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Should bank runs be prevented?

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Abstract

This paper extends Diamond and Dybvig's model [J. Political Economy 91 (1983) 401] to a framework in which bank assets are risky, there is aggregate uncertainty about the demand for liquidity in the population and some individuals receive a signal about bank asset quality. Others must then try to deduce from observed withdrawals whether an unfavorable signal was received by this group or whether liquidity needs happen to be high. In this environment, both information-induced and pure panic runs will occur. However, banks can prevent them by designing the deposit contract appropriately. It is shown that in some cases it is optimal for the bank to prevent runs but there are situations where the bank run allocation may be welfare superior.

JEL classification: G21; G28
Keywords: Bank runs; Deposit contracts; Liquidation costs; Optimal risk sharing; Suspension of convertibility

1. Introduction

Banking crises have traditionally been an important source of public concern. Examples of financial crises in the history of the financial systems were the Great Depression (1929–1933) which had a significant impact on the banking system of the US [1] or the more recent crises in emerging countries. [2]

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[1] From 1930 to 1933 the number of bank failures in the US averaged over 2000 per year (see Mishkin, 1995).

[2] Lindgren et al. (1996) find that 73% of the IMF's member countries suffered banking crises between 1980 and 1996.

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Given the historical importance of banking panics and their current relevance it is important to understand why they occur and what policies should be implemented to deal with them. In this sense, the theoretical research on banking has focused on analyzing the microeconomic nature of banks and their role in the economy. Diamond and Dybvig (1983), which formalized some of the ideas provided in Bryant (1980), made a significant contribution by modeling the demand for liquidity and the transformation service provided by banks. They demonstrated that demand deposit contracts, which enable the transformation of illiquid assets into more liquid liabilities, provide a rationale both for the existence of banks and for their vulnerability to runs. The optimal contract yields a higher level of consumption for those who withdraw early than the technological return. Bank runs, thus, take place when the idea of deposit withdrawals spills over economic agents (an essential point is that banks satisfy a sequential service constraint (see Wallace, 1988)). The model concludes that with no aggregate uncertainty, a suspension of convertibility policy can hinder the bank run equilibrium. Otherwise, a deposit insurance policy would be more effective. Diamond and Dybvig's model attracted severe criticisms (e.g., Gorton, 1988) for assuming that bank runs are random phenomena, and thus, uncorrelated with other economic variables. Gorton (1988), in an empirical study of bank runs in the US during the National Banking Era (1863–1913), found support for the notion that bank runs tended to occur after business cycle peaks.

Since the seminal work of Diamond and Dybvig, economists have used many variations of this model to explore banking issues. Bhattacharya and Gale (1987) consider a variation of the model with many intermediaries who face privately observed liquidity shocks. They show the welfare gains from setting up an institution, such as a central bank, offering borrowing and lending opportunities at a subsidized rate. Jacklin and Bhattacharya (1988) introduce smooth preferences and a risky technology and show that the optimality of bank deposits compared to equities depends on the characteristics of the risky investment. Hellwig (1994) introduces interest rate risk and shows that as interest rates increase the optimal rate of deposits withdrawn in the first period should decrease and that of deposits that remain until the second one should increase. Champ et al. (1996) assume that the fraction of the population requiring liquidity is random and construct a monetary model where seasonal variations in the demand for liquidity play a critical role in generating banking panics. Hazlett (1997) makes the technology risky in order to explore the costs and benefits of deposit insurance. Allen and Gale (1998) also introduce a risky technology and show that under certain circumstances, bank runs can be first best efficient, as they allow efficient risk sharing among depositors and they allow banks to hold efficient portfolios. Alonso (1996) demonstrates using numerical examples that in the Jacklin and Bhattacharya framework contracts where runs occur may be better than contracts that ensure runs do not occur because the former improve risk sharing. Finally, Lin (1996) models a continuum of types and Postlewaite and Vives (1987) extend the number of periods in the model.

The main objective of this paper is to cover one gap in this theory by extending the Diamond and Dybvig's framework to a situation in which there is both aggregate uncertainty about the demand for liquidity in the population and a risky technology.