ON THE DANGERS INHERENT IN A FRACTIONAL RESERVE BANKING SYSTEM

SERGEY ALIFANOV
Junior Sophister

Fractional reserve banking is ubiquitous in modern financial systems. However, does this dispersion mean it is the best banking available today? In this essay, Sergey Alifanov explores a number of concerns with the workings of the fractional reserve banking system and outlines how policy implementations could work to address these issues.

Introduction

In 1939, a brief proposal auspiciously titled "A Program for Monetary Reform" was circulated among economists in the United States. Written in the wake of The Great Depression by a group of prominent American economists which included Irving Fisher and Paul Douglas, it included a stark criticism of the fractional reserve banking system in the United States, referring to it as "a chief loose screw in our present American money and banking system" (Fisher et al., 1939). Despite this, the fractional reserve system remained then, and continues to remain status quo for all developed banking systems in the world. It has gathered many more critics over the years that attribute to it many disadvantages, such as a tendency for bank runs and moral hazard on behalf of lending institutions, among other negative externalities. This essay will outline the biggest issues with fractional reserve banking and provide several policy solutions that should adequately address these concerns.

Fractional Reserve Banking

Under a fractional reserve banking system, the central bank imposes a legal requirement on all banks operating under its mandate to maintain a specified proportion of their deposits in reserves. Reserves against these deposits can take the form either of currency on hand (vault cash) or balances at the central bank itself (Feinman, 1993). Originally, reserve requirements were designed as a safeguard against "runs" on the banks that were quite widespread over the world until roughly 1930-40s. The rationale behind this system was that by requiring financial institutions to hold some liquid assets on hand, central banks wished to reassure the depositors that their money was available on demand (Cecchetti and Schoenholtz, 2011). However, according to Feinman (1993), a series of bank runs and financial panics in the late nineteenth and early twentieth centuries (such as the

Great Depression) made it clear that imposing reserve requirements does not guarantee the convertibility of deposits for the entire banking system. Consequently, many central banks around the world took on the additional responsibility of being the lender of last resort in their respective economies.

Any market economy is susceptible to a fundamental mismatch, for example due to economic shocks, which can "lead to the negative externalities of liquidity demand, which include credit cycles, bank runs, and financial crises" (Gorton and Metrick, 2013). For instance, during a period of financial uncertainty or a recession, many depositors will race to withdraw their deposits to either reinvest them in a subjectively safer asset, e.g., gold or sovereign bonds, or to simply spend them. Either way, when such liquidity shocks occur a central bank will theoretically provide short-term liquidity to the troubled bank(s), allowing them to fulfil their short-term liquidity demands, thereby preventing a possible run on the banks. When central banks such as the Federal Reserve first took on the responsibility of being the lender of last resort, many economists believed that if depositors knew of the banks' facility to borrow excess liquidity if required, it will prevent depositors from withdrawing their assets and creating the liquidity shock in the first place. Supplementary to the safety net provided by the lender of last resort, some countries have also introduced personal deposit insurance schemes for all deposits up to a specified sum. In Ireland, the Central Bank guarantees deposits up to €100,000 under the Deposit Guarantee Scheme (Central Bank of Ireland, 2014), while in the United States the Federal Deposit Insurance Corporation (FDIC) acts as a guarantor of bank deposits (Gorton and Metrick, 2013).

Bank Runs

Bank runs are the chief danger associated with fractional reserve banking. A run on a bank occurs when depositors scramble to withdraw their deposits, fearing for their safety. Bank runs used to be a common occurrence in the early days of modern banking. However, a run on Northern Rock in the UK in 2007 among other bank runs in the United States has shown that they are still a real possibility today, albeit under exceptional economic circumstances. There are many reasons as to why runs on the bank can occur, including rumours or facts about financial difficulties at the bank, poor performance of the economy, or exposure of the bank to another troubled financial institution. In some cases, rumours of illiquidity can become a self-fulfilling prophecy where depositors scramble to withdraw their deposits, the bank runs out of liquid assets to furnish these requests and fails. In fact, there are countless reasons (both genuine and otherwise) why bank runs might take place. Cass and Shell (1983) refer to this extrinsic uncertainty as "sunspots", while Keynes famously coined the term "animal spirits" which refers to a similar notion.

