**THE IMPACT OF STATE OWNERSHIP ON
PERFORMANCE DIFFERENCES IN PRIVATELY-OWNED VERSUS
STATE-OWNED BANKS: AN INTERNATIONAL COMPARISON**

Marcia Millon Cornett*
Lin Guo**
Shahriar Khaksari**
Hassan Tehranian***

June 2008

The authors are from *Southern Illinois University at Carbondale, **Suffolk University, and ***Boston College, respectively.

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ABSTRACT

This paper employs cash flow and accounting based measures to examine performance differences between privately-owned and state-owned banks in sixteen Far East countries from 1989 through 2004, a period including the 1997 Asian financial crisis. We find that state-owned banks operated less profitably, held less core capital, and had greater credit risk than privately-owned banks prior to 2001, and the performance differences are more significant in those countries with greater government involvement and political corruption in the banking system. In addition, from 1997 to 2000, the 4-year period after the beginning of the Asian financial crisis, the deterioration in the cash flow returns, core capital, and credit quality of state-owned banks was significantly greater than that of privately-owned banks, and the contrast between the two types of banks during this period is especially sharp for the countries that were hardest hit by the Asian crisis. We also find that state-owned banks finance the government to a greater degree than do privately-owned banks in countries where the government is involved heavily in the banking system. However, state-owned banks closed the gap with privately-owned banks on cash flow returns, core capital, and nonperforming loans in the post-crisis period of 2001-2004. Taken together, our findings can best be explained by Shleifer and Vishny's (1997) corporate governance theory on state ownership of firms and Kane's (2000) life-cycle model of a regulation-induced banking crisis.

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1.   Introduction

Ownership structure is widely accepted in the finance and economics literature as an instrumental

determinant of firm performance. For example, a specific feature of ownership structure that has received

much attention is how insiders versus outsiders can affect a firm's performance.[1] In addition to insider

versus outsider stock ownership, another important dimension of ownership structure is state or public

ownership versus private ownership structure.[2] As Shleifer (1998) points out, private ownership should

generally be preferred to public ownership when incentives to innovate and to contain costs are strong,

and especially when competition between suppliers, reputational mechanisms, and the possibility of

provision by private not-for-profit firms, as well as political patronage and corruption are brought into play.

There may be some situations in which private ownership is not optimal. As Shleifer and Vishny (1997)

explain, monopoly power, externalities, or distributional issues can raise concerns that private ownership

may not be in the best interests of all parties served. For example, Laffont and Tirole (1993) and

Sappington and Stiglitz (1987) argue that private firms with large investors might underprovide quality or

otherwise shortchange the firm's stakeholders because of their single-minded focus on profits, and a

publicly spirited politician can then improve efficiency by controlling the decisions of firms.

In few studies of the benefits of state ownership have the efficiency arguments for state ownership

been supported (e.g., police and prison ownership, see Hart, Shleifer, and Vishny (1997)). In contrast, most

studies have found that state-owned firms do not better serve the public interest (i.e., Grossman and

Krueger (1993)) and, in fact, that state-owned firms are typically extremely inefficient (i.e., Boycko, Shleifer,

and Vishny (1995), and Dewenter and Malatesta (2001)). The conclusion from these studies is generally

that state-owned companies' disregard of social objectives combined with their extreme inefficiency is

inconsistent with the idea that state ownership can lead to performance efficiency that profit maximizing

privately-owned firms cannot achieve. Additionally, political bureaucrats often have goals that are in conflict

with social welfare improvements but are dictated by political interests. Dewenter and Malatesta (1997) find

that public offerings of stock by state-owned companies are significantly more underpriced than public

offerings of stock by privately-owned companies, and the underpricing in the less developed capital markets

is consistent with various political objectives of government officials rather than social welfare maximization. Jones, Megginson, Nash, and Netter (1999) provide evidence that when governments convert state-owned firms to privately-owned firms via public share offerings, they underprice share issue privatization offers, allocate the shares to favored domestic investors, impose control restrictions on privatized firms, and typically use fixed price offers rather than competitive tender offers, all to further political and economic policy objectives.

In addition to papers that examine state ownership versus private ownership in nonfinancial industries (e.g., electricity, prisons, health care), more recent papers investigate the impact of government ownership in the banking industry. In many foreign countries the banking system operates under a two tier ownership structure consisting of state (or publicly)–owned banks and privately-owned banks. State-owned banks, in fact, often hold the majority of total assets in a country's banking system. Using country-level data, La Porta et al. (2002) find that higher state ownership of firms in 1970 is associated with slower subsequent financial development and lower economic growth for a sample of 92 countries. Barth, Caprio, and Levine (1999) conclude that state ownership of banks tends to be associated with more poorly developed banks, non-banks, and securities markets. Sapienza (2004) finds that the party affiliation of state-owned banks' chairpersons in Italy has a positive impact on the interest rate discount given by state-owned banks in provinces where the associated party is stronger. The empirical results in Dinç (2005) indicate that government-owned banks increase their lending in election years relative to private banks in major emerging markets in the 1990s, and these actions are influenced by political motivations other than differences between privately-owned banks and government-owned banks in efficiency and objective. Brown and Dinç (2005) find that failing banks are much less likely to be taken over by the government or to lose their licenses before elections than after. In addition, Khwaja and Mian (2005) provide evidence that in Pakistan, firms with politicians on their boards receive larger loans from government banks and these loans tend to have higher default rates.

In general, previous papers on government ownership of banks can be classified into one of three categories. The first group uses country-level aggregate state ownership information to examine the effect of government ownership on the financial and economic development of various countries (e.g., La Porta et al. (2002)). The second group examines the difference in lending behavior between state-owned

and privately-owned banks for a particular country (e.g., Sapienza (2004) and Khwaja and Mian (2005)). Papers in the third category investigate the change in behavior of government-owned banks relative to privately-owned banks around some particular event such as elections in various countries (e.g., Dinç (2005)). However, there is a lack of research on how government ownership influences bank performance at the firm level and how government ownership of banks affects bank performance during financial crises. Our paper fills this void by employing firm-level state ownership information to examine the relation between bank performance and state ownership in sixteen Far East countries from 1989 to 2004, a period that includes the Asian financial crisis which started in 1997.

Our testable hypotheses are based on the corporate governance theory articulated by Shleifer and Vishny (1997) and the agency-cost and contestable-markets theory of Kane (2000). As Shleifer and Vishny (1997) point out, state-owned firms are technically "controlled by the public," they are run by political bureaucrats who can be thought of as having "extremely concentrated control rights, but no significant cash flow rights." That is, cash flow rights are dispersed among the many taxpayers in a particular country. Political bureaucrats have goals that are often dictated by political interests but in conflict with social welfare improvements and firm value maximization. This theory suggests that the performance of state-owned banks is inferior to that of privately-owned banks predominantly because of the perverse incentives of managers/bureaucrats of state-owned banks.

Kane (2000) uses agency-cost and contestable-markets theory to present a general model of the life cycle of a regulation-induced banking crisis and provides additional insights on the changing pattern of performance difference between state-owned and privately-owned banks over time. He argues that politicians hope to preserve the rents earned in the past by directing cheap loans to politically powerful parties and sectors. The extent of making this kind of subsidized loans tends to be greater for state-owned banks than privately-owned banks. This act of making subsidized loans creates unbooked losses for banks, and the contracting and reporting framework for government officials fails to make them directly accountable for controlling the size of the subsidies. When the scale of the unbooked losses is so large that covering it up is no longer possible, banking crises begin to emerge if doubts about governments' willingness and ability to guarantee the growing liabilities of an economically insolvent banking system.

The deterioration of banks' performance tends to be particularly rapid at state-owned banks during the banking crisis because of their larger unbooked losses prior to the crisis.

In addition, Kane (2000) argues that if the government only performs a stopgap partial resolution of insolvent institutions and continues to cover-up unbooked losses after the banking crisis, bank runs driven by the large size of accumulating unbooked losses may cause a breakdown in government guarantee support mechanisms and trigger another banking crisis in the future. A past banking crisis will lead to a substantially improved banking policy only if the government performs a full clean-up of the insolvent institutions. The contestable-markets perspective of Kane's life-cycle model suggests that the increasing globalization of financial services competition resulting from offshore innovations in financial technology and regulatory systems shortens the crisis gestation period and has the effect of creating pressure to discipline inefficient regulators. According to this theory, the extent to which the performance of state-owned banks improves relative to privately-owned banks in the post-crisis period depends on how thoroughly the government resolves insolvent state-owned banks and how effectively the government improves the policies that govern these banking institutions.

In this paper, we examine performances difference between state-owned banks and privately-owned banks before, during, and after the Asian financial crisis. In particular, we investigate whether the performance of state-owned banks is inferior to that of privately-owned banks as suggested by both Shleifer and Vishny (1997) and Kane (2000) and whether the changing performance of state-owned banks relative to privately-owned banks fits Kane's life-cycle theory of a regulation-induced banking crisis.

