International Review of Business Research Papers
Vol 4 No. 4 Aug – Sept 2008 Pp.368-380

The Effect Of Mergers On Bank Performance: Evidence From Bank Consolidation Policy In Indonesia

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An inclusive merger mechanism became one option for the Indonesian banking industry to response the Asian Financial crisis under its bank consolidation program. This study gives insight into the effectiveness of economic policy reforms in the Indonesian banking industry. This study examines the impacts of merger on commercial bank's performance in Indonesia during 1997 to 2006. The period was characterized by financial deregulation, the Asian economic crisis, and bank restructuring programs. The traditional financial ratios and non-parametric Data Envelopment Analysis approach is employed to investigate any efficiency gains both in the pre and post merger periods, in order to detect whether bank mergers produce any efficiency gains as well as factors contributed to the performance. The evidence shows that merger created synergy as indicates by the statistically and significantly increasing the post-merger financial and productive efficiency performances.

Field of Research: Banking

1. Introduction

Bank consolidation in the form of merger become one of the regulations initiated by the Indonesian central bank in order to improve banking system's capacity to provide financial intermediation between savers and borrowers and restore public confidence. As merger activities around the world have the same purpose, the most common purpose for merger is to increase efficiency and reduce costs.

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Paper presented at the 8th International Business Conference, 27-28 March, 2008. Dubai, UAE

In the depths of the crisis, initiated by the Government, sixty-seven banks were closed, merged or acquired by other institutions. To recondition bank balance sheets and public confidence, the government implemented a major restructuring and recapitalization program, directed by the Indonesian Bank Restructuring Agency (IBRA). The priorities were to reduce overlap in the banking sector and to create much larger and stronger entities that could serve the needs of a modern economy. Therefore, merger mechanism became one of the options for banking industry to survive the crisis. As a result, 19 banks were consolidated and formed 4 merged banks during the priod of 1997 to 2000. The merger process started on the 2nd of October 1998, when Bank Mandiri was formed, as part of the Indonesia's bank restructuring program. In July 1999, four state-owned banks – Bank Bumi Daya, Bank Dagang Negara, Bank Exim and Bapindo – were merged into Bank Mandiri. In 1997, as a result of the Asian financial crisis, Danamon ran into liquidity insolvency and was placed under the supervision of the Indonesian Bank Restructuring Agency (IBRA) as a taken over bank (BTO). Therefore, iIn 1999 the government through IBRA, recapitalized banks which possed of IDR 32 trillion government bonds. Within the same year, another BTO bank was merged into Danamon as part of the restructuring program of IBRA. Finally, in 2000, Danamon took over eight other BTO banks. As the surviving entity, Danamon emerged from the merger as one of the leader banks in Indonesia. In addition to the exising merged banks, Bank Permata was formed in February 2002 as the result of merger of 5 banks (Bank Bali, Bank Universal, Bank Prima Express, Bank Artamedia, and Bank Patriot). In this case,Bank Bali was appointed as the platform bank. This merger is the result of implementing the government policy on the restructuring program to create banks with strong capital structure, fit financial condition, and high competitive capability to run its intermediary function.

The main objectives of this study are to compare the financial and productivity performance of the Indonesian banks pre- and post merger and to identify factors that contibute to efficiency gains. This would also include five banks resulted from the merger program, as well as the evaluation of performance from the target banks. First we use financial ratio measures such as Capital Adequacy Ratio (CAR), Non-Performing Loans (NPL), Loan-to-Deposit Ratio (LDR), Net Interest Income (NII), Return on Assets (ROA), and Return on Equity (ROE), to understand the effect of merger on bank financial performance. Then, we use a non- parametric Data Envelopment Analysis (DEA) to measure bank efficiency performance before and after the merger. This study hope that empirical findings could provide a reference to government and bank authorities as to (1) Provide reliable financial information on the economic resources and obligation of the banks; (2) Provide support for identifying the variances which come up while calculating the financial ratios; (3) Provide assistant for financial information in estimating the gaining capability of a bank; and (4) Provide steadfast information about the changes in net resources that occur because of various banking actions. The remainder of the paper is organized as follows: Section 2 presents a brief review on literature review on bank mergers. Section 3 provides methodology and research design of the study. Section 4 presents the discussion of findings, which is followed by conclusions in Section 5.

