

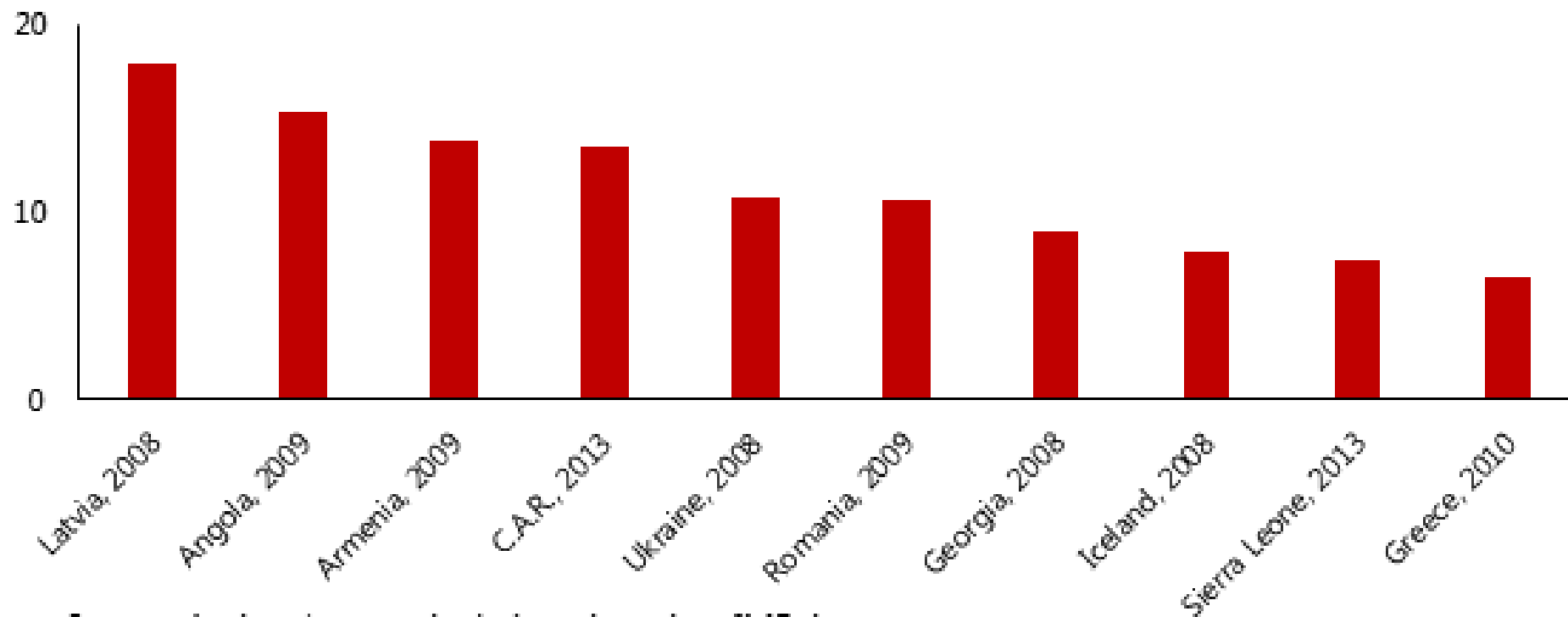
Fiscal Crises

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Motivation

Ten of the Worst Crises Since 2005
(decline in the real GDPpc growth rate, percentage points)



Source: Authors' own calculations, based on IMF data.

Note: difference in simple averages of real GDPpc growth rate of the three years preceding a crisis and the three years after the onset of the crisis.

Motivation

- Sound fiscal policy seen as key ingredient for stability and sustainable growth ...
- ... but empirical identification of fiscal crises is scarce
- **Previous literature**
 - ✓ Focuses mainly on public debt defaults (*legal* definition) ...
 - ✓ ... mostly external ...
 - ✓ ... mostly in advanced and emerging economies
 - ✓ Baldacci et al. (2011) is an exception (*economic* criteria)
 - Also adopted by the EC recently (Sumner & Berti 2017)
- **Our contribution**
 - ✓ Wider country and time coverage (all 188 IMF members, 1970-2015)
 - ✓ Improved identification methodology
 - ✓ Event study analysis – dynamics of macroeconomic variables around fiscal crises

Existing databases

- ✓ Reinhart & Rogoff (2011): 75 external and 26 domestic defaults
- ✓ Baldacci et al. (2011): 176 fiscal crises
- ✓ Laeven & Valencia (2012): 67 debt defaults
- ✓ Bruns & Poghosyan (2016): 201 fiscal crises
- ✓ Sumner & Berti (2017): 88 fiscal crises

Our database

- 436 fiscal crises in total, of which:
- ✓ 25 in Advanced Markets (AM)
 - ✓ 154 in Emerging Markets (EM)
 - ✓ 171 in Low-Income and Developing Countries (LIDC)
 - ✓ 86 in Small Developing States (SDS)

Outline

I. New Database on Fiscal Crises

II. Empirical Analysis

III. Concluding remarks

I. New Database on Fiscal Crises

Red Flags: How To Identify Fiscal Crises?