Using cash flow and accounting based measures of bank performance we find that, on average, state-owned banks operated less profitably, held less core capital, and had greater credit risk than privately-owned banks during the period of 1989 to 2000. Although we cannot completely rule out the possibility that state-owned banks enhance social welfare by making more loans to poorer individuals and/or businesses that privately-owned banks are not willing to lend to, our finding that the negative relation between government ownership and bank performance is particularly strong for countries with greater government involvement and political corruption in the banking system is more consistent with the view the inferior performance of state-owned banks is predominantly due to the perverse incentives of bank managers and political bureaucrats. Moreover, we find that state-owned banks held significantly

higher levels of government securities to total assets than privately-owned banks in countries where the government was heavily involved in the banking system. This result corroborates and extends the findings of Dinç (2005) and indicates that state-owned banks take a more active role in financing the government relative to privately-owned banks. This contradicts the view that state-owned banks tend to finance private projects that enhance social welfare but are too large or unprofitable for privately-owned banks to take on. We also perform a variety of robustness tests and the results from these tests confirm our main findings. On the whole, our results support the conjecture of Shleifer and Vishny (1997) and Kane (2000) that the opportunity for political bureaucrats to follow objectives dictated by political interests, but in conflict with social welfare improvements and firm value maximization, create a situation in which state-owned banks have poorer performance than privately-owned banks.

Our results on the change in performance differences between state-owned banks and privately-owned banks over time provide additional support to Kane's life-cycle model of a regulation-induced banking crisis. We find that from 1997 to 2000, the 4-year period after the beginning of the Asian financial crisis, the deterioration in cash flow returns, core capital, and credit quality of state-owned banks was significantly greater than that of privately-owned banks. This result is especially conspicuous for the five countries (Indonesia, Malaysia, the Philippines, South Korea, and Thailand) that were most affected by the Asian financial crisis. These findings support Kane's (2000) life-cycle model which argues that banks' unbooked losses could no longer be covered up during the crisis, and that the decline in performance is particularly rapid for state-owned banks because of their greater unbooked losses prior to the crisis.

We also find that the differences in cash flow returns, core capital, and nonperforming loans between state-owned banks and privately-owned banks were no longer significant during the post-crisis period of 2001-2004. This finding is consistent with the view that the increasing globalization of financial services competition has the effect of creating pressure to generate a substantially improved banking policy that disciplines inefficient regulators and substantially enhances the performance of state-owned banks.

The remainder of the paper is organized as follows. Section 2 describes the data and methodology examined in the paper. Section 3 presents the empirical results. Finally, Section 4 summarizes and concludes the paper.

2.   Data and Methodology

This study examines year-end financial statement data from 1989 through 2004 for sixteen Far East countries (Bangladesh, China, Hong Kong, India, Indonesia, Macau, Malaysia, Nepal, Pakistan, the Philippines, Singapore, South Korea, Sri Lanka, Taiwan, Thailand, and Vietnam) obtained from the June 1997 to January 2006 BankScope CDs.[3] For each bank in the database, state and foreign ownership information is hand collected from a variety of sources. We first gather information from the section "Shareholder Information" in the BankScope database. When BankScope's shareholder database does not have enough information for us to determine the percentage of state or foreign ownership, we gather bank ownership information from additional sources as used by La Porta, Lopez-de-Silanes, and Shleifer (2002). These sources include the Europa World Yearbook, the Banker's Almanac, Thomson Bank Directory, Asian Company Handbook, the Euromoney Bank Register, Bankers Handbook for Asia, Moody's International Company Data, World Scope Global Disclosure, and the MFC Investment Handbook. The procedure used to calculate a bank's proportion of state ownership is similar to La Porta et al. (2002). That is, we calculate the proportion of government ownership for bank i ($OWN_{state,i}$) by first multiplying the share of each shareholder in that bank by the share the government owns in that shareholder, and then sum the resulting products over the shareholders of the bank:

$$OWN_{state,i} = \sum_{j=1}^{J} s_{ji} s_{gj} \, ,$$

where $j = 1 \ldots J$ indexes shareholders of a given bank, s_{ji} is the share of bank i owned by shareholder j, and s_{gj} is the share of equity the government owns in shareholder j.

Similar to Dinç (2005), a bank is classified as state-owned if government ownership is at least 20 percent. The remaining banks are classified as privately-owned banks. The 20 percent threshold is used here and by Dinç following the corporate control literature which suggests that 20 percent ownership is often sufficient to control a company.[4] Nonetheless, we also examine whether the extent of state ownership matters in performance differences between state-owned and privately-owned banks by including the percentage of state ownership as one of the explanatory variables in our major regressions.

To control for the effect of foreign ownership on bank performance, we collect foreign ownership information from the section of "Shareholder Information" in the BankScope database, and calculate the bank's proportion of foreign ownership ($OWN_{foreign,i}$) as:

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$$\text{OWN}_{\text{foreign},i} = \sum_{j=1}^{J} s_{ji} s_{fj} ,$$

where s_{fj} is the proportion of foreign ownership in shareholder j. If a bank is completely foreign owned, it is classified as a privately-owned bank in our sample.

Our extended 16-year sample not only allows us to examine the impact of the Asian financial crisis on the performance differences between state-owned banks and privately-owned banks, but also makes our inferences more reliable despite possible flaws in accounting data, particularly in times of turmoil. Further, measures like allowance for loan losses may, at times, mean different things across various financial and regulatory regimes. Although the concern about the unreliability of accounting data cannot be eliminated in our paper, the theory of 'clean surplus' accounting suggests that analyzing a longer series of accounting data may help capture the determinants of a firm's economic income. "Clean surplus" accounting (Ohlson, 1989) emphasizes two identities for all firms. First, accounting income equals fiscal-year change in book value of equity, adjusted for dividends and capital contributions. Second, a firm's accounting and economic incomes summed over its lifetime are identical. Even though different degrees of violations of clean surplus accounting may exist for different countries, the clean surplus identities have been often used in international accounting studies. For example, Ball, Kothari, and Robin (2000) use the concept of clean surplus accounting to motivate their research design for their study on the extent to which current-period accounting income incorporates current-period economic income for 25 countries during 1985-1995. Accordingly, it is reasonable to expect that the concern about the unreliability of accounting data can be alleviated with our 16-year sample.

Table 1 presents the total number of banks, total assets held by privately-owned and state-owned banks (in U.S. dollars), the number of state-owned banks, and the percentage of total assets held by state-owned banks of each country for two selected sample years, 1996 and 2004, respectively. The exchange ratios used to convert a bank's total assets are the IMF official rates at the dates the banks' annual statements are reported. The number of banks is 456 in 1996, one year prior to the Asian crisis, and is 351 in 2004, the end of our sample period. Overall, state-owned banks, although much smaller in terms of their numbers relative to privately-owned banks, hold over 60 percent of the total assets in the banking industry. For example, in 1996 the 142 state-owned banks (31.14% of the 456 banks) held 65.61% of the total assets

of all banks. There is also great variation among countries in the percentage of bank assets controlled by

state-owned banks. For instance, in 1996, this percentage ranges from 0% in Hong Kong, Macau and

Nepal to 98.88% in China.

The variables used to measure and evaluate performance are similar to those used in Cornett and

Tehranian (1992) to measure performance associated with bank acquisitions, Cornett, Mehran, and

Tehranian (1998) to measure performance around equity issues by banks, and Dinç (2005) to examine

political influences on government-owned banks. Specifically, we use operating pretax cash flows (defined

as earnings before taxes and extraordinary items) divided by year-end book values of total assets as a key

measure of bank profitability. We also measure performance using return on assets which is net income

divided by total assets. To identify the sources of performance differences between state-owned and

privately-owned banks, we include the following additional variables in our analysis: the ratios of core

capital to total assets, nonperforming loans to total loans, allowance for loan losses to total loans, personnel

expenses to total loans, total loans to deposits, government securities to total assets, and total loans to total

assets. The ratio of core capital to total assets is to measure a bank's ability to meet regulated capital

standards. We use the ratio of nonperforming loans to total loans to measure a bank's loan quality.

However, information on nonperforming loans is often missing in BankScope, especially for the pre-crisis

period. Thus, we also use the ratio of allowance for loan losses to total loans to measure loan quality. The

ratio of a bank's personnel expenses to total loans is a measure of the bank's operating efficiency. The ratio

of loans to deposits measures a bank's liquidity and total loans to total assets measures the bank's

investment in loans as a percent of total assets. Following Dinç (2005), the ratio of government securities to

total assets is included to examine whether state-owned banks finance the government to a greater degree

than privately-owned banks. This variable is particularly important for us to examine whether state-owned

banks finance private projects that enhance social welfare but, are too large or unprofitable for privately-

owned banks to finance.

We use the ratio of a bank's total assets to the GDP of the country where the bank operates to

measure bank size. As in Dinç (2005), this size variable is motivated by the scenario that two banks with

similar total assets but operating in two different countries may behave differently. This measure also has

the benefit of being independent of the exchange rate. We also examine differences in asset growth rates

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between state-owned and privately-owned banks. We use deflated total assets in local currencies to calculate the asset growth rate in order to exclude inflation induced or exchange rate induced asset growth in our analysis.

