Capital Inflows, Credit Growth, and Financial Systems

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Seðlabanki Íslands–IMF–LSE Conference on
Capital Flows, Systemic Risk, and Policy Responses
April 29, 2016
Reykjavik, Iceland

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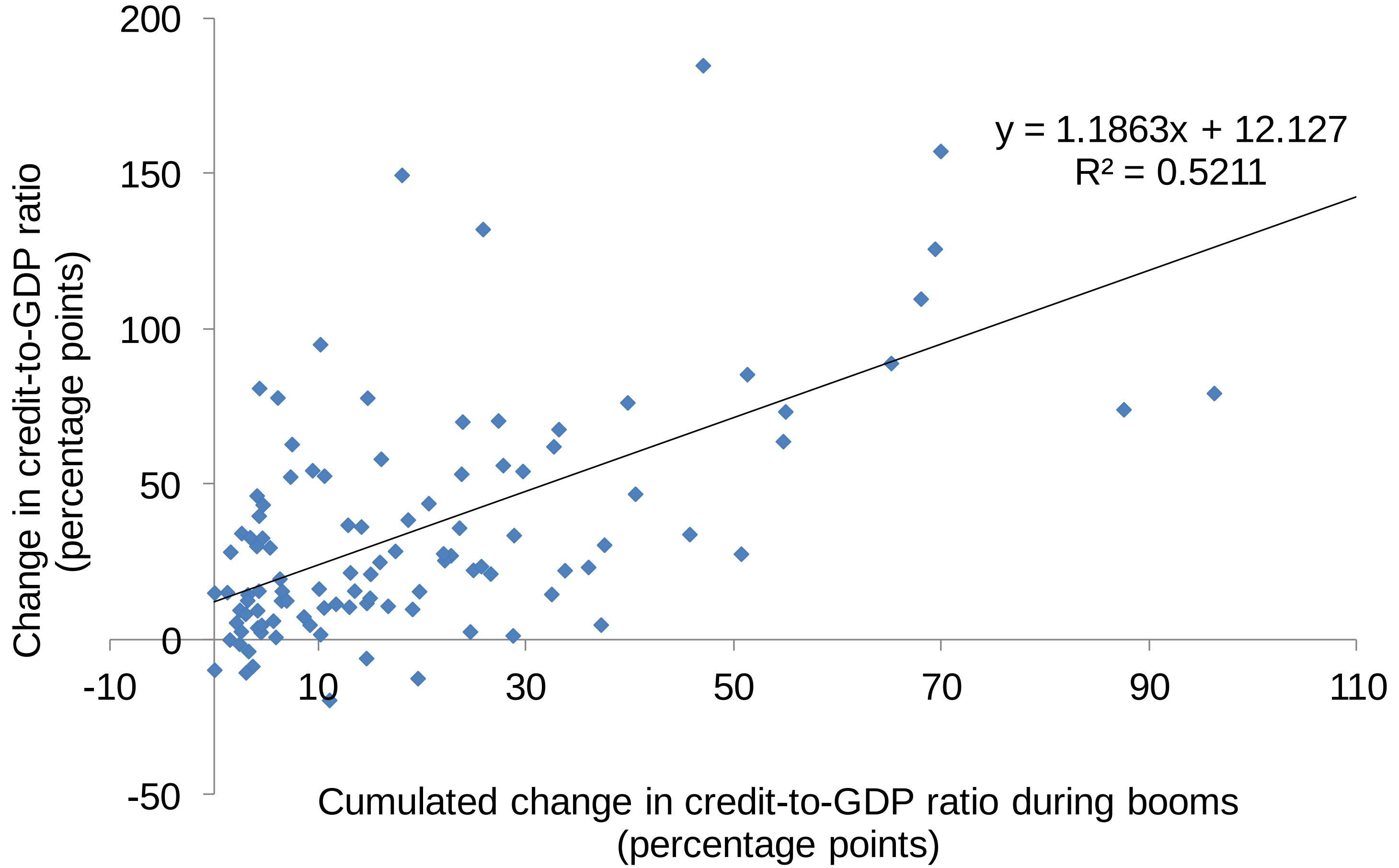
Motivation