1. Credit event

- Any year in which actions of the sovereign reduce the PV of public debt
- Exclude technical defaults
- **Examples: Bulgaria 1990; Macedonia 2010**

2. Official financing

- Any year under a large IMF financial arrangement ...
- ... with fiscal adjustment as a program objective
- **Examples: Hungary 2008; Ireland 2010**

3. Implicit default

- Any year with a very high inflation
- Any year with domestic arrears accumulation (**new!**)
- **Examples: Belarus 1999; Russia 2007**

4. Market confidence

- Any year with a very high price of market access
- Any year with loss of market access (**new!**)
- **Examples: Ukraine 2008; Romania 2009**

Criterion		Thresholds				Main Sources	
		AMs	EMs	LIDCs	SDSs		
(1)	Credit event	Any operation that makes creditors incur material economic losses on the sovereign debt they hold (e.g. default, restructuring, or rescheduling)					▪ BoC (2016)
		(ii) if (i) holds <i>and</i> the defaulted nominal amount grows by a substantial amount (in percent p.a)	≥ 10				
(2)	Exceptionally large official financing	High-access IMF financial arrangement with fiscal adjustment objective in place (in percent of quota)	≥ 100			▪ IMF	
(3)	Implicit domestic public default	(a) High inflation rate (in percent of growth of annual average CPI p.a.)	≥ 35	≥ 100	≥ 35	▪ IMF	
		(b) Steep increase in domestic arrears (in first difference of the ratio of 'other account payables (OAP)' to GDP in percentage points)	≥ 1			▪ OECD and Eurostat	
(4)	Loss of market confidence	(a) Loss of market access	when market access is lost (after maintaining market access for a 1/4 of the sample time and 2 consecutive years before the loss year)			▪ Guscina, Sheheryar and Papaioannou (2016) and Gelos, Sahay, and Sandleris (2004)	
		(b) High price of market access (in basis points, sovereign spreads or CDS spreads)	≥ 1,000 bps				

Note: AM = advanced markets, EM = emerging markets, LIDC = low-income and developing countries, SDS = small developing states.

Fiscal Crisis Episodes (1970-2015)

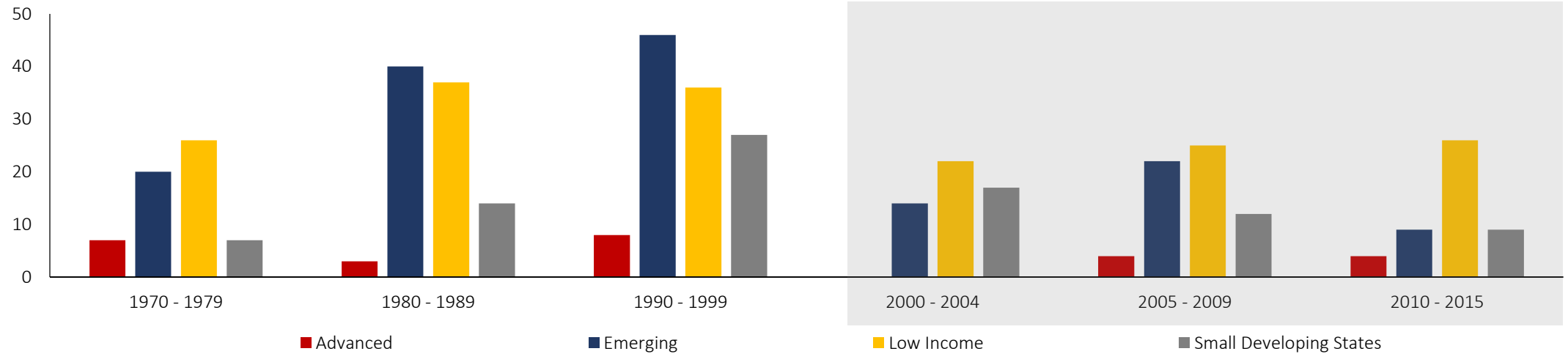
	Total	AM	EM	LIDC	SDS
With start date within sample period	436	25	154	171	86
Average per country	2.3	0.7	2.2	3.4	2.6
With start and end date within sample period	400	23	143	154	80
Average number of crises per country	2.1	0.7	2.0	3.1	2.4
Average probability of starting a crisis	6.7%	1.6%	6.4%	13.0%	6.7%
Average probability of being in a crisis	29.3%	6.0%	29.9%	50.4%	20.6%

Source: Authors' calculations.

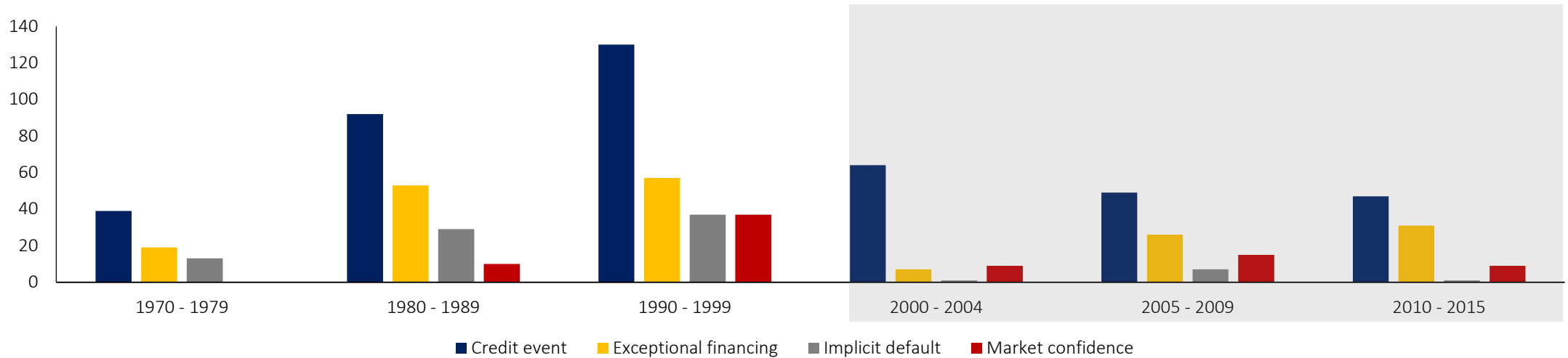
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Dynamics of Fiscal Crises