We first test for differences in means of the various measures between privately-owned and state-owned banks with t-tests that do not assume equal variances for the two samples. Because the variables may not follow normal distributions, we also use a nonparametric Wilcoxon ranksum test and a median test to examine i) whether the two samples (state-owned banks and privately-owned banks) are from populations with the same distribution, and ii) whether the two samples have different medians, respectively. Because the results from our nonparametric tests are qualitatively the same as the t-tests, we only report the t-test results in our tables. We then examine the effect of state ownership on bank performance using pooled cross-sectional and time-series regressions with error terms clustered at the firm level.

The time period analyzed (1989-2004) includes the Asian financial crisis which started in July 1997 when the Thai baht fell nearly 50 percent in value relative to the U.S. dollar. This drop was followed by contagious devaluation of other Asian currencies and eventually affected currencies other than those in Asia (e.g., the Brazillian real and Russian ruble). Although all 16 countries in our sample (and indeed in the world) were affected by the Asian crisis, five of them experienced the most severe impact during the crisis period: Indonesia, Malaysia, the Philippines, South Korea, and Thailand (Kane (2000)). For example, in the six months after the start of the Asian crisis these countries' currencies lost 87%, 75%, 68%, 70%, and 69% of their values relative to the U.S. dollar, respectively. Other countries experienced less severe drops in currency values and economic productivity. For example, the Taiwanese dollar lost 33% of its value relative to the U.S. dollar over this same period. To examine the effect of government ownership on bank performance for countries affected severely by the Asian crisis, we perform our tests using these five countries as a separate sub-sample.

Both Shleifer and Vishny (1997) and Kane (2000) suggest that the degree to which government involvement and political corruption in a country's banking system affects the operating performance of the country's banks. To test this implication, we use the 1996 Economic Freedom Index (EFI) to sort the sample banks. The EFI (compiled by the Heritage Foundation in Washington D.C.) offers an annual examination of ten factors that contribute most directly to economic freedom and prosperity in 161

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countries. We sort our sample using the EFI Banking and Finance factor. Countries receive a score from 1 through 5 based on the amount of government involvement in the country's banking and financial system. A score of 1 or 2 is assigned when government involvement is "negligible" or "minimal," respectively. Thus, these banks have no or few restrictions on their operations. A score of 3 through 5 is assigned when government involvement in the financial sector is "substantial," "heavy," or the financial system is in "chaos," respectively. In these countries, governments own some or several banks, control the credit process in these banks, limit the ability of privately-owned banks to exist, and may even experience political corruption. Five countries in our sample (Hong Kong, Pakistan, Singapore, South Korea, and Sri Lanka) have an EFI of 1 or 2, while the other 11 countries have ratings of 3 or 4. No countries in the sample have an EFI of 5. Accordingly, in addition to full sample results we examine the performance of banks in countries with an EFI of 1 and 2 versus 3 and 4. We also perform a battery of sensitivity tests to examine the robustness of our results.

3.   Empirical Results

3.1   Summary Statistics on the Performance Measures

        Table 2 presents means and numbers of observations for the variables used in this paper. It also reports differences in means for these variables between state-owned and privately-owned banks. Because the Asian financial crisis may have a significant impact on bank performance, we report the means of the variables for two 8-year periods before and after the start of the crisis: 1989-1996 and 1997-2004. Table 2 shows that although both state-owned and privately-owned banks experienced large changes in many performance measures before and after the Asian crisis, the difference in means between state-owned and privately-owned banks for each of the variables shows a consistent pattern for the pre- and post-crisis periods.

        Overall, Table 2 shows that compared with state-owned banks, privately-owned banks are more profitable and better capitalized, have lower percentages of nonperforming loans, and are less labor intensive. In addition, privately-owned banks had faster asset growth in both periods. State-owned banks are significantly larger than privately-owned banks, using either total assets in U.S. dollars or the ratio of total assets to country GDP to measure bank size. Table 2 also indicates that the difference in the loans to deposits ratio between the two types of banks is insignificant in the period 1989-1996 and significant

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only at the 10 percent level in the period 1997-2004. However, as shown in our analysis in Section 3.3, after we include other control variables in the multivariate regressions, the difference in loans to deposits ratio between the two types of banks is insignificant for most of the sample period. Table 2 also shows that privately-owned banks have higher loans to assets ratios than state-owned banks in both periods. This result is similar to that in Dinç (2005) and suggests that privately-owned banks relied more on loans than state-owned banks to generate interest income. Finally, state-owned banks hold significantly higher levels of government securities to total assets than privately-owned banks in both periods. This ratio averages 4.91% for privately-owned banks and 10.15% for state-owned banks in the pre-crisis period and averages 7.16% for privately-owned banks and 12.66% for state-owned banks in the post-crisis period. This result corroborates the findings in Dinç (2005) and suggests that state-owned banks take a more active role in financing the government itself relative to privately-owned banks. This contradicts the view that state-owned banks tend to finance private projects that enhance social welfare but are too large or unprofitable for privately-owned banks to finance.

3.2.   Regression Results on Operating Pretax Cash Flow Returns

Because operating pre-tax cash flow return is a key measure of bank performance, Table 3 reports the regression analyses with pre-tax cash flow returns as the dependent variable.[5] The explanatory variables include a state ownership dummy (D_{state}), cross products of D_{state} and time dummies, a foreign ownership dummy ($D_{foreign}$), bank size (assets to GDP ratio), year dummies, country dummies, and country-year dummies.[6] D_{state} is set equal to 1 if a bank's state ownership is at least 20 percent and 0 otherwise. $D_{foreign}$ is equal to 1 if a bank's foreign ownership is greater than zero and 0 otherwise. We include $D_{foreign}$ to control for the effect of foreign ownership on bank performance. The time dummies used in the cross-product variables are D9396, D9700, and D0104. D9396 is set equal to 1 if an observation is from the pre-crisis period of 1993-1996 and 0 otherwise. D9700 and D0104 are time dummies for the post-crisis periods 1997-2000 and 2001-2004, respectively. The time dummy for the period 1989-1992 is omitted from the explanatory variables to avoid multicollinearity. Thus, the coefficient on D_{state} corresponds to the cash flow returns for state-owned banks in the period 1989-1992, and the coefficients on the cross products of D_{state} and the time dummies indicate whether the difference in performance between state-owned and privately-owned banks changed in a particular period relative to

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the base period of 1989-1992. The year dummies, country dummies, and country-year dummies are used to control for macroeconomic and other time-varying country-specific factors. We exclude year dummy for 1996, country dummy for Bangladesh (or another country if Bangladesh is not included in the subsample), and their cross product from the regressions to avoid the unidentification problem of the coefficients. These regression specifications are similar in nature to that in Dewenter and Malatesta (2001). To further examine whether the extent of government ownership and foreign ownership affects bank performance, in separate regressions we replace D_{state} and $D_{foreign}$ with the proportions of state ownership (OWN_{state}) and foreign ownership ($OWN_{foreign}$), respectively, and find these results (not reported here) quantitatively similar to those in Table 3. We estimate all the regressions using pooled cross-sectional and time-series data with the errors clustered at the firm level, and calculate the t-statistics with the robust Huber/White/sandwich estimator of variance.

Because the Economic Freedom Index variable is highly correlated with the state-ownership variable, we do not include the EFI variable as an explanatory variable. Rather, we examine the effect of government intervention by estimating separate regressions for the following two sub-samples: the 5 countries with minimal government involvement in the banking system and the 11 countries with heavy government involvement. Table 3 reports regression results for the following four samples: the full sample, the extreme-crisis sample, and the samples with minimal government involvement and heavy government involvement in the banking system, respectively. Although the year dummies, country dummies, and country-year dummies are included as explanatory variables in all our regressions, to conserve space we do not report their coefficients in the table.

Table 3 shows that in three of the four samples there is a negative and significant relation between D_{state} and cash flow returns. Only for the sample of banks with minimal government involvement is this coefficient insignificant. Further, the size of the negative coefficient is largest for the 11 countries with heavy government involvement. These results suggest that during the period 1989-1992, except for the countries with minimal government involvement in banking, state-owned banks had lower cash flow returns than privately-owned banks, and the gap between privately-owned and state-owned banks was the biggest for the countries with heavy government intervention in their banking system, all else equal. Moreover, the coefficient on the cross product of D_{state} and D9396 is significantly negative for three of the

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four samples, only for the extreme-crisis sample is this coefficient insignificant. This suggests that overall, the gap in cash flow returns between state-owned and privately-owned banks during 1993-1996 continued to widen relative to 1989-1992. As expected, these results suggest that state-owned banks had lower profitability than privately-owned banks prior to the Asian financial crisis.