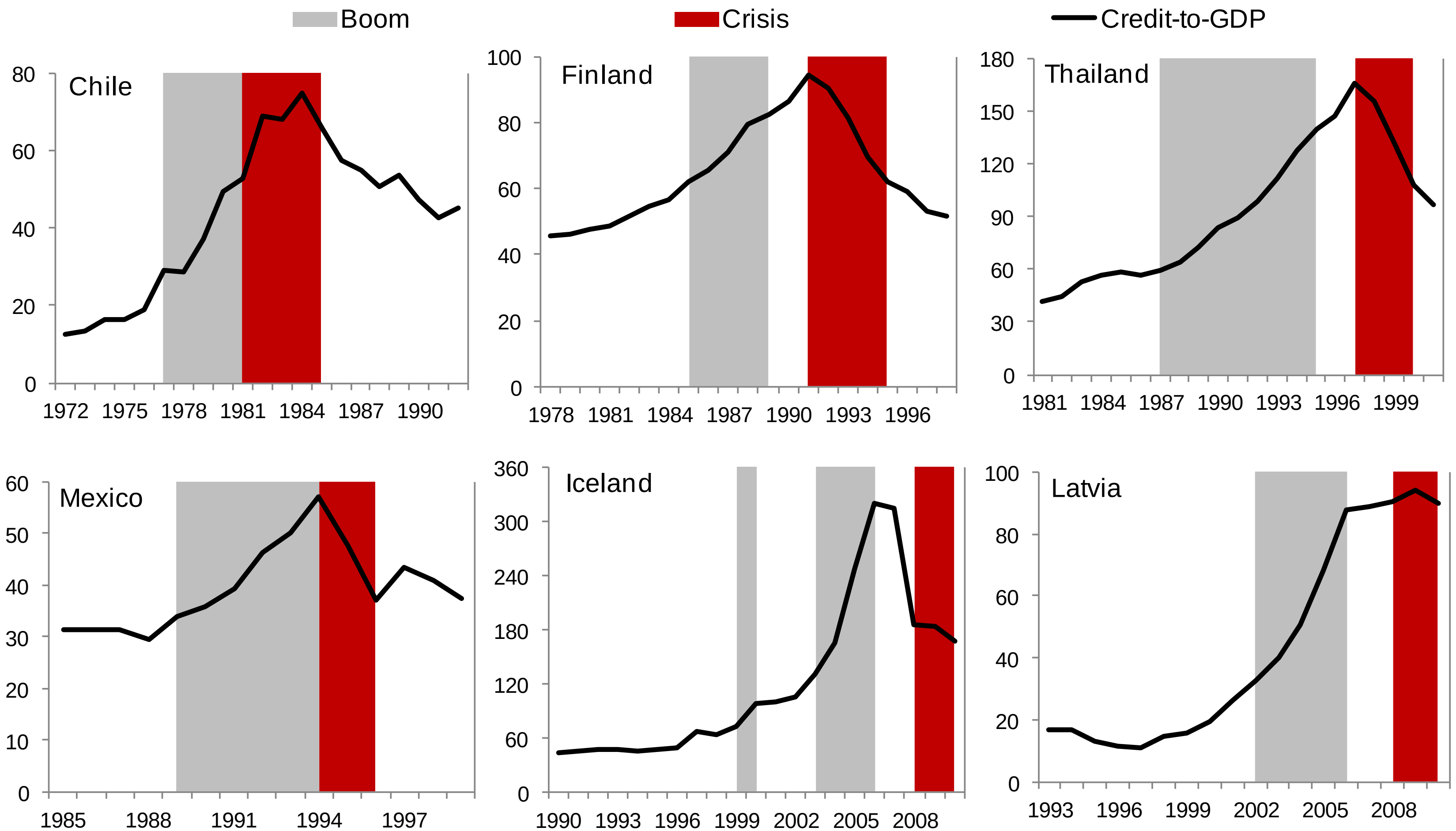
- Credit booms: The good, the bad, and the ugly
  - As signs of financial deepening
    - Financial intermediation relaxes constraints and helps growth
  - As systemic risk indicators
    - Lending standards deteriorate, which may destabilize the system

Figure 3. Credit Booms and Financial Deepening,1970-2010



Sources: IMF *International Financial Statistics;* staff calculations.

Figure 5. Credit Booms and Financial Crises: Examples of Bad Booms



Sources: Laeven and Valencia (2010), IMF *International Financial Statistics*; staff calculations.

