Bank ownership and performance in Taiwan: Do politics matter?

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ABSTRACT

Using a panel of Taiwanese bank data over the period from 1997 to 2010, this paper conducts a joint analysis to examine the static, selection, and dynamic effects of ownership on bank performance. Simultaneously, to determine whether politics have a significant effect on the performance of public banks, a dummy explanatory variable that represents a pan-public bank in a major election year is also included. The results indicate that both the pure-public banks and the private banks experiencing mergers and acquisition (M&A) significantly outperform the pure-private banks in most performance measures (static and selection effects); private banks experiencing M&A have consistently ascending NPL ratios in both the short and long run following the M&A, yet four other performance measures display a short-term improvement but a long-term deterioration after the M&A (dynamic effects). Public banks undergoing privatization have particularly poor loan growth rates, which improve significantly following privatization (selection and dynamic effects). All of the performance measures of privatized public banks present short-term deterioration but long-term improvement following privatization. Banks participated or acquired by foreign banks perform significantly worse than the pure-private banks in all five performance measures (selection effects), yet have all measures show short term deterioration but long-term improvements following the ownership change; this result indicates that foreign participation and acquisitions have a positive effect on bank performance. Finally, the pan-public banks have ascending NPL ratios in the major election years indicating that politics does matter.

Keywords: Bank; Ownership; Performance; Privatization; M&A; Foreign; Taiwan

INTRODUCTION

Taiwan's banking industry has experienced major structural transformations over the past two decades; some of the key transformations include establishment of new banks, privatization of state-owned banks, domestic mergers and acquisitions (M&A), and foreign equity participations and acquisitions (P&A). These changes have substantially altered the governance of banking organizations operating in Taiwan. Therefore, it is warranted to investigate how these transformations affect bank performance. A few studies investigate bank ownership and performance in Taiwan. For example, Yeh and Chen (1998) examine operating efficiency between public and private banks in Taiwan and find that private banks outperform public ones. Lin (2003) performs various analyzes of public bank performance before and after the privatization and finds that operating efficiency of those banks does not vary significantly during the three years before and after the privatization. Micco et al. (2007) study the relationship between bank ownership and performance and report that private banks outperform the public ones only in developing nations, and not so in for the industrial countries. The researchers (Micco et al., 2007) also analyze the impact of the political factor on bank performance and show that political factors do affect bank performance.

Other studies on the connection between bank ownership and performance have mainly focused on the banking industry of emerging countries or nations transitioning from a communist economy into a market economy, particularly those in Central and Eastern Europe. The literature concerning a single nation includes studies on Croatia (Kraft and Tirtiroglu, 1998; Jemric and Vujcic, 2002), the Czech Republic (Matousek and Taci, 2002; Weill, 2003), Hungary (Hasan and Marton, 2003), and Poland (Nikiel and Opiela, 2002; Weill, 2003). The literature considering multi-nations has been proposed by Grigorian and Manole (2002), Yildirim and Philippatos (2007), Drakos (2002), Bonin et al. (2005a, b), and Fries and Taci (2005). The common findings of these studies show that private banks and banks acquired or managed by foreign equity perform better in general than public ones.

The problem of this study is to examine how a series of changes in the bank ownership and political factor influence bank performance. Some of the key research questions include (1) to what extent do the structural changes following governance changes correspond to predicted effects; e.g., do privatized banks tend to improve their performance? (2) Do merged banks enhance their profitability due to the benefits of economies of scale? (3) Do banks with foreign participation or those acquired by foreign organization gain competitiveness due to the benefits of synergy? To address these questions, the current study is set up to examine the connection between ownership changes and bank performance in Taiwan. In particular, this paper tests whether performance difference between public and private banks is driven by political considerations. This study contributes to the further understanding of various effects of structural transformations of banking industry in Taiwan and adds insightful information to the existing banking literature. Finally, policy makers in Taiwan and beyond can use the information in this study to aid them in the designing and implementation of banking regulations.

DATA AND EMPIRICAL STRATEGY

This paper first thoroughly examines banks operating in Taiwan from 1997 to 2010, sorted their history and evolution, and divided them into two major groups – static and dynamic banks. The former indicate those banks that have not experienced any ownership change before December 2010, and the latter are those banks that have been selected to undergo an ownership change; at least there is an observed ownership change over the sample

period. The former can be categorized further to two types – purely public and private banks. The latter can be further categorized into three types; these are privatized public banks, domestic banks M&A with others, and banks joined or acquired by foreign capital. Overall, there are 5 distinct types of banks in terms of ownership in this study. There are 38 banks included in the sample; brief information of ownership types, changes and classification is described in Table 1 (See the appendices).

It is noteworthy that some of the banks underwent an ownership change more than once. For instance, Taiwan Cooperative Bank was first privatized in 2005 and acquired Farmer Bank of China in 2006; Cathay United Bank involved in M&A activity in 2003 and 2007; China Trust Commercial Bank first acquired Grand Commercial Bank in 2003 and thereafter acquired Hualien Business Banks. To which class a bank would be categorized would depend on its last ownership status or change.

Table 2 shows the distributions of our sample across years by ownership type. Our sample, collected from the Taiwan Economic Journal (TEJ) Data Bank, is an unbalanced panel containing 38 banks and 505 observations covering the 14-year period from 1997 to 2010. Of the 38 sample banks, 15 (39%) are static banks, and 23 (61%) are dynamic banks. Observing Table 2 and Fig. 2, the market shares of assets of private M&A banks are continually the highest across the years and display a trend of ascending due to the activities of M&A that these banks have undergone. On the contrary, the market shares of assets of the two types of pan-public banks, pure-public and privatized public banks, are gradually declining, where the former is consistently the third highest and the latter is the second highest.