2. Literature Review

It is widely known that the Asian financial crisis of 1997 has affected mostly the countries in the Asian region. In general, the crisis was associated with a sharp reduction of economic growth, especially in Indonesia, Thailand, Malaysia, South Korea, and the Philippines. For example, in 1998, the real per capita GDP of these most affected countries have been dramatically reduced by 16 percent in Indonesia, 12 percent in Thailand, 10 percent in Malaysia, 8 percent and 3 percent in South Korea and the Philippines respectively. On the other hand, countries such as Taiwan and China, despite of GDP growth declines, their real per capita GDP grew at 4 percent and 6 percent respectively, while Hong Kong, Singapore and Japan experienced only 5 percent, 3 percent and 1 percent GDP growth declines respectively (Barro, 2001). In Indonesia, the crisis hits the banking sector very much. It has created a significant destruction to the commercial banks; both publicly and privately owned as indicated by many banks were collapsed during and after the crisis periods. Creed (2000) suggests that the banking system becoming prone to several internal weaknesses due to its weak and vulnerable structure, i.e. excessive loan concentration, weak management system as well as inadequate information. Weak management seemed to stem from the government's decision to have banks operate on self-regulatory basis. No specific oversight mechanism existed, and thus misuses of authority by the politically well-connected few went unchecked. The result of these misuses comes in the form of excessive credit concentration or bad lending decisions. In addition, without adequate information on the quality of banks and general disturb, the public had lost much of its confidence and capital flow became uncontrolled. As the situation worsened, so did the degree of bank violations, with liquidity and capital adequacy ratios (CARs) becoming dangerously low.

To overcome the problems resulted from the economic crisis, the Indonesian government through the central bank, proposed financial liberalization programs as one of strategies to increase the bank performance and competitiveness. This strategy had been implemented across affected countries, especially in the Southeast Asian countries. It is assumed that more competitive environment will encourage bank to be more efficient by lowering costs and increase revenue trough efficiently allocation of resources. As the most affected sector, it is important to distinguish the effect of the merger on bank performance. In general, there are three main reasons for performance measurements: a concern for value of money in all evaluation process; a concentration upon economy, efficiency and effectiveness; and a focus on management rather than administration staff (Sharma, 2001).The most widely applied measure to banks' performance is financial measures, which is not the same as production efficiency, which motivates this study. The bank merger phenomenon has been widely accepted as the way to achieve performance improvement, especially when merger activities focus on geography, economic of scale, and activity lines (DeLong, 2001; Houston *et al.*, 2001). In addition,many urgue that bank mergers could improve economies of scale and cost reduction when they share information, transaction system and monitoring costs (van Rooij, 1997). The economies of scale of merged banks could be achieved since they can reduce the average cost by expanding the volume of similar banking products.

Therefore, when the economies of scale argument hold, then the greater the benefits received by the merged banks (Jensen and Ruback, 1983).

Study on the effect of bank mergers on performance has been conducted in many countries with varous findings. For example, Allen and Boobal-Batchelor (2005) studied the post-crisis bank mergers in Malaysia. The study found that the target banks tend to be less efficient than those acquring banks. Furthermore, most efficiency gains was found due to a an improvement in managerial efficiency. In contrast, Kwan (2004) based on US banking consolidation policy in 1997 raised issue of whether mergers contributed to the efficiency gains. Findings from previous studies of bank mergers in Indonesia also show various results. For example, Samosir (2003) found that there were no performance differences between before and after the merger. In contrast, Soemonagoro (2006) found that a merged bank experienced a continuing performance improvement from 1999 to 2005. However, its loan-to deposit ratio was relatively low indicated that the bank failed to fulfill its function as an intermediary institution. Other study by Hadad et al. (2003) found that only privately-owned banks found as the most efficient banks. In addition, Putra (2003) revealed that on average the technical efficiency of 45 foreign exchange Indonesia banks were 71.26 percent and 74.37 percent on 2001 and 2002 respectively.

