

Summary by Asani Sarkar of the Federal Reserve Bank of New York.

In their paper “Illiquidity and Interest Rate Policy,” authors Douglas W. Diamond and Raguram G. Rajan investigate the relationship between interest rates and the incentives facing banks regarding illiquid investments. In doing so, they hope to weigh in on a longstanding debate between those who believe, like Alan Greenspan, that the Federal Reserve cannot prevent asset price booms, only mitigate their consequences, and those who believe that asymmetric interest rate policy can encourage behavior that makes booms and busts more likely.

To do so, Diamond and Rajan have created a model in which entrepreneurs who invest in long-term projects must borrow from banks who in turn borrow from risk-averse households. In the model, there is no uncertainty about the profitability of projects, which are predetermined, but there is uncertainty about the households’ income in each period. Liquidity problems can emerge if households have an unexpectedly high need to withdraw deposits. This, the authors assert, can happen either because of an unexpected decrease or increase in income. With a decrease in income, households face a higher marginal utility of consumption, and may want to spend their financial assets in order to consume more today. If, on the other hand, households expect significantly higher income in the future, they may spend their assets today in order to smooth lifetime consumption.

In either case, unanticipated demand for funds can force banks to call in loans for long-term projects early. As a result, the real interest rate must rise in order to equalize household demand for consumption goods and the supply of consumption goods from

terminated projects whose loans have been called in. This in turn decreases bank net worth, since a bank's loans, which pay off only in the long run, fall in value as the real interest rate rises, but the bank's liabilities of demandable deposits do not have a corresponding fall in value. If the bank's net worth becomes negative, it can experience runs, which can be highly inefficient when they cause the terminations of otherwise profitable projects financed by bank loans. Thus an increase in households' withdrawals, either because of a current decrease in income or a future increase in income, can create fragility in the banking system that harms the real economy.

One solution to this problem would be to change the structure of banks, specifically making them less reliant on demandable deposits for funding. However, Diamond and Rajan claim, citing their past work, that this is very difficult. They assert that demandable debt is the cheapest form of financing available to banks, and that using more long-term liabilities that are not demandable would reduce the efficiency of intermediation substantially. Changing the sources of banks' funds is therefore not viewed as a viable option to reduce fragility in the banking system.

Another option is to use government intervention to attempt to stabilize the banking system and prevent bank runs. As a first possibility, governments can intervene by taxing households and giving the proceeds directly to banks. But while such a bailout scenario could certainly be effective in preventing bank runs, and may be necessary in times of crisis such as the present, Diamond and Rajan argue that the severity with which property rights are violated under these policies makes them unsuitable for frequent use.

Instead, they consider an alternative policy measure in which the government lends or borrows in the market in an attempt to alter interest rates, and apply this type of

policy to their model. In their analysis, Diamond and Rajan first note that since government action must be financed by tax revenues, there are potential issues of Ricardian equivalence. If the government seeks to lower interest rates by lending out funds, it must raise these funds by increasing taxes. When a household's taxes are raised, however, it is likely to increase its withdrawals in order to make up for the current decline in income, as mentioned earlier, which would counterproductively push interest rates back up.

In the model, it is shown that as long as the government finances its lending by taxing only households with deposits, with the level of deposits exceeding the size of the tax, there is zero effect on the interest rate. As a result, government intervention is likely to be ineffective when most or all households hold large amounts of demandable deposits relative to the size of the tax. However, if there are households that do not hold deposits, or if the level of the tax exceeds the amount of their deposit holdings, then the government action can have a marginal effect in the model, lowering the real interest rate and increasing banks' net worth. Thus, although households' actions in response to a government intervention may reduce its effectiveness, the intervention should still be effective, provided that it is large enough.

Next, Diamond and Rajan note while there can be benefits to affecting household and bank behavior if it prevents bank runs, it is also likely that altering these decisions can have negative effects. In the model, the authors consider both an "entrepreneur-friendly" central bank that seeks to lower interest rates as much as possible, and a "household-friendly" central bank that seeks to raise interest rates as much as possible. They demonstrate each type of central bank can have negative effects when its action is

anticipated, even on the group that it attempted to benefit, due to the distortions in behavior that it created.

Finally, Diamond and Rajan argue that when government policy is anticipated, it can have an important impact on how banks choose to allocate their portfolios between liquid and illiquid investments. In the model they assume that the government commits to lowering interest rates in case of liquidity problems, and find that this encourages banks to take on more deposits and to finance more illiquid projects, making liquidity shortages more likely. As a result, they claim that commitment to a “one-sided” policy to intervene only to lower interest rates when they are too high can lead to distortions in bank decisions that can have a strongly counterproductive effect and make liquidity crises much more likely.

For this reason, Diamond and Rajan assert that an optimal interest rate policy must not only prevent bank runs by lowering interest rates in times of crisis, but also encourage banks to make more liquid loans to prevent distortion. To this end, the central bank should pursue a “two-sided” policy of interventions, in which they not only act to lower interest rates to prevent runs when they are too high, but also push interest rates up when the interest rate would otherwise be low. This type of intervention would punish illiquid banks, forcing them to call in loans and decreasing their net worth, but would not raise rates so much as to cause bank runs. Appropriately implemented, this incentive against illiquidity could balance out the incentive in favor of illiquidity caused by the central bank’s commitment to lower interest rates in times of crisis. Such a two-sided policy could therefore prevent distortions and allow banks to make an efficient allocation

between liquid and illiquid investments while still allowing the central bank to intervene in order to prevent harmful bank runs.