In 1983, D.W. Diamond and P. Dybvig published a seminal paper which proposed a model that attempts to explain why bank runs occur. They have found that "bank deposit

contracts can provide allocations superior to those of exchange markets, offering an explanation of how banks [...] can attract deposits" (Diamond and Dybvig, 1983). However, these bank contracts are less stable than other types of financial contracts and they contain multiple Nash equilibria, one of which is a bank run. The basic principle of the Diamond-Dybvig model is as follows: by transforming illiquid assets (loans) into liquid liabilities (deposits) banks offer liabilities with a different, smoother pattern of returns over time than the illiquid assets offer. Under normal circumstances there is efficient risk sharing by all depositors because confidence is maintained. However, "if agents panic, there is a bank run and incentives are distorted. In that equilibrium, everyone rushes in to withdraw their deposits before the bank gives out all of its assets. The bank must liquidate all its assets, even if not all depositors withdraw, because liquidated assets are sold at a loss" (Diamond and Dybvig, 1983).

Diamond and Dybvig report that introduction of deposit insurance to their model greatly reduces the chance of a bank run. While it is considered to be a standard mechanism of dealing with bank runs, a vast amount of consequent research has shown its limited effectiveness. More recently, a study done by Iyer and Puri (2012) has looked at the importance of depositor-bank relationships in mitigating bank runs. While they have also found that deposit insurance helps to mitigate bank runs, another important factor was the level of relationship between the customer and the bank. The longer the people held accounts at the bank, the less likely they were to run. Additionally, depositors were more likely to run if anyone in their social network ran, which illustrates well the snowball effect that bank runs can have.

A number of economists including Irving Fisher and at one stage Milton Friedman have blamed the fractional reserve system for the existence of bank runs. An obvious policy solution would be to increase the reserve requirement, or to do away with reserve requirements altogether and introduce 100 per cent reserves: "the task [of sound financial regulation] would be much simplified if we did away altogether with the fractional reserve system; for it is this system which makes the banking system so vulnerable" (Fisher et al., 1939). However, there are numerous monetary and policy issues associated with this. Feinman (1993) argues that liquid reserves are not costless. By requiring a bank to hold reserves in excess of what they would have ordinarily held, the central bank imposes an opportunity cost equal to the interest forgone on the part of reserves held in excess of the banks desired level.

Moral Hazard and the Lender of Last Resort

It was already hinted above that an introduction of the lender of last resort and deposit guarantee schemes creates a moral hazard both for the banks and for their depositors. In this instance, moral hazard can be seen as "any situation in which one person makes the decision about how much risk to take, while someone else bears the cost if things go badly"

(Krugman, 2009). The existence of the safety net provided by the central bank alters incentives. Depositors have less incentive to worry about the reputation of their chosen bank because their deposits are insured, while the bank has less incentive to firstly hold more excess reserves, and secondly undertake safer investments.

In "A Monetary History of the United States, 1867 - 1960", Friedman and Schwartz (1963) through thorough theoretical and analytical research have found that the existence of the Federal Reserve System as a lender of last resort has led to a decline in actual reserves relative to required reserves. In short, the newly introduced safety net has "encouraged banks to trim their reserve balances further than they otherwise would have done" (Friedman and Schwartz, 1963). More recent authors report varying findings on the extent of moral hazard brought about by deposit insurance, or more specifically how risk taking and deposit insurance interact. Gropp and Vesala (2004) posit that these ambiguous findings are due to the omission of at least three other important factors by previous researchers: banks' charter values, the effectiveness of monitoring by non-deposit creditors and "too-big-to-fail" policies. Dam and Koetter (2012) argue that ambiguity stems from an identification problem: "bailed-out banks are, by definition, in some sort of distress and exhibit high risk. But this might simply be due to bad luck rather than bad behaviour." Nevertheless, being too big to fail seems to strengthen moral hazard of the banks. Firstly, seeing that being large enough warrants a bail-out, some banks may have the incentive to keep growing (possibly irresponsibly) until they are "too big to fail" (Gorton and Metrick, 2013).