3. Methodology and Research Design

In general, study on bank's efficiency performance can use one of the following approaches: production approach and intermediary approach. Production approach viewed banks as a producer of services. The services related to the deposit and loan accounts. Therefore, the number of transactions associated with each accounts are taken as outputs where labor and capital are considered the inputs. Conversely, under the intermediary approach, bank is viewed as a financial intermediary transferring funds betwen surplus saving units and deficit spending unit (Heffenan, 2000). Therefore, bank accepts deposits and used them to make loans and investments. Under this methods, deposits are considered as input to produce loans and generate interest income (Havrylchyk (2006), Das and Gosh (2005), Drake and Hall (2003), Canhoto and Dermine (2003), Jemric and Vujcic (2002), and Haslem, et.al (1999). This study applies the intermediary approach with performing loans and investments as output variables, while labor cost and fixed assets are the output variables. The sample data for this study comprises input and output of unbalanced panel data of 135 Indonesian commercial banks between1996–2006. Furthermore, we applied a multi-stage DEA to calculate banks' technical efficiency performance (Coelli, *et* al. 1998), as well as financial ratio measures. Data were gathered from the central bank data based as well as from the individual banks' annual financial reports.

The F-test conducted to test the difference between two variances of performances pre- and post merger. According to Levine et al. (2005), the important reason to test for difference between the variances of two populations is the need to determine whether the pooled-variance t test is appropriate or not. The null and alternate hypotheses are:

$H_{0:}$ Bank performance decreases after merger

$H_{1:}$ Bank performance increases after merger

Based on the whole Indonesian economic condition during the analysis periods, banks had less freedom to control the inputs. They were also required to meet some targets link to loan disbursement (i.e. LDR requirements) in the output side. This is conjunction with the decreasing of the government support and the incursion of foreign banks thus raising competition in the market. This implies banks must strengthen their lending to remain competitive. Based on these factors, we choose the output orientation for our analysis.

3.1. Financial Indicators Measurement of Bank Performance

Some financial ratios used in this study to evaluate bank performance pre - and post merger is common. For example, return on asset (ROA), return on equity (ROE), non-performing loans (NPL), loan to deposit ratio (LDR), capital adequacy ratio (CAR), and net interest margin (NIM). Return on assets (ROA) is a comprehensive measure of overall bank performance from an accounting perspective (Sinkey, Jr., 1992, p. 43). It is a primary indicator of managerial efficiency. It indicates how capable the management of the bank has been converting the bank's assets into net earnings. Indonesian banking industry, based on Bank Indonesia's regulation No.6/23/DPNP May 31, 2004 stated that the banks is considered healthy if they have a minimum ROA of 1,215. ROE measures accounting profitability from the shareholder's perspective. It is also illustrate the rate if return flowing to the bank's shareholders. It approximates the net benefit that the stockholders have received from investing their capital (Rose and Hudgins, 2006, p. 151). The Indonesian central bank regulate that the minimum ROE for a healthy bank is the same as its windows rate at the present time (currently is 8.5%). In addition, capital adequacy ratio (CAR) indicates the capital strength of a bank. As requested by the central bank, banks have to maintain minimum CAR equals to 8%.

The central bank's also regulated that capital funds are consists of capital inclusive of Tier-1 and Tier-2 capital, i.e. core capital and supplementary capital respectively. Tier 1 capital consists of paid-up capital and disclosed reserves such as capital reserves and previous year after tax profit. The Tier-2 capital comprises of reserves from revaluating the fixed assets, general reserves, hybrid/quasi capital, and subordinated loans. The capital funds equal to 4% of the risk weighted assets (RWA) and other exposures on an ongoing basis. Capital funds consist of core capital (Tier-1) and supplementary capital (Tier-2), while for RWA:

RWA = (assets x risk weight) + (off balance sheet items/contingent credit exposure x conversion factors)

Based on the central bank's regulation, all advances and loans are classified into two categories: performing assets/loans and non-performing assets/loans (NPL). NPL is the loans that have overdue in the account and the due interest are not recovered regularly. The maximum NPL allows for a healthy bank is 5%, while net interest margin measures how large the spread between interest revenues and interest costs that management

been able to achieve by close control over earning assets and the pursuit of the cheapest sources of funding (Rose and Hudgins, 2006, p. 151). The minimum NIM for a healthy bank is 4%. Loan-to deposit ratio (LDR) is a traditional measure of bank's liquidity, indicates the extent to which deposits are used to meet loan request. LDR also has important role for the banks which is as an indicator for banks as an intermediary institution to connect the excess funding holders and the users in their economic activities. Therefore, the optimum level should be maintained, so that the necessary liquidity needed and their function as an intermediary should be fulfilled. Total loan defines as the sum of the performing loans, non-performing loans, and deducted by allowances (provision for possible losses). Recently, the minimum LDR for commercial banks is increase to the level of 68%, while the maximum LDR is 94, 75 %.

