Capital Surges and Credit Booms: How Tight is the Relationship?

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Introduction

- Surges in capital inflows are believed to be a major cause of credit booms and banking crises, esp. in emerging market economies.
  - Reinhart and Reinhart (09), Elekdag and Wu (11), Mendoza and Terrones (08), Calderon and Kubota (12), Lane and McQuade (14).
  - And also Ansell and Broz (14), Copelovitch and Singer (15), Bauerle Danzman, Oatley, Winecoff, Oatley (15)

- This view suggests there is little role played by domestic economic policies in moderating the effects of surges in capital inflows (a view explicitly stated by Rey 2015).
  - Examples of such policies: sterilization, exchange rate regimes.

Capital Surges: One measure, many methods

- That countries regularly experience capital flow surges that are not followed by a credit boom is often overlooked.

- Part of the problem is that there are so many statistical techniques to identify a "capital flow event" (less so for credit booms) and most scholarly work only use a limited number of these methods.

  - Crystallin et al. (2015) replicated the measures and find that the range of capital surges from various methods range from 59-185 episodes.

Question

- Question: how sensitive are estimated capital flow-credit boom relationships to the measures of capital flow surges and credit booms used?

- Preliminary note:

  - Finding strong correlations is a necessary but not sufficient condition for establishing the importance of capital surges as a cause of credit boom.

Theory and Previous Evidence

- Capital surges → credit booms
  - Money supply link: unless offset by CA deficit net inflows of capital generate increases in foreign reserves, which if not sterilized, lead to higher money supply and higher credit.
  - Demand side, e.g. asset price channel.
    - Capital surges → demand for domestic assets rise→ asset price appreciation→ higher collateral value→ higher domestic demand for credit.

Previous Studies: Measurement issues

- While a number of empirical studies have found a positive relationship between capital flow surges and rapid credit expansion there are issues that merit further investigation, such as

  - The numbers of surges and booms identified by the different methods used in the literature differ dramatically.

    - 59-185 capital surge episodes (based on 7 different gross flows measures).

    - 21-60 measures of surges (based 5 credit boom proxies)

Measurement Issues

- Specific underlying proxies used for capital flows and credit growth.

    - Net inflows, gross capital flows or current account deficit?

    - Real credit or real credit per capita?

- Some earlier studies (Calvo, Reinhart & Reinhart 09, Reinhart and Rogoff 09) used current account balances. More recent ones use direct measures of capital flows.

- Other issues: methods used to identify surge and boom events including the de-trending methods used, and the size of the thresholds applied.

Empirical Strategy

- Data description-

  – 41 emerging markets and five advanced "periphery" eurozone economies (Portugal, Greece, Ireland, Italy, Spain) from 1981–2010.

- Our analysis parts from the literature in two ways…

    1) we expand the definition of capital surges and use alternating sources to calculate the probabilities.

      – We replicate 14 different measures of capital surges (gross and net) and 5 different credit boom proxies over a sample of 46 countries from 1981 to 2010.

Empirical Strategy

- Second, we compute the unconditional probability that:
  - a capital surge will be followed by a credit boom and
  - that a credit boom will be preceded by a capital surge.
  - Context: most studies focused on associations between capital surges and credit booms over a given time window.
  - We use the onset year of credit booms and capital flow surges, using contemporaneous occurrence and 1 and 2 years separating the onset of surges and booms.

Results 1: Capital Surges *followed* by Credit Booms

- The proportion of gross surges that are followed by credit booms range from 3 -20% (over 2-year window). Only a minority of surges are followed by credit booms.

Gross Flows			
	Lowest	Highest	Average
Same year	0.0%	6.5%	3.2%
1-yr	2.7%	18.6%	7.8%
2-yr	3.2%	18.6%	10.2%
Net Flows			
	Lowest	Highest	Average
Same year	0.5%	8.5%	3.3%
1-yr	1.0%	13.0%	6.7%
2-yr	3.1%	20.0%	10.1%

Results 2: Credit Booms *preceded* by Capital Surges

- The proportion of credit booms that are preceded by (gross) capital surges range from 10% to 44.7% (2-year window), for the full sample. Credit booms are frequently generated in absence of surges.

