Three Branches of Theories of Financial Crises

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Contents

Abstract

In this monograph, we review three branches of theoretical literature on financial crises. The first deals with banking crises originating from coordination failures among bank creditors. The second deals with frictions in credit and interbank markets due to problems of moral hazard and adverse selection. The third deals with currency crises. We discuss the evolutions of these branches in the literature, and how they have been integrated recently to explain the turmoil in the world economy during the East Asian crises and in the last few years. We discuss the relation of the models to the empirical evidence and their ability to guide policies to avoid or mitigate future crises.

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1

Introduction

Financial and monetary systems are designed to improve the efficiency of real activity and resource allocation. Many empirical studies in financial economics provide evidence that financial development and economic growth and efficiency are connected; see, for example, Levine [1997] and Rajan and Zingales [1998]. In theory, financial institutions and markets enable the efficient transmission of resources from savers to the best investment opportunities. In addition, they also provide risk sharing possibilities so that investors can take more risk and advance the economy. Finally, they enable aggregation of information that provides guidance for more efficient investment decisions. Relatedly, monetary arrangements, such as the European Monetary Union (EMU), are created to facilitate free trade and financial transactions among countries, thereby improving real efficiency.

A financial crisis — marked, for example, by the failure of banks, the sharp decrease in credit and trade, and/or the collapse of an exchange rate regime — causes extreme disruption of the normal functions of financial and monetary systems, thereby hurting the efficiency of the economy. Unfortunately, financial crises have happened frequently throughout history and, despite constant attempts to eliminate them,

it seems unlikely that they will disappear in the future. Clearly, the last decade has been characterized by great turmoil in the world's financial systems. The meltdown of leading financial institutions in the US and Europe, the sharp decrease in lending and trading activities, and the ongoing challenge in the European Monetary Union exhibit ingredients from several types of financial crises in recent history: banking crises, credit and market freezes, and currency crises.[1]

Understanding the different types of financial crises and the connection between them poses a challenge for academics, policymakers, and practitioners. Are crises caused by problems in the economy or are they creating the problems? Are crises inevitable for economies that wish to maintain a high level of financial development? Can we think of an optimal mix of regulations that will achieve financial development without much exposure to crises? Or, are the crises themselves sometimes a result of regulation and intervention in financial markets? Most financial economists will probably agree that crises are related to panics and externalities and that some policy is needed to reduce their frequency and severity. But how big is the problem and how extensive should intervention be? Ongoing research is critical to gain a better understanding of the origins of crises and the optimal response to them.

Over the years, many theories have been developed to explain financial crises and guide policymakers in trying to prevent and mitigate them. In this monograph, we review models from three different branches of literature that have been developed more or less in parallel: banking crises and panics, credit frictions and market freezes, and currency crises. At a later stage, mainly following the East Asian crisis in the late 1990s, these literatures have become more integrated as the events in the real world proved that the different types of crises can occur simultaneously and amplify each other in different ways. Our monograph is not meant to be a comprehensive survey of the financial-crises literature. The literature is too big to be meaningfully covered in full in one survey. In fact, there is no consensus on what this literature includes as different people have different views on what constitutes a

[1] Many authors provide detailed descriptions of the events of the recent crisis. See, for example, Brunnermeier [2009] and Gorton [2010].

financial crisis. Instead, we attempt to present basic frameworks linked to the broad topic of financial crises and describe some of the ways in which they influenced the literature and relate to recent events. We also address some of the policy challenges and shed light on them using the analytical tools at hand. We hope that this survey will be helpful in highlighting the basic underlying forces that have been studied in the literature for over three decades in a simple and transparent way, and will be an easy and accessible source for the many economists who are now interested in exploring the topic of financial crises following the events of the last few years.

In Section 2, we review the literature on banking crises and panics. This literature is perhaps most directly linked to the concept of crises. Banks are known to finance long-term assets with short-term liabilities. One advantage of this arrangement is that it enables banks to provide risk sharing to investors who might face early liquidity needs. However, this also exposes the bank to the risk of a bank run, whereby many creditors decide to withdraw their money early. The key problem is that of a coordination failure, which stands at the root of the fragility of banking systems: when more depositors withdraw their money from a bank the bank is more likely to fail, and other depositors have a stronger incentive to withdraw. These strategic complementarities lead to either multiple equilibria or abrupt regime shifts, and support the view held by many economists that crises are sudden and unexpected events that have an element of panic [see Friedman and Schwartz, 1963, Kindleberger, 1978]. In this section, we describe the theoretical underpinnings behind bank runs and the lessons for policy analysis.

Banking systems have been plagued with bank runs throughout history; see, for example, Calomiris and Gorton [1991]. Policy lessons from the early 20th century led governments to insure banks, which substantially reduced the likelihood of bank runs. However, runs are still a prominent phenomenon behind financial crises. In East Asian and Latin American countries, many runs occurred in the last two decades. In the recent turmoil, a classic type of bank run was seen in the United Kingdom (UK) at Northern Rock Bank [see Shin, 2009] when investors were lining up in the street to withdraw money from

their accounts. There are many other examples of runs in the financial system as a whole. The repo market, in which investment banks get short-term financing, was subject to a run according to Gorton and Metrick [2012]. This led to the failure of leading financial institutions, such as Bear Stearns and Lehman Brothers. One can think of the credit squeeze in the repo market as a coordination failure among providers of capital, who refused to roll over credit, expecting deterioration in the value of collateral and in the ability of borrowers to pay due to the refusal of other lenders to roll over credit. This is similar to the models of bank runs caused by coordination problems that we review in this section. Others documented runs in money-market funds and in the asset-backed-commercial-paper market [see for example, Schmidt et al., 2015, Covitz et al., 2013, Schroth et al., 2014], which were in distress during the recent crisis.