By Country Groups

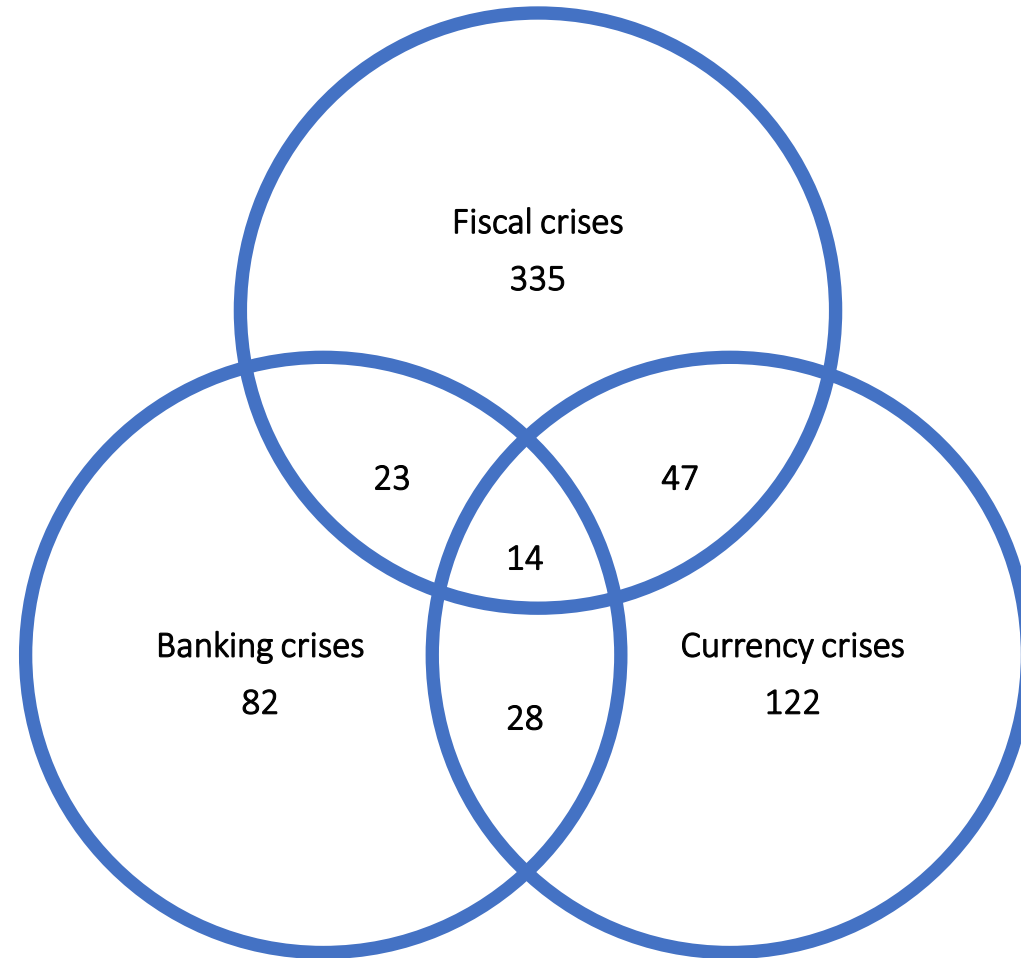


By Criteria





Overlap between Fiscal, Banking, and Currency Crises



Source: Laeven and Valencia (2012), authors' calculations.

II. Empirical Analysis

Event Study

- Empirical regularities during the 11-year time window around fiscal crises (Gourinchas & Obstfeld 2012; Catao & Milesi-Ferretti 2014)
- Does not necessarily imply causality

