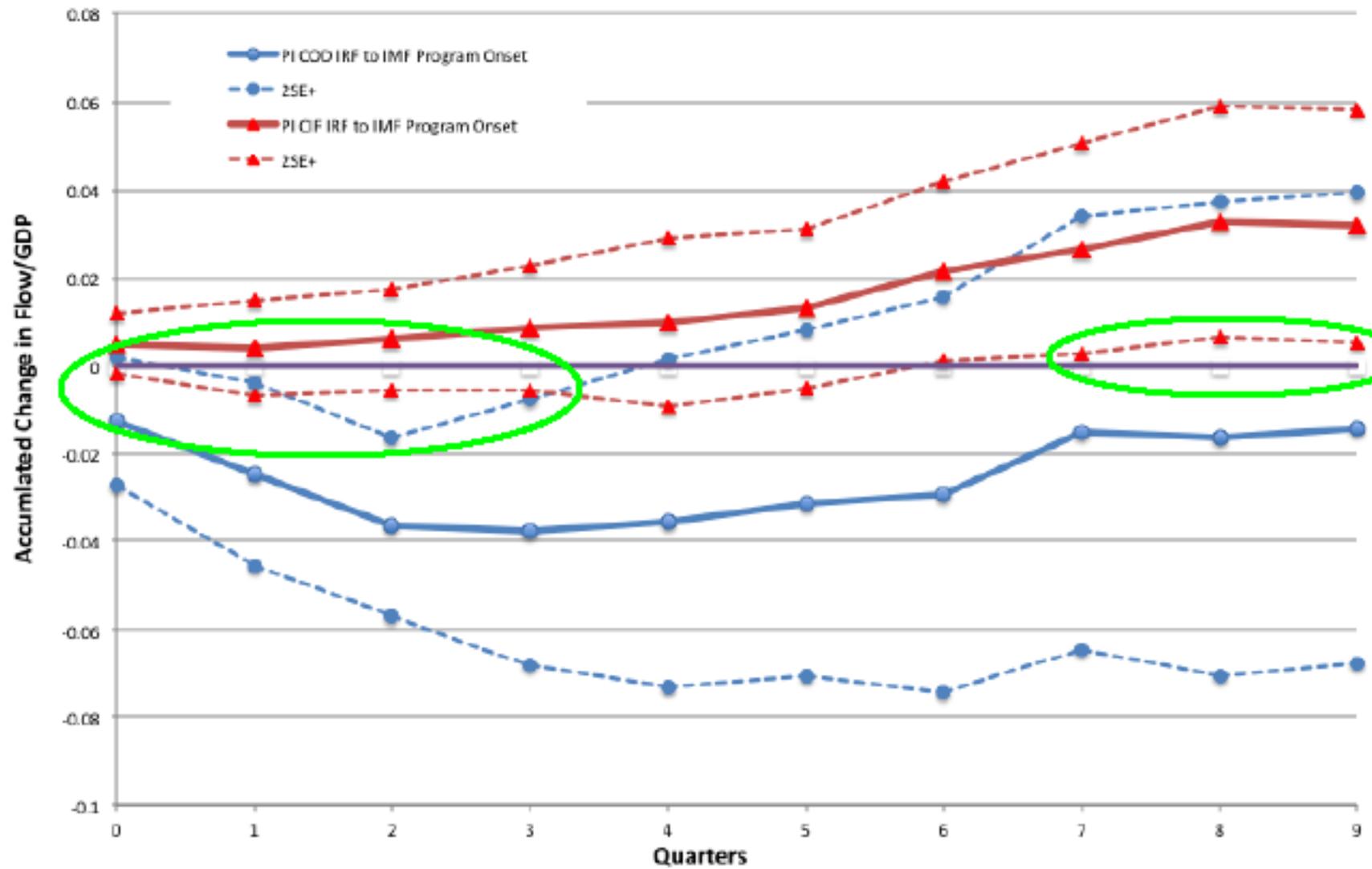
Panel D



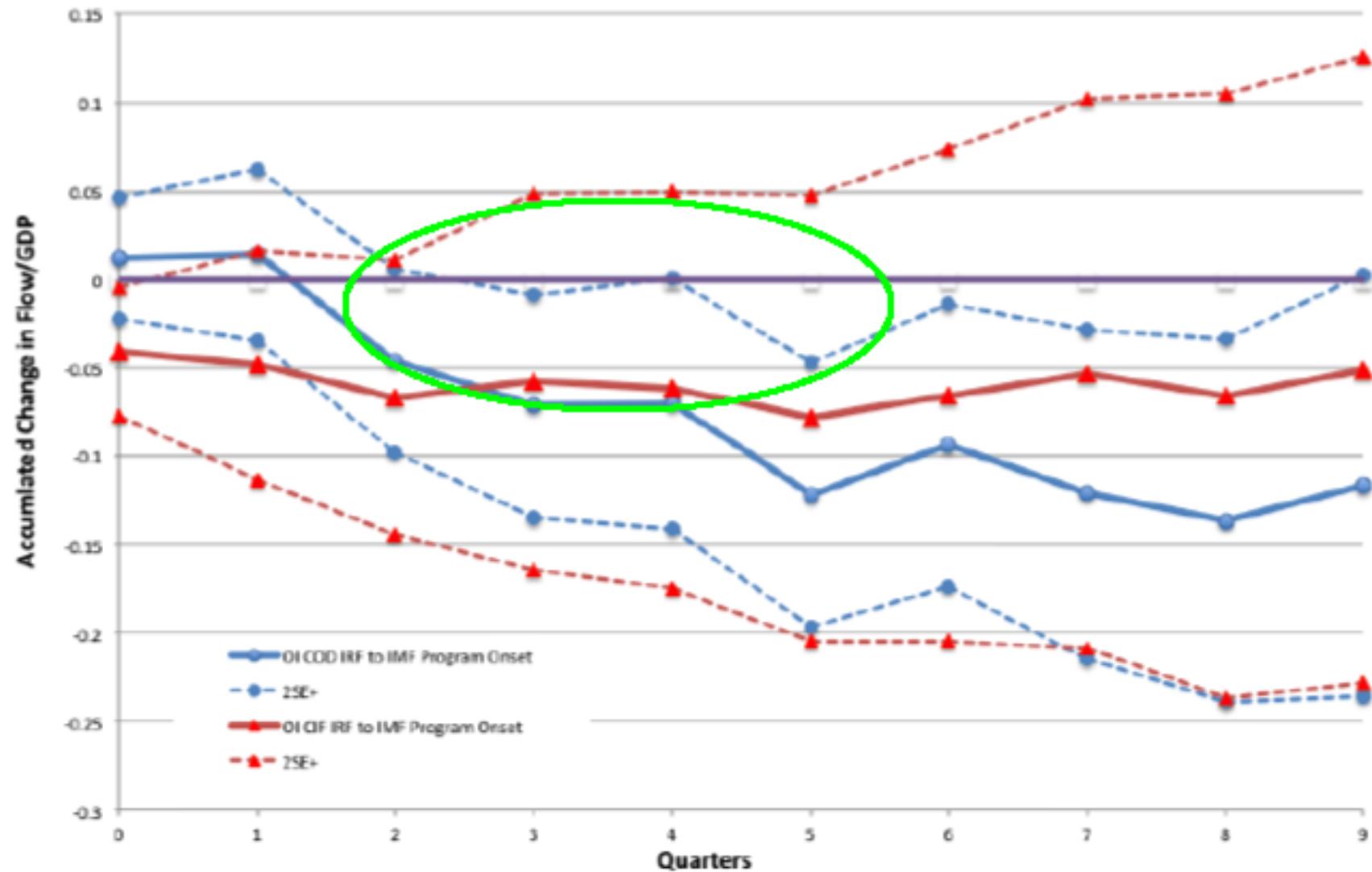
Results LP. No Catalysis on relatively stable FDI Flows



Results LP. Catalysis is found on Portfolio flows although...