Table 3 also reports that the coefficient on the cross product of D_{state} and D9700 is significantly negative for all the samples. While the size of this negative coefficient is much larger for the heavy-government-involvement sample relative to the minimal-government-involvement sample, it is the largest for the extreme-crisis sample. This suggests that during the period immediately after the onset of the Asian crisis, state-owned banks' profitability deteriorated at a much faster rate than privately-owned banks in the countries that were hardest hit by the financial crisis. Moreover, during the Asian crisis, the gap between privately-owned banks and state-owned banks increased with the extent of government involvement in the banking system. These findings support the prediction of Kane's (2000) life-cycle model of the banking crisis that the transition to zombieness is particularly rapid at state-owned banks.

For the post-crisis period of 2001-2004, Table 3 reports that the coefficient on the cross product of D_{state} and D0104 is insignificant for three of the four samples, and it is only significantly positive at the 10 percent level for the full sample. We perform a Wald test to examine whether the sum of the coefficients of D_{state} and D_{state} x D0104 is different from zero. The F-statistics from this test indicate that the sum of the coefficients is insignificant for all the four samples. This suggests that the state-owned banks had similar cash flow returns to those of privately-owned banks in the post-crisis period of 2001-2004. The significant improvement of the profitability of state-owned banks during this period is consistent with the view that the Asian crisis has created pressure for the government to effectively resolve insolvent institutions and led to a substantially improved banking policy that helped to substantially improve the performance of state-owned banks. There has been evidence that the Asian crisis prompted governments to adopt financial reforms to enhance the competitiveness of the banking industry. For example, in Thailand, post-crisis financial reforms significantly relaxed restrictions on foreign bank entry and improved the transparency of bank information (Okuda and Rungsomboon (2006)). In Korea, the government and the IMF orchestrated a $57 billion rescue package in December 1997 to clean up the nonperforming loans and to initiate reforms to improve the corporate governance structure of banking institutions (Choe and Lee (2003)).

Table 3 also shows that the coefficients on $D_{foreign}$ and bank size are insignificant in all four samples. This suggests that a bank's size and foreign ownership were insignificant factors in explaining operating cash flow performance. Results are qualitatively the same if we exclude banks that are 100% foreign owned.

Overall, the regression results in Table 3 indicate that the extent of government involvement in the banking system as measured by the EFI Banking and Finance factor is crucial in determining the performance differences between state-owned and privately-owned banks during the Asian crisis. Compared with the countries with less government involvement in the banking system, the gap in cash flow returns between privately-owned banks and state-owned banks widened at a faster pace in countries with heavy government involvement in the banking system during the Asian crisis. In addition, we find that in the countries that were most severely affected by the Asian crisis, state-owned banks experienced the greatest decline in performance relative to privately-owned banks in the period of 1997-2000. Our results also indicate that the performance differences between these banks were no longer significant during the period 2001-2004 for all our sub-samples. These results support Kane's life cycle model of a regulation-induced banking crisis, which postulates that the deterioration of bank performance tends to be particularly rapid at state-owned banks during the Asian financial crisis, and that the increasing globalization of financial services competition has the effect of creating pressure to generate a substantially improved banking policy that disciplines inefficient institutions.

3.3.   Regression Results on Other Performance Measures

To examine possible sources of performance differences between state-owned and privately-owned banks, we use measures of banks' capital adequacy, credit quality, operating efficiency, liquidity, government-security holdings, and asset growth as dependent variables in a series of regressions. The explanatory variables are the same set of regressors used in Table 3. Table 4 presents the regression results. Although the regressions include year dummies, country dummies, and country-year dummies, to conserve space Table 4 reports only the coefficients on D_{state}, the cross products of D_{state} and time dummies, $D_{foreign}$, bank size, and the intercept.

Panel A in Table 4 presents results for regressions using the core capital ratio as the dependent variable. Again we observe that the extent of government involvement in the banking system plays an important role in the difference in core capital between state-owned and privately-owned banks. The coefficient on D_{state} is significantly negative for the sample with heavy government involvement, while

insignificant for the minimal government involvement sample. Thus, the negative coefficient on D_{state} for the full sample is mainly driven by the heavy government involvement sample. The coefficient on D_{state} suggests that, during the period 1989-1992, state-owned banks held less core capital than privately-owned banks in the countries with heavy government involvement in the banking system. In contrast, for the minimal government involvement countries, both types of banks had similar core capital ratios during this period.

Although the coefficients on D_{state} x D9396 in the core-capital regressions are insignificant for all the sub-samples, a Wald test indicates that the sum of the coefficients of D_{state} and D_{state} x D9396 and the sum of the coefficients of D_{state} and D_{state} x D9700 are significantly negative for all the four samples. This suggests that during the periods of 1993-1996 and 1997-2000, state-owned banks held less core capital than privately-owned banks, regardless of the extent of government involvement in the banking system. However, the size of the coefficients indicates that the difference in core capital between state-owned banks and privately-owned banks is greater in the heavy-government sample compared with the minimal-government sample in both periods, while this gap gets bigger in the period immediately after the onset of the Asian crisis, and becomes largest for the extreme-crisis countries in the period 1997-2000. This suggests that state-owned banks' core capital deteriorated at a faster rate than privately-owned banks in the countries that were hardest hit by the Asian crisis. Although state-owned banks' low capital ratios could be attributed to their stronger conjectural government guarantee, the substantial decline of core capital during the Asian crisis suggests that their lower capital ratios were mainly attributed to their poorer performance. Should assets held by banks default or underperform, state-owned banks would see capital levels approach insolvency faster than privately-owned banks.

Our Wald test also shows that the sum of the coefficients of D_{state} and D_{state} x D0104 becomes insignificant for all the sub-samples. This suggests that state-owned banks significantly increased their core capital level in the post-crisis period of 2001-2004. Combined with our result on cash flow returns, this suggests that state-owned banks were able to catch up with privately-owned banks on core capital and profitability during 2001-2004. This again is consistent with the view that the increasing globalization of financial services competition may have had the effect of creating pressure for regulators to generate a substantially improved banking policy that effectively improved the performance of state-owned banks.

The results on other control variables are also interesting. Panel A shows that the coefficients on $D_{foreign}$ are significantly positive except for the minimal government involvement sample. This suggests that banks with foreign ownership generally held more core capital compared with purely domestic banks The significantly negative coefficients on bank size for all groupings of the sample indicate that larger banks tend to have lower core capital ratios. This is perhaps because of the stronger conjectural government guarantee enjoyed by large institutions.

Panel B in Table 4 reports regressions using allowance for loan losses to total loans as the dependent variable. The coefficient on D_{state} in Panel B is positive and significant at the 10 percent level for the sample with heavy government involvement, but insignificant for the other three samples. This suggests that during the period 1989-1992, state-owned banks had significantly higher allowance for loan losses than privately-owned banks only in the heavy government involvement sample. However, the Wald tests indicate that the sum of the coefficients of D_{state} and the respective cross products of D_{state} and time dummies are mostly significantly positive for all the samples, and only is the sum of the coefficient of D_{state} and D_{state} x D0104 insignificant for the minimal-government sample. These findings suggest that overall, state-owned banks had greater allowance for loan losses than privately-owned banks during most of the sample period, especially for the countries with heavy government involvement in the banking system. The size of the coefficients indicates that the difference in allowance for loan losses is especially large in the post-crisis period for the countries that were hardest hit by the Asian crisis.

Panel C reports results from regressions using the ratio of nonperforming loans to total loans. Because the vast majority of the observations for this variable are missing in the pre-crisis period, we omit D9396 and the cross product of D_{state} and D9396 to avoid multicollinearity. We find that the coefficients on D_{state} are significantly positive for the full sample and the minimal-government sample. Thus, state-owned banks had significantly greater proportions of non-performing loans than privately-owned banks in the pre-crisis period mainly for the minimal-government sample. The coefficients on the cross product of D_{state} and D9700 are significantly positive for the heavy-government sample and are insignificant for the minimal-government sample. These results suggest that although there were no significant differences in nonperforming loans between state-owned banks and privately-owned banks prior to the crisis in the countries with heavy government involvement in the banking system, the nonperforming loans in the

state-owned banks in these countries increased at a much faster rate than privately-owned banks in these countries. This result supports Kane's (2000) argument that state-owned banks' greater unbooked losses prior to the crisis could no longer be covered up during the crisis, and this is revealed by the more rapid increase in nonperforming loans during the crisis. Our Wald tests also show that although the sums of the coefficients of D_{state} and D_{state} x D9700 are significantly positive for all the samples, the sums of the coefficients of D_{state} and D_{state} x D0104 are insignificant for all the samples. This suggests that state-owned banks were able to close the gap in nonperforming loans with privately-owned banks during the period 2001-2004. This result is consistent with our findings on core capital and cash flow returns, and indicates state-owned banks' strong improvement in the post-crisis period of 2001-2004.