$$y_{it} = \alpha_i + \sum_{j=-5}^5 \beta_j F_{t+j} + \varepsilon_{it}$$

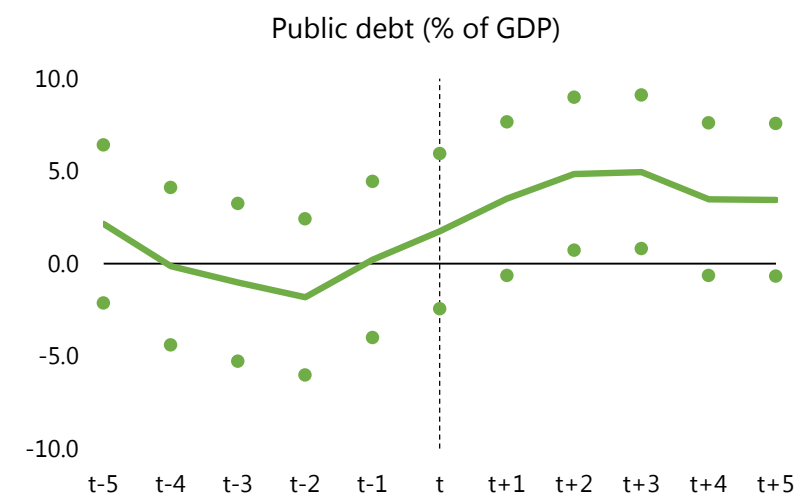
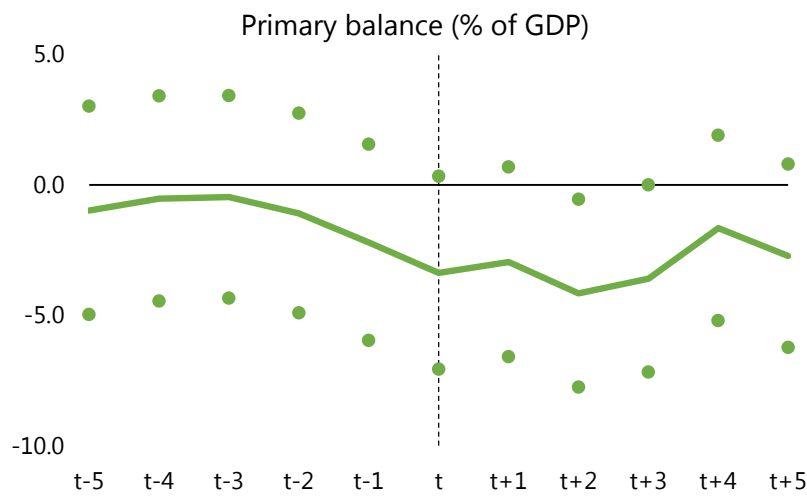
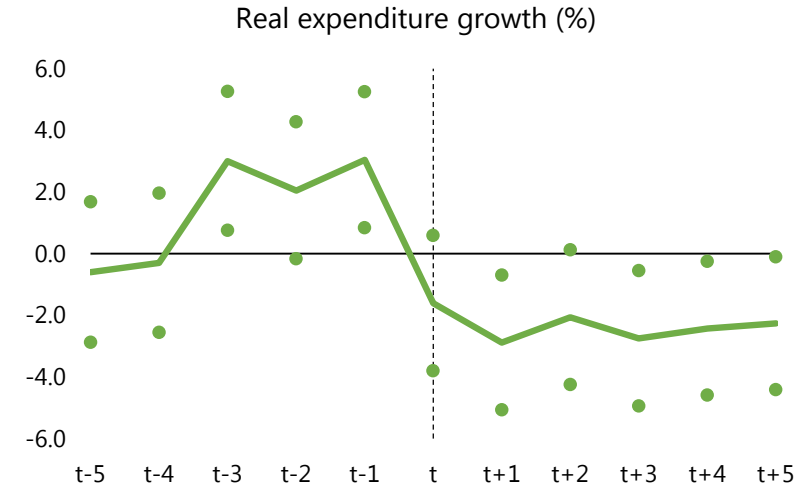
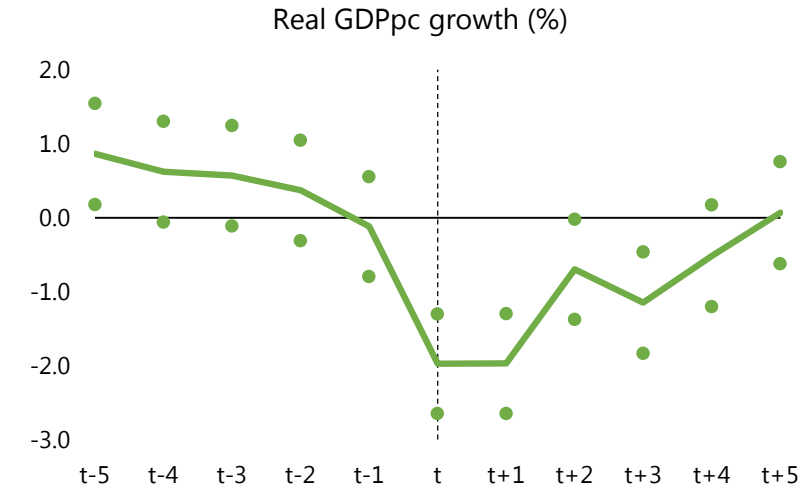
where:

y = variable of interest (e.g., real GDP p.c. growth, public debt-to-GDP ratio)

F = dummy variables taking the value of 1 in period $t+j$, where t is the fiscal crisis year