Following the method first proposed by Berger et al. (2005), this paper examines the static, selection, and dynamic effects of various bank ownership types and changes on bank performance. Simultaneously, to determine whether performance difference between public and private banks is driven by political factors, this study follows the empirical model of Micco et al. (2007) and incorporate a dummy variable representing a pan-public bank in a major election year, which takes the value of one while a pan-public bank is in a major election year and zero otherwise, as one of the explanatory variables. The basic regression model is as follows:

$$\begin{aligned}&\text{Bank Performance Measure}\\&= \text{Constant} + \beta_1 * \text{Static Ownership Indicators}\\&+\beta_2 * \text{Selection Ownership Indicators}\\&+\beta_3 * \text{Dynamic Ownership Indicators}\\&+\beta_4 * \text{Dynamic Ownership Indicators\_Years Since}\\&+\beta_5 * \text{State Dummy} * \text{Elect Dummy}\\&+\beta_6 * \text{Control Variables} + \beta_7 * \text{Year Fixed Effects} + \text{Error Term}\end{aligned} \quad (1)$$

The current study examines various aspects of performance measures including profitability, asset quality, and growth. In the aspect of profitability, three measures for evaluating bank profitability are net profit margin (NPM), return on assets (ROA), and return on equities (ROE)[1] are included. NPM is defined as the net profit relative to the net sales revenue. ROA and ROE are net profits relative to assets and equities, respectively. The reason for the three profitability measures being included together is that they convey distinct information about profitability according to the Du Pont Analysis. NPM indicates the profit

[1] We use the data of after-tax ROA and ROE.

that every dollar of revenue can earn. However, a high NPM does not necessarily mean a high ROA because ROA equals NPM times total asset turnover (TAT). ROA can convey the information of how efficiently or intensively a firm uses its assets to generate sales, in addition to the information of profit-earning ability. Similarly, a high ROA does not necessarily bring a high ROE because ROE equals ROA times the equity multiplier. ROE, compared with ROA, contains additional information, which is the degree of leverage a firm uses. Rhoades (1998) also argued that the ROA is biased upwards if a lot of banks' profits come from off-balance sheet business because revenue and expense generated from these activities are not based on assets. Hence, from this viewpoint, it is necessary to include ROE in the analysis to provide an alternative measure of bank profitability. As for the aspects of asset quality and growth, this paper employed non-performing loans (NPL) and loan growth rate (LGR), respectively, as performance measures.

As can be seen in regression equation (1), there are four types of ownership indicators included in the model, which represent static, selection, and one-time and long-term dynamic effects of ownership, respectively, on bank performance. The total number of static and selection dummies equals the number of types of banks minus 1 because one type of static bank would be set as the control group, so it would not have corresponding dummy. For instance, there are five types of banks in our sample, two types of static banks and three types of dynamic banks. A static bank with no corresponding dummy is deemed a control group, and the coefficients of the static and selection dummies reflect the performance differences between some type of banks that the dummy denotes and the control group of banks. Therefore, we can interpret the static effect as the performance difference between one type of static bank and the control group of banks. Selection effects determine the performance difference between the various types of dynamic banks and the control group. As to the two dynamic effects, one captures the one-time change impact (average impact) and the other captures the long-term change impact (gradual impact) on performance.

Because there are two types of static ownership, that is, pure-public and pure-private, in this study, only one static dummy variable had to be introduced. Here, static pure public is set as the only static dummy. It equaled 1 over the whole sample period if some bank belongs to the purely public type and zero otherwise. In other words, purely private banks comprised the so-called "control group" (excluded reference sample), and thus, the coefficient on the static dummy measured the performance difference between the purely public and purely private banks.

Next, because there are three types of dynamic banks, three selection dummies were introduced, one for the public banks that have undergone privatization (selection_privatization), another for the banks involved in the local M&A activities (selection_private merge)[2], and the other for the banks that have ever been joined or acquired by foreign equities (selection_foreign). Some of the banks underwent ownership changes more than once or of more than one type, and following the method of Berger et al. (2005), to which class a bank would be classified mainly depended on its last ownership status or change.[3] The selection dummies equaled one for the corresponding banks for all time periods.

[2] This paper considers only the M&A activities among private banks, excluding those among public ones. In 2007, Bank of Taiwan (Public Bank) merged the Central Trust of China (Public Bank).

[3] The state-owned shares in MEGA Bank, previously known as ICBC, were below 50% in early 1971, thereafter, merging/acquiring the Chiao Tung Bank. Hence, this study categorized it as a "private M&A bank." Taiwan Cooperative Bank was privatized in 2005, and then merged/acquired Farmer Bank of China in 2006. This study, therefore, categorizes its ownership change according to the change in 2006. Cathay United Bank engaged in M&A activities both in 2003 and 2007, and thus we categorize the type according the 2007 change. China Trust Commercial bank was the same case as Cathay United Bank.

The coefficients on these dummies thus identified the performance difference between the pure private banks (the control group) and those that have been selected to undergo some type of ownership change.

The number of dynamic dummies was exactly the same as the number of selection dummies as Lin and Zhang (2009) had explained that the dynamic dummies aim to identify those banks for which the selection dummies take the value of one to capture the one-time change (average) or long-term (gradual) impact on performance. Accordingly, three dynamic dummies for evaluating the average impact were introduced, one stands for the public bank that has undergone privatization (dynamic_privatization), another for the private banks involving in the local M&A activities (dynamic_private merger), and another for the banks joined or acquired by foreign capital (dynamic_foreign). If the ownership change occurred more than once, this study referred to the latest change as previously mentioned. These dummy variables equaled one for the corresponding banks after the year when the change took place, and equaled zero for the periods prior to the ownership change and for all of the periods of the banks that were not observed any ownership change.