Panel D presents regressions using the ratio of personnel expenses to total loans. There are mixed results on the coefficients of D_{state}. Results indicate that during the period 1989-1992, compared with privately-owned banks, state-owned banks incurred greater personnel expenses for the minimal government involvement sample, and fewer personnel expenses for the other three samples. However, the negative relation between state ownership and the ratio of personnel expenses to loans for the three samples is reversed for the periods after 1993. Our Wald tests indicate that the sums of the coefficients of D_{state} and D_{state} x D9396 are significantly positive except for the extreme-crisis sample. This suggests that state-owned banks operated less efficiently on average than privately-owned banks in the period of 1993-1996. The sums of the coefficients of D_{state} and D_{state} x D9700 are significantly positive for the full sample and the minimal government involvement sample, while it is insignificant for the other two samples. Moreover, the sums of the coefficients of D_{state} and D_{state} x D0104 are significantly positive for the full sample only. These results indicate that overall, during the period 1993-2004, state-owned banks operated less efficiently than privately-owned banks.

Panel D also shows that the coefficients on $D_{foreign}$ are significantly negative, except for the sample with minimal government involvement. This suggests that in the countries where the government was heavily involved in the banking system, banks with foreign ownership operated more efficiently than purely domestic banks. The significant negative coefficients on bank size for all sub-samples indicate that larger banks operated more efficiently than smaller banks, perhaps due to their greater economies of scale.

Panel E examines the effect of state ownership on the loans to deposits ratio, a measure of bank liquidity. The coefficients on D_{state} are significantly positive except for the sample of minimal-government involvement. This suggests that in the countries where government has heavy involvement in the banking system, state-owned banks relied more on purchased liabilities to finance their loan portfolios and thus were less liquid than privately-owned banks during the period 1989-1992. However, results from the Wald tests indicate that the sums of the coefficients of D_{state} and the respective cross product of D_{state} and time dummies are insignificant for all the sub-periods after 1992 and for all the sub-samples. This suggests that state-owned and privately-owned banks had similar loans to deposits ratios after 1992, all else equal.

Interestingly, the coefficients on $D_{foreign}$ are significantly positive except for the sample with minimal government involvement. Thus, banks with higher foreign ownership relied less on deposits to finance their loan portfolios. This is perhaps because banks with foreign ownership have greater access to other markets than deposits to finance their loans. It is also likely that in countries with heavy government involvement in the banking system, foreign banks faced more restrictions when tapping into the local deposit market. We also find that the coefficients on bank size are all negative and they are statistically significant for the full sample and the minimal government involvement sample. This suggests that larger banks on average relied less on deposits to finance their loans, and this result is mainly driven by the sample with minimal government involvement in the banking system.

Panel F examines whether state-owned banks provide greater financing to the government than privately-owned banks. The coefficient on D_{state} in Panel E is insignificant for all the samples. This suggests that in the period 1989-1992, state-owned and privately-owned banks held similar proportions of government securities. The coefficients of cross products of D_{state} and the time dummies again show different patterns between the minimal-government sample and the heavy-government sample. Our Wald tests on the sums of the coefficients of D_{state} and the respective cross-product variables indicate that, for the heavy-government-involvement sample, state-owned banks held significantly greater proportions of government securities than privately-owned banks in all the sub-periods after 1992. However, for the sample with minimal government involvement, state-owned banks and privately-owned banks had similar percentage holdings of government securities in all sub-periods. These results corroborate and extend the findings of Dinç (2005) and suggest that state-owned banks take a more active role in financing the

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government relative to privately-owned banks in countries where the government is heavily involved in the banking system. This contradicts the view that state-owned banks tend to finance private projects that enhance social welfare but are too large or unprofitable for privately-owned banks to take on. However, it is possible that state-owned banks' greater increase in government securities in the post-crisis period can be partly explained by the government's efforts to recapitalize insolvent banks. For instance, in Indonesia, the government issued bonds to the central bank in exchange for funds needed for the recapitalization program initiated in 1999, and at the same time the central bank resold the bonds to the recapitalized banks (Zulverdi, Gunadi and Pramono 2007).

Panel G reports regressions using banks' asset growth rates as the dependent variable. Again, we observe different patterns between samples grouped by the level of government involvement in the banking system. The coefficient on D_{state} is significantly negative for the heavy-government sample, but insignificant for the minimal-government sample. Our Wald tests on the sums of the coefficients of D_{state} and the cross-product of D_{state} and time dummies also show that these sums are significantly negative for the sample with heavy government involvement and insignificant for the sample with minimal government involvement. This suggests that state-owned banks, on average, had slower asset growth than privately-owned banks during the whole sample period for the countries with heavy-government involvement in their banking system. However, for the sample with minimal government involvement, state-owned and privately-owned banks had similar asset growth rates throughout our sample period. These results suggest that the extent of government involvement in the banking system also influences the differences in asset growth rates between state-owned and privately-owned banks.

In summary, results in this section suggest that on average, state-owned banks in the 16 countries had less core capital, greater credit risk, less management efficiency, and slower asset growth than privately-owned banks for most of our sample periods prior to 2001. In none of the performance areas (capital adequacy, asset quality, management efficiency, and liquidity) did state-owned banks show consistent superior performance to privately-owned banks for the 16-country sample. Moreover, our findings in this section highlight the importance of government involvement in influencing differences in various performance measures between state-owned and privately-owned banks. In the countries with greater government involvement in the banking system, the difference in various performance measures

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(e.g., core capital, allowance for loan losses to loans, and government securities to assets) between state-owned and privately-owned banks tend to be much greater compared with the countries where government is less involved in the banking industry. Another particularly interesting finding is that state-owned banks take a more active role in financing the government relative to privately-owned banks in countries where the government is heavily involved in the banking system. Together, these results reinforce our findings on cash flow returns and support the hypothesis that the inferior performance of state-owned banks is predominantly because of the perverse incentives of managers of state-owned banks. Our finding that state-owned banks experienced the sharpest declines in core capital and credit quality during the Asian crisis for the five countries that were most severely affected by the crisis supports the prediction of Kane (2000) that the deterioration of bank performance tends to be particularly rapid at state-owned banks during a banking crisis.

Our results that state-owned and privately-owned banks had similar levels of core capital and nonperforming loans in the post-crisis period of 2001-2004 are in line with our findings on cash flow returns. These results support the scenario of Kane's life cycle model of a regulation-induced banking crisis, which postulates that the increasing globalization of financial services competition has the effect of creating pressure to generate a substantially improved banking policy that disciplines inefficient institutions.

3.4.   Robustness Tests

In this section, we perform several tests to examine the robustness of our major findings. We first investigate whether our results are sensitive to differences in the accounting systems of our sample countries. We use the accounting models classified by Mueller, Gernon, and Meek (1997) and their updated version Gernon and Meek (2001) to group the countries according to their accounting similarities. Mueller, Gernon, and Meek argue that a country's accounting system is not only determined by its accounting standards, but also by its institutional environment factors such as reliance on external financing, legal system, political and economic ties with other countries, culture, levels of inflation, size and complexity of business enterprise, sophistication of management and the financial community, and general levels of education.

Gernon and Meek (2001) group countries into three major accounting models based on their institutional environment: (1) British-American model, (2) Continental model, and (3) inflation-adjusted model. Out of the 16 countries in our sample, 11 are classified by Mueller, Gernon, and Meek (1997) and

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Gernon and Meek (2001). British-American model countries include Bangladesh, Hong Kong, India, Indonesia, Malaysia, Pakistan, the Philippines, Singapore, Taiwan, and Thailand. South Korea is the only country using the Continental model. We cannot find a study that has carefully classified the other 5 countries in our sample (China, Macau, Nepal, Sri Lanka, and Vietnam). Accordingly, we run the regressions of cash flow returns (as specified in Table 3) for the following four sub-samples: (1) countries using the British-American accounting model (10 countries), (2) the one country using the Continental accounting model (South Korea), (3) countries with minimal government involvement in the banking system that are using the British-American accounting model (7 countries), and (4) countries with heavy government involvement in the banking system that are using the British-American accounting model (3 countries). Table 5 reports the results of these regressions. Overall, results for countries using the British-American accounting model confirm our previous findings that privately-owned banks had significantly greater cash flow returns than state-owned banks for the three sub-periods from 1989 to 2000, but similar cash flow returns in the 2001-2004 period. Table 5 also shows that for the one country using the Continental model (South Korea), the coefficients on D_{state} and the cross products of D_{state} and time dummies are insignificant. Because South Korea is one of the countries with minimal government intervention, this result is not surprising. In addition, Table 5 reports that for the two sub-samples under the British-American accounting model, the coefficient on D_{state} x D9700 is insignificant for the sample with minimal government involvement and significantly negative for the sample with heavy government involvement. This confirms our findings that the profitability of state-owned banks deteriorated at a much faster rate than privately-owned banks during the Asian crisis in the countries that the government involved heavily in the banking system. The coefficients of D_{state} x D0104 are also consistent with our previous findings that the difference in cash flow returns between state-owned banks and privately-owned banks disappeared in the post-crisis period of 2001-2004.

