The Journal of Social Sciences Research
ISSN: 2411-9458
Vol. 1, No. 4, pp: 37-40, 2015
URL: http://arpgweb.com/?ic=journal&journal=7&info=aims

An Analysis of the Efficiency of Philippine Financial Institutions

HuiChen Chiang* Department of Business Administration, Ming Chuan University, Taipei, Taiwan
YihChing Tsaih Department of Business Administration, Ming Chuan University, Taipei, Taiwan

Abstract: A non parametric analysis is performed in the banking industry in the Philippines. This study is of interest from several points of view. First, it is of use for those who are interested in understanding how Philippine banks performed prior and throughout the global financial crisis. The study will point to which banking models handled the financial crisis well. Secondly, this would be of interest for those who are interested in comparing and contrasting the performance of different types of banking models in the Asia Pacific. As more local banks consider expanding overseas, there are various options in terms of banking models to consider, branch to the subsidiary, commercial to universal, each with its strict regulatory guidelines. For a developing economy, such as the Philippines, we aim to show the impact of different models based on traditionally used inputs of measuring banking performance, and applying it to our non parametric model. The study's conclusions point to the universal banking model is the most consistently efficient models of banking in the Philippines.

Keywords: Banking industry; Effectiveness; Emerging markets.

1. Introduction

There are hundreds and thousands of empirical studies on estimating inter-banks efficiency in various countries. Studies on the Philippines, however, particularly those that focus on both the universal and commercial banks of the country, seem to be missing from literature.

This research takes into account the possible contributing factors that might further explain the difference in performance. First, ownership structure size-wise is deemed to be related to a bank's efficiency. Manlagñit (2011) pointed out that a bank's size can affect its cost efficiency; while Dacanay (2007) found efficiency to be inversely related to asset size. The presence of disparate results gave us our second motivation, which is to correlate the impact of the size of the bank with efficiency. Put under investigation is whether the idea of economies of scale is applicable in the case of the Philippines.

In terms of ownership type, efficiency is expected to be higher for foreign-owned banks, for their corporate governance is that of international standards; local and government-owned banks are expected to be. As such, the researchers are determined, as third motivation, to further examine bank ownership type to have any grounds on efficiency. We focus on probing whether or not foreign-owned banks perform better than any other banks in the Philippines.

Battaglia *et al.* (2010) asserted that efficiency of banks is influenced by its environmental conditions such as market characteristics, economic conditions as well as regulatory constraints. These arguments somewhat strongly conform to our idea of correlating bank efficiencies with economic conditions. As the recent global economic and financial crisis of 2008 affected much of the banks in the U.S. that it had led to its drop in numbers, the Philippines actually had otherwise (see Table 1). The government has always been encouraging the merger and acquisition program to strengthen up the banking industry. Although a rise in number of banks does not necessarily imply efficiency, yet it somewhat signifies that a competitive environment for the financial industry, and a positive environment for growth.

Table-1. Number of Universal and Commercial Banks in Operation

Bank \ Year	2005	2006	2007	2008	2009	2010
Universal	3683	3807	3801	3916	4009	4121
Commercial	635	506	474	488	511	560

Source: Central Bank of the Philippines (http://www.bsp.gov.ph/)

*Corresponding Author

2. Data and Methodology

The dataset used in this study contains observations from the first quarter of 2005 to the fourth quarter of 2010 of the 19 Universal and 19 Commercial banks in the Philippines. Banks with incomplete data were deleted, leaving us with 18 universal and 17 commercial banks, yielding 840 bank observations (calculation: 18+17=35 banks; 6 years*4 quarters = 24). The researchers compiled the following as the input variables: (1) total fixed assets, (2) total deposits, and (3) total capital; while (1) total loans, and (2) net equity investment as our choice for output variables to estimate the efficiency scores of each bank. Initial statistical processing was done, followed with the application of Data Envelopment Analysis (DEA). Lastly, all efficiency scores were correlated with the different controlling variables such as size, ownership structure type and environmental variables using Tobit Regression.

3. Empirical Analysis

The researchers organized the data panel of 945 bank observations and processed all statistical results accordingly. First, Pearson's correlation was used to determine and confirm the degree to which our DEA input and DEA output variables are related (Table 2). Results implied a substantial degree of relation.

Table-2. Pearson Correlation of DEA Input and Output Variables

INPUT / OUTPUT	Total Fixed Assets	Total Deposits	Total Capital
Total Loans	.791**	.969**	.920**
Net Equity Investment	.738**	.838**	.858**

** Correlation is significant at the 0.01 level (2-tailed).

Second, DEA efficiency scores (Table 3) have been shown. Maximum scores remained at par; while minimum scores have somehow improved suggesting banks are doing relatively better year after year.