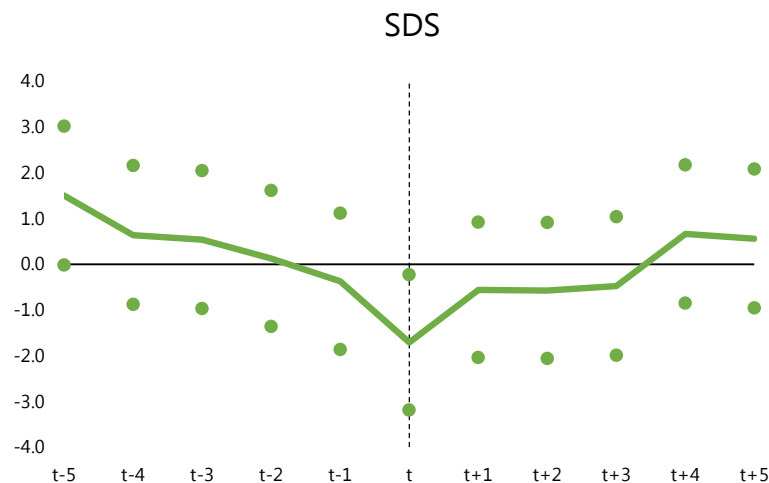
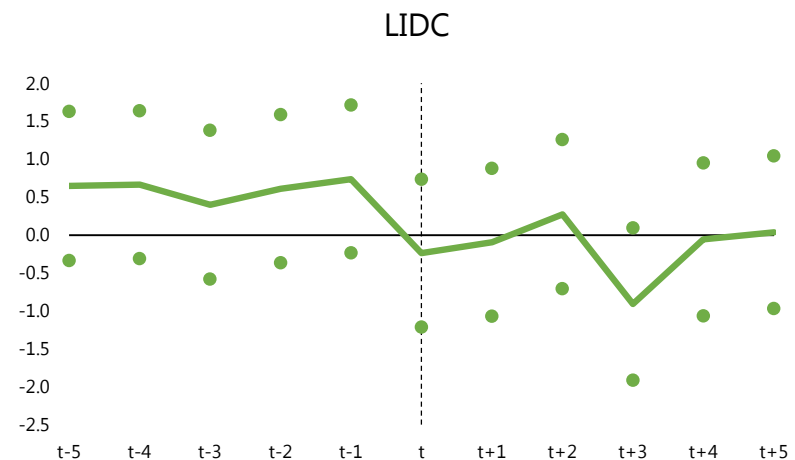
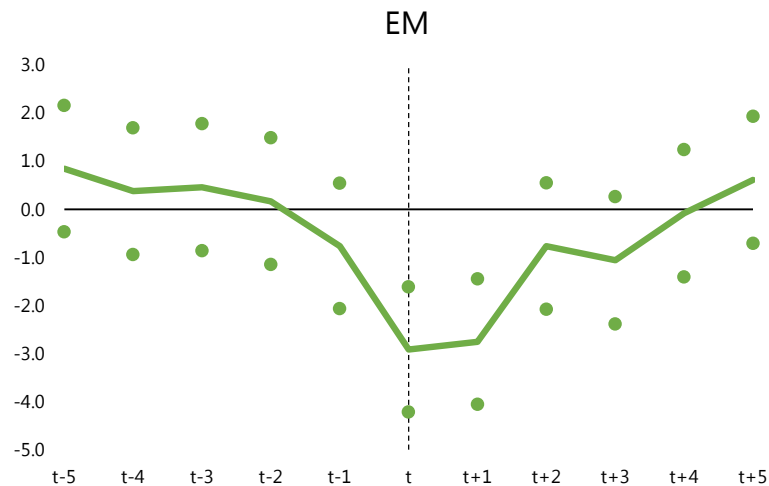
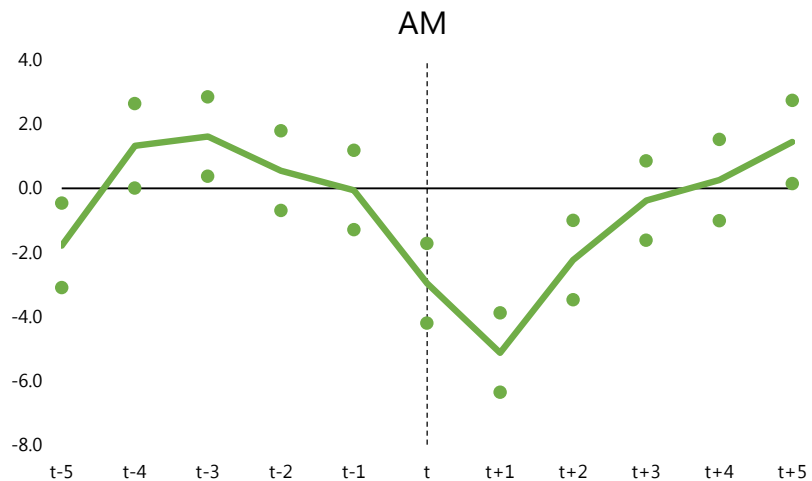
β = conditional effect of a crisis over the event window relative to *tranquil* times

What Happens Around Fiscal Crises?



Note: Reported are coefficient estimates with 95% confidence intervals.