We also examine whether our results are influenced by a potential sample bias. Brown and Dinç (2005) show that the most common way of dealing with failing privately-owned banks is government takeover after which these banks operate as government-owned banks. This may create a sample bias in our performance comparisons as some of the state-owned banks are failed privately-owned banks that are taken over by the government. As a robustness check, we run two additional regressions each

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employing cash flow returns as the dependent variable. First, we use the 3-year lagged variables of proportion of state ownership, operating cash flow returns, core capital to assets, allowance for loan losses to loans, personnel expenses to loans, and government securities to assets as an instrument for the proportion of state ownership.[7] Second, we exclude banks in which state ownership increased during the sample period. We also examine the robustness of our results by including only the top 10 banks in each country in the regressions. We perform these robustness tests for the full sample, the extreme-crisis sample, the minimal-government-involvement and heavy-government-involvement samples, respectively. Table 6 shows that the results from these robustness tests confirm our previous findings. Moreover, we perform the above robustness tests using other performance measures (as in Table 4) as dependent variables and the results are qualitatively similar to our previous findings.

4.   Conclusion

In this paper, we examine how government ownership and government involvement in a country's banking system affect bank performance. Specifically, we use cash flow and accounting based measures to examine performance differences between privately-owned and state-owned banks in sixteen Far East countries from 1989 through 2004, a period including the 1997 Asian financial crisis. Our study uncovers an interesting pattern of changing performance difference between state-owned and privately-owned banks around the Asian crisis. We find that state-owned banks generally operated less profitably, held less core capital, and had greater credit risk than privately-owned banks prior to 2001, and the performance differences are more significant in those countries with greater government involvement and political corruption in the banking system. We also find that from 1997 to 2000, the 4-year period after the beginning of the Asian financial crisis, the deterioration in the cash flow returns, core capital, and credit quality of state-owned banks was significantly greater than that of privately-owned banks. The contrast between the two types of banks during this period is especially sharp for the five countries (Indonesia, Malaysia, the Philippines, South Korea, and Thailand) that were hardest hit by the Asian crisis. We also find that state-owned banks closed the gap with privately-owned banks on cash flow returns, core capital, and nonperforming loans in the post-crisis period of 2001-2004. In addition, our results on banks' holding of government securities corroborate and extend the findings of Dinç (2005) and suggest that state-

owned banks finance the government to a greater degree than do privately-owned banks in countries where the government is involved heavily in the banking system.

Taken together, our findings suggest that the inferior performance of state-owned banks in our sample during the period of 1989-2000 can best be explained by Shleifer and Vishny's (1997) corporate governance theory on state ownership of firms and Kane's (2000) agency-cost and contestable-markets perspectives of banking policy mistakes. Both theories attribute the inferior performance of state-owned banks to the perverse incentives of political bureaucrats who manage or influence the operation of state-owned banks. The changing patterns of the performance difference between state-owned and privately-owned banks around the Asian crisis support Kane's (2000) life-cycle model of a regulation-induced banking crisis. In addition, our result that state-owned banks had similar performance to privately-owned banks in the post-crisis period of 2001-2004 is consistent with the implication of Kane's life-cycle model that increasing globalization of financial services competition may have the salutary effect of disciplining inefficient regulators and improving the performance of state-owned banks.

We acknowledge that our findings could be consistent with other explanations as well. For example, state-owned banks may be more exposed to a different set of firms such as local or small firms that got hit harder by the Asian crisis. It is also possible that subsidies to poor individuals or to particular sectors may have been funneled through government banks to improve social welfare. Although our tests cannot completely rule out these possibilities, our findings that the performance gap between state-owned and privately-owned banks is greater for the countries with less economic freedom in the banking sector, and state-owned banks finance the government to a greater degree than do privately-owned banks in countries where the government is involved heavily in the banking system, are more consistent with the agency cost explanations.

FOOTNOTES

[1] See, for example, Booth, Cornett, and Tehranian (2002), Brickley, Lease, and James (1988), Cornett, Hovakimian, Palia, and Tehranian (2003), Denis and Denis (1994), Fama and Jensen (1983), McConnell and Servaes (1990), Mehran (1995), Morck, Shleifer, and Vishny (1988), and Stulz (1988, 1990).

[2] Megginson and Netter (1998) present a survey of studies that have provided evidence on the relative performance of state-owned and privately-owned firms.

[3] Although Hong Kong, Macau and Taiwan are not independent countries, this paper calls these special geographic regions as countries for convenience. It also needs to be noted that the BankScope database does not include all commercial banks in the countries. Demirguc-Kunt and Huizinga (2004) documents that, on average, BankScope covers about 90 percent of all bank assets for most countries.

[4] We also use 0 percent and 50 percent government ownership as the threshold to define state-owned banks. Because our conclusions are robust to the three classifications, we only report the results using 20 percent as the threshold to define state-owned banks.

[5] We also use ROA as an alternative measure of bank performance. The results and conclusions using ROA are similar to those using operating cash flows returns.

[6] We also estimate the regressions with single-year dummies and their cross products with state ownership variables. Results from these regressions support our grouping of the time periods and the usage of the time dummies as reported in Table 3.

[7] We also use the 5-year lagged state ownership and foreign ownership dummies to replace D_{state} and $D_{foreign}$ in the regressions. The results from these regressions are qualitatively the same as those in Table 4.

Table 1

Number of commercial banks, total assets, number of state-owned banks, and the percentage of bank assets in state-owned banks for 1996 and 2004. A bank is defined as state-owned if it has at least 20 percent state ownership; otherwise it is classified as privately owned.

	Country	Number of Commercial Banks	Total Assets (in $billions)	Number of State-Owned Banks	Percentage of Bank Assets in State-Owned Banks
1996	Bangladesh	17	7.75	7	79.80%
	China	23	965.53	20	98.88%
	Hong Kong	41	266.36	0	0.00%
	Indonesia	93	166.40	24	72.83%
	India	59	169.41	37	92.40%
	Korea-South	30	468.47	12	64.60%
	Sri Lanka	8	4.75	4	81.76%
	Macau	9	5.90	0	0.00%
	Malaysia	38	143.80	2	13.05%
	Nepal	6	0.39	0	0.00%
	Philippines	30	57.82	2	16.81%
	Pakistan	21	25.89	10	90.36%
	Singapore	18	134.84	1	27.34%
	Thailand	16	204.07	5	30.54%
	Taiwan	34	404.02	11	70.96%
	Vietnam	13	7.21	7	92.35%
	Total	456	3032.59	142	65.61%
2004	Bangladesh	27	20.97	5	51.86%
	China	29	2620.47	22	96.74%
	Hong Kong	29	546.93	0	0.00%
	Indonesia	38	100.24	9	55.07%
	India	49	444.92	29	88.82%
	Korea-South	14	775.20	3	18.36%
	Sri Lanka	9	7.40	1	34.41%
	Macau	7	7.33	0	0.00%
	Malaysia	23	191.35	1	0.45%
	Nepal	9	1.41	0	0.00%
	Philippines	22	48.18	3	29.47%
	Pakistan	21	43.91	6	58.99%
	Singapore	6	205.55	1	41.64%
	Thailand	13	175.48	8	56.03%
	Taiwan	40	685.88	4	27.37%
	Vietnam	15	18.48	7	80.44%
	Total	351	5893.70	99	60.55%

Table 2

This table lists the mean values for variables used to measure performance of privately-owned and state-owned commercial banks in 16 Far East countries for the periods of 1989-1996 and 1997-2004. The numbers of observations are listed below the means. A bank is defined as state-owned if it has at least 20 percent state ownership; otherwise it is classified as privately owned. The significance level for the differences in means between privately-owned and state-owned banks is determined by t-tests that do not assume equal variances for the two samples.

Variable	1989-1996			1997-2004		
	Privately-Owned Banks	State-Owned Banks	Difference in mean	Privately-Owned Banks	State-Owned Banks	Difference in mean
Operating pre-tax cash flow / Assets	1.65%	0.56%	1.09%***	0.78%	-0.55%	1.33%***
	1,339	864		2,099	1,024	
ROA	1.32%	0.40%	0.92%***	0.55%	-0.74%	1.29%***
	1,498	858		2,266	1,026	
Core capital / Assets	11.73%	6.20%	5.53%***	12.42%	6.46%	5.96%***
	1,547	878		2,330	1,038	
Nonperforming loans / Loans	3.41%	8.79%	-5.38%***	12.08%	14.61%	-2.53%***
	192	86		1,288	534	
Allowance for loan losses / Loans	1.45%	1.40%	0.05%	6.08%	6.38%	-0.30%
	1,542	875		2,064	866	
Personnel expenses / Loans	2.44%	3.35%	-0.91%***	2.47%	3.00%	-0.53%***
	1,092	637		1,756	736	
Loans / Deposits	89.46%	84.47%	4.99%	78.10%	72.92%	5.18%*
	1,538	868		2,321	1,024	
Asset growth rate	23.31%	15.79%	7.52%***	16.40%	13.62%	2.78%**
	1,246	755		2,259	1,017	
Assets (in $ millions)	2930.16	11028.01	-8097.85***	4874.37	21677.62	-16803.25***
	1,547	878		2,354	1,046	
Size (Assets / Country GDP)	2.70%	4.48%	-1.78%***	3.27%	4.90%	-1.63%***
	1,547	878		2,354	1,046	
Loans / Assets	58.79%	54.83%	3.96%***	53.92%	51.05%	2.87%***
	1,547	878		2,342	1,046	
Government securities / Assets	4.91%	10.15%	-5.24%***	7.16%	12.66%	-5.50%***
	1,535	816		2,315	1,017	

*, **, *** Significantly different from zero at the 10%, 5%, and 1% levels respectively, using a two-tailed tests.