3.2.1 Malmquist Data Envelopment Analysis

Using the DEA methodology, one can calculate the relative efficiency of banks, which can be advantage the need for assigning a priori measures of relative importance of to any inputs or outputs. Therefore, one can define efficiency as full efficiency when none of its inputs or outputs can be improved without deteriorating some of its other inputs or outputs. In addition, a bank can be considered as 100% efficient if the performance of other banks cannot be improved without worsening some of its other inputs or outputs. DEA is used as a tool to evaluate operating performance of such a DMU or an organization. The performance is simply measured as unit (DMU) efficiency or productivity, which is a ratio of output produced to input used in the production processes. For example, partially we can measure labor efficiency as sales per number of employee. In addition, we can also measure total productivity by incorporating all possible inputs used to produce all possible outputs of such entity.

According to Boussofiane *et al.* in Martin and Parker (1997; 127), DEA is a non-parametric ″…linear programming method used for evaluating the efficiency of decision-making units (DMUs or firms), where the presence of incommensurate inputs and outputs makes the measurement of overall efficiency difficult". It uses data as inputs and output quantities of a group of firms to construct a piece-wise frontier over the data points. This frontier is constructed by the solution of a sequence of linear programming problems, one for each firm in the sample. Efficiency measures are then calculated relative to this frontier, which represents an efficient technology. Hence, this method is an ideal measure for broad measurement of efficiency. Moreover, it ″allows efficiency to be measured without having to specify either the form of production function or the weights for inputs and outputs used".[1] Charnes *et al.* (1978) first used the DEA constant. It takes into account multiple inputs that are used in the production process to produce outputs, to calculate *total factor productivity*. Total factor productivity (TFP) index is the ratio of the weighted aggregate output to a weighted aggregate input quantity index. This study is design to apply DEA-Malmquist productivity index to measure a firm's TFP.

[1] DEA is a generalized of TFP methods and non-parametric because its flexibility. That is, the nature of the functional form between outputs and inputs is not specified in advance (Boussofiane *et al.* in Martin and Parker (1997)).

TFP growth is the geometric mean of two output-based Malmquist TFP indices: one index uses period *t* technology and the other period *t+1* technology (Coelli (1996)). This approach is claimed to be superior in identifying the net gain in efficiency after adjustment for inputs by the firm. TFP is measured in two steps. The Malmquist index of total factor productivity change (TFPCH) over period t and t+1 is the product of technical efficiency change (EFFCH) and technological change (TECHCH) as expressed:

$$\text{TFPCH} = \text{EFFCH X TECHCH} \tag{1}$$

Following Fare *et al*. (1994), the Malmquist productivity change index, therefore, can be written as comprising the two indices as in:

$$m_0(y_t, x_t, y_{t+1}, x_{t+1}) = \frac{d_0^{t+1}(y_{t+1}, x_{t+1})}{d_0^t(y_t, x_t)} \left[\frac{d_0^t(y_{t+1}, x_{t+1})}{d_0^{t+1}(y_{t+1}, x_{t+1})} \times \frac{d_0^t(y_t, x_t)}{d_0^t(y_t, x_t)} \right]^{1/2} \tag{2}$$

where, y and x represent outputs and inputs across time *t* to *t+1*. The Malmquist indices are relative to the previous year.[2]

This result can be decomposed into efficiency change and technological efficiency change as given by:

$$\text{Technical efficiency change} = \frac{d_0^t(y_t, x_t)}{d_0^s(y_s, x_s)} \tag{3}$$

and

$$\text{Technological change} = \left[\frac{d_0^s(y_t, x_t)}{d_0^t(y_t, x_t)} x \frac{d_0^s(y_s, x_s)}{d_0^t(y_s, x_s)} \right]^{1/2} \tag{4}$$

The technical efficiency change measures the change in efficiency between period t and t+1, while the technological change captures the shift in the technology applied over time. A value greater than one in both cases indicates growth in productivity: that is positive factor values. Thus, adopting this recently-popularised method is likely to provide new findings, which are more accurate than those in the literature because of the superior accuracy of these efficiency measures obtained in this study. These could then be compared with the more popular accounting-cum-financial measures, which are based on profits (and costs) to the firm.[3]

[2] The output begins at year 2.

