ISSN:2790-5187 Vol 1, No. 1, 2023

# A Market Discipline Improved Deposit Insurance System: A Framework Design

Zhixin Zhu

Nankai University, China

## Abstract

*This article devises a new framework of deposit insurance that helps to improve market discipline. Focused on institutional relevance and continuity, it provides a new perspective for the reform of deposit insurance. The design integrates the environmental resilience theory of catastrophe risk management theory. Based on the risk-adjusted premiums mechanism, the framework unifies the supervision incentives of authorities, insurers and depositors. They jointly establish checks and balances on the risk-taking of banks. This article also puts forward some policy suggestions for the implementation of the new system.*

## Keywords

*Deposit Insurance design, market discipline, banking crisis.*

## 1. Introduction

To limit the possibility of systemic bank failures and reduce the enormous costs when they occur, financial safety nets have been established in almost all countries. Deposit insurance has shown the potential for limiting bank runs (Diamond and Dybvig, 1983) as well as relaxing market discipline. The counteracting effect has always been a challenge in the design of modern financial safety nets. Regulatory forbearance and generous depositor protections may increase banks' excessive risk-taking, which is often the source of bank failures.

At present, there have been various empirical studies on the effects of deposit insurance in different countries with suggestions for improvement. But these proposals only discuss each feature of the deposit insurance system separately. However, the study of market discipline requires a perspective in which all parts are viewed as a whole to form mutual checks and balances. The main purpose of this paper is to fill the gap in the overall framework design and propose a feasible reform plan.

In essence, deposit insurance is a kind of guarantee insurance, whose risk loss probability curve is similar to that of catastrophe insurance. This article also draws on their risk reduction management method, hoping to provide a new perspective on reforming deposit insurance systems.

## 2. Literature Review

The study of deposit insurance protection traces back to Merton (1977). Deposit insurance is especially important in maintaining stability and is largely effective against contagious bank runs (Karels and Mcclatchey, 1999) (Gropp and Vesala, 2004) (Demirgüç-Kunt et al., 2014).

ISSN:2790-5187 Vol 1, No. 1, 2023

However, the magnitude of destabilizing effect caused by moral hazard may be greater (Anginer et al., 2014) and even exacerbate the fragility of the banking system (Demirgüç-Kunt and Detragiache, 2002). This is mainly due to the lack of incentives for depositors to monitor the banks (Ioannidou and Penas, 2010). Such loosened market discipline gives banks incentives to take excessive risks, which can eventually lead to a catastrophic crisis (Kane, 1989).

Deposit insurance affects the market discipline mainly in the following three aspects:

(1) The design of the deposit insurance system. Demirgüç-Kunt and Huizinga (2004) analyzed cross-country data and found that higher coverage, earmarked insurance funds, government support, and public management of schemes weaken market discipline, while coinsurance, private management and voluntary membership strengthen it. Karas et al. (2019) found that a greater reliance on household deposits by banks suggests a greater weakening of market discipline.

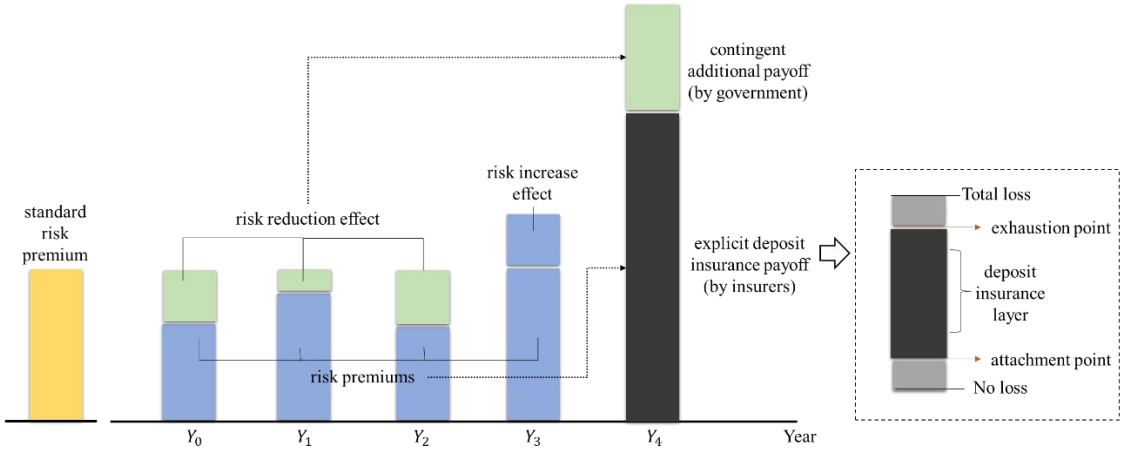
(2) The design of the safety net system. Gropp and Vesala (2004) use EU data to show that the existence of widespread implicit guarantees prior to the introduction of deposit insurance would lead to stricter market discipline.

(3) The macro-environment. Hovakimian et al. (2003) took a sample of 56 countries and found that moral hazard is controlled or even reduced in countries with a stronger contractual environment, higher degree of political and economic freedom, and lower levels of corruption.

