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# Off-balance sheet activities and cost inefficiency in Taiwan's Banks

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In this study, we adopt a stochastic cost frontier method to investigate the influence of off-balance sheet (OBS) activities on the cost efficiency of Taiwan's banks. We estimate and compare cost inefficiency with or without OBS outputs of 46 Taiwanese commercial banks during the period, 1998 through 2001. The conclusions of this empirical study are as follows. First, omitting off-balance sheet outputs in estimating the cost frontier function of banks results in an underestimation of bank efficiency by approximately 5 per cent. Second, large banks are associated with a higher cost efficiency and have an increased ability to develop OBS activities. This is consistent with Taiwan's regulatory policies, which focus on promoting efficiency in the banking industry of emerging markets. Banks with higher employee productivity are also more cost efficient. Finally, we observe evidence of economies of scale in both models with or without OBS specification in Taiwan's bank industry. Economies of scope between loans and OBS outputs are also observed.

# Notes

1. Chen and Yeh [1998](#) adopted four outputs – loan services, portfolio investment, interest income, and non-interest income – to analyse the relative efficiency of 34 commercial banks in Taiwan, by using the data envelopment analysis method. In later research, Chen and Yeh [2000](#) used loan services, portfolio investment, and non-interest income to measure bank efficiency, ownership and productivity changes in Taiwan.
2. According to the official report of the Ministry of Finance, any loan for which repayment of interest has been overdue for more than six months will be classified as a non-accrual loan.
3. Cost inefficiency 27 per cent equals  $1-(1/1.3762)$ .



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