

# ***A PERFORMANCE BASED RANKING OF THE WORLD'S LARGEST COMMERCIAL BANKS***

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## **INTRODUCTION**

With the growing trend toward consolidation and mergers in the banking industry throughout the 1990s, increasing attention is now paid to the issue of how firm size affects the performance of commercial banks. This paper develops a multi-criteria, performance based index to rank the world's largest commercial banks. It also seeks to measure the extent to which there is a correlation between performance and bank size (total assets) in the international commercial banking industry.

Traditionally, one of the common approaches to measure and rank the performance of the largest commercial banks in the world has been to analyze their levels of employment and patterns of labor utilization. Generally, under this approach, production of financial services is quantified in terms of a given bank's total assets and the institution's performance is evaluated via the productivity of its labor measured by the number of employees needed to generate a given level of production (total assets). Section two of this paper reviews the literature on this labor productivity approach to evaluate and rank the world's commercial banks.

In section three, the methodology to construct the performance-based index is described. Following that, a model is formulated to test that hypothesis of the existence of increasing returns to scale in the international commercial banking industry. Finally, the empirical results are discussed in the section preceding the conclusions at the end of the paper.

## **REVIEW OF THE LITERATURE**

The method of using labor productivity as the yardstick to evaluate bank performance was pioneered by G. G. Kaufman using 1967 data for large banks in industrialized and developing countries (Kaufman 1970). He concluded that the efficiency of labor was highest in banks based in the United States and lowest in Japanese banks. Similar conclusions were reached by B.K Short also using data for 1967 (Short 1971).

In 1984, Sang-Rim Choi and Adrian Tschoegl used 1979 data to reach the significant different conclusion that the labor efficiency of Japanese banks was now higher than that of banks in the United States. Results of their study showed that American banks required more workers to produce the same level of financial services than their counterpart institutions in Japan and in other industrialized nations (Choi and Tschoegl 1984). More recently, with figures for the 1980 - 1986 period, W.C. Hunter and S.G. Timme, updating the previous studies by Kaufman, Short and Choi and Tschoegl and continuing to use total assets as the measure of production of financial services, reaffirmed Choi and Tschoegl's findings and concluded that large U.S. banks were being outperformed by banks in other industrialized countries based on labor productivity rates. (Hunter and Timme 1990).

More recently, attention has focused on the issues of firm scale and efficiency in the banking industry. The 1990s have witnessed large bank mergers such as those of BankAmerica and Security Pacific, Chemical Bank and Manufacturers Hanover Trust, First Chicago and N.B.Detroit and lastly Chase Manhattan and Chemical Bank, and an accelerated pace of consolidation that has resulted in a 36%

reduction in the number of independent banking organizations in the United States-- from 12,380 in 1980 to 7,926 in 1994 (Ritter, Silber and Udell 1997).

Arguably, cost savings has prompted this recent wave of bank mergers and consolidation reflecting bankers' belief that economies of scale do exist under industry. Such an argument states that production costs fall as output increases, implying that banks would become more efficient as they grow larger. However, in a recent study, A.N. Berger and D. Humprey have concluded that such cost savings associated with economies of scale have not materialized for banks whose assets exceed \$100 million; although, they do seem to exist for banks smaller than \$100 million in total assets (Berger and Humprey 1993).

Given the rapid pace of technological change in the financial service industry in general and the increasing consolidation and globalization of commercial banking in particular, empirical work on issues related to bank performance continues to be very relevant. In that context, important contribution of this paper is in the use of several criteria, listed below, to construct an index to rank the performance of the largest commercial banks in the world and to quantify the extent to which there is a relationship between bank performance and size.

## METHODOLOGY

### The Performance Index

The performance-based index is based on the following four variables: Total Profits (TP), Return on Assets (ROA), Return on Equity (ROE) and Labor Productivity (LP). Raw data for the construction of the index is from the *Fortune 500 List* of the largest banks for the 1997 - 98 period. There were sixty-eight international banks for which the required data were complete. Each of the four variables received an equal weight in the construction of the index.

Additionally, to adjust for the wide dispersion of values among the different banks under each of the four criteria, each bank's numbers under a given criterion were divided by the cumulative sum of all the banks' results for that given performance indicator. For example, under the Total Profits component of the performance index, bank X's Total Profit is divided by the cumulative sum of the Total Profits for all sixty eight banks considered in this study. The Total Profit entry for bank X's performance score, therefore, reflects its Total Profit as a percentage of the T.P. of the sixty eight largest banks in the world. The same procedure is used for the ROA, ROE and labor productivity components of the composite performance measure.

