



Speculative Asset Bubbles: The Primary Drivers of “Systemic” Banking Crises in Post-war Advanced Economies

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Motivation

- In academia as well as in policy circles discussions on possible measures for averting a future “systemic” banking crisis often lead to talks on appropriate monetary and macro-prudential policies to abate the growth of private sector debt and financial sector leverage as the “main driver” of “systemic” banking crises.
- While asset market bubbles are recognized as an important and frequent precursor of systemic crises, such bubbles are thought to be caused primarily by the expansion of credit to the private sector, often fueled by large capital inflows.



Motivation (contd...)

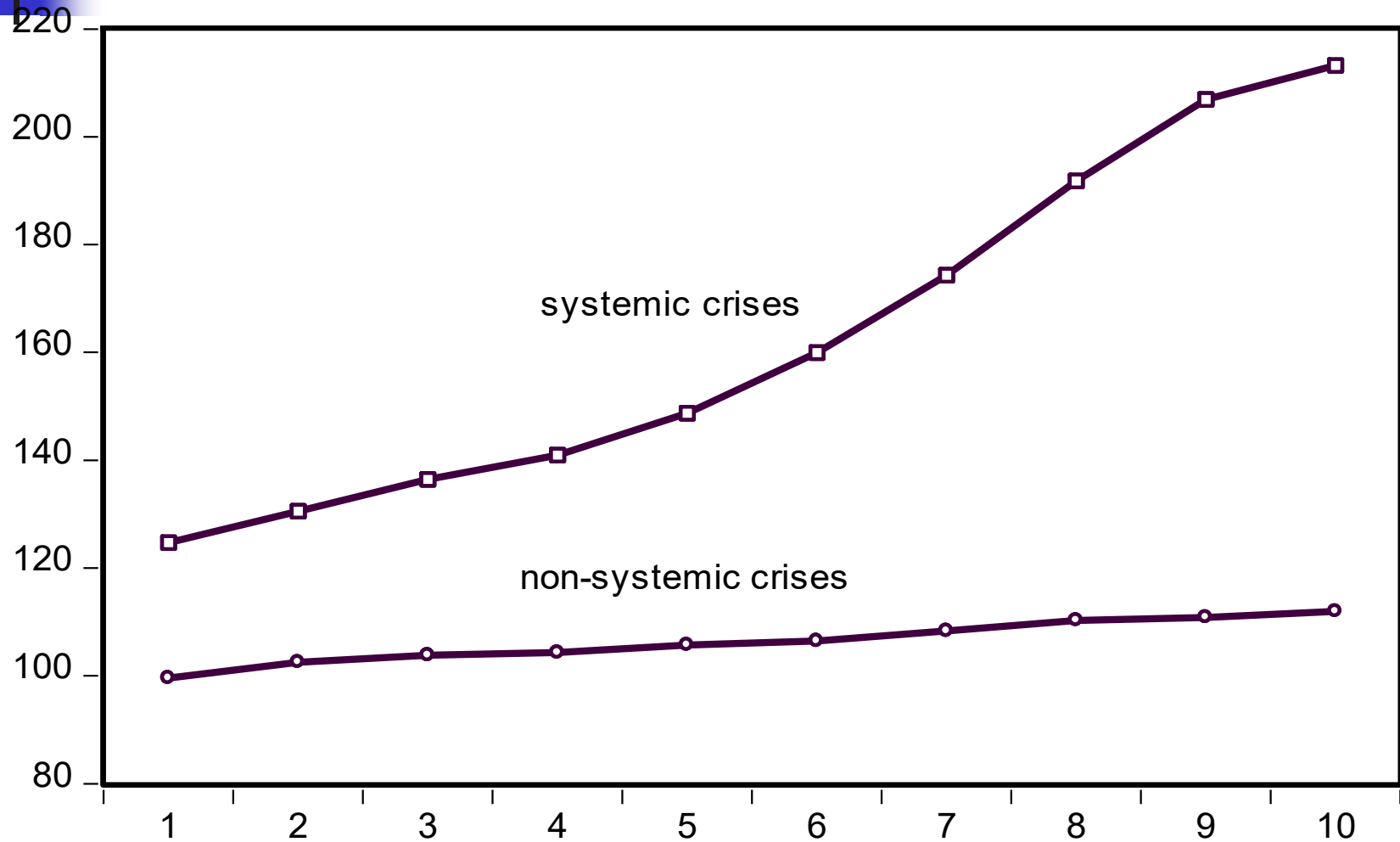
- Interesting: The development of this whole new narrative is being shaped by findings of studies that either analyze “systemic” and “non-systemic” banking crises together simply as one genre of “banking crises” or preclude the effects of changes in real house prices—sometimes both real house and stock prices—altogether.
- Some of the studies do not even distinguish between crises of advanced and developing economies.
- In this paper: A comparative study of only “systemic” banking crises in advanced economies in the post-war era
- Argue that such crises are primarily and most commonly caused by speculative bubbles in asset markets, not credit booms or surges in capital inflows.