Table 3

Coefficients from pooled regressions of the ratio of operating pretax cash flows returns on selected variables with the errors clustered at the firm level for the full sample and various sub-samples. Robust Huber/White/sandwich estimator of variance is used to calculate the t statistics in brackets. D_{state} equals 1 if a bank has at least 20% of state ownership; 0 otherwise. $D_{foreign}$ equals 1 if there is foreign ownership in the bank; 0 otherwise. The sample period is from 1989 to 2004. D9396 equals 1 if an observation is from the period 1993-1996; 0 otherwise. D9700 equals 1 if an observation is from the period 1997-2000; 0 otherwise. D0104 equals 1 if an observation is from the period 2001-2004. The year dummies, country dummies and country-year dummies are included in the regressions but their coefficients are not reported here to conserve space.

	Full Sample	Extreme Crisis	Minimal Government Involvement	Heavy Government Involvement
D_{state}	-0.0055***	-0.0053**	-0.0024	-0.0060***
	[4.36]	[2.53]	[1.04]	[4.13]
D_{state} x D9396	-0.0040**	-0.0027	-0.0077**	-0.0032*
	[2.40]	[1.24]	[2.58]	[1.69]
D_{state} x D9700	-0.0295***	-0.0864***	-0.0093*	-0.0346***
	[3.92]	[4.75]	[1.77]	[3.76]
D_{state} x D0104	0.0038*	0.0032	0.0032	0.0039
	[1.76]	[0.69]	[0.90]	[1.56]
$D_{foreign}$	0.0023	-0.0008	0.0029	0.0022
	[1.11]	[0.25]	[1.21]	[0.88]
Size (Assets / Country GDP)	0.0056	0.0208	-0.0002	0.0058
	[0.81]	[0.87]	[0.03]	[0.61]
Intercept	0.0107**	0.0205***	0.0095**	0.0106**
	[2.05]	[10.71]	[2.00]	[2.03]
Year Dummies	Included	Included	Included	Included
Country Dummies	Included	Included	Included	Included
Country-Year Dummies	Included	Included	Included	Included
No. of Obs.	5188	2133	1047	4141
R^2	0.2483	0.2872	0.1527	0.2586

*, **, *** Significantly different from zero at the 10%, 5%, and 1% levels respectively, using a two-tailed tests.

Table 4

Coefficients from pooled regressions of the various performance measures on selected variables with the errors clustered at the firm level for the full sample and various sub-samples. Robust Huber/White/sandwich estimator of variance is used to calculate the t statistics in brakets. Dstate equals 1 if a bank has at least 20% of state ownership; 0 otherwise. Dforeign equals 1 if there is foreign ownership in the bank; 0 otherwise. The sample period is from 1989 to 2004. D9396 equals 1 if an observation is from the period 1993-1996; 0 otherwise. D9700 equals 1 if an observation is from the period 1997-2000; 0 otherwise. D0104 equals 1 if an observation is from the period 2001-2004. Size is the ratio of total assets to country GDP. The year dummies, country dummies and country-year dummies are included in the regressions but their coefficients are not reported here to conserve space.

Dependent Variable	Sample	D_{state}	D_{state} x D9396	D_{state} x D9700	D_{state} x D0104	$D_{foreign}$	Size	Intercept	No. of Obs.	R^2
A. Core capital / Assets	Full	-0.0299***	-0.0019	-0.02	0.0127	0.0352***	-0.2026***	0.0402***	5633	0.2216
		[2.83]	[0.19]	[1.27]	[0.84]	[4.22]	[3.34]	[3.08]		
	Extreme crisis	-0.0182*	-0.0049	-0.0840***	0.0021	0.0197***	-0.2810***	0.1086***	2198	0.2451
		[1.76]	[0.56]	[3.09]	[0.10]	[2.72]	[3.37]	[17.28]		
	Minimal government	-0.0173	-0.01	-0.0037	0.007	0.0096	-0.1572**	0.1541***	1388	0.2244
		[1.13]	[0.63]	[0.25]	[0.46]	[1.01]	[2.52]	[6.27]		
	Heavy government	-0.0286**	-0.0007	-0.0254	0.0123	0.0423***	-0.3123***	0.0400***	4245	0.2222
		[2.34]	[0.06]	[1.34]	[0.70]	[4.11]	[4.47]	[3.07]		
B. Allowance for loan losses / Loans	Full	0.0035	0.0106**	0.0239**	0.0187**	0.0065*	-0.0268	0.0068	5197	0.3956
		[1.49]	[2.14]	[2.29]	[2.04]	[1.67]	[1.42]	[0.51]		
	Extreme crisis	0.0051	0.0198**	0.0372*	0.0415**	0.0164***	-0.0868	0.0073**	2174	0.3896
		[1.22]	[2.07]	[1.81]	[2.07]	[2.84]	[1.10]	[2.22]		
	Minimal government	0.0115	0.0022	0.0347*	0.0065	-0.0137**	-0.0186	0.0325***	1341	0.2908
		[1.14]	[0.29]	[1.84]	[0.37]	[2.00]	[0.83]	[4.34]		
	Heavy government	0.0040*	0.0119*	0.0186	0.0194*	0.0131***	-0.0452	0.0059	3856	0.4186
		[1.74]	[1.96]	[1.49]	[1.81]	[2.82]	[1.54]	[0.43]		
C. Nonperforming loans / Loans	Full	0.0442***		0.0303	-0.0298*	0.001	-0.0693**	0.0519***	2049	0.3454
		[3.41]		[1.49]	[1.66]	[0.10]	[2.55]	[4.28]		
	Extreme crisis	0.0014		0.0994***	0.013	0.0470***	0.0959	-0.0005	736	0.4689
		[0.07]		[2.62]	[0.45]	[2.86]	[0.50]	[0.02]		
	Minimal government	0.0622***		0.0416	-0.0243	-0.0224	-0.0509	0.0399**	678	0.2678
		[2.84]		[1.25]	[0.63]	[1.25]	[1.47]	[2.54]		
	Heavy government	-0.0032		0.0529**	0.0083	0.0158	0.1647	0.1087***	1371	0.4298
		[0.22]		[2.25]	[0.43]	[1.30]	[1.16]	[3.87]		
D. Personnel expenses / Loans	Full	-0.0056***	0.0108***	0.0111***	0.0102***	-0.0056**	-0.0239***	0.0217***	4104	0.2243
		[3.36]	[5.23]	[4.02]	[3.95]	[2.53]	[2.88]	[11.21]		
	Extreme crisis	-0.0067***	0.0045***	0.0038	0.0083**	-0.0053***	-0.0370***	0.0204***	2049	0.2448
		[4.01]	[2.99]	[1.09]	[2.19]	[3.14]	[2.93]	[15.17]		
	Minimal government	0.0112***	-0.0006	0.003	-0.0039	-0.0079	-0.0194*	0.0819**	855	0.1833
		[2.87]	[0.13]	[0.54]	[0.63]	[0.87]	[1.70]	[2.41]		
	Heavy government	-0.0077***	0.0117***	0.0107***	0.0119***	-0.0052***	-0.0381***	0.0223***	3249	0.2597
		[4.53]	[5.30]	[3.42]	[4.19]	[3.39]	[3.06]	[11.96]		