Motivation

- Lack of a robust early warning model that tells the good and the bad apart

- Explore different pieces of the puzzle separately to identify regularities
  - 1 out of 3 credit booms preceded by financial account liberalization, only 2 percent associated with reversals (Dell'Ariccia et al, 2016)
  - Capital inflow surges another regularity as net inflows increase from 2.3 to 3.1 percent of GDP in the three-year period before a boom

Literature

- Hernandez and Landerretche (1999): supporting evidence that capital inflow surges tend to finance credit booms
- Sa (2006): no clear-cut relationship between capital inflows and credit booms
- Calderon and Kubota (2012): gross debt inflows good predictor of credit booms
- Lane and Mcquade (2013): domestic credit growth strongly related to net debt inflows but not to net equity inflows

Approach

- Evidence at the aggregate level using more granular data than most literature
  - Capital inflows: FDI, portfolio, other
  - Credit: Households, firms
- Further supported with firm-level data
  - Variation in external finance dependence across sectors
- Differentiating between financial system characteristics
  - Depth, bank- versus market-based

Data and Methodology

- Range of sources from IMF and BIS to WorldScope
- 33 countries, 1980–2011 (1991–2011 for microdata)
- Standard fixed-effect panel regressions

$$Y_{it} = \alpha CI_{it-1} + \beta X_{it-1} + \upsilon_i + n_t + \varepsilon_{it}$$

- X: log real GDP per capita (and squared), real GDP growth, broad money, inflation, interest rate, real FX appreciation, FX regime, openness, capital controls

Data and Methodology

- Extend to firm-level analysis

$$Y_{ijkt} = \gamma\, RZ_{jt} \times CI_{kt} + \alpha_1 RZ_{jt} + \alpha_2 CI_{kt} + \beta_1 F_{ijkt\text{-}1} + \beta_2 M_{kt} + \upsilon_i + n_t + \varepsilon_{ijkt}$$

- *F*: tangible asset ratio, Tobin's Q, EBIT, sales

Credit growth and booms are significantly related to portfolio and other flows

	Credit growth		Boom	
HOUSEHOLDS				
CI	0.337**		0.010**	
FDI		0.102		0.007
Portfolio		0.329*		0.011**
Other		0.380***		0.010**
FIRMS				
CI	0.252**		0.007**	
FDI		0.082		0.007*
Portfolio		0.161		0.008**
Other		0.341***		0.006**

Depth and type of flow is important for households while less market-based systems transform any flow into firm credit

	Financial Development		Financial Structure	
Households	**High**	**Low**	**High**	**Low**
FDI	0.060	0.128	-0.212	-0.174
Portfolio	0.180**	0.687	0.390	0.042
Other	0.190**	0.857*	0.269	0.229
Firms	**High**	**Low**	**High**	**Low**
FDI	0.057	-0.070	-0.091	0.332**
Portfolio	0.089	0.388*	0.110	0.315**
Other	0.235**	0.438**	0.368***	0.381***

Channels

- Demand
  - Boost asset prices
  - Enhance firm value
  - Improve balance sheets
  - Decrease external finance premium

- Supply
  - Domestic bank health determines existing credit constraints
    - Less healthy banks → failure to meet demand

Demand side has relevance for other flows: firms with increasing equity and collateral values are able to raise more loans

DV: Total debt growth	Demand Side	
	Net equity growth	Collateral value growth
Indicator×FDI	-0.004	0.825
Indicator×Portfolio	-0.128	0.337
Indicator×Other	0.297**	1.726*

Supply side also has some relevance: when domestic banks are constrained, capital inflows are more closely associated with credit growth

	Capitalization		Distance to default		NPLs	
	High	**Low**	**High**	**Low**	**High**	**Low**
FDI	-0.185	0.301***	-0.033	0.127	0.265	-0.046
Portfolio	0.170	0.222**	-0.014	0.270**	0.583**	0.036
Other	0.351**	0.258**	0.153	0.347***	0.641***	0.231*

Summary

- Capital inflows boost credit growth and increase the likelihood of credit booms for both households and firms
- Composition matters: Other flows appear to be the main driver
- System matters: Association with faster household credit growth in more developed systems and with faster corporate credit in less market-based systems

Policy implications

- One size does not fit all
  - Policy response to credit booms should take into account the type of flows and the characteristics of the domestic financial system

- Future work:
  - Distinguishing demand and supply further
  - Extension to good versus bad booms