The dynamic effects mentioned above captured the one-time change impacts on performances that arise at the time of ownership change. However, the impact could last for more than one period signifying that the existence of long-term or gradual impact cannot be ignored. Thus, this paper also introduces another dynamic dummy, the "dynamic time dummy," to measure the time that has lapsed since the event occurred to capture the long-term impacts of ownership changes. Three dynamic time indicators are employed, one for public banks undergoing privatization (dynamic_time_privatization), another for banks involving in local M&A activities (dynamic_time_private merger), and the other for banks joined or acquired by foreign capital (dynamic_time_foreign). Because this paper used yearly observations for the sample, these dummies were measured at the annual frequency. The time variable equaled one in the year following the change, two in the second year, and so on. Because there are several interventions during the year of ownership change, for example, legal fees, consultant expenses, due diligence costs, etc., following the previous studies, this paper deletes the observations from the year of ownership change.

To understand how the political factor affects bank performance, this paper considers the framework of Micco et al. (2007), employing the product of dummy variables regarding the ownership and the political factor (whether a major election takes place during the appointed year, namely an election year[4]) as an explanatory variable (=pan-public×election-year). The product of the two dummies equaled 1 if the bank is pan-public and there is at least one major election in that year and equaled 0 otherwise. Table 3 lists the major election years during the period from 1997 to 2010 and their elections.

Control variables help observe the impacts of banks' own characteristics or different years (Year Fixed Effect) on bank performance. Following Lin and Zhang (2009), this paper uses the logarithm of the lagged asset to help understand the impact of different bank size on bank performance. Furthermore, to understand the effects of characteristics of bank revenue, the fee revenue to total income ratio, which can also be interpreted as the percentage of non-interest income to total revenue, was included as another control variable. The definitions of the variables in regression (1) are listed in Table 4.

[4] The election years indicate the years that had major elections including the election of president, the election of legislators, and the municipal elections held in that year.

EMPIRICAL RESULTS

Table 5 and 6 present the regression results, which convey the impacts of ownership types, changes and political factors on bank performance. Table 5 presents the regression results for three profitability measures, and Table 6 presents the regression results for the asset quality and growth measures.

Starting from the measures regarding profitability, regardless of whether dynamic time indicators were included in our models, for the static effect, purely public banks outperformed the purely private ones in terms of ROE, with coefficients suggesting that purely public banks are 6.39% or 6.31% points more profitable than purely private banks. As for asset quality measure, regardless of whether dynamic time indicators were included in our models, purely public banks still significantly outperformed the purely private ones in terms of NPL. However, in the measure of growth, purely public banks underperformed purely private banks in both models with or without dynamic time indicators, though not significantly.

Particularly noteworthy are the results of ROE and asset quality for static effects. They are inconsistent with most of the previous literature that concluded that private banks outperform state-owned banks and what agency and political views have predicted. The probable reason is that the purely private banks, which are in the control group in this study, mainly consist of newly established banks and transformed banks (from SME banks or credit cooperative unions transforming to general private banks.) Those banks are smaller and less competitive, causing their poorer performance but showing higher growth. Most private banks with larger size and better constitution have encountered M&A activities and were therefore excluded out of the type of "purely private banks" and instead classified as the type of "private M&A banks" in the models. However, state-owned banks in Taiwan, owing to history evolution, are generally large and long-lived, having a certain market share, and benefited from the economies of scale and oligopoly in the early times, and thus have better performance except for that in growth. As a result, the purely public banks are observed to perform better than the purely private ones. Such inference can be supported from the coefficients of "Ln Assets" in the NPM, ROA and ROE regression, which are all positive and 0.2584, 0.0221 and 0.3272, respectively, indicating that larger size in terms of assets positively affects the bank profitability, though only the coefficient of ROE is significant. However, larger assets do not necessarily have positive influence on asset quality and loan growth rate as based on the coefficients of the NPL and LGR regressions.

With respect to the selection effects, the results suggest that the state-owned banks selected to be privatized underperform purely private banks in terms of the growth indicator, LGR, significantly. The coefficients of LGR in the models with and without dynamic time indicators are -13.7029 and -13.5966, respectively. The banks having undergone private M&A have statistically better ROE and NPL than the control group, i.e., the purely private. The most interesting is that banks involved in foreign P&A underperform the purely private significantly in all five performance measures, suggesting that in Taiwan, banks available for P&A by foreign capital are still limited to the banks with inferior operating conditions. Such a result particularly opposes the empirical results of Lin and Zhang (2009) that banks involved in foreign acquisitions perform better and argued that the Chinese government selected better banks for foreign acquisition to attract foreign investors. In contrast, the Taiwanese government is more concerned about the problems of bad assets and banks and wants to introduce the funds, know-how and management of foreign banks to solve the problems. Combining the results of static and selection results, the estimated coefficients for both effects dummies are quite robust to the inclusion of dynamic time indicators.

As have been discussed in the introduction, the regression coefficients for the static and selections effects not only reveal the performance differential between one type of banks and the benchmark banks, i.e., the purely private, but also can be used to distinguish the performance differential between various types of banks by their relative values. In other words, whether significant or not, the coefficients of static and selections effects could be compared to decide the rank of various types of banks on various performance measures. The results are listed in Table 7.

