

# Has East Asian banking restructuring following the crisis improved efficiencies?

The 1997 financial crisis put pressure on regulators in the East Asian banking industry to improve banking performance. **NECMI AVKIRAN** and **NAKHUN THORANEENITIYAN** suggest that the evidence so far is that regulators haven't achieved their aims.



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**B**anking crises are typically followed by bank restructuring, which is launched by regulators and policy makers wanting to foster recovery. During the last two decades, more than two-thirds of the banking crises around the world took place in developing countries.

The 1997 crisis was of particular importance in the East Asian region where a lot of Australian banks are establishing offshore operations in the form of branches or collaborative arrangements with local banks. This paper covers the main findings from the first in-depth investigation (see Thoraneenitiyan 2007) that analyses the impact of the post-crisis restructuring on the banking systems of our East Asian neighbours and business partners.

## OVERVIEW OF THE CASE STUDY

After the East Asian crisis in 1997, most of the bank regulators in the countries affected by the crisis implemented measures to both improve and strengthen their banking systems. These measures included liquidity support, blanket guarantee on banks' liabilities, removal of bad loans, nationalisation, mergers and relaxation of foreign bank entry barriers.

While such measures may vary by country, a significant common goal is to improve bank efficiency to maintain a viable banking system. Nonetheless, the effectiveness of such policies for these Asian countries has attracted very little investigation. Consequently, a significant question raised in this study is whether restructuring does indeed lead to more efficient banks as expected by the regulators and bankers alike.

Although improper regulatory environments and widespread moral hazards among developing economies are heavily cited as probable causes of various financial crises, banking inefficiency is still regarded as one of the most significant factors noted at the onset of a crisis. Due to the massive costs involved in bank restructuring (Lingren et al., 1999), it is imperative to find out to what extent restructuring works in restoring banking systems.

Table 1 shows the composition of the sample in our five-year study. Commercial bank data on five Asian banking systems (sourced from BankScope database) which experienced a severe crisis in 1997 were collected in order to empirically determine the impact of the post-crisis bank restructuring on bank efficiency.

The study uses efficient frontier techniques to measure the performance

of banks relative to each other. Cost, technical and allocative efficiencies across 1997–2001 are computed by averaging the performance of individual banks in each country.<sup>1</sup>

Briefly, cost efficiency, also known as economic or overall efficiency, is defined as the ratio of the minimum production cost observed in the sample to the actual production cost of the bank investigated. On the other hand, technical efficiency is the efficiency of a production process in converting inputs into outputs that is calculated independent of prices and costs; this is essentially an attempt to capture the efficiency of flows through a bank. Finally, allocative efficiency is a measure of the success of a technically efficient bank in minimising the cost of production for a given set of input prices through substitution or reallocation of inputs; we note that allocative efficiency can be residually calculated as the ratio of cost efficiency to technical efficiency, whereas cost and technical efficiencies have to be estimated.

**TABLE 1 COMPOSITION OF THE STUDY SAMPLE**

Country	Number of banks	Observations (1997–2001)	Percentage of sample coverage of total banking assets
Indonesia	37	185	78.6
South Korea	15	75	82.4
Thailand	16	80	91.7
Malaysia	23	115	75.6
Philippines	19	95	72.8
<b>Total</b>	<b>110</b>	<b>550</b>	

The study also assesses the impact of restructuring measures that are related to bank ownership and other measures aimed at enhancing bank efficiency. These measures include mergers among domestic banks, allowing for foreign bank entry, and state intervention. In addition, the impact of country-specific environmental factors that may affect bank efficiency are also observed. These include market concentration, inter-bank interest rates, per capita gross domestic product and a variable that captures whether the country subscribes to IMF support.

## KEY EMPIRICAL FINDINGS

Before we report the key findings, we summarise the propositions tested:

Proposition 1: Cost and technical efficiencies of banks at the end of restructuring in 2001 were higher than the efficiencies measured at the start of the crisis in 1997.

Proposition 2: Mergers among domestic banks from 1998 to 2001 have a positive association with bank efficiency.<sup>2</sup>

Proposition 3: Allowing for foreign bank entries during 1998–2001 has a positive association with bank efficiency.

Proposition 4: State intervention during the period of 1998–2001 has a negative association with bank efficiency.

Overall, the results do not support Proposition 1, indicating that there are no clear signs of efficiency improvement in the banking systems of Asian developing countries after the crisis.

In fact, the sample average of cost and technical efficiency scores for 2001, when most of the restructuring was completed, are slightly lower than those in 1997, at the start of the crisis (see Table 2 overleaf). The results for cross-country analysis, however, indicate improvement of cost and technical efficiencies in some countries (i.e. South Korea and Malaysia).

A further analysis of the cost-efficiency components (see Table 2) reveals that the major source of cost inefficiency during the post-crisis period is technical inefficiency rather than allocative inefficiency. That is, cost-inefficiency observed in East Asian banking systems across the post-crisis period (1997–2001) is mostly due to over-utilised inputs (i.e. deposits, labour capital, and physical capital) in producing the modelled outputs (i.e. loans, investment and other earning assets, fee income, and off-balance-sheet items).

