

## Foreign Booms, Domestic Busts: The Global Dimension of Banking Crises

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The global financial crisis that began in 2008 was an extreme example of an empirical regularity: financial crises come in waves. That is, crises tend to take place simultaneously across countries. Credit also comes in waves: domestic credit growth is correlated across countries, and hence one could argue for the existence of a global cycle in domestic credit growth too.

In this paper we link these two facts with the well-known result in the literature that domestic credit growth seems to be the single best predictor of domestic banking crises, due to the influential work of Schularick and Taylor (2012). Specifically, the observations that (1) banking crises come in global waves (2) credit growth is correlated across countries, and (3) credit growth predicts financial crisis, naturally lead us to ask the following question: do global conditions have a role in predicting domestic banking crises, over and above that of domestic credit?

For this purpose, we combine two existing databases (namely, the data on systemic banking crises compiled by Laeven and Valencia (2013), and the BIS data on credit) in a novel way, and come up with a panel of 38 countries over the period 1970-2015.

Armed with this data, we first present a number of novel stylized facts on the international synchronization of credit and of crisis episodes. We show that domestic credit growth is correlated across a large set of countries and that this synchronization has increased over time. We also show that the empirical distribution of banking crises has fatter tails than a binomial distribution, i.e. the distribution they would follow if crises were independently distributed across countries. We formally test for this correlation with a 'stable correlation binomial model' and find strong statistical evidence of a positive cross-country correlation in the occurrence of banking crises.

We then test our main hypothesis (i.e., that *foreign* variables can help explaining the occurrence of *domestic* banking crises) in the simplest possible way: we construct an information set that includes lagged values of some variables of interest for each country in our panel. We then use this information set as explanatory variable for the occurrence of banking crises, which are quantified by the use of dummy variables. We use both linear probability and Logit models.

Given the proven importance of domestic credit growth for the occurrence of banking crises, one plausible conjecture is that credit growth in the rest of the world could also affect the probability of a banking crisis taking place at home. So, as a first step, we study the role of 'foreign' credit growth

(that is, domestic credit growth in the rest of the world) in affecting the probability of experiencing banking crises at home.

Our results show that the information contained in foreign credit substantially increases the predictive power of models that only focus on domestic credit as explanatory variable for the occurrence of crises. In particular, we find that foreign credit growth is a significant predictor of domestic banking crises, even when controlling for domestic credit growth. This is true for our new dataset as well as for the longer, narrower panel in Schularick and Taylor (2012) (which covers 14 countries over the 1870-2008 period). Foreign credit is not only significant statistically, but also substantially increases the ability of the model to distinguish between forthcoming crisis and no-crisis episodes.

In a second stage, we also try to understand the mechanisms at play underlying our main finding. A first attempt entails testing whether countries that are more 'open' are particularly affected by global conditions. There are at least two relevant dimensions in which a country can be open: it can be open to foreign trade, and it can be open to financial transactions with non-residents (which we refer to as financial openness). We explore these two dimensions by interacting proxies of these degrees of openness with measures of credit growth abroad. We find that financially open countries are more likely to experience banking crises at home when foreign credit growth is elevated, while this is not true for countries that are more open to trade. This suggests that channels are likely to be financial rather than related to external trade.

Even if channels are likely to be financial, there are still several (non-mutually exclusive) transmission mechanisms through which booming foreign credit growth could result in financial instability at home. In particular, financial channels of transmission come in at least three varieties: (i) cross-border capital flows, (ii) transmission of risk sentiment and (iii) crisis contagion. Although testing rigorously for each of these mechanisms is beyond the scope of our paper, we find suggestive evidence that all three seem to play a role.

First, we factor in different types of cross border capital flows, namely banking inflows and gross portfolio inflows (foreign purchases of domestic bonds and shares). We find no evidence that banking flows influence the risk of crisis, but we do find evidence for the impact of elevated portfolio inflows (even when controlling for domestic credit growth). The coefficient corresponding to credit growth abroad changes in magnitude and significance (which can be interpreted as evidence of some shared information with portfolio inflows) but remains significant, suggesting that capital inflows are not the whole story.

In a second exercise, we factor in a number of variables that the literature has found to affect and reflect conditions in global financial markets. We find that four of them (real short term US interest rates, US corporate credit spreads, changes in the leverage of US broker dealer banks and the VIX

index) have a significant effect on the probability of experiencing a domestic banking crisis. More specifically, depressed values of real short term US interest rates and of global risk aversion proxies tend to be associated with an increased probability of a banking crisis at home further down the line. Credit growth abroad remains significant when controlling for corporate credit spreads, but it does not in the rest of the cases, suggesting common channels. We interpret this as suggesting an important role for risk sentiment in explaining the influence of global conditions in general, and credit growth abroad in particular, on domestic financial stability.

Finally, we find that when controlling for the occurrence of crises abroad, this new variable is significant for predicting banking crises at home, but credit growth abroad remains significant too. This suggests there is a role for contagion but also that it is not the whole story, strengthening the case for the channels described above.

In sum, credit growth *abroad* contains useful information for predicting the occurrence of banking crises *at home*, over and above that information contained in *domestic* credit growth. The channels behind this effect seem to be financial rather than related to foreign trade, and they seem more strongly linked to the international transmission of investor sentiment, including via portfolio capital flows (although there also seems to be a partial role for direct crisis contagion). Global risk sentiment can be captured with variety of price- and quantity-based measures, of which foreign credit growth is a prominent example. These findings highlight the importance of foreign developments for domestic financial stability, and provide a case for international standards for a broader coordination of responses to building financial risks.