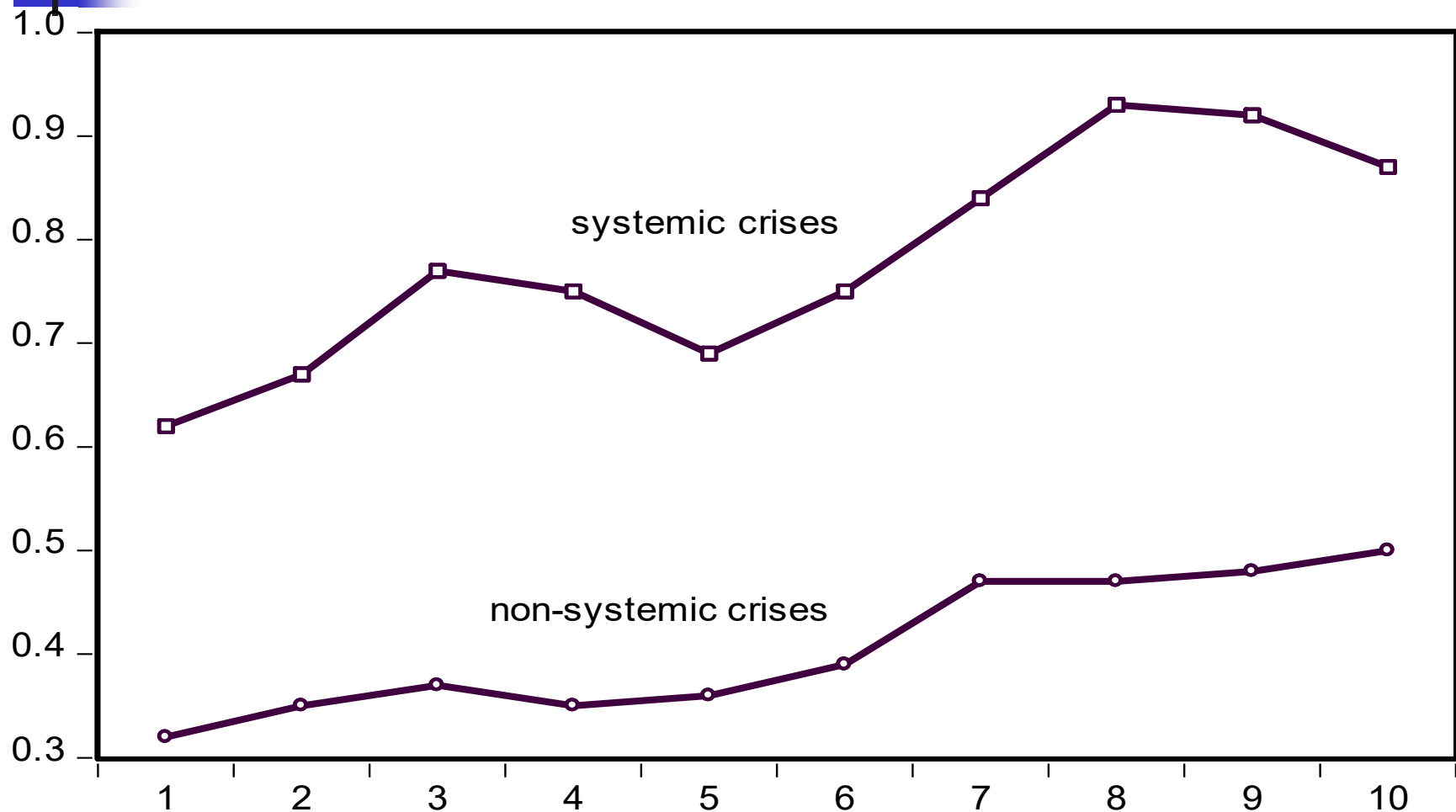
The First Probe

- How are the evolutions of real house and stock prices, current account balance as a percentage of GDP, and private sector debt to banking institutions as a percentage of GDP over ten years prior to post-war “systemic” and “non-systemic” banking crises in advanced economies?
- Definition and identification of “systemic” banking crises: Laeven and Valencia (2013)
- Non-systemic banking crises: Reinhart and Rogoff (2009)