[3] Strictly, it is possible to show that the productivity indices values can be expressed as equivalent cost and profits measures: see Coelli (1998; chapter 3). However, given the difficulty of classifying what is a profit as evidenced in the recent debate on corporate malfeasance, it is difficult to assume that profits measures are as accurate as cost measures as identified by accountants for purposes of financial reporting. Herein lays a major issue as to why production efficiency measures based on costs may be more accurate for assessing performance.

4 Discussion of Findings

This section summarizes the findings on Indonesian banks' financial and production efficiency performance before and after merger. The analysis is divided into two subsections: financial performance and production efficiency performance.

Bank's Financial Performance before and after Merger

The after-merger financial performance of Bank Permata, Bank Mandiri, and Bank Danamon is tested with one way ANOVA and Tukey Kramer Procedure with critical value at 5% level of significance. In this analysis, the legacy banks are not included, so only the three banks which are Bank Permata, Bank Mandiri, and Bank Danamon would be analyzed.

Table 1: Banks Financial Performance before and after Merger

	Bank Danamon		**Bank Mandiri**		**Bank Permata**	
Indicators	Before	After	Before	After	Before	After
ROA	-49.38	-0.28	-130.55	-2.07	-5.03	0.56
ROE	-69.80	11,00	-96.54	-33.8	-113.12	2.17
NIM	-18.14	3.96	-17.39	2.86	0.09	4.99
CAR	-151.64	34.53	-39.35	25.76	1.65	11.38
NPL	33.83	9.53	13.26	9.11	15.75	7.52
LDR	135.33	46.98	85.69	39.21	42.25	60.12

Sources: data processed

Table 1 shows in overall, banks financial performance improved significantly after they merged. It indicates by the increasing most of all financial performance indicators, such as ROA, ROE, CAR, NIM, and NPL after merger. This implies that merger does improve banks operating performance including decreasing number of credit default, indicate by decreasing of non-performing loans. However, the performance improvement have not experienced by all banks in the sample. For instance, although bank Permata increased its ROA, it still below the minimum requirement set up by the central bank, which is 1.215%. As for ROE, while all banks experienced higher ROE after merger, none of the banks meet the minimum ROE requirement of 12.25 percent. Furthermore, since only Bank Permata can improve its loan to deposit ratio (LDR) after merger indicates that overall, merger cannot improve their ability to transfer funds from the excess to the needy. In addition, this result implies that the post merger efficiency gains were not transmitted the benefit to the public. In addition, this also indicates that those merged banks tended to operate safely by putting most of their funds on the notes issuing by the central bank (risk-free securities issued by the central bank), considering its higher rate than that of saving rate.

Bank's Efficiency Performance before and after Merger

Table 2 provides the summary difference of efficiency scores before and after merger of the observed banks.

Table 2: Banks Productivity Performance before and after Merger

Banks	Pre-Merger			Post-Merger		
	EFFCH	TECHCH	TFPCH	EFFCH	TECHCH	TFPCH
Bank Danamon Indonesia	0.757	0.839	0.692	1,000	1.165	1.165
Bank Mandiri	0.832	1.072	0.925	1,000	1.090	1.090
Bank Permata	0.992	1.194	1.047	1.684	0.987	1.661

Sources: data processed

Results in Table 2 shows that overall, average post merger efficiency and productivity performance appeared to be higher than pre-merger performance. For example, Bank Permata experience the highest productivity improvement after merger (66.1 per cent) compare to other two merged banks. The examination of efficiency change (EFFCH) relative to a base year provides an indication of the merger advantages, except for bank Permata. The high productivity growth of this bank was due to increase in applying new technology. As seen on the table, the post merger efficiency performance indicates a significant shifting of the frontier. In addition, before merger, each bank experienced productivity decline (except for bank Permata) mostly due to managerial inefficiency. In contrast, after merger they performance improved not only increasing their technical efficiency by producing on and above the frontier (indicates by increasing EFFCH), but also shifting their frontier technology by 30.5 per cent on average. This finding thus indicates that banks would take advantages from the government driven mergers. In addition, potential efficiency gains from bank mergers under the intermediation approach can be a source of reorganization of the service portfolios. Furthermore, the alteration of the products mix may also have the added benefit of lowering the merged bank's credit risk. In addition, the government policy of bank merger brought an excellent economies of scale of the merged banks and use their capacity to enhance technology that help them expanding their customer and produce better quality loans and investment.