Several meaningful implications could be inferred from Table 7. First, performing relatively well are the purely public and private M&A banks; therefore, both types of banks have opportunities to play an active role in the future course of the consolidation of the Taiwan banking industry. Second, banks with foreign participation or those acquired by foreign capital (foreign P&A banks) perform the worst. Third, the privatized public banks have to notice the problem of unsatisfactory loan growth. Fourth, according to Du Pont analysis, purely private banks have higher asset turnover rates than purely public, private M&A, and privatized public banks; that purely public, private M&A, and privatized public banks have higher financial leverage than purely private banks; and that privatized public banks have higher financial leverage than private M&A banks.

With respect to the dynamic effects, there are three major significant results. First, the privatized public banks display a significant increase in LGR, which was originally their weakness, in the regression that excluded dynamic time indicators. Second, the private banks that experienced private M&A display deteriorated NPL in the regression that excluded dynamic time indicators. Third, the banks with foreign participation or those acquired by foreign capital display deteriorated NPM but improved NPL in the regression that excluded dynamic time indicators, which confirms Lin and Zhang's (2009) statement that "foreign acquisitions usually involve detecting past non-performing assets and writing them off using gross profits"; however, in the regression that includes dynamic time indicators, these banks display short-term deteriorating but long-term improvement in the two measures, ROA and ROE, of profitability, implying that the introduction of foreign P&A might be advantageous.

The dynamic effect demonstrates the difference on the distinct stages of the timeline, while the dynamic time effect indicates the continual improvement or deterioration of the performance with the time passing by. The former is interpreted as the short-term (one-time) effect, and the latter is interpreted as the long-term effect. Regardless of whether it is significant, in the regression including dynamic time indicators, the privatized public banks show short-term deterioration but long-term improvements on the NPM, ROE, and NPL measures. The other two measures, ROA and LGR, are both improved regardless of whether it was short or long term. Generally speaking, privatization is beneficial. For private banks that encountered private M&A, the results reveal short-term improvements but long-term deterioration on the NPM, ROA, ROE, and LGR measures. The remaining measure, NPL, deteriorated for both the short and long term. Such results could be attributed to the better performance of the acquiring banks relative to that of the acquired banks dragging down the performance of the acquiring banks. For banks with foreign participation or those acquired by foreign banks, it is noteworthy that all performance measures show short-term deterioration yet long-term improvement, suggesting that acquisition or participation by foreign capital is advantageous in the dealing with problem assets and banks.

Observing the coefficients of dynamic effects of NPM, ROA, ROE and NPL, we can find that the performance of privatized public banks does not display significant changes, indicating that the ex-ante performance is not significantly different from the ex-post performance in the event of privatization. There are two feasible explanations: first, most privatization events occurred in the years of 1998 and 1999, and our observations started from

1997; thus, the less observations for pre-privatization periods led to this result; and second, as Xue and Hu (1998) mentioned, in the first stage of the privatization, if state-owned shares are lower than 50%, the tasks in this stage were completed and enter into the second stage; in the second stage, although the state-owned shares are not above 50%, the government can still exert some influence on bank operations. Thus, the major task in this stage is to reduce the control of government. Continually decreasing the state-owned shares until the government abandons control over the bank operation is the goal for the third stage of privatization. Currently, the privatized state-owned banks in Taiwan remain in the second stage of privatization, meaning that the ownership type has reached privatization, but in fact, the government still enjoys leading power in the bank operation. If the managing methods are not adjusted due to the change of ownership, i.e., privatization, the decisions, personnel, and mechanisms will continue to be rigid. For example, the boards that are appointed by the Ministry of Finance of Taiwan, despite being financial experts, serve to obtain rewards from the government, thus making it difficult to eradicate the influence of the government. Moreover, if the staffs of the privatized banks are not able to switch their attitudes away from the conventional style and are not active in developing new businesses or clients, the ex-post performance of privatized public banks cannot be obviously improved.

In analyzing the correlation between the political factor and bank performance, although none of the results is significant, the former has unfavorable bearings on performance. In particular, the coefficient on NPL is positive and almost statistically significant, which is consistent with our prediction that the pan-public banks are easily intervened by political power and thus apt to make some loans of poor quality, making the NPL rise especially in election years.

The coefficients of the control variable “ln asset” indicate that there exists a positive connection between asset size and bank profitability, although only the result for ROE is significant, showing that benefits from economies of scale do exist. Moreover, “fee income to total revenue ratio” has significantly positive impacts on all five performance measures; that is, it is positively correlated to profitability and loan growth measures and negatively correlated to NPL measures, representing that the lower the dependence on traditional interest revenue and the higher the proportion of fee income, the better the bank performance.

CONCLUSION

The banking industry in Taiwan released the restriction on the establishment of new banks, launched the privatization of the public banks in 1990s, and encountered M&A within private banks and P&A by foreign capital in 2000s. This paper seeks to examine how the series of changes in the bank ownership and the political factor influenced bank performance.

The data of 38 banks in Taiwan during the period from 1997 to 2010, referring to the model proposed by Berger et al. (2005) were collected. Their model considered the static effects, selection effects, and dynamic effects when studying the correlation between bank ownership and performance. For the purpose of observing the political impact, another dummy variable, which represented a pan-public bank in an election year was included to determine whether the performance differential between public and private banks widens during major election years.

The empirical results show that, for the static effect, the purely public banks significantly outperformed the purely private ones in terms of ROE and NPL but underperformed in the measure of growth, though not significantly. With respect to selection effect, the public banks encountering privatization underperformed the pure private ones in terms of the growth indicator, LGR, significantly, but improved significantly after

privatization, which can be found in the dynamic effects. The banks that encountered private M&A significantly outperformed the control group in terms of ROE and NPL, indicating that the private banks that have the ability to merge or acquire other banks are in better conditions. However, the banks with foreign participation or those acquired by foreign capital underperformed the control group significantly in all five performance measures, showing that, in Taiwan, banks available for foreign investors to participate in or acquire are still limited to those banks experiencing insufficient operations and poor conditions.