Table-3. DEA Efficiency Scores

YEAR	AVERAGE	ST. DEV.	MAXIMUM	MINIMUM
2005	0.811439	0.214112	0.992925	0.173799
2006	0.771551	0.321349	0.992530	-0.416353
2007	0.840168	0.163520	0.990538	0.374740
2008	0.837634	0.164988	0.992786	0.407547
2009	0.822304	0.201033	0.993432	0.253432
2010	0.827956	0.181104	0.993327	0.344800

In the Philippines, universal banks do not only pose the function of an ordinary commercial bank, but are also authorized to do underwriting and empowered to invest in equities of non-allied undertakings; thus making them larger and more powerful than any other banks. The researchers made a comparison on the production and cost efficiency scores of these two bank classifications. Based on this comparison, we have noticed a significant difference on the production efficiency level between the universal and the commercial banks in the Philippines (Table 4). From their mean scores, the Universal banks posed to be better than Commercial banks. Further investigation found 10 out of 18 universal scoring above 95%; while, only 1 commercial bank stood on this level and the rest are in a much lower position. This explains the high standard deviation score of commercial banks. This result is quite similar as the findings of Dacanay (2007), stating that the universal banks in the Philippines have higher technical efficiency scores than the ordinary commercial banks.

Table-4. DEA Scores Comparison for Universal and Commercial Banks

BANK TYPE	Mean	Std. Deviation	F	Sig.
Commercial	.6848166464	.30218016586	203.248	.000***
Universal	.9027465453	.14498244192		

*** indicate significance at p<0.01.

Then, we grouped banks with total assets of more than 140 billion pesos are identified as large banks; while banks within the range of 30 billion to 140 billion and below 30 billion are considered to be medium and small banks, respectively (Table 5). Large-size banks dominate the universal category; while commercial banks are mostly small and medium scaled. We also noticed smaller banks to have reduced in numbers; while the number of medium and large banks is increasing. Most likely, this results from the encouragement of the government for banks to merge/acquire.

Table-5. Statistical Frequencies for Bank Size and Bank Type

YEAR	LARGE		MEDIUM		SMALL	
	Universal	Commercial	Universal	Commercial	Universal	Commercial
2005	7	1	8	3	3	13
2006	9	1	6	5	3	11
2007	9	1	7	7	2	9
2008	10	1	6	8	2	8
2009	12	1	4	6	2	10
2010	13	1	5	10	0	6

Comparing DEA scores of the different bank sizes (Table 6), a significant difference is seen between each kind of size. As their mean scores reveal, large banks perform relatively better than the medium and small size ones. However, the high standard deviation of small banks signifies a big difference between the efficiency scores of the smaller banks.

Table-6. DEA Scores Comparison for Size

SIZE	Mean	Std. Deviation	F	Sig.
Large	.962058	.0656191	360.634	.000***
Medium	.871804	.1073384		
Small	.560577	.3135397		

*** indicate significance at p<0.01.

3.1. Ownership Structure and Economic Conditions

According to Table 7, the result shows that government-owned banks are found to have the highest mean score with a very low standard deviation, followed by private owned ones; while foreign banks come in last in the list. In other words, despite the liberalization of foreign entrant, foreign banks are limited in rising in number because of the financial system regulation of the Philippines. So there may be a lot of registered foreign banks in the Philippines, yet the number of their offices is not much.

Table-7. DEA Scores Comparison for Ownership Type

OWNERSHIP	Mean	Std. Deviation	F	Sig.
Private-owned	.912868	.1020312	169.459	.000***
Government-owned	.966259	.0346538		
Foreign-owned	.652503	.3109235		

*** indicate significance at p<0.01.

With regard to the environmental factor, the researchers divided the whole time period into three sub-periods: 2005 to 2007, 2008 to 2009, and 2010 as pre-crisis, crisis and post-crisis period, respectively. We mirrored some other researchers (Dacanay, 2007;2010; Sufian and Habibullah, 2009; Thangavelu and Findlay, 2010) who covered comparable economic conditions and made similar period division. As far as the results are concerned (Table 8), a significance level of 0.060 indicates that there are no significant differences in the efficiency level of the banks during these three different economic periods. Meaning crisis or no crisis, banking efficiency is not affected at all.