Policy Proposals

Mitigating Probability of Bank Runs

The easiest way to decrease the probability of bank runs is to raise the reserve requirement. That way banks have more liquidity on hand to absorb any unexpected liquidity demands. However as we have previously observed, remaining liquid is not costless. By requiring banks to hold reserves in excess of reserves they would have ordinarily kept, banks face an opportunity cost equal to the interest forgone on the excess reserves (Feinman, 1993). Furthermore, since the reserve requirement is likely to be increased in times of financial crises or recessions, when lending capacity of banks is already squeezed this policy action will have the additional negative externality of credit forgone.

We may also consider the more extreme polar policy of narrow banking, which has been colloquially described as to be separating utility from the casino (Kay, 2009). In a narrow banking system, banks are restricted to hold deposits in very safe assets, while lending is left to other financial institutions. Obviously, self-fulfilling runs cannot happen. But on the other hand, "there is a loss in welfare relative to the no-run equilibrium. Narrow banking is equivalent to autarky; requiring it does away with all the benefits of financial intermediation" (Chang and Velasco, 1999). Similar to the higher reserve requirement

scenario, maintaining liquidity is expensive.

Chang and Velasco (1999) argue that despite the fact that financial liberalisation increases the vulnerability of countries to crises, "one should not put too much stock on financial regulation alone as the panacea of crisis prevention." As it was already stated above, mandating banks to remain liquid bears a large cost. Additionally, financial regulation suffers from asymmetric information and lag effects, rendering it useful only up to a point, as financial crises in countries as developed as Sweden and the United States in the 1990s have suggested. The best way to mitigate the probability of liquidity shocks and consequently bank runs is to employ good macroeconomic policy that prevents economic shocks to begin with (Chang and Velasco, 1999). Hence, in the long-run the best panacea against bank runs is good macroeconomic policy and adequate financial regulation. Basel III standards are an example of a step in that direction.

Reducing Moral Hazard Present in the Existence of a Lender of Last Resort

Mitigation of moral hazard problems should go a long way towards a more sound fractional banking system. At the root of lender of last resort and deposit insurance issues are agency problems. In effect, the taxpayer agrees to be responsible for a bank not necessarily knowing the amount of risk that a particular bank takes on. According to Gorton and Metrick (2013) the existence of this safety net "provides the rationale for close supervision and regulations that limit the scope, risk-taking, and leverage of these institutions. If the safety net is too large, then banks lack incentives to manage risks in a socially optimal way; if the safety net is too small, then failure of a large institution could have major spillovers to the whole financial system."

There are a multitude of policies that can be undertaken to address bad incentives of banks to take on excessive risk. Dam and Koetter (2012) developed an econometric model that looks at the effect different supervisory interventions had on the banks' risk-taking behaviour, based on recent German data. They have found that "moral hazard is significantly reduced if interventions aim directly at the banks management or involve outright restrictions of its business. Sturdy interventions are effective. But weaker measures, such as warnings that are more often used, are ineffective in reducing moral hazard." An earlier study by Gropp and Vesala (2004) suggested that deposit insurance should be devised in such a way that deposit insurance credibly and explicitly leaves out non-deposit creditors. That way deposit insurance may even reduce moral hazard.

After the financial crisis of 2009-10 in the United States the "too big to fail" problem has also risen to prominence. In 2008, Emergency Economic Stabilisation Act (EESA) authorised the Treasury, under the Troubled Asset Relief Program (TARP), to spend up to $700 billion to purchase and insure distressed assets (Barth and Prabha, 2014). However, the problem with TARP was that in the end funds were used to bail-out not only banks, but entire holding companies which included other ventures besides banking itself:

"the fact that 86 per cent of TARP's capital purchase program funds went to 20 big banks, while the other 14 per cent went to the 687 smaller institutions, again focused substantial attention on the too big to fail issue" (Barth and Prabha, 2014). Under the new Dodd-Frank Act, the American government is "trying to resolve the too big to fail problem by stating that losses must be imposed on both debt and equity holders should a bank encounter sufficiently severe financial difficulties." In theory, this should also align interests of equity and bondholders with those of the Federal Reserve.

In the global financial world, Basel III standards are slowly being implemented, particularly in the Eurozone, under the premise that these enhanced standards of financial regulation will prevent the need for governmental financial assistance in the future. According to Bank for International Settlements (BIS), "the objective of the reforms is to improve the banking sectors ability to absorb shocks arising from financial and economic stress, whatever the source, thus reducing the risk of spillover from the financial sector to the real economy" (BIS, 2010). Stress tests are currently being implemented across the Eurozone in order to gauge the resilience of the banking sector at present.