With respect to the dynamic effect, regardless of it was significant, in the regression including dynamic time indicators, the privatized public banks show short-term deterioration but long-term improvements on the NPM, ROE, and NPL measures. The other two measures, ROA and LGR, both improved for both the short and long term, indicating that overall privatization is beneficial. For private banks that encountered private M&A, the results exhibit short-term improvements but long-term deterioration on the NPM, ROA, ROE, and LGR measures. The remaining measure, NPL, deteriorated for both the short and the long term. Such results could be attributed to the better performance of the acquiring banks relative to the acquired banks dragging down the performance of acquiring banks. For foreign P&A banks, it is noteworthy that all performance measures showed short-term deterioration yet long-term improvement, suggesting that P&A by foreign capital are advantageous in dealing with problem assets and banks. Thus, the government ought to properly encourage the participation of foreign equities in the operation and management of local banks with the hope that the synergy can be elaborated and their technical level and service quality enhanced further.

Concerning the political factor, the pan-public banks display a worsening NPL ratio during the years of nationwide election, indicating that the pan-public banks in Taiwan are indeed intervened by the political power to a certain degree. In sum, the results of this paper can finally answer the questions proposed in section 3:

1. Private banks do not outperform public ones; instead, according to our findings, the purely public ones perform better than the purely private ones.
2. Privatization does improve public bank performance overall.
3. M&A activities among private banks do not obviously enhance bank performance; on the contrary, the performances of the acquiring banks were in fact dragged down by the banks they acquired.
4. P&A by foreign capital does enhance bank performance and, to a certain extent, solve the problems of bad assets and banks in Taiwan.
5. The political factor does affect the decision making and thus the performance of pan-public banks.

The results of this study also suggest a direction of development for the banking industry in Taiwan for the near future. First, economies of scale do exist, the large-sized banks outperform the small ones, so M&A activities are worthy of continuous efforts. Second, the innovation business positively affects the bank performance. Hence, in addition to becoming a larger bank through M&A to reinforce their dominance over competition, the smaller banks have another option of developing their professional knowledge and skills to engage in innovative business, thus evolving as a niche bank.

Next, there exists benefits for public banks to be privatized; hence, the government should continue putting the third stage of privatization into practice to complete the whole process and, thus, to effectively improve the efficiency and operations of bank performance. Furthermore, those banks who are interested in merging or acquiring other banks should choose their target carefully to enjoy the advantages of M&A activity. Last but not least, the

P&A of foreign capital exhibit positive effects on the local banking industry. The authority should consider how to introduce, exploit, or learn from the operation modules, the techniques, the know-hows, and the experiences of foreign banks, therefore approaching the ultimate goal of improving the competence of the Taiwan banking industry.

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APPENDIX

Table 1 Ownership Type, Change, and Classification of 38 banks

Classification of Banks	Brief Description of Governance Type or Change
1. Static banks	
A. Pure Public	
a. Bank of Taiwan	100% public bank; acquired another pure-public bank "Central Trust of China" in 2007.
b. Land Bank of Taiwan	100% public bank.
c. Central Trust of China	100% public bank; acquired by another pure-public bank "Bank of Taiwan" in 2007.
B. Pure Private	
a. Shanghai Commercial and Saving Bank	Founded in Shanghai in 1915; the only private bank that moved from the mainland China; allowed to resume banking business in Taiwan in 1965.
b. Yuanta Commercial Bank	whose predecessor is Asia-Pacific Bank, one of the 16 new banks.
c. Far Eastern International Bank	One of the 16 new banks.
d. Taichung Commercial Bank	whose predecessor is Taichung Business Bank.
e. China Development Industrial Bank	whose predecessor is China Development Trust Investment Corporation.
f. Jin Sun International Commercial Bank	whose predecessor is Bao Dao Bank, one of the 16 new banks.
g. King's Town Commercial Bank	whose predecessor is Tainan Business Bank.
h. Bank of Panhsin	Founded in 1957, formerly known as the Panchiao Credit Cooperative.
i. Industrial Bank of Taiwan	Founded in 1999.
j. Hwa Tai Bank	whose predecessor is the Taipei Second Credit Union.
k. Cota Commercial Bank	whose predecessor is the Taichung Credit Cooperative.
l. Bank of Taipei	whose predecessor is the Taipei First Credit Union.
2. Dynamic banks	
A. Public Privatization	
a. First Bank	Privatized in 1998.
b. Hua Nan Commercial Bank	Privatized in 1998.
c. Chang Hua Commercial Bank	Privatized in 1998.
d. Taiwan Business Bank	Privatized in 1998.
e. Chiao Tung Bank	Privatized in 1999.
f. Bank of Kaohsiung	Privatized in 1999.
B. Private M&A	
a. Taiwan Cooperative Bank	Privatized in 2005; acquired "Farmer Bank of China" in 2006.
b. Mega International Commercial Bank	"International Commercial Bank of China (ICBC)" merged with "Chiao Tung Bank" in 2006 where ICBC is the surviving bank.

