



# Bank ownership reform and bank performance in China

Xiaochi Lin, Yi Zhang \*

*Guanghua School of Management, Peking University, Beijing 100871, China*

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## Abstract

Using a panel of Chinese banks over the 1997–2004 period, we assess the effect of bank ownership on performance. Specifically, we conduct a joint analysis of the static, selection, and dynamic effects of (domestic) private, foreign and state ownership. We find that the “Big Four” state-owned commercial banks are less profitable, are less efficient, and have worse asset quality than other types of banks except the “policy” banks (static effect). Further, the banks undergoing a foreign acquisition or public listing record better pre-event performance (selection effect); however, we find little performance change in either the short or the long term.

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## 1. Introduction

The banking system in China is the largest and most complex among the countries presently in transition from central planning to market-based economies. In the last two decades, Chinese government-owned banks have undergone a remarkable privatization program that, distinct from the experience of other transition countries, has followed an incremental approach to change. The resulting changes in the ownership of Chinese banks raise important questions. In particular, what role do domestic private ownership and foreign private ownership play in banks' performance relative to state ownership? To address these questions we employ an econometric methodology that builds on the literature on the performance effects of various types of bank ownership in developing countries and apply it to a unique data set on Chinese banks from 1997 to 2004.

In our analyses we regress banks' performance on corporate ownership changes. Following the methodology

proposed by Berger et al. (2005), we include variables that control for static, selection, and dynamic effects. *Static effects* refer to performance differences among banks that have not observed any corporate ownership change over the sample period (i.e., domestic, foreign, and state ownership). *Selection effects* refer to performance differences among banks that have observed some corporate ownership change over the sample period. *Dynamic effects* represent performance changes that are due directly to a change in ownership.

Our results indicate that the “Big Four” state-owned commercial banks are less profitable, are less efficient, and have worse asset quality than city-level commercial banks, domestic joint-equity banks, newly established Chinese-foreign joint-equity banks, and banks capitalized entirely by foreign funds (static effect). We also find that banks undergoing a foreign acquisition or public listing record better pre-event performance than those that do not (selection effect). These results suggest that foreign investors may choose to acquire the better performing banks, or alternatively that the government sells the equity of better performing banks first in an effort to attract foreign and private investors. However, we do not find evidence of a significant performance change following a

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\* Corresponding author. Tel.: +86 10 62757895; fax: +86 10 62751463.  
E-mail address: [zhangyi@gsm.pku.edu.cn](mailto:zhangyi@gsm.pku.edu.cn) (Y. Zhang).

foreign acquisition or public listing in either the short or the long term.

The remainder of the paper is organized as follows: Section 2 provides a review of the related literature and Section 3 presents a brief overview of the banking industry in China. Section 4 describes our sample, data, and empirical models. Section 5 reports the empirical results. Section 6 concludes with a brief summary focusing on policy implications.

## 2. Related literature on bank ownership and performance

Though there exist many studies on banking in transition nations, this literature focuses mostly on countries in Central and Eastern Europe, such as 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 results of these studies, which primarily examine the association between bank ownership and performance and that between ownership and efficiency, are mixed. For instance, Hasan and Marton, Jemric and Vujcic, and Weill find that bank efficiency is positively related to foreign as opposed to state ownership, while Nikiel and Opiela observe that foreign banks are less profit efficient than domestic private banks. Further, Kraft and Tirtiroglu document that newly established banks are less efficient but offer better profit performance than either privatized or state-owned banks, whereas Jemric and Vujcic find that new banks are more efficient.

A number of cross-country studies also investigate the impact of ownership on banking in transition countries. While these empirical studies vary in terms of the countries and periods under analysis, as in the single-country studies they also focus on Central and Eastern Europe. In investigating the determinants of bank efficiency and performance, Grigorian and Manole (2002), Yildirim and Philippatos (2002), and Bonin et al. (2005a,b) all find that foreign-owned banks are significantly more cost efficient than domestic banks. In addition, Bonin et al. (2005b) find that government-owned banks are least efficient and Grigorian and Manole observe that private banks established after the start of the transition are no more cost efficient than old banks. Drakos (2002) conclude that foreign entry may improve the overall performance of the banking system. Finally, looking at a more detailed breakdown of bank ownership, Fries and Taci (2005) find that private banks are more efficient than state-owned banks, and that privatized banks with majority foreign (domestic) ownership are the most (least) efficient. In summary, the research on the impact of transitions from a planned economy to a market economy on a country's banking system indicate that both foreign ownership and private ownership can generate better performance than state ownership.