Table 8. DEA Scores Comparison for Economic Conditions

ECONOMIC CONDITIONS	Mean	Std. Deviation	F	Sig.
Pre-Crisis	0.806330	.270504	2.822	.060
Crisis	0.812049	.234539		
Post-Crisis	0.827956	.181104		

3.2. Tobit Regression Analysis

Tobit regression allows us to combine and evaluate all independent factors together in assessing efficiency level. Results from Tobit Regression (Table 9) revealed that a bank's total asset and return on equity is significantly and positively correlated with technical efficiency; thereby implying that as the total asset increases, the technical efficiency score also increases. This finding confirms our initial analysis that the larger the bank is, the higher the technical efficiency score is. For the variables of ownership type, our regression results show that government and private owned banks are positively and significantly related with efficiency. This result coincides with the findings of Manlagñit (2011), which somehow implies that the entry of foreign banks only brought about the transformation

of domestic banks, prompting them to be better than foreign banks. However, another way of explaining this matter is that most of the foreign banks operating in the Philippines are limited in branch numbers; thereby putting a stop on their way to a better efficiency level. We understand that branch numbers do not directly relate to efficiency, yet we believe that with lesser number of branches to serve the Filipinos, the lesser the chances the bank has to get more deposits and loans or any other financial services.

Lastly, results revealed that efficiency level of banks is higher during the pre-crisis and crisis period opposed to the post-crisis stage. Nevertheless, the inverse relation of economic conditions with efficiency most likely stems from financial system regulation. The healthier the financial system, the least it is going to be affected by its economic conditions. Just like the lesson the Philippines has learned during the 1997 Asian Financial Crisis, policies really do matter.

Table-9. Tobit Regression Model

VARIABLE	COEFFICIENT	STD. ERROR	Z-STATISTIC	PROB
Private-owned	0.174254	0.010617	16.41342	0.0000***
Government-owned	0.195244	0.022206	8.792191	0.0000***
Pre-Crisis	-0.001854	0.011664	-0.158976	0.8737
Post-Crisis	-0.071235	0.013326	-5.345606	0.0000***
Return on Equity	0.059033	0.028241	2.090372	0.0366**
Log of Total Asset	0.029523	0.000454	65.03867	0.0000***

*** and ** indicate significance at $p<0.01$ and $p<0.05$, respectively.

4. Conclusion

This paper presents a two-stage DEA approach coupled with Tobit regression analysis in examining the efficiency level of the universal and commercial banks in the Philippines over the period of 2005 to 2010. First of all, Universal banks are found to be more efficient than commercial banks; 10 out of 18 universal banks were found to be considerably efficient; while only 1 out of 17 commercial banks appeared to possess a consistent high efficiency score over the time period. Second, it has been observed that 49% of the whole banking sector has been dominated by privately-owned banks; while 46% of it goes to foreign banks. This clearly shows the success in liberalizing foreign entry as well as in attracting foreign investors. Yet our findings revealed that foreign banks in the Philippines, either branches of foreign banks or foreign subsidiaries, performed quite badly relative to domestic private and government-owned ones. This proves that although there are a lot of foreign banks registered under the Central Bank of the Philippines, yet because of their limitations in opening bank branches, their efficiency level also stays at a certain limit. So for them to be more efficient, the foreign entry regulation must also be further eased. Then again, just like most of the studies on the impact of foreign entry on domestic banks, their positive impact towards banking efficiency can be commonly seen. This coincides with the fact that entry of foreign banks has prompted domestic banks to improve operations and efficiency.

Next, most of the large size banks are universal banks; while commercial banks, with average performance, are medium and small size ones. Confirming our assumption, larger banks are technically more efficient than smaller ones. Lastly, the reforms of the Central Bank of the Philippines are seen to be effective, especially in stabilizing the financial system and guarding it against any financial crisis.

References

Battaglia, F., Farina, V., Fiordelisi, F.and Ricci, O. (2010). The Efficiency of Cooperative Banks: The Impact of Environmental Economic Conditions. *Applied Financial Economics*, 20(17): 1363-76. http://dx.doi.org/10.1080/09603107.2010.491442

Dacanay, S. J. O. I. (2007). Profit and Cost Efficiency of Philippine Commercial Banks Under Periods of Liberalization, Crisis and Consolidation. *The Business Review, Cambridge*, 7(2): 315-22.

Dacanay, S. J. O. I. (2010). The Evolution of Cost and Profit Efficiency of Philippine Commercial Banks. *Philippine Review of Economics*, 42(1): 109-46.

Manlagñit, M. C. V. (2011). The Economic Effects of Foreign Bank Presence: Evidence from the Philippines. *Journal of International Money and Finance*, 30(6): 1180-94. http://www.sciencedirect.com/science/article/pii/S0261560611000994

Sufian, F. and Habibullah, M. S. (2009). Asian Financial Crisis and the Evolution of Korean Banks Efficiency: A DEA Approach. *Global Economic Review*, 38(4): 335-69. http://dx.doi.org/10.1080/12265080903391735

Thangavelu, S. M. and Findlay, C. C. (2010). 'Bank Efficiency, Regulation and Response to Crisis of Financial Institutions in Selected Asian Countries.', *Linkages Between Real and Financial Aspects of Economic Integration in East Asia*, 288-314.