Labor productivity here is measured in terms of millions US\$ of Total Revenue generated per employee rather than in terms of millions of Total Assets per employee. This is a better measure of labor productivity since revenue, an income statement item, rather than total assets, a balance sheet item, is more directly associated with sales.

In summary a bank X's performance score is equal to:

$$\left[ \frac{T.P.X}{\text{sum T.P. all banks}} + \frac{ROA X}{\text{sum ROA all banks}} + \frac{ROE X}{\text{sum ROE all banks}} + \frac{L.P. X}{\text{sum L.P. all banks}} \right] \times 100$$

Each bank's composite performance score is multiplied times 100 in order to eliminate the very small decimal scores.

Finally, the individual banks performance scores are converted into an indexed number, ranging from zero to one where zero is equal to the lowest performance rating and one is equal to the highest performance score.

## The Relationship Between Bank Performance and Size

The testing of the hypothesis that there is a relationship between performance and bank size is via regression analysis and the test of significance of the coefficient of correlation between those two variables. Performance is quantified by each bank's composite performance score based on profits, return on assets, return on equity and labor productivity (revenue dollars generated per employee). Bank size, on the other hand is specified in terms of total assets in US\$. The hypothesis to be tested is that there is a direct or positive correlation between size and performance in the international commercial banking industry or that performance is enhanced by size.

## RESULTS

### Performance Based Ranking of the World's Largest Banks

Lloyds TBS Group plc, a United Kingdom bank, heads the list of the best performing international commercial banks. Number two is Hsbc Holdings, also a United Kingdom institution. The only other non-American bank in the top ten is number six, the Norinchukin Bank (Japan). The remaining seven in the ten best performing banks are all United states banks as follows: Citicorp, Chase Manhattan, Bank America Corporation, Nations bank, Bank One Corporation, Norwest Corporation and First Chicago NBD Corporation. The upper half of Table I below details the performance of the top ten international banks.

On the other extreme, the bottom ten or worse performing list of banks in our study includes eight Japanese and two Italian banks. Banca Nazionale del Lavoro (Italy) had the lowest composite performance score of the sixty-eight institutions ranked. Paradoxically, all eight Japanese banks among the ten worse performing banks appear in the top twelve rankings based on labor productivity as the only performance criterion. The lower half of Table I presents the bottom ten banks in our composite rankings along with their respective measures of performance.

Table 1  
The Best And The Worst Ten Performing International Banks

No	IPV	Bank, Country	Size	Proft.	ROA	ROE	L. P.
1	1.0	Lloyds TSB Group, U.K	260.2	3.83	.0147	.372	.270
2	.966	Hsbc Holdings, U.K.	471.3	5.50	.0117	.203	.282
3	.843	Citicorp, USA	310.9	3.59	.0116	.169	.370
4	.837	Chase Manhattan Corp, USA	365.5	3.71	.0101	.170	.440
5	.823	Bank America Corp., USA	260.2	3.21	.0123	.162	.306
6	.806	The Nurinchukin Bank, Japan	391.7	1.09	.0028	.099	4.86
7	.792	Nations Bank Corp., USA	264.6	3.08	.0116	.144	.270
8	.786	Banc One Corporation, USA	115.9	1.31	.0113	.126	.234
9	.756	Norwest Corporation, USA	88.5	1.35	.0153	.192	.173
10	.756	First Chicago NBD Corp., USA	114.1	1.52	.0134	.192	.297
59	.393	Gruppo Cassa Risparmio Roma, Italy	117.3	-.210	-.002	-.036	.329