5 Conclusion

This paper reports findings from a research on bank financial and production efficiency performance before and after merger. Using both financial ratio analysis and data envelopment analysis (DEA) approaches. The DEA can determine the production efficiency gain, as well as its decomposition, efficiency change and technological change. In addition, the traditional accounting and financial measures is also employed. The new findings for the literature would strongly suggest that corporate evaluation which is primarily based on accounting - financial ratios is definitely not getting at the

more important, in our opinion, levels of how management of firms efficiently mix inputs to secure productivity gains. Thus, the use of productivity measures led a better conclusion on to bank's overall performance by including all factors contributed to its outputs. Neither measure alone is useful for an evaluation of bank performance. Use of production measures reveal the factors that are identified as the cause of the inefficiency, i.e. managerially inefficient or technologically inefficient. This paper provides interesting evidence using both accounting-finance and production efficiency with unbalanced samples using non-parametric statistics. This study reveals that merger did increase bank's ability to gain profits. It indicates by the increasing most of performance indicators such as return on asset, return on equity, net interest margin, capital adequacy ratio and non-performing loans. In In contrast, it is also found that merged banks could not improve their ability to carry out its function as an intermediary institution, indicates by declining the ratio of loan to deposits collected from their customers that could be due to slower activities in the real sectors.

The results of the Malmquist productivity measures show that there is a significant productivity improvement of the merged banks over the observation periods and that is primarily due to the technological growth. It is also found that after the consolidation, merged banks could move their production frontier to the efficient level, specifies by achieving the technical efficiency change index of 1. Furthermore, evidence on the comparative performance of banks before and after merger shows that being merged they can boost operating efficiency by optimally used their production capacity. Findings of this study give us insight on how the merger can create more benefit to the public. For example, bank should increase managerial skill of its officers to increase the bank managerial efficiency. For example, distribute more loans to SMEs customers who had proven their income stability during the crisis periods, which in turn, increasing loan to deposit ratio (LDR). In addition, banks should consider lowering their cost of funds by changing the composition of funds from third parties to acquire more funds from current and saving accounts which apply lowest cost of capital to increase their net profit margin (NIM). Finally, despite of the some success stories of merger, based on findings of this study there is still a question of whether merger action could improve banks ability to accomplish their main task as intermediary institution between depositors and borrowers. Therefore, for the central bank as regulator it is also a question of whether merger is an appropriate tool to increase banks efficiency. However, this is a preliminary finding on the impact of merger on banks' efficiency and still need more elaboration of what the main problems are.

References

Allen D. and Boobal-Batchelo, V, 2005. "The Role of Post-Crisis Bank Mergers in Enhancing Efficiency Gains and Benefits to the Public in the Context of A Developing Economy: Evidence from Malaysia", *Conference Proceeding* Modeling and Simulation Society of Australia and New Zealand. (http://www.mssanz.org.au/modsim05/papers/allen_2.pdf)

Brealey, Myers & Marcus, 2004, Fundamentals of Corporate Finance, 4th Ed, McGraw-

Hill/Irwin, New York.

Barro, Robert J. 2001. “Economic Growth in East Asia Before and After the Financial Crisis”, *National Bureau of Economic Research Working Paper* 8830. http://www. Nber.org/paper/w8330

Canhoto, A., Dermine, J. 2003, "A note on banking efficiency in Portugal: new vs. old. banks", *Journal of Banking and Finance*, Vol. 27 No.11, pp.2087-98.

Charnes, A. et al. 1978. “Measuring efficiency of decision making units”, *European Journal of Operational Research*, 2, pp. 429-44

Coelli, T.J et al. 1998. An Introduction to efficiency and productivity analysis. Kluwer Academic Publishers Boston, Dodrecht, London.

Cooper, William W., Lawrence M. Seiford, and Kaoru Tone. 2007. Data Envelopment Analysis: Comprehensive Text with Models, Applications, References and DEA – Solver Software. Second Edition. Springer.

Damodaran, Aswath, 2006, Damodaran on Valuation: Security Analysis for Investment and Corporate Finance, 2nd ed, John Wiley & Sons, Inc., New Jersey.

DeLong, Gayle (2001). “Does Long-Term Performance of Mergers Match Market expectation? Evidence from the US Banking Industry”, *Financial Management*, Vol 32 No. 2, pp.5-25.

Fare, Rolf; Grosskopf, Shawna and Margaritis, Dimitri. 2001. “Productivity Trends in Australian and New Zealand Manufacturing”, *The Australian Journal of Economic Review*, 34(2): 125-34.