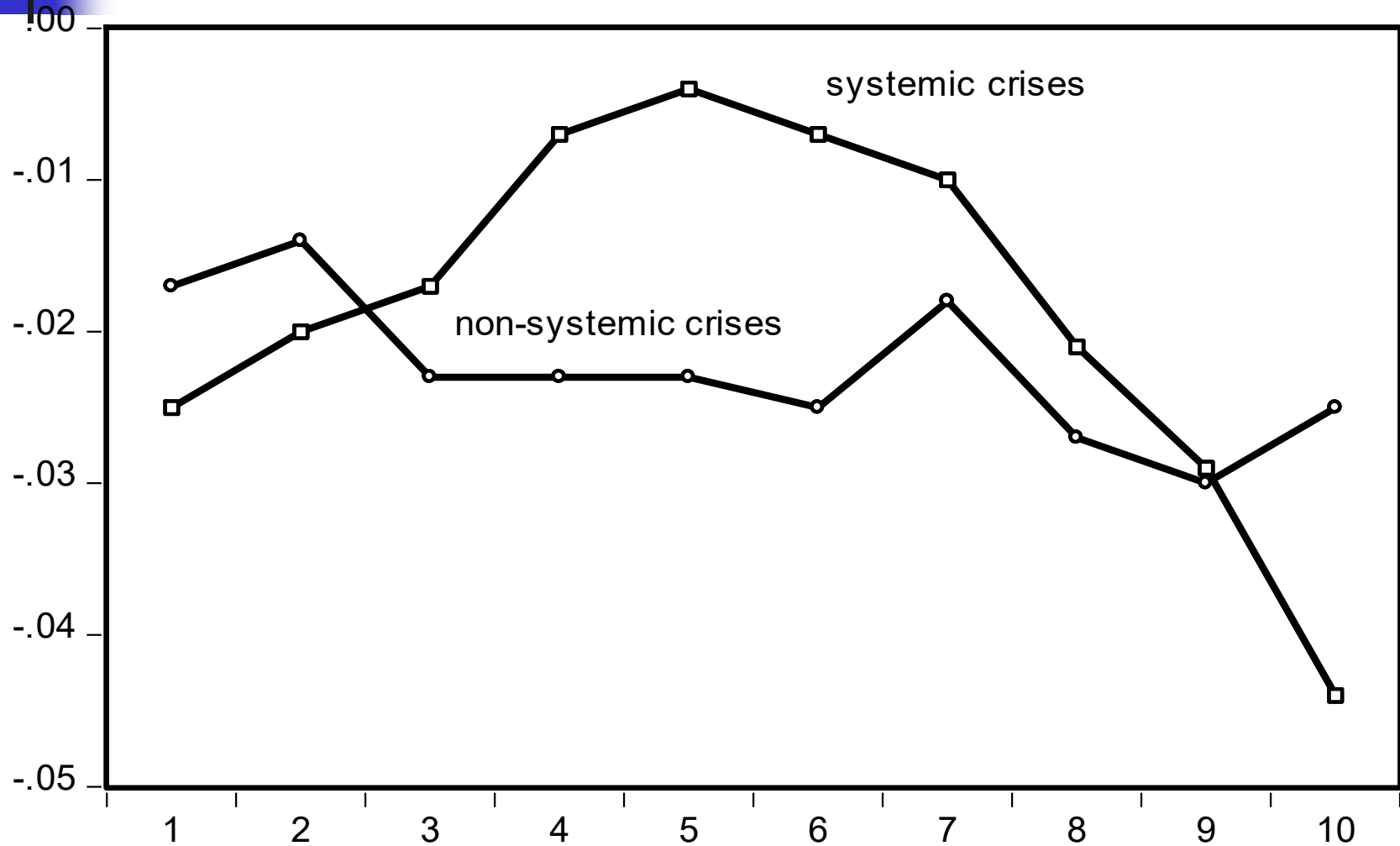
Real house prices over ten years prior to banking crises in post-war advanced economies: Average across "systemic crises" and average across "non-systemic crises"



