



Financial reform and the adequacy of deposit insurance fund: Lessons from Taiwanese experience



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ABSTRACT

Financial reforms and capital adequacy are probably the most critical issues for the banking industry in the world. This study examines the effectiveness of financial reforms carried out in Taiwan recently and measures the adequacy of the deposit insurance fund (DIF), including financial restructuring fund and Designated Reserve Ratio (DRR) strategy in Taiwan. We have improved on the methodology of Episcopoc (2004) and report estimates of the cost of deposit insurance and implied reserves for each bank or financial holding company. Estimates of the implicit cost of government guaranty of the DIF are also included. To stabilize its financial environment in 2000, the Taiwanese government amended many bank regulations, including the enactment of the Financial Holding Company Act (FHC Act) of 2001 and the Financial Restructuring Fund Statute. Our evidence shows lower volatilities and average unit cost of deposit insurance for seven sampled FHCs compared to sixteen sampled banks, even though the FHCs are larger. These results indicate the effectiveness of the financial reforms put forward by the Taiwanese government. When implied reserves are compared with the Designated Reserve Ratio (DRR) strategy of 2%, imposed by the Central Deposit Insurance Corporation (CDIC) in 2007, we find that the DIF would have been sufficient in 2006, but not in 2000. The results imply that the fixed target ratio for the DIF may not be appropriate. In addition, the details of financial reforms in Taiwan starting in 2001 are provided and demonstrate resolve in implementing financial reforms. Finally, financial reforms of Taiwan and the calculations of DRR and estimates of the implicit cost of government guaranty of the DIF can be used as lessons for other countries.

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1. Introduction

Financial reforms and capital adequacy are probably the most critical issues for the banking industry in the world. Using Taiwan as an example, this study examines the effect of certain financial reforms, provides improved methods of calculating estimates of the cost of deposit insurance and implied reserve, and discusses the strategy of Designated Reserve Ratio. In order to integrate the financial market and stabilize the financial environment, the Taiwanese government implemented a series of financial reforms in the early 2000s. Among these, an important one is the enactment of the Financial Holding Company Act in 2001. The act provided the basis for the mergers of financial institutions and accelerates the process of financial consolidation. This enhances the strength and competitiveness of financial institutions in Taiwan.

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Another reform was the adoption of the Financial Restructuring Fund Statute in June 27, 2001. The Financial Restructuring Fund is funded by a special budget of the Taiwanese government and supports the Central Deposit Insurance Corporation (CDIC) to deal with problem financial institutions. Due to the financial reforms, the number of insured institutions decreased from 456 in 2000 to 392 in 2011 (see [Appendix A](#)). Moreover, in order to improve the quality of bank assets, the Taiwanese government reduced the bank business tax rate from 5% to 2% in 1999. The tax savings resulted from the lower tax rate were required to write off non-performing loan (NPL). The average NPL ratio decreased from 6.2% in 2000 to 0.43% at the end of 2011 (see [Appendix B](#)). At the same time, the average NPL coverage ratio rose from 15.34% to 251.83%. This indicates that there has been a significant improvement in the quality of bank assets in Taiwan.

Five failing financial institutions were taken over by the CDIC in 2006 and 2007.³ In the wake of these five failed banks, the Taiwanese government revised the Deposit Insurance Act in 2007 to ensure the adequacy of the Deposit Insurance Fund (DIF). Among the amendments in the Deposit Insurance Act the most important one sets up a target ratio (i.e. Designated Reserve Ratio, DRR) for the DIF at the fixed ratio of 2% of insured deposits. Low DRR will increase the possibility of serious shortage on the DIF when the CDIC faces a large financial institution failure or systemic collapse. The DIF is implicitly guaranteed by the government; however, its shortage will be transferred to the government and eventually born by the ordinary taxpayers. On the other hand, high DRR can alleviate the spillover problem, but high DRR may increase bank's cost of capital and hence loan rates, which will shrink the investment of firms and disturb overall economic growth. How to set up an adequate DRR level becomes an important issue for bank managers, regulators and depositors. In this study, we examine the relationship between the levels of DRR and the implicit cost to the Taiwanese government to insure financial institutions. We also examine the effectiveness of these financial reforms and its effects on the adequacy of the DIF.