Fare, Rolf and Grosskopf, Shawna. 1994. “Measuring Productivity: A Comment”, *International Journal of Operation & Production Management*, Vol 14, No 9, pp. 83-88.

Fare, Rolf, Grosskopf, Shawna, and Lee, Wen-Fu. 1995. “Productivity in Taiwanese Manufacturing Industries”, *Applied Economics*, Vol 27, pp. 259-65.

Fare, Rolf; Grosskopf, Shawna and Margaritis, Dimitri. 2001. “Productivity Trends in Australian and New Zealand Manufacturing”, *The Australian Journal of Economic Review*, Vol 34 No 2, pp: 125-34.

Gjirja, Matilda, 2003. “Assessing the Efficiency Effects of Bank Mergers in Sweden A panel- based Stochastic Frontier Analysis”, *Working Paper* Department of Economics Göteborg University, Sweden

Hadad, Muliaman D., Santoso, Wimboh, Ilyas, Dhaniel & Mardanugraha, Eugenia, 2003.

"Analisis Efisiensi Industri Perbankan Indonesia", *Working Paper,*Bank Indonesia (http://www.bi.go.id/NR/rdonlyres/C2FC92CC-F93B-4CFF-905E-2007E55FE7D2/1400/PenggmetodeparametrikDEA.pdf)

Havrylchyk, O.,2006. "Efficiency of the Polish Banking Industry: Foreign versus Domestic Banks."Journal of Banking and Finance **30**(7): 1975-1996.

Houston, J.F, C. James, and R.M Ryngaert, 2001. "Where Do Merger Gains Come From? Bank Merger from the Perspective of Insiders and Outsiders", *Journal of Financial Economics* 60,pp.285-32.

Jensen, M.C. and R.S Ruback (1983). "The Market for Corporate Control: The Scientific Evidence"*, Journal of Financial Economics,* Vol 11 pp. 5-50.

Koetter, Michael, 2005. "Evaluating the German Bank Merger Wave*",* Utrecht School of Economics & Tjalling C. Koopmans Research Institute, Utrecht, Netherlands.

Kwan, Simon.,2004. "Banking Consolidation" *FRBSF Economic Letter* No 2004-Federal Reserve Bank of San Fransisco. (http://www.frbsf.org/publications/economics/letter/2004/el2004-15.pdf)

Levine, David M., Stephan, David, Krehbiel, Timothy C. & Berenson, Mark L., 2005. Statistics For Managers Using Microsoft Excel. 4th ed. Pearson Prentice Hall, New Jersey.

Lind, Douglas A., Marchal, William G. & Wathen, Samuel A., 2005, Statistical Techniques in Business & Economics*,* 12th edn, McGraw-Hill/Irwin, New York.

Rose, Peter S. & Hudgins, Sylvia C., 2006. Bank Management & Financial Services, 6th ed.McGraw-Hill, New York.

Samosir, Agunan P., 2003. "Analisis Kinerja Bank Mandiri setelah Merger dan Sebagai bank Rekapitalisasi", *Kajian Ekonomi dan Keuangan*, Vol. 7, no. 1, Jakarta.

Sekaran, Uma, 2003. Research Methods for Business: a Skill Building Approach, 4th ed, John Wiley & Sons, Inc., New York.

Sinkey, Jr., Joseph F., 1992. Commercial Bank Financial Management: In the Financial-Service Industry*,* 4th Ed, Macmillan Publishing Company, Ontario.

Soemonagoro, Koeswardojo, 2006. "Challenging the Performance of a Restructured Indonesian Bank: A Case Study of Bank Mandiri's merger and recapitalization". unpublished thesis, Swiss German University, Indonesia.

van Rooij, M.C.J (1997). "Bank Mergers, Banking Efficiency, and Economies of Scale and Scope. A Review of Empirical Literature", *Research Memorandum WO&E nr*

511/9726. The Netherlandsche Bank NV.Econometric Research and Special Studies Department.

Vasudevan, A., 2004. “Bank M&A: Stability and Synergy”, viewed 28 March 2007, <http://www.thehindubusinessline.com/2004/11/11/stories/2004111100071000.htm>.

Yener, Altunbas & Ibáñez, David Marqués, 2004.” Mergers and acquisitions and bank performance in Europe: the role of strategic similarities”, *Working Paper Series 398, European Central Bank.*