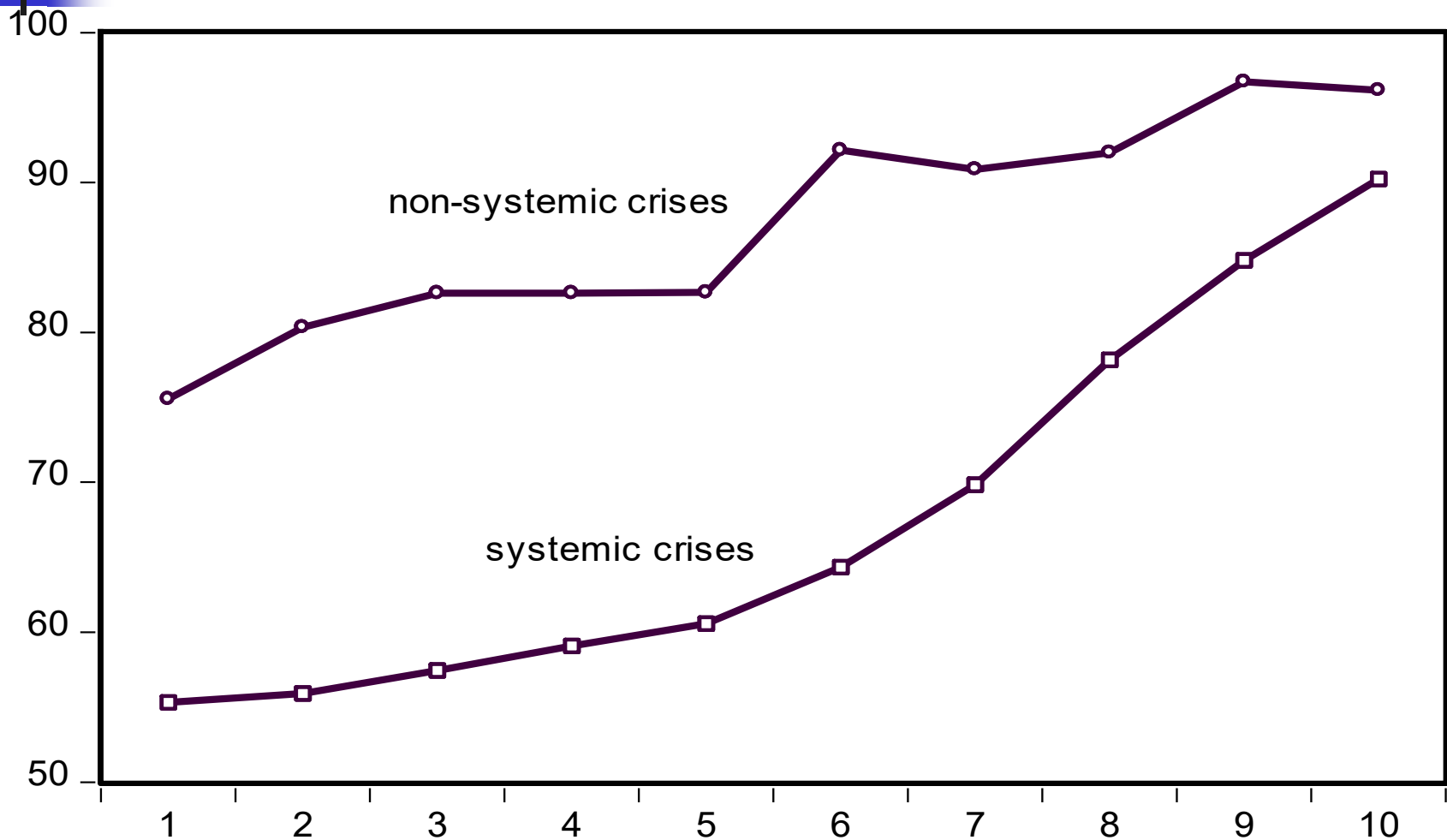
Real share prices over ten years prior to banking crises in post-war advanced economies: Average across "systemic crises" and average across "non-systemic crises"



Current Account Balance as a Percentage of GDP over ten years prior to banking crises in post-war advanced economies: Average across "systemic crises" and average across "non-systemic crises"



Private Sector Debt as a Percentage of GDP over ten years prior to banking crises in post-war advanced economies: Average across "systemic crises" and average across "non-systemic crises"





The First Probe: Questions

- The plots do not fully match the popular perception of credit booms driving systemic banking crises. These in fact raise a few important questions.
- If credit booms are thought to be the most important factor in the run-up to a systemic banking crisis, how is this reconciled with the fact that the share of private sector debt in GDP is generally lower prior to systemic banking crises than it is prior to non-systemic banking crises?
- Why does the share of private sector debt in GDP rise and the share of current account balance in GDP decline in tandem with upward movements of real stock and house prices prior to systemic crises and not prior to non-systemic crises?
- Is it possible that asset market bubbles, and not credit booms or surges in capital inflows, are commonly the primary drivers of systemic banking crises?