A fairly large body of literature focuses on the valuation of deposit insurance including [Merton \(1977, 1978\)](#), [Marcus and Shaked \(1984\)](#), [McCulloch \(1985\)](#), [Pyle \(1986\)](#), [Ronn and Verma \(1986\)](#), [Pennacchi \(1987\)](#), [Allen and Saunders \(1993\)](#), [Duan and Yu \(1994, 1999\)](#), and [Duan, Moreau, and Sealey \(1995\)](#).⁴ [Merton \(1977\)](#) and other researchers propose actuarially fair premiums based on the option-pricing model and suggest that premiums should depend on the size of insured deposits and the bank's asset risk. Because the deposit insurance is implicitly fully guaranteed by the government in most countries, these studies did not consider the effect of the insolvency of the DIF on the deposit insurance valuation. However, a series of studies, such as [Kane \(1989, 2000\)](#), [Hovakimian and Kane \(1996\)](#), and [Demirguc-Kunt and Kane \(2002\)](#) points out the relations among a failed DIF, government regulators, and insured banks, in terms of risk-taking incentives.⁵ In addition, the forbearance of authority may encourage financially deteriorating banks to take higher risks, leading to increased losses for the deposit insurance agent. Under the political pressure the government may be forced to supply unlimited DIF in the case of bank failures. The shortage of the DIF eventually will be transferred to the taxpayers. [Episcopos \(2004\)](#) addresses the shortage of the DIF and tries to incorporate the effect of the reserve of the DIF on the deposit insurance valuation.

There are two implications to be drawn from this stream of the literature. First, if governments do not guarantee the solvency of the DIF, then there are more incentives for depositors to monitor banks. Second, if governments guarantee the DIF, they take on the role of reinsurer, and adequacy of the DIF remains an important issue due to the cost of reinsurance. When a government guarantees the DIF, the insolvency risk may be shifted from the troubled banks to the deposit insurance agent, then to the government, and finally to taxpayers. Taxpayers would like to know the cost of the guaranty. It is obvious that a guaranty is costly when the DIF is insolvent. Even when the DIF remains solvent, a guaranty is still costly, *ex ante*, so it is important to estimate its implied costs. One example is the U.S. Government guarantee of Chrysler's debt in 1979. Even though Chrysler survived, and it cost the government nothing, there was an *ex ante* implied cost of guaranty.

In this study, we apply the model of [Episcopos \(2004\)](#) to measure the coverage ratio provided by the current level of DIF, and the implicit costs of government to guarantee the DIF. We measure the effectiveness of financial reforms put forward mainly during the period from 2001 to 2005 in Taiwan, in particular, the enactment of the FHC Act and the establishment of Financial Restructuring Fund.⁶

Our results show that the average premium for the FHCs in 2006 is lower than that for the corresponding individual banks in 2000 even though the FHCs are larger. This suggests that the FHC Act has achieved its objectives. Moreover, the average implied reserves in 2006 are lower than in 2000. This indicates that the financial reforms improved the quality of financial institutions and the financial environment in Taiwan. When implied reserves are compared with the Designated Reserve Ratio (DRR) strategy of 2%, imposed by the Central Deposit Insurance Corporation (CDIC) in 2007, we find that the DIF would have been sufficient in 2006, but not in 2000. The results imply that the fixed target ratio for the DIF may not be appropriate.

³ See [Appendix C](#) for details.

⁴ In contrast to the studies focused on the valuation of deposit insurance, there is a series of studies contributed to empirically examine the effect of deposit insurance on the bank's risk-taking behavior and the probability of bank failure. For example, [Gueyie and Lai \(2003\)](#) examined the effect of the introduction of flat-rate deposit insurance on the bank risk-taking behavior in Canada. [Hwang, Lee, and Liaw \(1997\)](#) examined the factors that can be used to detect the bank failure and estimated the costs of insuring the U.S. banks.

⁵ [Kupiec \(2004\)](#) developed a model to value deposit insurance while incorporating the interaction effect of the endogenous Internal-Model-Based capital requirement recommended by Basel II and bank risk-taking incentives.

⁶ In order to improve the competitiveness and capital status of financial institutions in Taiwan, the FHC Act was passed in 2001. Moreover, in order to deal with the problem financial institutions and stabilize the financial environment, the Taiwanese government established the Financial Restructuring Fund in 2001. The Financial Restructuring Fund which is independent of the DIF provided a temporary blanket guarantee from July 2001 to July 2005.

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