c. China Trust Commercial Bank	Acquiring “Grand Commercial Bank” in 2003 and “Hualien Business Bank” in 2007.
d. Cathay United Bank	“Cathay Bank” merged with “United World Chinese Commercial Bank” in 2003 where “United World Chinese Commercial Bank” is the surviving bank; acquired “Lucky Bank” in 2007.
e. Taipei Fubon Commercial Bank	“Bank of Taipei” merged with “Fubon Bank” in 2005 where “Bank of Taipei” is the surviving bank.
f. SinoPac Commercial Bank	“Bank SinoPac Company Limited” merged with “International Taipei Commercial Bank” in 2006 where the Bank SinoPac Company Limited is the surviving bank.
g. E. Sun Commercial Bank	Acquired “Kaohsiung Business Bank” in 2004.
h. Taishin International Commercial Bank	Acquired “Dah An Commercial Bank” in 2002.
i. Taiwan Shin Kong Commercial Bank	Merged with “MAKOTO Bank” in 2005 where “MAKOTO Bank” is the surviving bank.
j. Union Commercial Bank	Acquired “Chung Shing Bank” in 2005.
k. Sunny Commercial Bank	Acquired “Kao Shin Commercial Bank” in 2005.
C. Foreign Acquisition and Participation	
a. Citi Bank Taiwan	Acquired “Bank of Overseas Chinese” in 2007.
b. Standard Chartered Bank	Acquired “HiBank” in 2006.
c. Ta Chong Commercial Bank	Acquired the participation of capital from private equity “Carlyle Group” and “Gable Fund” in 2007.
d. HSBC Bank (Taiwan)	Acquired “Chinese Bank” in 2007.
e. Entie Commercial Bank	Acquired the participation of capital from private equity “LongReach Group Limited” in 2007.
f. Cosmos Commercial Bank	Acquired the participation of capital from financial group such as “SAC” and “GE Money” in 2007.

This table provides the brief information of ownership types, changes and classification of the 38 banks included in our sample. Sources of data: Financial Statistics Abstract, the Banking Bureau, Financial Supervisory Commission, R.O.C. and the official website of the appointed banks.

Table 2 Distribution of Bank Observations

Total Observations	Total	97	98	99	00	01	02	03	04	05	06	07	08	09	10
	505	33	33	37	37	37	37	37	37	37	36	36	36	36	36
Number of banks by ownership															
1. Static banks	188	10	10	14	14	14	14	14	14	14	14	14	14	14	14
A. Pure Public	38	3	3	3	3	3	3	3	3	3	3	2	2	2	2
B. Pure Private	150	7	7	11	11	11	11	11	11	11	11	12	12	12	12
2. Dynamic banks	317	23	23	23	23	23	23	23	23	23	22	22	22	22	22
A. Public Privatization	79	6	6	6	6	6	6	6	6	6	5	5	5	5	5
B. Private M&A	154	11	11	11	11	11	11	11	11	11	11	11	11	11	11
C. Foreign Participation and Acquisition	84	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Market share of assets by ownership															
1. Static banks	.29	.31	.31	.32	.31	.31	.30	.30	.29	.28	.28	.28	.29	.28	.28
A. Pure Public	.20	.23	.23	.22	.22	.21	.21	.20	.19	.18	.18	.18	.19	.19	.18
B. Pure Private	.09	.08	.08	.09	.09	.09	.09	.09	.09	.10	.10	.10	.10	.09	.09
2. Dynamic banks	.71	.68	.68	.68	.69	.70	.69	.70	.70	.71	.72	.72	.71	.71	.72
A. Public Privatization	.25	.30	.30	.30	.29	.30	.28	.28	.27	.25	.22	.22	.22	.21	.21
B. Private M&A	.38	.31	.31	.31	.32	.33	.33	.35	.37	.40	.42	.44	.43	.43	.42
C. Foreign Participation and Acquisition	.07	.08	.08	.08	.07	.07	.07	.07	.07	.07	.08	.06	.06	.07	.09

This table shows the distributions of our sample across years by ownership type. Our overall sample is an unbalanced panel containing 38 banks and 505 observations covering the 14-year period from 1997 to 2010.