Fiscal Crises and Growth: By Country Groups

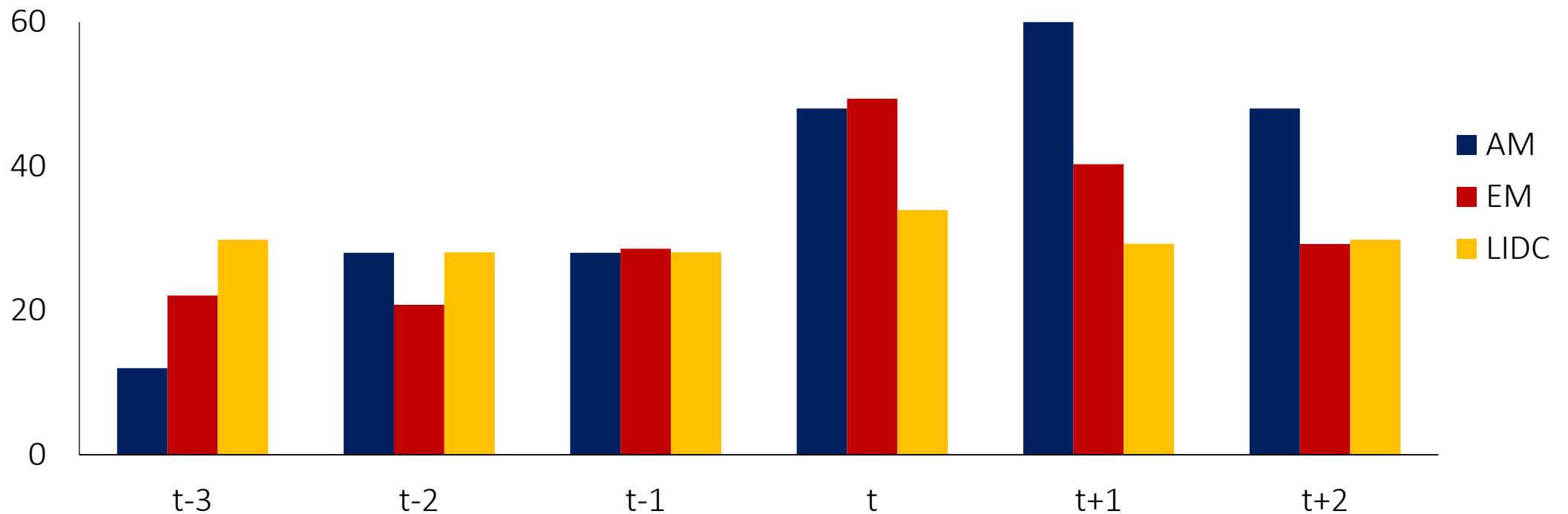


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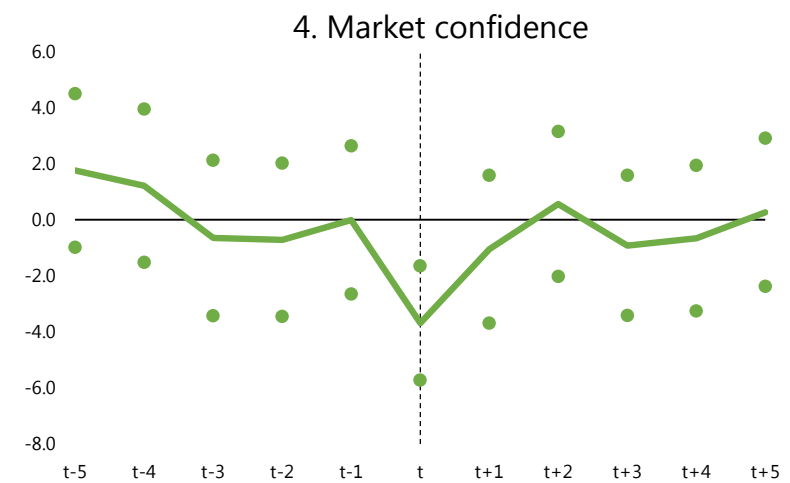
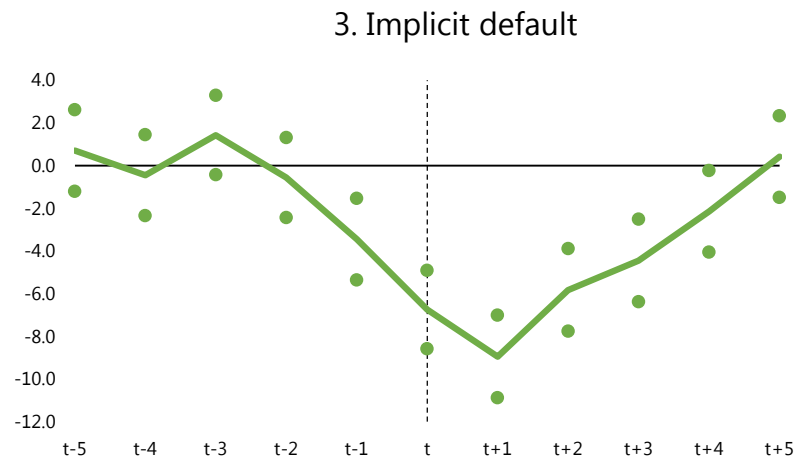
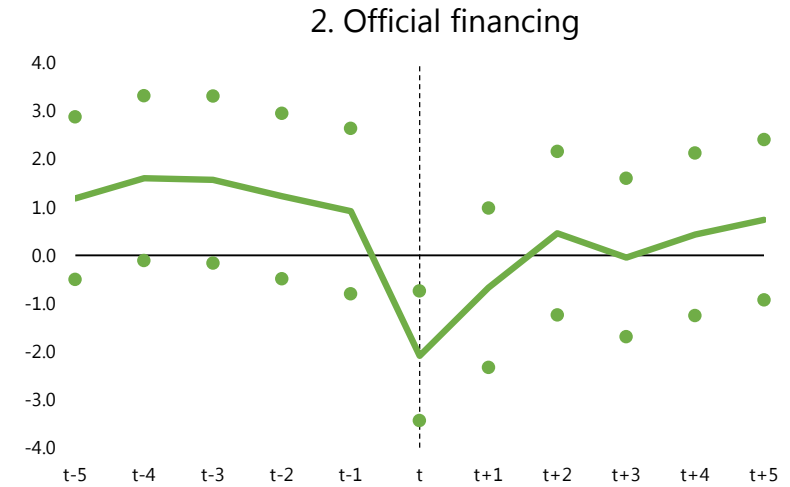
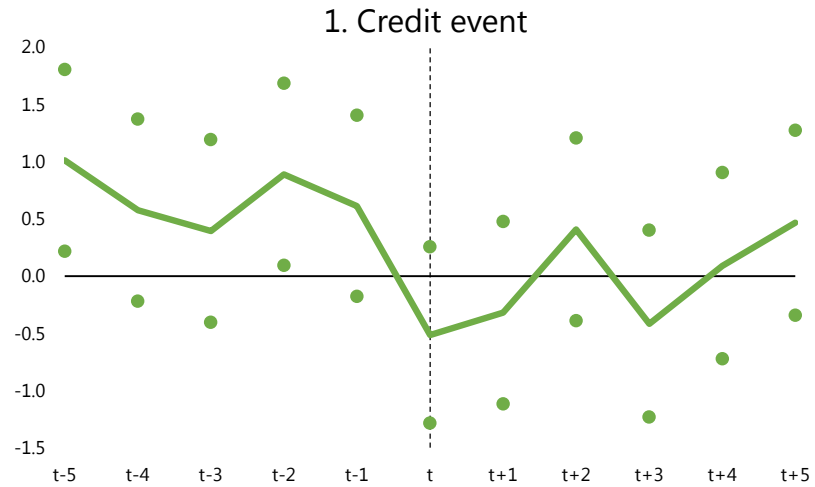
Recessions are common at time of Crisis