Furthermore, the scale efficiency results (not shown but available upon request) indicate that most of the banks exhibit decreasing returns to scale. This implies that, contrary to expectations, the majority do not operate at optimum scale. This further supports the overall conclusion that the post-crisis restructuring did not produce more efficient banking systems in East Asian countries as expected by regulators and other participants. A possible reason for this may be the tighter restrictions in risk assessment that hamper the new loan granting processes. In addition, the absence of favourable macro-economic conditions may also slow new investment plans.

With regard to the association among restructuring measures and bank efficiencies, the results indicate a positive association between cost and technical efficiencies and domestic mergers, suggesting that domestic bank mergers can enhance efficiency of banks in developing countries. Therefore, these results support Proposition 2, which posits a positive correlation between mergers and bank efficiency.

The results show a negative significant association between foreign bank entry and bank efficiency. The results, therefore, do not support Proposition 3, which postulates a positive association. This finding is counter-intuitive and contradicts the literature on foreign bank entries into developing countries, which usually finds that foreign banks are more efficient than domestic banks.

One possible explanation may be that the foreign banks entering the market during the crisis period appear more willing to focus on asset quality, rather than granting new loans or financial products (Kim and Lee, 2004; Vasconcelos and Fucidji, 2001). Another possible explanation lies in the fact that the Asian banking systems are highly regulated. Therefore, even though some restrictions for foreign banks may have been relaxed during the crisis period, locally owned banks are still more likely to have the home-field advantage over their foreign-owned counterparts in areas such as introducing new financial products and services.

On our last proposition, the results indicate a negative significant association between state intervention and bank efficiency, thus supporting Proposition 4. These results are consistent with literature, which usually claims that state ownership per se may be inefficient by design because state

TABLE 2 MEAN COST, TECHNICAL AND ALLOCATIVE EFFICIENCIES

	Indonesia	South Korea	Thailand	Malaysia	Philippines	Sample Average
<b>1997</b>						
CE	0.4920	0.5873	0.5609	0.5073	0.2946	0.4884
TE	0.6859	0.7451	0.6421	0.7174	0.4137	0.6408
AE	0.6650	0.7428	0.8131	0.7033	0.6930	0.7234
<b>1998</b>						
CE	0.3422	0.5465	0.5123	0.4583	0.3138	0.4346
TE	0.5682	0.7492	0.6149	0.6879	0.4198	0.6080
AE	0.5817	0.6670	0.7512	0.6671	0.6987	0.6732
<b>1999</b>						
CE	0.3799	0.6093	0.5529	0.5577	0.3109	0.4821
TE	0.5670	0.7338	0.6439	0.7241	0.4090	0.6156
AE	0.6583	0.7984	0.8137	0.7683	0.7353	0.7548
<b>2000</b>						
CE	0.4507	0.5960	0.5018	0.6369	0.3066	0.4984
TE	0.6652	0.7093	0.5797	0.7813	0.4385	0.6348
AE	0.6657	0.7752	0.8245	0.8165	0.6999	0.7564
<b>2001</b>						
CE	0.3808	0.6450	0.4813	0.6741	0.2468	0.4856
TE	0.5970	0.7718	0.5598	0.8103	0.3477	0.6173
AE	0.6479	0.8067	0.8194	0.8310	0.7001	0.7610
<b>Period Average</b>						
CE	0.4091	0.5968	0.5218	0.5668	0.2945	0.4778
TE	0.6167	0.7418	0.6081	0.7442	0.4057	0.6233
AE	0.6437	0.7580	0.8044	0.7573	0.7054	0.7338

CE = cost efficiency; TE = technical efficiency; AE = allocative efficiency. These relative efficiency scores can range between 0 and 1, with higher scores representing higher efficiencies.

institutions can be used to reward political support (Megginson, 2005).