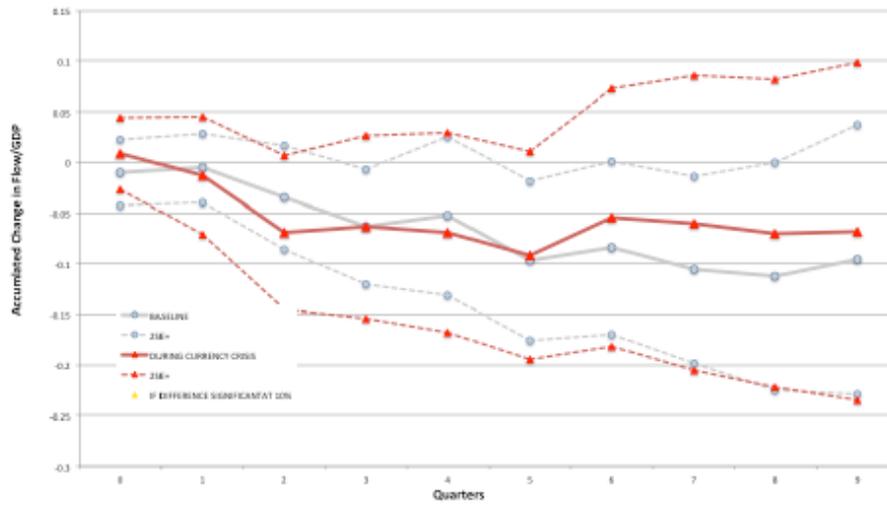


Results LP. ... the “big” story seems to be a domestic banks’ story

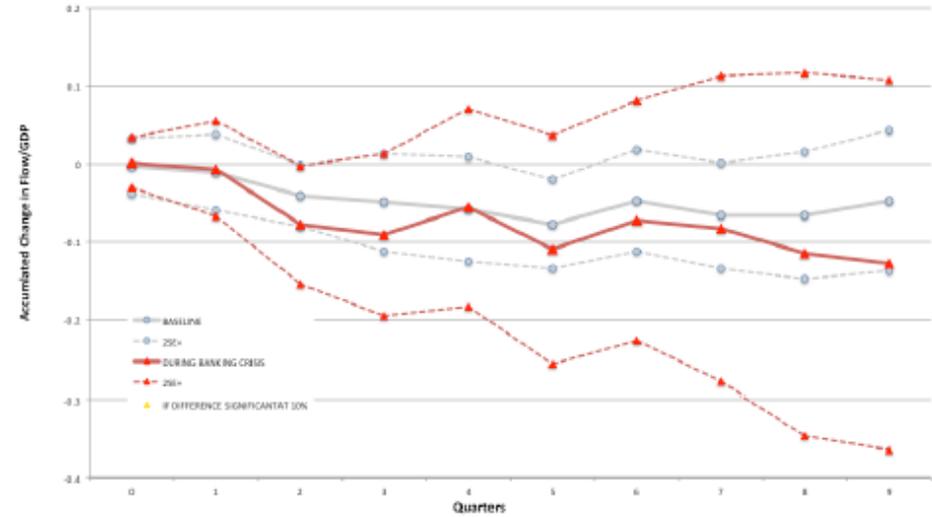


Results LP. Domestic catalysis (COD) works best in debt crises

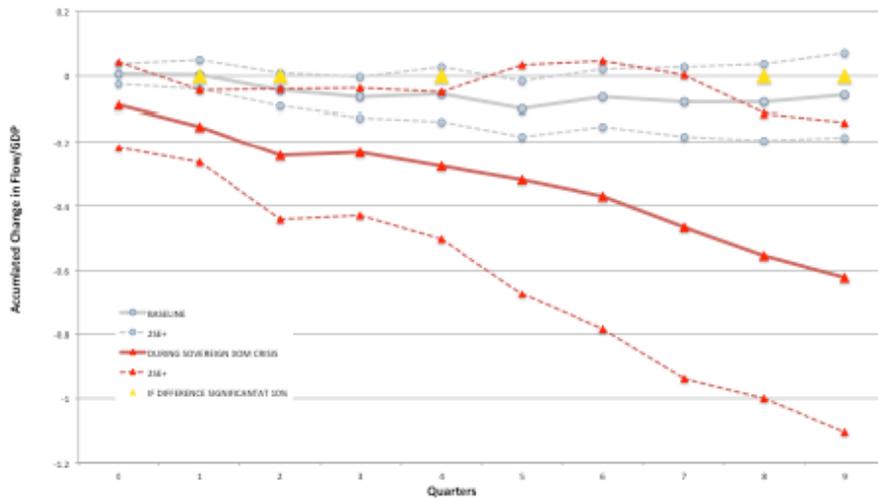
Panel A: Currency Crisis



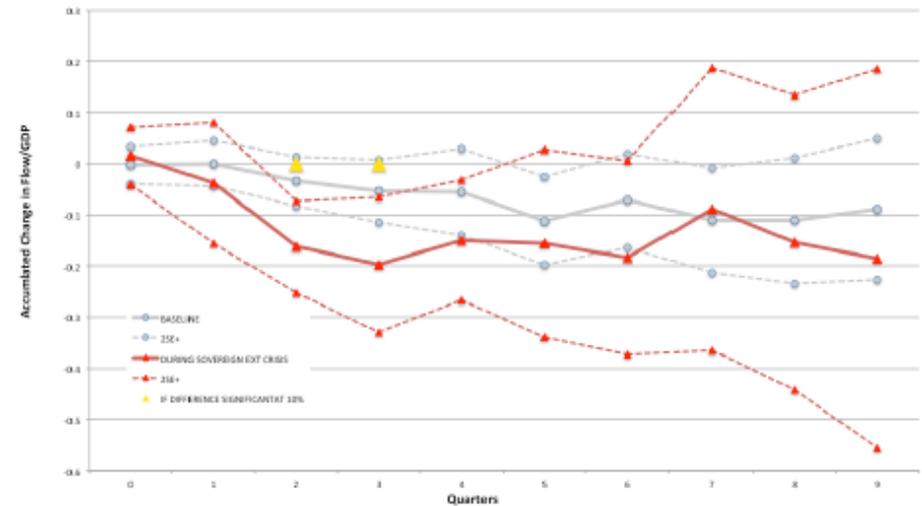
Panel B: Banking Crisis