Negative growth around fiscal crises
(percent of countries with negative GDPpc real growth)



Source: Authors' calculations.

Fiscal Crises and Growth: By Criteria



Note: Reported are coefficient estimates with 95% confidence intervals.

Event Study – Twin Crises

➤ Empirical specification:

$$y_{it} = \alpha_i + \sum_{j=-5}^5 \beta_j F_{t+j} + \sum_{j=-5}^5 \gamma_j FB_{t+j} + \sum_{j=-5}^5 \delta_j FC_{t+j} + \varepsilon_{it}$$

where:

y = macro variable of interest (e.g., growth, public debt ratio)

F = fiscal crisis dummy

FB = twin fiscal-banking crisis dummy

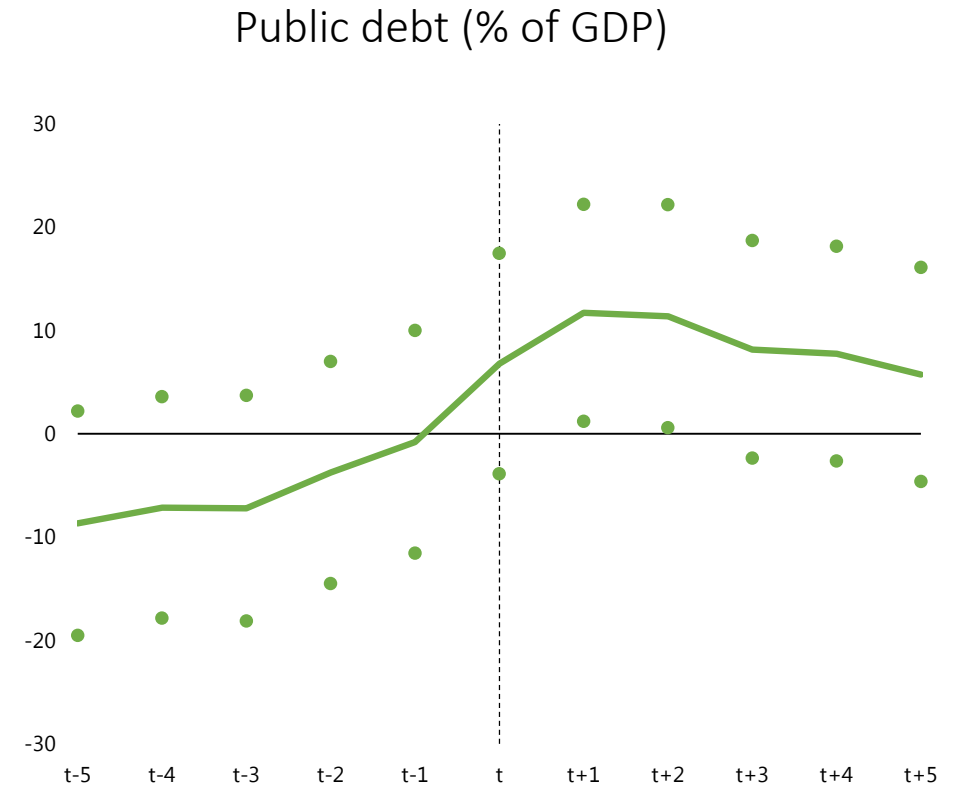
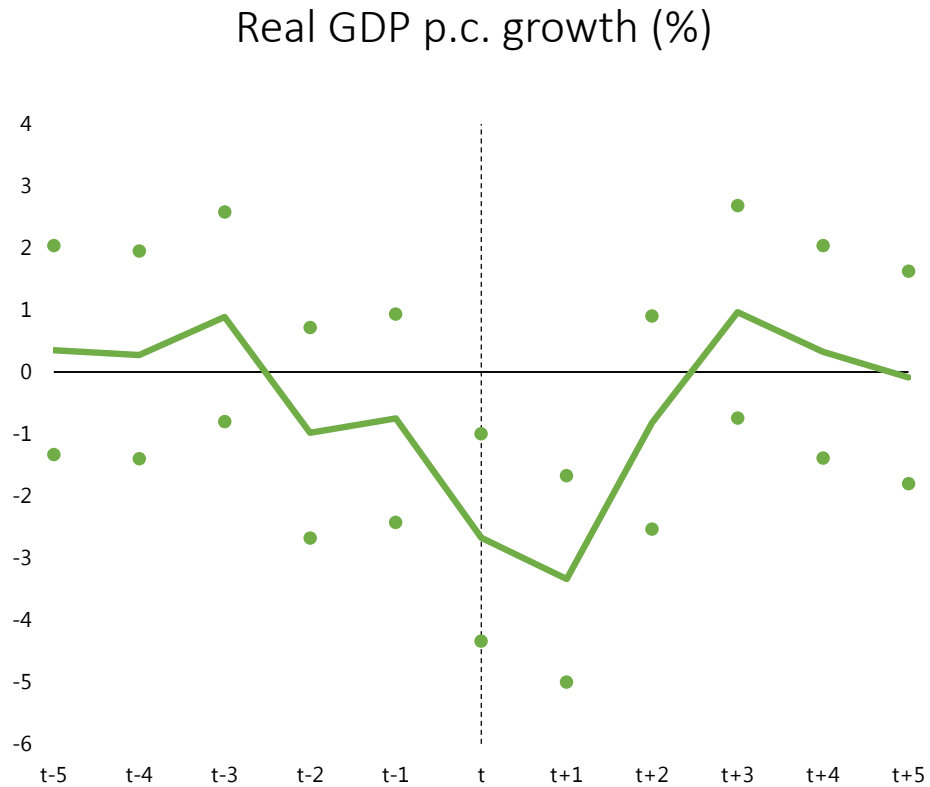
FC = twin fiscal-currency crisis dummy