Although several principles of good design for deposit insurance have been proposed based on evidence and lessons (Demirgüç-Kunt et al., 2006), most ideas for improvements lack an integrative perspective on the whole framework. In addition, the risk management function of insurers has been underestimated. This article draws on the framework of catastrophe risk management in enhancing environmental resilience (Reguero et al., 2020) and proposes a new framework for the deposit insurance system.

## 3. Framework Design

Figure 1 shows a deposit insurance framework to improve market efficiency, which provides risk-based incentive and penalty principles for banks.




*Note*: Suppose a model with only four insurance years. Banks pay premiums in the first three years, and a bank run occurs in the fourth year. Yellow bars represent standard premiums. The blue bar is the actual premium paid by the bank. Green bars are reduced premiums compared to standard premiums. Insurance payouts consist of two parts: explicit payoff paid by insurers and additional contingent payoff paid by the government. Among them, the part paid by the insurers is incomplete insurance, which is described in the figure on the right.

**Figure 1** New Deposit Insurance Framework

This is a deposit insurance framework based on risk-adjusted premiums. Banks increase (column $Y_3$) or decrease (column $Y_0$, $Y_1$ and $Y_2$) risk exposure relative to the standard risk exposure, resulting in an increase (blue bars) or decrease (green bars) in the insurance premium rate. The standard risk premium rates (yellow bars) are based on standard risk factors. It can be determined in accordance with Basel III and country-wise regulatory requirements, representing the supervisor's expected level of risk after balancing the bank's efficiency and safety.

This means that deposit insurance companies have to comprehensively assess and adjust the risk level of banks in each insurance year. According to the current research on deposit insurance pricing, the risk adjustment factor should consider not only the capitalization level and regulatory rating (used by FDIC), but also the degree of asset correlation that represents systemic risk factors (Lee et al., 2015). In this framework, the bank's response to risks should also be considered.

It is worth mentioning that in the new framework, banks controlling their own risk-taking levels shall enjoy the bonus of certain exemption of premiums. Furthermore, the reduced risk, in the form of the exempted premium, can be accumulated and transformed into contingent additional payoffs funded by the government (discussed later). Such transformation is based on actuarial principles (probability of states × possible loss). The reduced probability of banking crisis, resulted from relatively cautious behavior of banks, can be monetarized into insurance coverage. Then the banks that perform better can get a higher payout when bank runs occur.

## 4. Mechanism Effect

The role of this mechanism in enhancing market discipline is reflected in (Figure 2):

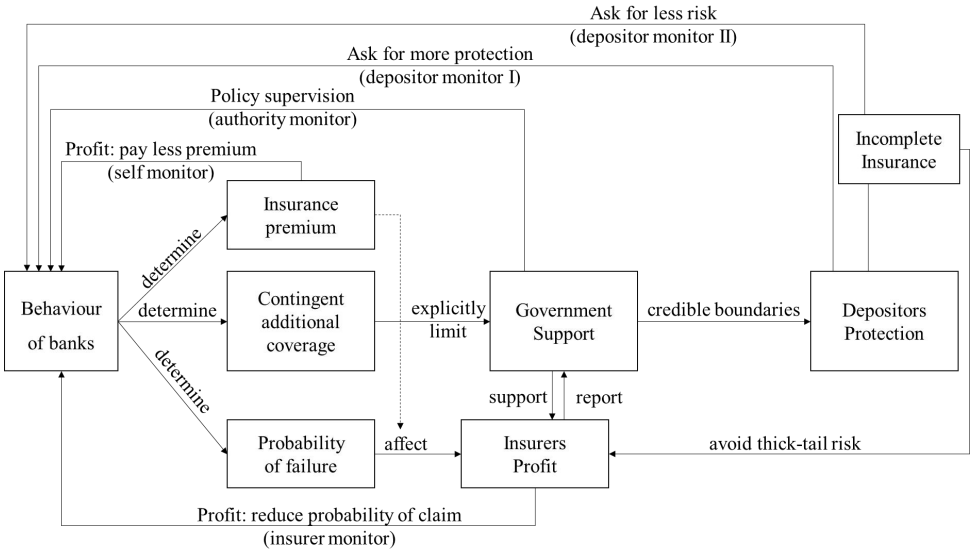



**Figure 2** Market Discipline Mechanism

(1) Deposit insurance is an incomplete insurance with a deductible and a coverage ceiling, which can preserve some of the monitor incentives depositors have over banks' risk-taking.

(2) From the perspective of profit, under the mechanism of risk-adjusted premiums, banks have their own incentives to reduce risk-taking and thus pay less premiums; insurers have incentives to monitor bank behavior and reduce the probability of risk.

(3) The risk reduction effect is reflected as a contingent additional payoff determined by actuarial principles. Compared with the view that "the boundaries of the safety net must be credible"(Gropp and Vesala, 2004) proposed in previous research, it is more efficient to explicitly link the extent of the safety net to the risk behavior of banks. The tendency of depositors to obtain more comprehensive protection has strengthened depositors' incentives to restrain banks.