Gross Flows			
	Lowest	**Highest**	**Average**
Same year	0.0%	20.0%	8.3%
1-yr	6.7%	34.2%	19.8%
2-yr	10.0%	44.7%	26.2%
Net Flows			
	Lowest	**Highest**	**Average**
Same year	2.6%	18.3%	8.5%
1-yr	9.1%	35.0%	17.5%
2-yr	13.3%	53.3%	27.8%

Decade Analysis

- Over time, we find that
  - The proportion of credit booms preceded by surges perpetually rises (especially from the 1980s-90s).
  - However, the proportion of surges that are followed by credit booms rose from the 1980s to the 1990s, it fell again in the 2000s.

- Correlations using gross flows are lower than net flows, but only for the 1980s and the 1990s.
  - In the 2000s, correlations using gross flows are higher than those measures with net flows.

Decade Analysis

Average Proportion of Surges that End in Credit Booms (%)

	80s	90s	2000s	80s	90s	2000s	80s	90s	2000s
		Same year			1yr			2yr	
Gross Measures	0.5	4.9	2.6	1.0	10.4	7.7	2.6	14.6	9.5
Net Measures	0.7	4.4	2.9	3.6	9.0	6.0	7.4	15.6	7.9

Average Proportion of Booms Preceded by Surges (%)

	80s	90s	2000s	80s	90s	2000s	80s	90s	2000s
		Same year			1yr			2yr	
Gross Measures	0.9	9.3	13.4	2.4	17.6	40.9	5.6	24.2	50.0
Net Measures	1.2	9.5	13.9	5.3	17.9	29.5	12.1	30.1	39.8

Concluding Remarks

- Correlations between surges and booms appear to be much weaker than is frequently assumed.
    - Surges are often not followed by credit booms and credit booms are frequently generated in the absence of capital surges.
    - The positive but relatively low correlations between surges and subsequent booms suggest that many countries have substantial abilities to protect themselves.

Concluding Remarks

- It is also important to attempt to develop a better understanding of why despite the low propensity for surges to generate booms a much higher proportion of booms are associated with surges.

  - The differences in proportions is likely due in part to the substantially larger number of surges than booms.

  - Such analysis would likely also give insight into issues of causality.

Further Issues

- The best ways to limit potential harmful effects of large capital inflows likely to vary from one country to another.

- Examples of domestic economic factors that could intermediate the effects of capital flow surges:

  - Sterilization
  - Macroprudential policies

- Issues to investigate further: what factors make countries technically able and politically willing to adopt such policies.

APPENDIX

Capital Surge Measurement Methods

Method	Number of Surges (Gross)	Number of Surges (Net)	Underlying Capital Flows Data	Trend	Standard Deviation	Fixed-Threshold
Surge1	59	71	Level	Two-sided HP-Filter	One S.D	3% of GDP
Surge2	185	193	Ratio to GDP	Two-sided HP-Filter	One S.D	75th percentile of a country's capital flows ratio
Surge3	113	145	Ratio to GDP	No	No	75th percentile of a country's capital flow to GDP ratio, AND 75th percentile of the entire sample capital flows ratio to GDP.
Surge4	90	94	Level and Ratio to GDP	Mean of level capital flows	One S.D	3% of GDP
Surge5	105	100	Ratio to GDP	Two-sided HP-Filter	One S.D	3% of GDP
Surge6	62	75	Per capita	Two-sided HP-Filter	One S.D	Current Account<0 Financial Account>0
Surge7	143	130	Change in level and Ratio to GDP	No	No	3% of GDP

Credit Boom Measurement Methods

Method	Underlying Credit Data	Total Number of Episodes	Limit Threshold	Definition
EW1	Real Credit(logged)	60	1.55 x standard deviation of country-specific trend	CB=1 if deviation from trend of real credit exceeds the typical expansion of credit over the business cycle by a factor of 1.55, which is consistent with the top 6th percentile of the distribution
EW2	Real Credit (logged)	38	1.96 x S.D	CB=1 if deviation of real credit from trend is in the top 5th percentile of the distribution
MT1	Ratio of Real Credit to population (logged)	48	1.5 x SD	1.5 std. dev
MT2	Ratio of Real Credit to population (logged)	33	1.75 x S.D	CB=1 if deviation from trend of real credit per capita exceeds the typical expansion of credit over the business cycle by a factor of 1.75, which is consistent with the top 5th percentile of the distribution
MT3	Ratio of Real Credit to population (logged	21	2 x S.D	2 std. deviation