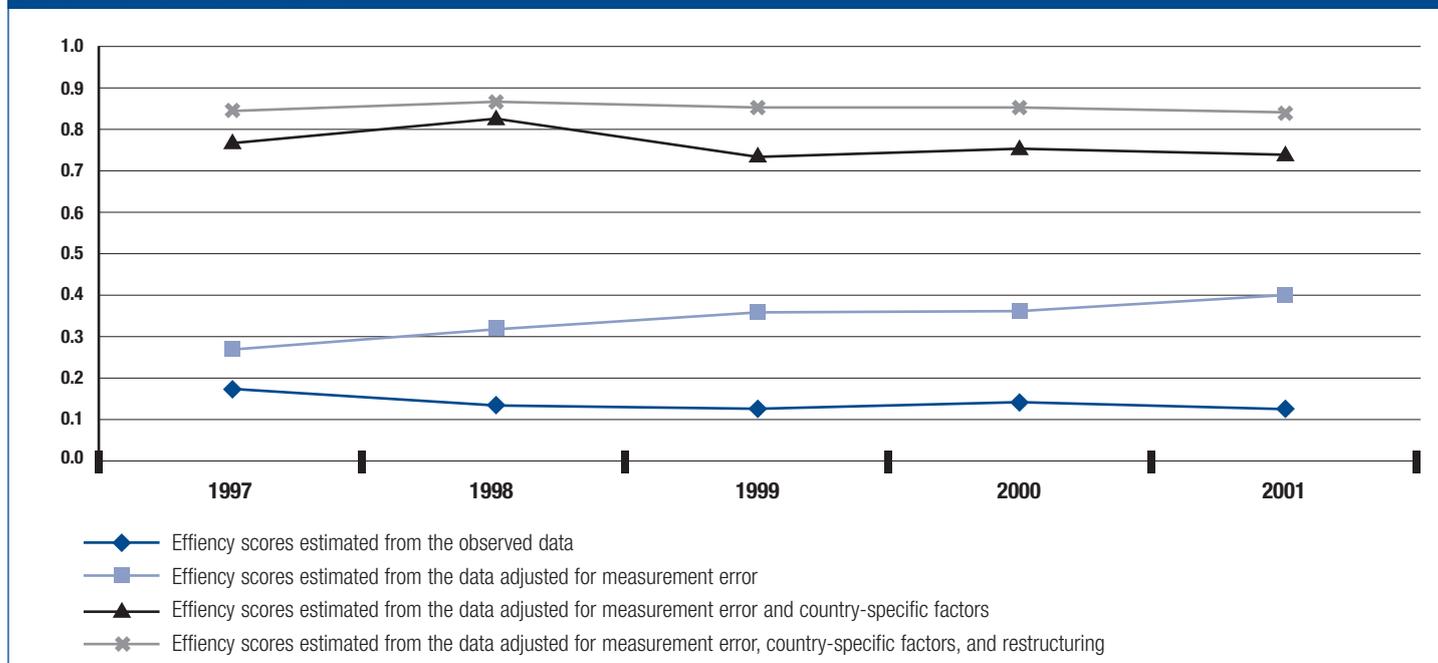
With respect to the impact of other environmental factors, the results reveal that country-specific conditions play a significant role in determining bank efficiency. High interest rates and concentrated markets appear to be unfavourable influences on bank efficiency in the post-crisis East Asian countries.

On the other hand, the positive association between the overall level of economic development and inefficiency may be a reflection of highly regulated Asian banking systems that are dominated by a small number of banks. Therefore, high economic development in such countries does not necessarily lead to more competition and higher efficiencies as found in other less regulated markets. Similarly, the positive association with bank efficiency indicates that IMF support facilitates a more disciplined operating environment for

banks. Finally, with respect to bank size, the results suggest that larger banks generally underperformed during the post-crisis period.

In an effort to separate from efficiency scores the impact of any measurement error in data, country-specific factors and restructuring, we systematically adjust the data using the econometric methodology developed by Avkiran and Rowlands (in press). Figure 1 shows the stark changes in efficiency scores once they are adjusted for factors that are beyond the control of managers. Following the curves in Figure 1, the gap between any two consecutive curves represents the increase in efficiency estimates as we remove a particular category of non-discretionary factors that impact on efficiency estimates. The largest gap is between the second and third curves, which indicates that the greatest distortion of efficiency estimates is due to country-specific macro-economic factors.

FIGURE 1 IMPACT ON SAMPLE MEAN EFFICIENCY SCORES OF REMOVING THE MEASUREMENT ERROR AND ENVIRONMENTAL FACTORS



### MANAGERIAL IMPLICATIONS AND CONCLUSIONS

The findings of this study have significant practical implications for the effectiveness of post-crisis restructuring of banks in developing countries in South East Asia.

Particularly, the study shows that domestic mergers can enhance bank efficiency, whereas foreign bank entry alone may not be effective. This is because the existing domestic banks may still use the home-field advantage in terms of extending their loans and financial services as a barrier to the new foreign banks. This study also indicates a failure of state intervention. The results show that state-intervened banks do not improve their efficiency after a government agency takes control. This may be a reflection of the nature of state-run enterprises, which usually involves politically motivated transactions.

The findings from this study also reveal that the largest impact on bank efficiency during the crisis period can be attributed to country-specific conditions. This suggests that decision makers should not focus only on bank restructuring policies, but also on other regulatory and macro-economic policies, as they can have a greater impact than restructuring.

In conclusion, the study provides useful insight for bank regulators, policy makers, and bankers keen to invest in developing countries in terms of the effectiveness of restructuring policies implemented following a banking crisis. Evidence on the extent to which policies are successful provides decision makers with information to deal with further potential crises more effectively. The results reveal that the effects of restructuring on bank efficiency are relatively low compared to the influences of macro-economic factors.

Consequently, we conclude that, in order to deal with future potential crises, local and international bank regulators should put more emphasis on macro-economic policies. That

is, micro-managing of banks by local regulators does not appear to raise operating efficiencies.

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### Notes

<sup>1</sup> The study period is limited to five years after the crisis in 1997 because most of the restructuring efforts were completed by 2001, following which the restructured banks were fully exposed to market forces.

<sup>2</sup> The association between bank efficiency and restructuring is tested using Tobit regression where dummy variables on restructuring measures become the independent variables. **J**