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Dependent Variable	Sample	D_{state}	D_{state} x D9396	D_{state} x D9700	D_{state} x D0104	$D_{foreign}$	Size	Intercept	No. of Obs.	R^2
E. Loans / Deposits	Full	0.1365**	-0.0551	-0.0865	-0.0986	0.2508***	-0.3991***	0.5104***	5592	0.1511
		[2.28]	[0.65]	[1.05]	[1.26]	[5.30]	[2.84]	[10.02]		
	Extreme crisis	0.2942***	-0.1603	-0.1906	-0.1108	0.3466***	-0.4669	1.2793***	2191	0.1756
		[2.73]	[1.06]	[1.50]	[0.63]	[5.23]	[1.04]	[11.25]		
	Minimal government	0.0534	0.0863	-0.0601	-0.0586	0.0531	-0.4305**	0.6583***	1375	0.1098
		[0.58]	[0.62]	[0.66]	[0.59]	[1.10]	[2.33]	[9.81]		
	Heavy government	0.1681**	-0.0913	-0.1053	-0.1267	0.3133***	-0.3066	0.5075***	4217	0.1664
		[2.45]	[0.93]	[1.09]	[1.40]	[5.23]	[1.16]	[9.11]		
F. Government securities / Assets	Full	-0.0098	0.0166***	0.0223**	0.0573***	-0.0079*	0.0387***	0.0468**	5533	0.6038
		[1.58]	[3.01]	[2.40]	[4.36]	[1.69]	[2.67]	[2.37]		
	Extreme crisis	-0.003	0.0016	0.014	0.1141***	-0.0047	0.2015*	0.0056	2193	0.3145
		[0.61]	[0.39]	[0.79]	[3.57]	[0.67]	[1.70]	[1.65]		
	Minimal government	-0.0291	0.018	0.0131	0.0223	-0.0099	0.0410***	0.0372***	1374	0.6173
		[1.55]	[0.90]	[0.69]	[0.92]	[1.08]	[3.48]	[2.96]		
	Heavy government	-0.0065	0.0179***	0.0252**	0.0644***	-0.0073	0.0539	0.0447**	4159	0.6037
		[1.32]	[3.39]	[2.35]	[4.25]	[1.32]	[1.27]	[2.26]		
G. Asset growth rate	Full	-0.1440***	0.0006	0.0666	0.0802	0.0094	0.0131	0.4097***	5143	0.1489
		[2.67]	[0.01]	[1.14]	[1.42]	[0.55]	[0.07]	[3.64]		
	Extreme crisis	-0.0105	-0.0571	0.0231	-0.0404	-0.0048	-0.0498	0.2296***	1996	0.2076
		[0.16]	[0.82]	[0.30]	[0.58]	[0.20]	[0.25]	[8.32]		
	Minimal government	-0.1134	0.0831	0.0603	0.0404	0.0432	0.2334	0.1283*	1277	0.1432
		[1.11]	[0.69]	[0.59]	[0.43]	[1.63]	[0.75]	[1.86]		
	Heavy government	-0.1442**	-0.0224	0.0715	0.0948	-0.0068	-0.4974***	0.4261***	3866	0.1573
		[2.46]	[0.33]	[1.09]	[1.52]	[0.34]	[5.10]	[3.77]		

*, **, *** Significantly different from zero at the 10%, 5%, and 1% levels respectively, using a two-tailed tests.

Table 5

Coefficients from pooled regressions of the ratio of operating pretax cash flows returns on selected variables with the errors clustered at the firm level for the full sample and various sub-samples. Robust Huber/White/sandwich estimator of variance is used to calculate the t statistics in brakets. Dstate equals 1 if a bank has at least 20% of state ownership; 0 otherwise. Dforeign equals 1 if there is foreign ownership in the bank; 0 otherwise. OWNstate is the proportion of state ownership. OWNforeign is the proportion of foreign ownership. The sample period is from 1989 to 2004. D9396 equals 1 if an observation is from the period 1993-1996; 0 otherwise. D9700 equals 1 if an observation is from the period 1997-2000; 0 otherwise. D0104 equals 1 if an observation is from the period 2001-2004. The year dummies, country dummies and country-year dummies are included in the regressions but their coefficients are not reported here to conserve space.

	British-American accounting model	Continental accounting model	British-American accounting and minimal government involvement	British-American accounting and heavy government involvement
D_{state}	-0.0067***	-0.0027	-0.0085**	-0.0070***
	[4.69]	[0.86]	[2.36]	[4.32]
D_{state} x D9396	-0.0049***	0.0009	-0.0181***	-0.0033*
	[2.63]	[0.38]	[3.38]	[1.66]
D_{state} x D9700	-0.0374***	-0.0076	-0.0068	-0.0413***
	[3.98]	[0.90]	[0.93]	[3.93]
D_{state} x D0104	0.0042	0.0055	0.0069	0.0041
	[1.54]	[1.05]	[1.28]	[1.39]
$D_{foreign}$	0.0013	0.001	0.0037	0.0009
	[0.51]	[0.28]	[1.18]	[0.31]
Size	0.0164	0.0308	0.0022	0.0340*
	[1.61]	[1.35]	[0.22]	[1.67]
Intercept	0.0115**	0.0036***	0.0087	0.0108**
	[2.18]	[2.98]	[1.63]	[2.07]
Year Dummies	Included	Included	Included	Included
Country Dummies	Included		Included	Included
Country-Year dummies	Included		Included	Included
Observations	4055	291	647	3408
R-squared	0.2489	0.4104	0.1084	0.2599

*, **, *** Significantly different from zero at the 10%, 5%, and 1% levels respectively, using a two-tailed tests.

Table 6

Coefficients from pooled regressions of the ratio of operating pretax cash flows returns on selected variables with the errors clustered at the firm level for the full sample and various sub-samples. Robust Huber/White/sandwich estimator of variance is used to calculate the t statistics in brakets. Dstate equals 1 if a bank has at least 20% of state ownership; 0 otherwise. Dforeign equals 1 if there is foreign ownership in the bank; 0 otherwise. OWNstate is the proportion of state ownership. OWNforeign is the proportion of foreign ownership. The sample period is from 1989 to 2004. D9396 equals 1 if an observation is from the period 1993-1996; 0 otherwise. D9700 equals 1 if an observation is from the period 1997-2000; 0 otherwise. D0104 equals 1 if an observation is from the period 2001-2004. The country-year dummy variables are included in the regressions but are not reported here to conserve space. The instrumental variable (IV) regressions instrument the proportion of state ownership variable by 3-year lagged variables of proportion of state ownership, operating cash flow returns, core capital to assets, allowance for loan losses to loans, personnel expenses to loans, and government securities to assets. The year dummies, country dummies and country-year dummies are included in the regressions but their coefficients are not reported here to conserve space.

	Full Sample			Extreme-Crisis Sample			Less Government Involvement Sample			Greater Government Involvement Sample		
	Instrumental variable	Without banks that increased state ownership	Top 10 banks in each country	Instrumental variable	Without banks that increased state ownership	Top 10 banks in each country	Instrumental variable	Without banks that increased state ownership	Top 10 banks in each country	Instrumental variable	Without banks that increased state ownership	Top 10 banks in each country
D_{state}		-0.0051***	-0.0034**		-0.0045**	-0.0033		-0.0024	-0.0033		-0.0057***	-0.0022
		[4.15]	[2.06]		[2.13]	[1.51]		[1.03]	[1.28]		[3.89]	[0.91]
D_{state} x D9396		-0.0043***	-0.003		-0.0028	-0.0006		-0.0078**	-0.0057		-0.0033*	-0.002
		[2.62]	[1.23]		[1.33]	[0.34]		[2.55]	[1.20]		[1.72]	[0.71]
D_{state} x D9700		-0.0258***	-0.0197**		-0.0829***	-0.0384*		-0.0103*	-0.0154**		-0.0303***	-0.0236*
		[3.56]	[2.05]		[4.24]	[1.88]		[1.80]	[2.39]		[3.25]	[1.66]
D_{state} x D0104		0.0027	-0.0008		0.0069	0.0038		0.0037	-0.0009		0.0047	-0.0023
		[0.99]	[0.27]		[0.99]	[0.82]		[0.95]	[0.20]		[1.60]	[0.53]
OWN_{state}	-0.0182***			-0.0079**			0.0028			-0.0193***		
	[4.51]			[2.52]			[0.39]			[4.66]		
OWN_{state} x D9396	0.004			-0.0027			-0.0216***			0.0058		
	[1.03]			[0.80]			[2.91]			[1.47]		
OWN_{state} x D9700	-0.0480***			-0.1415***			-0.0274***			-0.0620***		
	[2.93]			[4.48]			[3.02]			[2.94]		
OWN_{state} x D0104	0.0168***			0.0081			-0.0034			0.0178**		
	[2.64]			[0.93]			[0.52]			[2.25]		
$D_{foreign}$		0.0032	0.0043**		0.0004	0.0059		0.0026	0.0001		0.0027	0.0068**
		[1.59]	[2.03]		[0.11]	[1.65]		[1.03]	[0.02]		[1.06]	[2.29]
$OWN_{foreign}$	0.0042			0.0001			0.0043			0.0042		
	[0.52]			[0.02]			[0.94]			[0.44]		
Size	0.0379**	-0.0022	0.002	0.034	-0.0037	0.0062	0.0174	-0.0003	0.0044	0.0404	-0.0028	-0.0016
	[2.10]	[0.36]	[0.35]	[1.06]	[0.17]	[0.27]	[1.18]	[0.04]	[0.51]	[1.59]	[0.34]	[0.24]
Intercept	0.0164***	0.0119***	0.0096***	0.0157***	0.0201***	0.0168***	0.0096***	0.0098**	0.0210***	0.0173***	0.0106**	0.0085***
	[5.37]	[4.85]	[4.33]	[6.45]	[10.51]	[4.24]	[2.98]	[2.02]	[6.18]	[8.54]	[2.02]	[3.58]
No. of Obs.	2264	4895	1998	1281	2009	721	521	982	544	1743	3913	1454
R^2	0.3241	0.2117	0.7206	0.3495	0.2581	0.746	0.2900	0.1542	0.2947	0.3278	0.2299	0.7395

*, **, *** Significantly different from zero at the 10%, 5%, and 1% levels respectively, using a two-tailed tests.

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