60	.390	The Dai-Ichi Kangyo Bank, Japan	432.2	-.590	-.001	-.043	1.162
61	.374	The Sakura Bank, Ltd., Japan	398.6	-.720	-.002	-.056	1.222
62	.351	The Long-Term Credit Bank of Japan	199.2	-1.21	-.006	-.158	3.280
63	.281	The Sanwa Bank, Ltd., Japan	427.1	-1.49	-.004	-.108	1.160
64	.222	The Sumitomo Bank, Ltd., Japan	482.7	-2.05	-.004	-.163	1.390
65	.121	The Fuji Bank, Ltd., Japan	413.3	-2.81	-.007	-.238	1.570
66	.059	The Bank of Tokyo-Mitsubishi, Japan	690.5	-4.27	-.006	-.235	1.890
67	.031	The Industrial Bank of Japan, Ltd.	369.2	-1.65	-.004	-.167	5.415
68	0.00	Banca Nazionale del Lavoro, Italy	102.7	-1.65	-.016	-.282	.372

IPV (col. 2) = Indexed Performance Value. Size (col.4)= Total Assets in billions of US\$.  
 Profits (col.5) = Profits in billions of US\$. L.P. (col. 8) = Labor Productivity measured in million US\$ of Total Revenue generated per employee.  
 Figures in Table I are based on data in the 1998 Fortune 500 List of International Banks.

### The Relationship Between Performance and Bank Size

The estimated regression equation is:  
 Performance score = 9.189 - 0.014 Size

where the dependent variable, Performance Score, is the unindexed value of each bank's composite performance based profits, return on assets, return on equity and labor productivity (millions of US\$ of total revenue generated per employee). The independent variable, Size, is specified in terms of each bank's total assets billions of US\$. The regression results are as follows:

R (coefficient of correlation) = -.27; R squared (coefficient of determination) = .073;  
 F statistic = 5.192, t statistic for independent variable and for the correlation coefficient = -2.28.

At the 95% level of significance the critical F value is 5.19 so the overall regression is significant. Also at the 95% level of significance, the critical t value is + or - 2.00, therefore, the coefficient of the independent variable (size) as well as the coefficient of correlation are significant: there is a statistically significant negative correlation between performance and bank size.

### CONCLUSIONS

American banks dominate the rankings based on a multi-criteria performance index while Japanese banks are at the bottom of these rankings. Given the severe recession affecting the Japanese economy in the latter half of the 1990s, the poor performance of their banks and their low ranking in our study are not surprising. What is interesting is that, despite their recession, Japanese commercial banks are, in general, continuing to experience comparatively high levels of total revenue and continue to be at the top of the labor productivity rankings.

Additionally, our study has found that bigger is not necessarily conducive to better performance in the international commercial banking industry. The statistically significant **negative** correlation between performance and bank size suggests that probability of better performance results is higher for

comparatively smaller banks and lower for the larger institutions or, in other words, that there might be diseconomies of scale in the international commercial banking industry.

Finally, the differences in performance might quite possibly be attributable not only to differences in economic conditions across countries but also to their differences in regulatory, competitive and strategic environments. Incorporating such differences in the study of bank performance would be a fertile area for further research.

## REFERENCES

- Benavides, Adolfo, "The Relationship Between Bank Size and Labor Productivity in the International Commercial Banking Industry," Association for Global Business 1999 Conference Proceedings, pp. 240 - 244.
- Berger, Allan N and David Humprey, "The Dominance of Inefficiencies over Scale and Product Mix in Banking," Journal of Banking and Finance, 1993.
- Choi, Sang-Rim and Adrian Tschoegl, "Bank Employment in the World's Largest Banks: An Update," Journal of Money, Credit, and Banking, 16, August, 1984, pp. 359-362.
- Daniel Wayne N. and James C. Terrell, Business Statistics for Management and Economics, 9<sup>th</sup> edition, Houghton-Mifflin Co., 1992, Chapter 9.
- Fortune, "Fortune 500, International Commercial Banks"  
<http://cgi.pathfinder.com/fortune/global500/industries/ind192.html>
- Hunter, William and Stephen Timme, "Employment in the World's Largest Banks," Economic Review, Federal Reserve Bank of Atlanta, January/February 1990, pp. 2-11.
- Kaufman, George G., "Bank Employment: A Cross-Section Analysis of the World's Largest Banks: A Comment," Journal of Money, Credit, and Banking, 2, February, 1970, pp. 101-111.
- Ritter, Lawrence, William Silber, and Gregory Udell, Principles of Money, Banking, and Financial Markets, 9<sup>th</sup> edition Addison Wesley, 1997 pp. 214-215.
- Short, Brock K., "Bank Employment in the World's Largest Banks: A Comment," Journal of Money, Credit, and Banking, 3, August, 1971, pp.709-711.