Panel C: Domestic Sovereign Debt Crisis

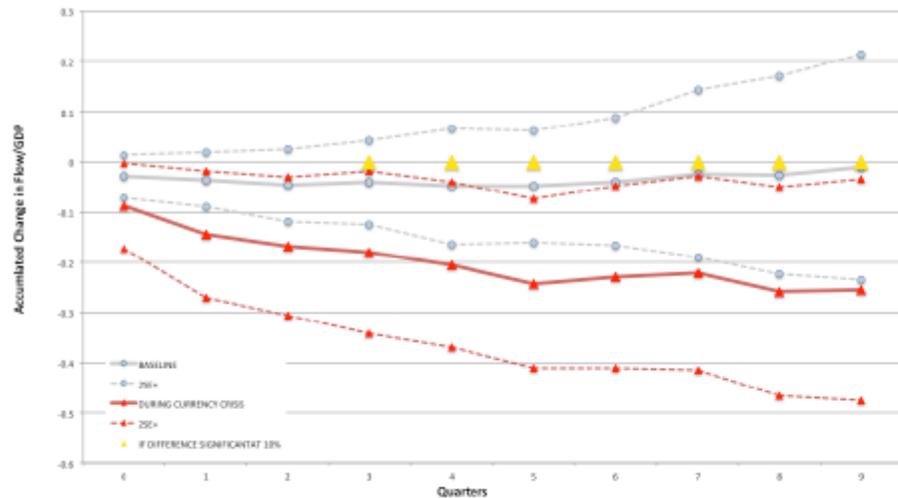


Panel D: External Sovereign Debt Crisis

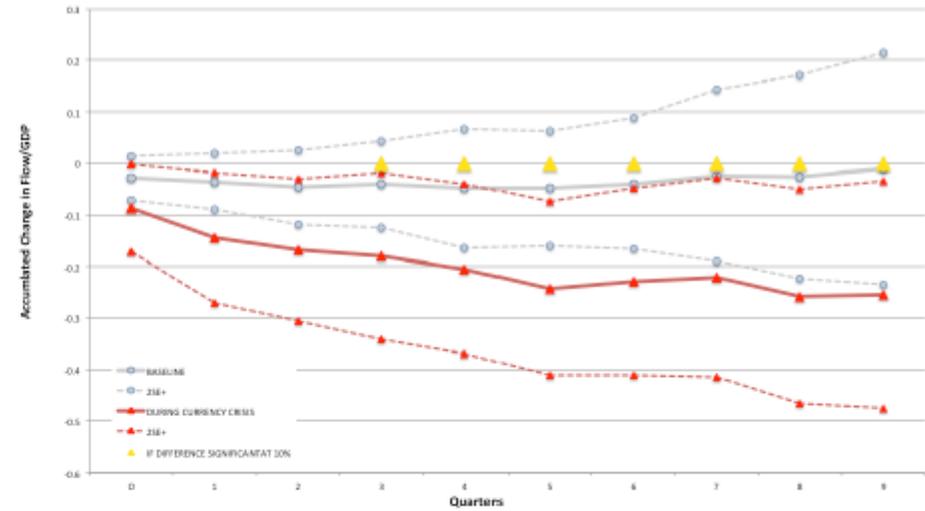


Results LP. Foreign catalysis (CIF) works worst in Currency and Banking crises

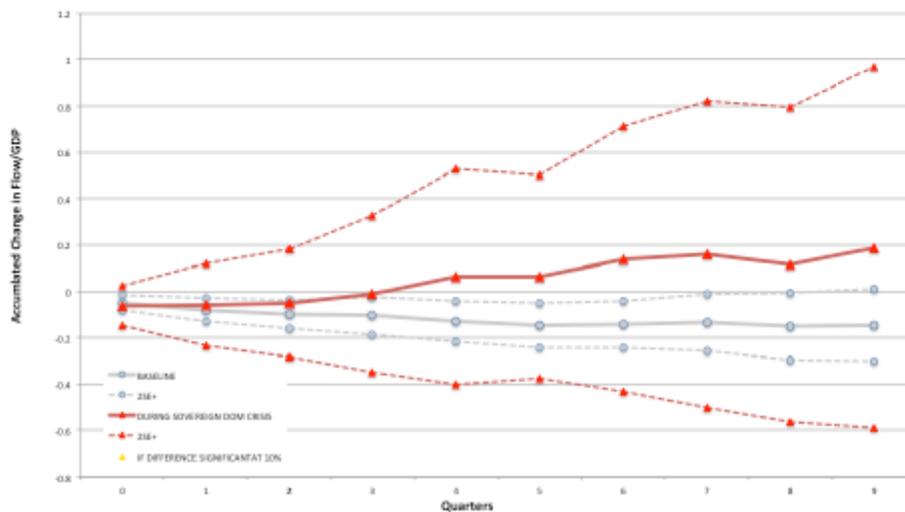
Panel A: Currency Crisis



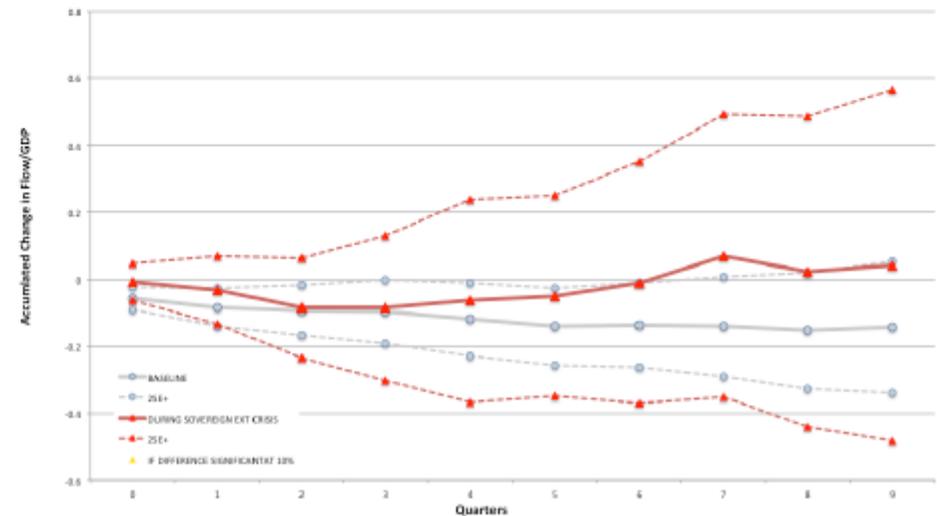
Panel B: Banking Crisis



Panel C: Domestic Sovereign Debt Crisis



Panel D: External Sovereign Debt Crisis



Concluding

- Catalysis is
 - Residence dependent
 - Shock dependent

- Forthcoming work:
 - Show that it is also program type dependent:
 - » Size
 - » Duration
 - » Successful adoption of conditionality

Thank you!