Conclusion

Despite some major shortcomings of the fractional reserve banking system, it remains arguably the best form of banking available today, corroborated by the fact that it is so widespread throughout the world. Bank runs are a traditional concern in a fractional reserve system. This essay has shown that bank runs are a result of a liquidity mismatch in the banking system following a liquidity shock. Bank runs have a high economic cost, so prevention is crucial. It was demonstrated that the best long-term policy response is a not a permanent increase in the reserve requirements, but rather a mixture of good macroeconomic policy and sound financial regulation. The second biggest concern of fractional banking is moral hazard in the presence of deposit insurance schemes and a lender of last resort. It was found that the best policy response to bad incentives is prohibitive regulation that explicitly outlines what banks can and cannot do. Mere warnings were found to be ineffective. Finally, the "too big to fail" mindset of banks and governments needs to be challenged. In the USA, the Dodd-Frank act takes some measures in that regard. In Europe and the rest of the world the new Basel III standards provide a framework to local regulators to make sure that systemically important banks are crisis proof, so that the possibility of them failing does not even arise during future economic shocks and financial crises.

References

Bank for International Settlements. 2010. Basel III: A global regulatory framework for more resilient banks and banking systems. [on-line], http://www.bis.org/publ/bcbs189.pdf. [Accessed: 15 November 2014].

Barth, J.R., and Prabha, A.P. 2014. "An Analysis of Resolving Too-Big-to-Fail Banks Throughout the United States", Journal of Regional Analysis & Policy, 44(1), 1-19.

Cass, D., and Shell, K. 1983. "Do Sunspots Matter?", Journal of Political Economy, 91(2), 193-227.

Cecchetti, S.G., and Schoenholtz, K.L. 2011. Money, Banking, and Financial Markets. New York: McGraw Hill/Irwin.

Central Bank of Ireland. 2014. Deposit Guarantee Scheme (DGS). [on-line], http://www.centralbank.ie/paycurr/paysys/dgs/pages/about.aspx. [Accessed: 15 November 2014].

Chang, R., and Velasco A. 1999. "Liquidity Crises in Emerging Markets: Theory and Policy", NBER Macroeconomics Annual, 14(2), 1-60.

Dam, L., and Koetter, M. 2012. "Bank Bailouts and Moral Hazard: Evidence from Germany", Review of Financial Studies, 25(8), 2343-2380.

Diamond, D.W., and Dybvig P. 1983. "Bank Runs, Deposit Insurance, and Liquidity", Journal of Political Economy, 91(3): 401-419.

Feinman J. 1993. "Reserve Requirements: History Current Practice, and Potential Reform", Federal Reserve Bulletin, June, 569-589.

Fisher, I., Douglas, P., Graham F.D., Hamilton E.J., King W. and Whittlesey C. 1939. A Program for Monetary Reform. [on-line], http://sensiblemoney.ie/data/documents/A-Program-for-MonetaryReform-.pdf. [Accessed: 15 November 2014].

Friedman, M., and Schwartz A.J. 1963. A Monetary History of the United States 1867-1960. Princeton: Princeton University Press.

Gorton. G., and Metrick A. 2013. "The Federal Reserve and Panic Prevention: The Roles of Financial Regulation and Lender of Last Resort", Journal of Economic Perspectives, 27(4), 45-64.

Gropp, R., and Vesala, J. 2004. "Deposit Insurance, Moral Hazard and Market

Monitoring", Review of Finance, 8(4), 571-602.

Iyer, R. and Puri, M. 2012. "Understanding Bank Runs: The Importance of Depositor-Bank Relationships and Networks", American Economic Review, 102(4): 1414-1445.

Kay, J. 2009. Narrow Banking: The Reform of Banking Regulation. [on-line], http://www.johnkay.com/wp-content/uploads/2009/12/JK-NarrowBanking.pdf. [Accessed: 15 November 2014].

Krugman, P. .2009. The Return of Depression Economics and the Crisis of 2008, New York: W.W. Norton & Company.