(4) The contingent additional payoff is calculated by deposit insurance companies yet funded by the government. It protects insurers' profits and regulatory incentives. Moreover, it explicitly limits government functions by setting the ceiling on financial support. The reason why government support had been shown to weaken market discipline in previous studies may be because there is no clear limit to the size of fiscal support. The new mechanism increases the credibility of the safety net boundary without undermining the credibility of the government.

To sum up, under this framework, banks ' self-motivation and the monitor of authority, insurers, depositors complement each other to form a virtuous cycle of deposit insurance system and moral hazard control.

## 5. Policy Suggestions

To implement this mechanism, the following policy are suggested as necessary additions:

(1) Insurers should have more voice and information support. Deposit insurance companies are important intermediaries and executors in the framework. It is essential to enhance their position in the regulatory system and enable them to receive adequate information support from the public and private sectors.

(2) Bank participation in deposit insurance schemes should be mandatory. Such risk exposure can convince depositors that their funds are indeed at inevitable risk. Besides, this move can ensure sufficient size of the insurance capital pool (Demirgüç-Kunt et al., 2006). However, deposit insurance companies have the power to revoke membership in the deposit insurance scheme to promote robustness (Laeven and Beck, 2006).

(3) Deposit insurance should be reasonably priced. There are various attempts on pricing, such as market-based method (Dermine and Lajeri, 2001) and options theory (Flood, 1990). However, at present, no country has yet successfully established a risk-adjusted premium system. Unreasonable pricing will lead to distortions and inefficiencies.

## 6. Conclusion

The effect of deposit insurance on market discipline depends on its design. Based on the previous empirical research of deposit insurance and lessons of various countries, this article proposes a deposit insurance system framework from a new perspective.

Although risk-adjusted premium mechanism is not a new concept, it is an important channel

to integrate each part of deposit insurance and form an improved market discipline. This mechanism motivates the authorities, insurers and depositors to supervise the bank through incomplete insurance, clear safety net boundaries and government support limitations. It also guides the banks' behavior to self-control risk by profit incentives.

Finally, the deposit insurance system must be continuously evolved with financial innovation so that it has the ability to adapt to the current rapid financial changes. We still have a long way to go.

## References

[1] Anginer, D., Demirguc-Kunt, A. & Zhu, M. 2014. How does deposit insurance affect bank risk? Evidence from the recent crisis. Journal of Banking & finance, 48, 312-321.

[2] Demirgüç-Kunt, A. & Detragiache, E. 2002. Does deposit insurance increase banking system stability? An empirical investigation. Journal of monetary economics, 49, 1373-1406.

[3] Demirgüç-Kunt, A. & Huizinga, H. 2004. Market discipline and deposit insurance. Journal of monetary economics, 51, 375-399.

[4] Demirgüç-Kunt, A., Kane, E. J. & Laeven, L. 2006. Deposit insurance design and implementation: Policy lessons from research and practice. World Bank Policy Research Working Paper.

[5] Demirgüç-Kunt, A., Kane, E. J. & Laeven, L. 2014. Deposit insurance database. National Bureau of Economic Research.

[6] Dermine, J. & Lajeri, F. 2001. Credit risk and the deposit insurance premium: a note. Journal of Economics and Business, 53, 497-508.

[7] Diamond, D. W. & Dybvig, P. H. 1983. Bank runs, deposit insurance, and liquidity. Journal of political economy, 91, 401-419.

[8] Flood, M. D. 1990. On the use of option pricing models to analyze deposit insurance. Federal Reserve Bank of St. Louis Review, 72.

[9] Gropp, R. & Vesala, J. 2004. Deposit insurance, moral hazard and market monitoring. Review of Finance, 8, 571-602.

[10] Hovakimian, A., Kane, E. J. & Laeven, L. 2003. How country and safety-net characteristics affect bank risk-shifting. Journal of financial services research, 23, 177-204.

[11] Ioannidou, V. P. & Penas, M. F. 2010. Deposit insurance and bank risk-taking: Evidence from internal loan ratings. Journal of Financial Intermediation, 19, 95-115.

[12] Kane, E. J. 1989. S&L Insurance Mess, The: How Did It Happen?

[13] Karas, A., Pyle, W. & Schoors, K. J. 2019. Deposit insurance, market discipline and bank risk.

[14] Karels, G. V. & Mcclatchey, C. A. 1999. Deposit insurance and risk-taking behavior in the credit union industry. Journal of Banking & Finance, 23, 105-134.

[15] Laeven, L. & Beck, T. 2006. Resolution of failed banks by deposit insurers: Cross-country evidence. World Bank Policy Research Working Paper.

[16] Lee, S.-C., Lin, C.-T. & Tsai, M.-S. 2015. The pricing of deposit insurance in the presence of systematic risk. Journal of Banking & Finance, 51, 1-11.

[17] Merton, R. C. 1977. On the pricing of contingent claims and the Modigliani-Miller theorem. Journal of Financial Economics, 5, 241-249.

[18] Reguero, B. G., Beck, M. W., Schmid, D., Stadtmüller, D., Raepple, J., Schüssele, S. & Pfliegner, K. 2020. Financing coastal resilience by combining nature-based risk reduction with insurance. Ecological Economics, 169, 106487.