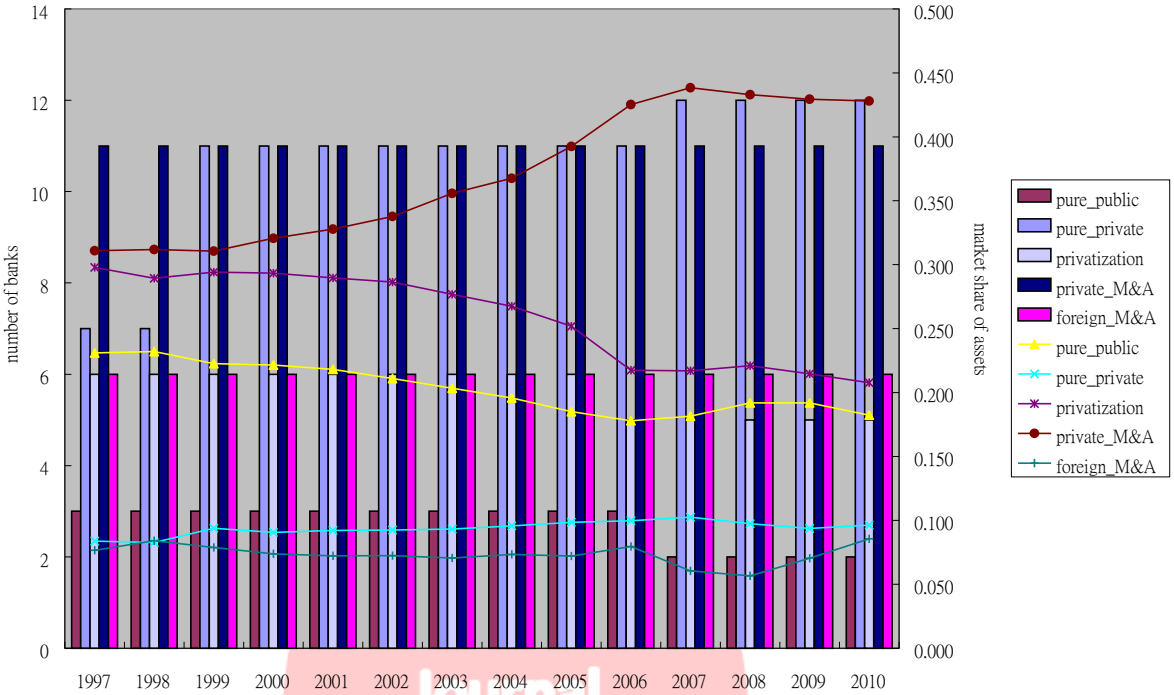

Fig. 2. The distribution of bank observations across types year by year. The straight bars represent the numbers of various types of banks, and the lines represent the market shares of assets of various types of banks.

Table 4 Variables employed in the regression models

Symbol	Definition
Endogenous variables	
NPM	Net Profit Margin
ROA	Return on Asset
ROE	Return on Equity
NPL	Non-Performing Loan
LGR	Loan (including discount loans) Growth Rate
Exogenous variables	
Static Dummies	
Static_pure public	Dummy indicating a pure public bank during the period from 1997 to 2010. Equals 1 or 0 for all periods for a bank.
Selection Dummies	
Selection_privatization	Dummy indicating a public bank that underwent privatization during the period from 1997 to 2010. Equals 1 or 0 for all periods for a bank.
Selection_private merge	Dummy indicating a private bank that underwent M&A during the period from 1997 to 2010. Equals 1 or 0 for all periods for a bank.
Selection_foreign	Dummy indicating a private bank that was joined or acquired by foreign capital during the period from 1997 to 2010. Equals 1 or 0 for all periods for a bank.
Dynamic Dummies	
Dynamic_privatization	Dummy indicating the years following a bank's

	privatization during the period from 1997 to 2010. Equals 0 prior to the bank's change and 1 the second year following the change. Equals 0 for all periods for banks that did not undergo a privatization.
Dynamic_private merge	Dummy indicating the years following a private bank's M&A during the period from 1997 to 2010. Equals 0 prior to the bank's change and 1 the second year following the change. Equals 0 for all periods for banks that did not undergo M&A.
Dynamic_foreign	Dummy indicating the years following a private bank joined or acquired by foreign capital during the period from 1997 to 2010. Equals 0 prior to the bank's change and 1 the second year following the change. Equals 0 for all periods for banks that were not joined or acquired by the foreign capital.
Dynamic time Dummies	
Dynamic_time_privatization	Number of years since a privatization. Equals 0 for all periods prior to a public bank's privatization and starts with one for the first year following the change during the period from 1997 to 2010. Equals 0 for all periods for banks that did not undergo privatization.
Dynamic_time_private merge	Number of years since a merge and acquisition. Equals 0 for all periods prior to a private bank's M&A and starts with one for the first year following the change during the period from 1997 to 2010. Equals 0 for all periods for banks that did not undergo M&A.
Dynamic_time_foreign	Number of years since a foreign acquisition. Equals 0 for all periods prior to a private bank's foreign acquisition and starts with one for the first year following the change during the period from 1997 to 2010. Equals 0 for all periods for banks that did not undergo foreign acquisition.
Political Dummy	
Pan-public*election	Dummy indicating pan-public banks that encounter an election year during the period from 1997 to 2010. Equals 1 for pan-public banks in the election year and 0 in a year without election, and equals 0 for banks that are not pan-public ones.
Other control variables	
Ln asset	Logarithm of total assets in period t -1 for each bank
Fee income ratio	The percentage of non-interest revenue to total revenue
Year fixed effect	Year dummies

This table provides the definitions of the endogenous and exogenous variables in regression (1).

Table 3 Major Election Years and their elections

Election Year	Elections
1997	Municipal elections
1998	Legislator elections
2000	President election
2001	Legislator elections, municipal elections
2004	President election, legislator election
2005	Municipal elections
2008	President election, legislator election
2009	Municipal elections

This table lists the years that had major elections held during our sample period 1997 to 2010. We defined the major elections as the election of president, the election of legislators, and the municipal elections. Following each election year, we also list the major elections in that year. Source of data: Central Election Commission.

Table 5 Ownership change, political factor, and bank performance: profitability measures

Model	Models including dynamic time indicators			Models excluding dynamic time indicators		
Dependent Variables	NPM	ROA	ROE	NPM	ROA	ROE
Constant	-0.0658 (0.9872)	0.2182 (0.3656)	-3.8253 (0.0831)*	-0.2480 (0.9515)	0.2088 (0.3855)	-3.9637 (0.0724)*
Static Dummies						
Static_pure public	5.3704 (0.2897)	-0.0887 (0.7658)	6.3919 (0.0193)*	5.2933 (0.2944)	-0.0972 (0.7436)	6.3140 (0.0207)**
Selection Dummies						
Selection_privatization	-1.4904 (0.8820)	-0.6807 (0.2487)	5.8462 (0.2784)	-1.6166 (0.8715)	-0.6938 (0.2390)	5.7232 (0.2886)
Selection_private merge	3.5535 (0.3054)	-0.2361 (0.2475)	5.6634 (0.0025)***	3.7139 (0.2764)	-0.2151 (0.2855)	5.8717 (0.0015)***
Selection_foreign	-7.2826 (0.0500)**	-0.8173 (0.0002)***	-3.9062 (0.0507)*	-7.1526 (0.0517)*	-0.7979 (0.0003)***	-3.7221 (0.0609)*
Dynamic Dummies						
Dynamic_privatization	-0.6089 (0.9581)	0.2002 (0.7688)	-5.6739 (0.3625)	2.9666 (0.7583)	0.5347 (0.3466)	-2.0198 (0.6976)
Dynamic_private merge	4.0253 (0.6662)	0.3510 (0.5220)	2.1950 (0.6614)	-3.2590 (0.4997)	0.0359 (0.8996)	-2.7416 (0.2927)

