

Banking Crises and Contagion: Empirical Evidence

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Financial deregulation and the global integration of markets have heightened the awareness of the potential fragility of banking systems in the face of external crises. From a global perspective, banking crises are numerous: Glick and Hutchison (1999) document 90 crises since 1975 across a sample of 90 developing and developed countries.¹ High-profile events such as the U.S. Savings and Loan, Mexican, Scandinavian, East Asian, and Argentinian crises reinforce this perception. Unfortunately, despite considerable efforts to empirically model the nature of banking crises, current analyses do not provide uniform conclusions regarding the determinants of crises.² Likewise, little is known with respect to the presence and effect of contagion across banking systems.

This leaves several questions unanswered in the empirical literature:

- First, does the theoretical literature on banking crises and contagion provide suitable testable hypotheses with respect to the likelihood of a banking crisis when interbank markets exist, and can these hypotheses be empirically assessed?
- Second, given the limitations of the data, can the onset of a banking crisis be accurately predicted?

1. Banking crises are defined when one or more of the following events occur: the ratio of non-performing loans to total assets is greater than 10 per cent, the cost of rescue operations is more than 2 per cent of GDP, and/or banks are nationalized, a bank holiday, or a guarantee of deposits, or loan losses and the erosion of bank capital exceed defined thresholds.
2. Given the current emphasis of the International Monetary Fund and central banks on constructing “stress indicators” and “early-warning systems” to quantify the potential risks in the financial system, it is important to be confident of the methods of empirical assessment used in these processes.

- And third, conditional on the ability to robustly predict banking crises, can the existence of contagion be assessed? Moreover, does the occurrence of a crisis in one market allow the prediction of crises in other markets, over and above the effects of macroeconomic interconnections?

With regard to the first of these questions, contagion can be defined in terms of “fundamental” and “informational” channels. Fundamentals-based contagion is used to describe shocks that affect markets because of common components, such as changes in U.S. interest rates, the price of oil, or the growth rate of the OECD countries (Dornbusch, Park, and Claessens 2000). These shocks lead to contagion because of the normal interdependence of banks and real-side markets. Information-based contagion occurs when the onset of a crisis in one market leads investors to re-assess the risks associated with investments in other markets, regardless of whether or not there are any real-side linkages between the respective markets. The subsequent impact on asset prices from changes in investor behaviour can negatively affect the balance sheets of banks and, ultimately, the stability of the banking system.

In both cases, there are several pathways by which these shocks can lead to banking crises within and across banking systems. It is therefore interesting to consider how contagion is modelled in the theoretical literature and whether the predictions can be empirically tested. For instance, Allen and Gale (2000) show that the likelihood and effect of contagion depends on the degree of interbank market completeness; i.e., the extent to which banks are interconnected with other banks. But the data required to assess their model simply do not exist. Alternatively, Chen (1999) shows that the failure of one bank can lead to the failure of other banks simply because of informational

contagion. This suggests that crises can be propagated without any real-side links among banks. This notion of informational contagion can be empirically assessed.

With regard to the second question, the empirical literature on banking crises does not adequately address the issue of how to choose an appropriate sample of countries to test hypotheses. Most studies arbitrarily choose the sample of crisis and non-crisis countries, neglecting the potential impact of sample selection on the appropriate estimation procedure. It would be preferable to pay particular attention to the construction of the cross-country sample: matching-method techniques should be used to construct a suitable control group analogue to the set of crisis countries. This would allow the probability of the occurrence of a banking crisis and of banking-system contagion to be quantified more accurately. Sample selections in previous studies introduced bias into the estimates of the probability of the occurrence of a banking crisis, because of differences between the characteristics of the crisis and non-crisis country groups.

Finally, in terms of the third and final question, given a clearly defined empirical benchmark, an empirical model of contagion can be estimated. Following Ahluwalia (2000), it is possible to construct contagion indexes to capture the notion of "informational contagion," reflecting the extent to which a country shares macroeconomic characteristics with a country that previously experienced a banking crisis: the index takes positive values proportional to the degree of similarity. The contagion index does not require the respective countries to share any real-side links; rather, the empirical specification suggests that the information associated with the crisis leads to changes in investor behaviour that may affect banks' balance sheets. This allows a simple empirical test to be conducted: Do lagged values of the contagion index accurately predict the occurrence of a banking crisis in the current period, conditional on macroeconomic fundamentals? The analysis indicates that the probability of a banking crisis increases when countries have characteristics similar to those that have experienced a crisis, regardless of the degree of actual economic linkages between the respective countries.

In conclusion, the implications of these results are intriguing. If the fundamentals are

controlled, then the occurrence of a banking crisis in the previous period in one country predicts the onset of a banking crisis in another country, if the countries have similar macroeconomic characteristics. This suggests that informational contagion plays a larger role than previously suspected, since the onset of a crisis is related to the information provided by the initial crisis event, over and above macroeconomic effects. The existence of informational contagion raises many issues for policy-makers. In particular, institutions that oversee, supervise, or regulate financial institutions need to account for the process by which information from the occurrence of one banking crisis affects the behaviour of market participants, and how market completeness propagates or mitigates the transmission of macroeconomic effects.

References

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