

Bank panics and the endogeneity of central banking[☆]

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Abstract

Central banking is intimately related to liquidity provision to banks during times of crisis, the lender-of-last-resort function. This activity arose endogenously in certain banking systems. Depositors lack full information about the value of bank assets, so that during macroeconomic downturns they monitor their banks by withdrawing in a banking panic. The likelihood of panics depends on the industrial organization of the banking system. Banking systems with well-diversified big banks are less prone to inefficient bank runs because diversification alleviates the information asymmetry. In addition, big banks can self-monitor through publicly observable branch closure. Systems of many small banks form incentive-compatible bank coalitions to emulate the big banks during times of crisis. Such coalitions improve efficiency by monitoring member banks and issuing money that is a kind of deposit insurance—a precursor of central banking.

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1. Introduction

The most important function of a central bank is to provide liquidity to the banking system in times of crisis. The classic work on central banking, *Lombard Street*, by Walter Bagehot, published in 1877, offered the advice that in times of panic the central bank (Bank of England) should lend freely and continue to pay out currency (Bagehot, 1877). At the time *Lombard Street* was published, there was no central bank in the US and yet the private arrangement of banks in the US clearinghouse system had already discovered Bagehot's precepts and was acting on them. In this paper we argue that the lender-of-last-resort function of "central banking" arose endogenously through the formation of state contingent bank coalitions, such as clearinghouses, which provided liquidity during banking panics.

In the model we propose, central banking emerges endogenously as a response to the banking system's problems of asymmetric information and concomitant moral hazard. In some banking systems these problems can lead to banking panics. But, these banking panics are not irrational manifestations of multiple equilibria. Rather, these episodes represent depositors monitoring their banks, which are vulnerable to moral hazard problems in certain states of the world. With the information asymmetry, such panics may involve inefficiencies because banks may be mistakenly liquidated. Banks cannot honor the demands of all depositors; there is not enough liquidity in the banking system. Efficiency can be improved in two ways. First, banks can be more accurately identified, so that only those banks in bad states are liquidated. Secondly, liquidity can be created which, as we show below, mitigates the problem of moral hazard. The industrial organization of the banking system is crucial in determining whether these improvements are operable. We show how central banking arose endogenously as a by-product of the interaction between the industrial organization of banking and the problems emanating from asymmetric information.

Specifically, we study three different organizational forms of the banking industry: a system with small independent unit banks; a system with a few highly branched and well-diversified big banks; and a system with a bank coalition. The unit banking system is the least efficient, because it suffers from severe asymmetric information problems, due in part to the fact that these banks are not diversified. Costly economy-wide liquidations following banking panics are the only way to forestall moral hazard. The big bank system is more efficient for two reasons. First, diversification alleviates the asymmetric information problem so that mistaken bank runs can be avoided. Second, big banks can self-monitor by closing branches to improve the quality of assets. The self-monitoring mechanism enables big banks to send credible signals to depositors that incentives to engage in moral hazard have been removed. Once depositors' confidence is restored, bank runs are stopped. The bank coalition system partially replicates the big bank system in certain states of the world through state contingent coalition operations, including mutual monitoring and liability pooling. However, ownership and property rights of individual banks give rise to incentive compatibility constraints that prevent coalitions from fully replicating big banks.

The implications of the model are consistent with banking history. A comparison of the US and Canadian banking experiences from the middle of the 19th century is a particularly instructive example of the importance of industrial organization in banking and its relation to central banking. Haubrich (1990), Bordo et al. (1994, 1995), and White (1984), among others, study the drastic contrast between these two systems. During the period 1870 to

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