Dynamic_foreign	-29.5710 (0.2325)	-2.4151 (0.0971)*	-22.0918 (0.0969)*	-12.8656 (0.0806)*	-0.1003 (0.8168)	-0.8135 (0.8374)
Dynamic time Dummies						
Dynamic_time_privatization	0.5010 (0.6006)	0.0469 (0.4047)	0.5130 (0.3187)			
Dynamic_time_private merge	-1.6826 (0.4084)	-0.0638 (0.5936)	-1.0780 (0.3240)			
Dynamic_time_foreign	5.6313 (0.4751)	0.7882 (0.0892)*	7.2314 (0.0881)*			
Political Dummy						
Pain-public*election	-1.5732 (0.7129)	-0.1790 (0.4761)	-1.4072 (0.5400)	-1.2626 (0.7662)	-0.1468 (0.5574)	-1.0816 (0.6368)
Other control variables						
Ln asset	0.2584 (0.4668)	0.0221 (0.2898)	0.3272 (0.0866)*	0.2733 (0.4394)	0.0226 (0.2769)	0.3371 (0.0774)*
Fee income ratio	7.5377 (0.0000)*** **	0.4103 (0.0001)*** **	1.6181 (0.0853)*	7.5101 (0.0000)*** **	0.4088 (0.0001)*** **	1.5980 (0.0901)*
Observations	464	463	463	464	463	463
R-squared	0.197370	0.183554	0.280171	0.194345	0.175865	0.271350

All specifications include year-fixed effects (not shown, for readers who are interested, please email us for the detailed results). P-values are in parentheses. The superscripts of P-value *, ** and *** denote significance at 10%, 5% and 1% levels, respectively.

Table 6 Ownership change, political factor, and bank performance: asset quality and growth measures

Model	Model including dynamic time indicators		Models excluding dynamic time indicators	
Dependent Variables	NPL	LGR	NPL	LGR
Constant	3.5073 (0.0000)***	11.7441 (0.0000)***	3.5147 (0.0000)***	11.4990 (0.0000)***
Static Dummies				
Static_pure public	-1.3102 (0.0046)***	-3.1156 (0.3476)	-1.2981 (0.0048)***	-3.0942 (0.3512)
Selection Dummies				
Selection_privatization	-0.8305 (0.3690)	-13.7029 (0.0401)**	-0.8122 (0.3774)	-13.5966 (0.0419)**
Selection_private merge	-1.9376 (0.0000)***	-0.8302 (0.7171)	-1.9452 (0.0000)***	-0.3807 (0.8666)
Selection_foreign	1.4853 (0.0000)***	-4.9723 (0.0428)**	1.4801 (0.0000)***	-4.6307 (0.0580)*
Dynamic Dummies				
Dynamic_privatization	0.5560 (0.6040)	4.6388 (0.5480)	0.3375 (0.7041)	11.5792 (0.0728)*
Dynamic_private merge	0.6508 (0.4516)	9.2237 (0.1389)	1.1753 (0.0087)***	1.9165 (0.5526)
Dynamic_foreign	0.0899 (0.9688)	-15.6303 (0.3448)	-1.5092 (0.0268)**	5.9695 (0.2258)
Dynamic time Dummies				
Dynamic_time_privatization	-0.0299 (0.7356)	0.9984 (0.1180)		
Dynamic_time_ private merge	0.1235 (0.5128)	-1.5161 (0.2652)		
Dynamic _time_foreign	-0.5336 (0.4657)	7.5244 (0.1538)		
Political Dummy				
Pain-public*election	0.5590 (0.1528)	-3.0096 (0.2850)	0.5304 (0.1719)	-2.7421 (0.3293)
Other control variables				
Ln Asset	0.0131 (0.6440)	-0.2581 (0.2055)	0.0125 (0.6569)	-0.2401 (0.2395)
Fee income ratio	-0.2622 (0.1060)	1.9784 (0.0912)*	-0.2597 (0.1086)	1.9448 (0.0979)*
Observations	467	470	467	470
R-squared	0.445468	0.162925	0.443954	0.151078

All specifications include year-fixed effects (not shown, for readers who are interested in, please email us for the detailed results). P-values are in parentheses.

The superscripts of P-value *, ** and *** denote significance at 10%, 5% and 1% levels, respectively.

Table 7 Bank Performance Ranking

Measures Rank	**NPM**	**ROA =NPM×AT**	**ROE =ROA×EM**	**NPL**	**LGR**
1	Pure Public	Pure Private	Pure Public**	Private M&A***	Pure Private
2	Private M&A	Pure Public	Privatized Public	Pure Public***	Private M&A
3	Pure Private	Private M&A	Private M&A***	Privatized Public	Pure Public
4	Privatized Public	Privatized Public	Pure Private	Pure Private	Foreign P&A**
5	Foreign P&A**	Foreign P&A***	Foreign P&A*	Foreign P&A***	Privatized Public**

"AT" represents "Asset Turnover;" "EM" is the abbreviation of "Equity Multiplier." *, ** and *** denote the significance of difference relative to the control group, namely the pure private banks, at 10%, 5% and 1% levels, respectively.