While Section 2 emphasizes fragility of financial institutions due to coordination failures by their creditors, we review models that analyze frictions in loans extended by financial institutions and other lenders in Section 3. Broadly speaking, these are models of credit frictions and market freezes. Traditionally, the literature on this topic has developed without addressing crises per se, but more recently the basic mechanisms have increasingly been mentioned in connection to major events during financial crises. This literature highlights two key problems that create frictions in the flow of credit and trade. One problem is that of moral hazard. If a borrower has the ability to divert resources at the expense of the creditor, then creditors will be reluctant to lend to borrowers. Hence, for credit to flow efficiently from the creditor to the borrower, it is crucial that the borrower maintains "skin in the game", that is, that he has enough at stake in the success of the project, and so does not have a strong incentive to divert resources. This creates a limit on credit, which can be amplified when economic conditions worsen, leading to a crisis. Another problem is that of adverse selection. Looking at financial markets and credit markets, many are puzzled by the fact that they freeze despite the presence of gains from trade. Adverse selection generated by asymmetric information is a powerful force that can generate a freeze. In the presence of asymmetric information, traders

are reluctant to trade as they are concerned that they are getting a "lemon". Again, this may lead to a crisis if asymmetric information is very extreme.

There is ample empirical evidence that shows the importance of the kind of credit frictions as described in this section. For example, Gan [2007a,b] documents reduced lending and firm investment as firms' collateral value and banks' capital deteriorated following the collapse of the Japanese real estate market in the early 1990s. In the period leading to the recent crisis, Chaney et al. [2012] find that increased real estate values for companies were related to increases in firm borrowing and investing. It is generally not difficult to link such forces to the events of the recent crisis. The credit freeze that followed the financial meltdown of 2008, in which financial institutions were reluctant to lend money to operating firms, and the ensuing freeze in the flow of funds between financial institutions in the interbank markets both seem to be related to the amplification of economic shocks due to the frictions in credit provision, brought on by the principal-agent models that we review here. As economic conditions deteriorated, borrowers found themselves with less "skin in the game", and so lenders refused to provide credit to them. This, in turn, worsened the economic conditions of borrowers, amplifying the initial shock. Similarly, the potential increase in asymmetric information that followed the collapse of Lehman Brothers in 2008 may have contributed to a total market freeze, where investors were reluctant to trade in assets with each other due to the heightened uncertainty about the value of assets they trade.

Overall, the models of Sections 2 and 3 show fragility on both sides of the balance sheet of a financial institution. It seems that both types of fragility have been at work in recent crises, as we mention above. Importantly, such fragilities can reinforce each other. For example, creditors of a financial institution are more likely to panic and run when problems of moral hazard and asymmetric information reduce the value of its assets or make it more uncertain. A small problem on the asset side of a financial institution that would not be usually called a 'crisis' might then worsen due the mechanisms highlighted in the two sections, and turn into a crisis. This is how the models described in Section 3

are connected to the traditional crises literature in Section 2, and now all are used to describe parts of the system of interdependent forces that lead to the pronounced outcomes we see around times of financial crises. We elaborate more on this in Section 3.

Another literature that evolved independently is focused on currency crises. Traditionally, these were viewed as a separate phenomenon, unrelated to banking crises, but more recently the literatures have moved towards each other. In Section 4, we review models of currency crises. Many currency crises, such as the early 1970s breakdown of the Bretton Woods global system, originate from the desire of governments to maintain a fixed exchange rate regime, which is inconsistent with other policy goals such as free capital flows and flexible monetary policy. This might lead to the sudden collapse of the regime. Like in the bank-run literature, coordination failures play an important role here. When the central bank tries to maintain a fixed exchange rate regime, it might decide to abandon it under pressure from speculators. Speculators then find themselves in a coordination problem, and they attack the regime if and only if they believe others will do so too. In such coordination failures, the event of a currency crisis becomes a self-fulfilling belief. This is also similar to debt crises, where the government may decide to default under pressure from creditors. Then, creditors are facing a coordination problem, and they liquidate their bond holdings if and only if they expect that others will liquidate their claims. Consequently, a debt crisis becomes a self-fulfilling expectation.

Such models are highly relevant to the current situation in the European Monetary Union. In the basis of the theory of currency crises is the famous international-finance trilemma, according to which a country can choose only two of three policy goals: free international capital flows (benefitting international risk sharing), monetary autonomy (the ability to employ monetary policy tools to stabilize inflation and output fluctuations), and the stability of the exchange rate (bringing about a reduction in transaction costs associated with trade and investment). Countries in the Euro zone now realize that in their attempt to achieve the first and third goal, they have given up on the second goal, and therefore have a limited ability to absorb the shocks in

economic activity and maintain their national debts. This is triggered by the global financial crisis. Coordination problems among investors and currency speculators aggravate this situation, and may have an important effect on whether individual countries in Europe are forced to default and/or leave the monetary union.

While the traditional literature on currency crises focused on the government alone, we review the 'third-generation' models of currency crises in Section 4.3. These models essentially connect models of banking crises and credit frictions (reviewed in Sections 2 and 3) with traditional models of currency crises (reviewed in Subsections 4.1 and 4.2). Such models were motivated by the East Asian crises of the late 1990s in which financial institutions and exchange rate regimes collapsed together, demonstrating the linkages between governments and financial institutions that can expose the system to further fragility. This is again relevant for the current situation in Europe as banks and governments are intertwined, and the fragility of the system depends to a large extent on the connections between them. We elaborate on this in Section 4.3.

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