β = effect of a fiscal crisis

γ = additional effect of a twin fiscal-banking crisis

δ = additional effect of a twin fiscal-currency crisis

Twin Fiscal-Currency Crises



Note: Reported are coefficient estimates with 95% confidence intervals.

III. Concluding Remarks

Conclusions

- A new IMF database on fiscal crises
 - ✓ Updated annually
 - (<https://www.imf.org/en/Publications/WP/Issues/2017/04/03/Fiscal-Crises-44795>)
 - ✓ Large sample (including LIDCs, over 4½ decades) ...
 - ✓ ... but some challenges remain (variability of quality/available data across criteria, time, and country groups)
- Helps understanding implications of fiscal crises
 - ✓ Crises are disruptive: economic recession, indebtedness rises ...
 - ✓ ... but effects can vary across country groups and crisis criteria
 - ✓ Procyclical fiscal policy (expenditures) play a role
 - ✓ Twin crises can be even more disruptive
- Can be used to conduct further research

Predicting Fiscal Crises - Preliminary

- Signaling and Logit approaches
- Advanced and Emerging Economies
 - ✓ Macro imbalances: external (current account), financial (credit growth), and economic activity (large output gap)
 - ✓ Strong expenditure growth increases probability of crisis - evidence of destabilizing role of procyclical fiscal policy
 - ✓ Able to predict a large share of crises (out of sample)
- Low Income Countries
 - ✓ Very different factors; able to predict large share of crises
 - ✓ External factors very relevant: world growth; food prices; dependence on external aid
 - ✓ Some role for domestic economic activity and traditional fiscal indicators

Thank you!

Background Slides

Types of Fiscal Crises per Country Groups

	AM	EM	LIDC	SDS
Credit event	0	85	141	71
Official financing	11	40	29	6
Implicit default	13	18	9	7
Market confidence	7	25	4	3

Source: Authors' calculations.

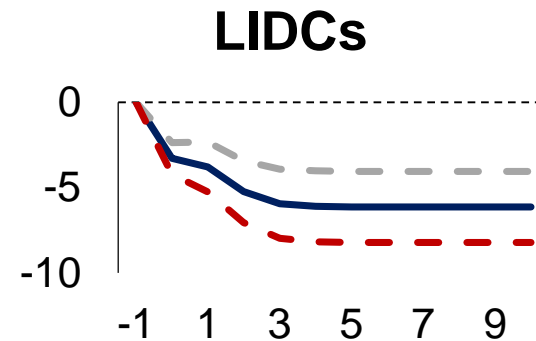
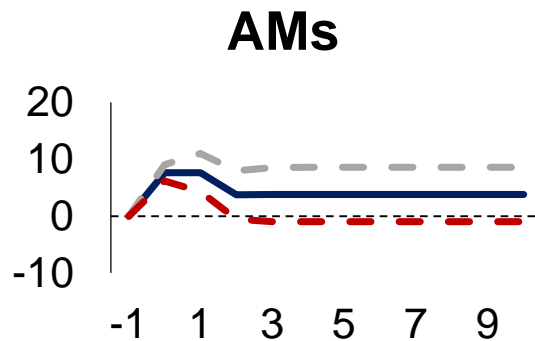
Long-Term Impact?

Specification:

$$y_{i,t} = \alpha_i + \sum_{j=1}^p \beta_j y_{i,t-j} + \sum_{s=0}^q \delta_s D_{i,t-s} + \varepsilon_{i,t}$$

Public Debt

(in percent of GDP, cumulative)



Real GDP p.c.

(in percent, cumulative)