Methodology and Data

- Examine robust similarities across historical “systemic” banking crises based on their **predictability**
- We examine *thirty-four* specifications of bivariate and multivariate panel logit models to examine the joint effects of different combinations of indicators on the probability of crisis and to better capture fat tails in the data
- We ask, specifically, if the historical crises and the current global crisis can be predicted to occur within a period of three years.
- All three observations prior to a crisis episode are labeled as “pre-crisis” and all observations prior to these three years are labeled as “tranquil.”
- The dependent variable representing crisis probability is assigned the actual value *one* when the observation is “pre-crisis” and *zero* when the observation is “tranquil.”



Methodology and Data (contd..)

- The two essential criteria for assessing crisis similarity are:
 - Percentage of “pre-crisis” years correctly called (conditional probability of an alarm given a crisis within three years)
 - True alarms as a percentage of total alarms (conditional probability of a crisis within three years given an alarm)



Methodology and Data (contd..)

■ The Choice of Threshold

- The first preference under all conditions: 50%
 - No bias towards pre-crisis or tranquil observations
 - However, for a rare event, such as banking crisis, only a few alarms are generated
- Candelon, Dumitrescu and Hurlin (2009) recommend several alternative criteria for the determination of an optimum threshold
 - The minimum bias toward either pre-crisis or tranquil observations: *a threshold that simultaneously and conditionally maximizes the percentage of pre-crisis observations correctly called and the percentage of tranquil observations correctly called in the within sample exercises.*
- We apply both 50% and optimum thresholds and compare the results



Methodology and Data

- Variables based on the literature on banking crisis similarity
 - Current account as a percentage of GDP (CA)
 - Growth rate of per capita real GDP (GGDP)
 - Public debt as a percentage of GDP
 - Real house prices (RHP)
 - Real share prices (RSP)
 - Income inequality (IE)
 - Central bank real interest rate (RIR)
 - M2/reserves (M2/R)
 - Bank liquidity (LIQ)
 - Currency appreciation (APP)
 - Private sector debt as a percentage of GDP (PVD)

Methodology and Data (contd..)



■ Data Sources:

- International Financial Statistics
 - ILO
 - Groningen Growth and Development Centre Total Economy Database
 - OECD.stat
- Due to a large number of missing observations, following the econometric literature, employ a “choice-based” sample:
- Make the sample distribution symmetric across historical crisis experiences with a balanced panel of data.

Methodology and Data (contd..)



- Five systemic banking crises in advanced economies prior to the global financial crisis (Laeven and Valencia, 2013): *Finland (1991), Japan (1992), Norway (1991), Spain (1977), Sweden (1991)*
- Not to bias the sample with the experience of the global financial crisis we choose four representative countries out of thirteen that experienced the crisis (Laeven and Valencia, 2013): *US(2007), UK(2008), Ireland(2008), Spain(2008)*
- Three sets of forecasting exercises and check the robustness of results:
 - All nine countries in the sample
 - Only the five crises prior to the global financial crisis
 - Only the four countries that were part of the global financial crisis

Results from Estimation and Forecasting

Significance of Coefficients

- In the bivariate specifications: *current account balance, real GDP growth, private sector debt, real share prices* and *real house prices* are significant at 5% or 10% level.
- In the multivariate specifications:
 - Several variables are significant at 5% or 10% level in different specifications
 - But *private sector debt* and *current account balance* are not significant in a specification that also has *real house prices* and *real share prices*

Results from Estimation and Forecasting (contd..)

- Prediction results
 - Bivariate specifications
 - *Real house prices* does the best
 - Next are: *private sector debt*, *real share prices*, and *current account balance*
 - The combination of *real house and share prices* does the best and equally well as the combination of *real house and share prices and private sector debt* or the combination of *real house and share prices, private sector debt and current account balance*
 - Implies that in the presence of *real house and share prices*, *private sector debt* and *current account balance* are redundant
 - The results are robust across the three samples and sub-samples
- Granger causality tests: Any possible causality is from real house prices to private sector debt and current account balance and not in the opposite direction.



Conclusion

- Speculative bubbles in asset markets are the primary drivers of “systemic” banking crises in post-war advanced economies
- They also drive growing current account deficits and credit booms
- Of course reminds us of Robert Shiller’s 2005 prediction of the global financial crisis by looking only at historical booms and busts in asset markets