Note that a number of studies examine privatization in developing nations that are not transition economies. These studies generally find that at least one bank performance measure improved following privatization, although

some measures show no change. See, for example, Boubakri et al. (2005), and Williams and Nguyen (2005) for cross-country analyses and Beck et al. (2005a,b) and Nakane and Weintraub (2005), among others, for studies of individual nations.

## 3. Review of the Chinese banking system

Prior to 1978, the Chinese financial system followed a mono-bank model (People's Bank of China) whereby all the country's banks were part of one administrative hierarchy. In 1978 banking reform was put on the agenda. The initial reform measures focused on modifying the structure and operations of China's banking system. Specifically, bank credit gradually replaced state-owned enterprises' budgetary allocations, banks were expected to become more profit-oriented, a two-tiered banking system replaced the mono-bank system, and various banking functions were devolved from the People's Bank of China (PBOC). This last measure resulted in four specialized state-owned banks, the Bank of China (BOC), the Agriculture Bank of China (ABC), the Construction Bank of China (CBC), and the Industrial and Commercial Bank of China (ICBC), the so-called "Big Four". In 1985 additional changes were implemented that were designed to give these institutions greater scope in raising and allocating capital. The four banks are now national commercial banks that compete with each other.

In the mid- and late-1980s, banking reform turned to bank ownership; during this period, the existing banking system structure was held constant. Ownership reform was introduced incrementally. The first Chinese-foreign joint-equity bank, China and South Sea Bank Ltd., was formed in 1984. Two years later the Bank of Communications, the first domestic joint-equity bank, was established. In 1991, Shenzhen Development Bank, also a domestic joint-equity bank, was successfully listed on the Shenzhen Stock Exchange, becoming the first partially public-owned bank in China. In 1994, the government established three specialized "policy" banks, the Agricultural Development Bank of China (ADBC), China Development Bank (CDB), and the Export-Import Bank of China (Chexim), to reduce the commercial banks' burden with respect to financing state-directed trade and development projects. In 1995, the Central Bank Law and the Commercial Bank Law were promulgated. With the implementation of the Commercial Bank Law, urban and rural credit cooperatives started to merge and form city-level commercial banks, which are owned by the state, state-owned enterprises, or in some cases private capital. Around the same time foreign investors acquired a small portion of equity in China Everbright Bank, a domestic joint-equity bank.

Because of the large volume of policy loans and weak internal controls, since the late 1990s non-performing loans (NPL) and technical insolvency have received the most attention from reform efforts. In 1998, the government injected RMB 27 billion of capital into the Big Four state-owned banks and transferred the NPL to four newly

Table 1  
Distribution of observations

Year	State-owned banks	Policy banks	(Domestic) joint-equity banks (no changes)	(Domestic) joint-equity banks that underwent a foreign acquisition or listing	City-level commercial banks (no changes)	City-level commercial banks that underwent a foreign acquisition	Chinese-foreign joint-equity banks and banks capitalized entirely by foreign funds	Total
1997	4	2	7	3	3	0	11	30
1998	4	2	7	3	4	0	12	32
1999	4	2	7	3	9	0	12	37
2000	4	2	7	3	12	1	10	39
2001	4	3	6	4	15	1	8	41
2002	4	3	6	4	23	2	8	50
2003	4	3	4	6	26	2	7	52
2004	4	3	2	6	16	5	5	41
Total	32	20	47	31	108	11	73	322

established asset management companies. In addition, five more domestic joint-equity banks were publicly listed and another 10 banks were partially sold to foreign investors, including city commercial banks, domestic joint-equity banks, and even the Big Four state-owned banks in 2005.

Presently, China's banking system consists mainly of three tiers of domestic banks, with the Big Four state-owned banks comprising the first tier, 12 national-level domestic joint-equity banks the second tier, and about 100 city-level commercial banks the third tier. The system also includes policy banks, newly established Chinese-foreign joint-equity banks, banks capitalized entirely by foreign funds, and other non-bank financial institutions such as urban and rural credit cooperatives, trust and investment companies, finance companies, and leasing companies.

#### 4. Data, model, and variables

##### 4.1. Data

###### 4.1.1. Sample and observations

To identify sample banks and collect the necessary information, we retrieve all the banks on the Bankscope and Chinese Almanac of Finance. We obtain an unbalanced sample of 60 banks with annual data for the period 1997–2004. The sample yields a total of 322 observations. Since not all variables are available for all banks, fewer observations are included in some of the regressions. We also collect detailed ownership information from the China Banking Regulatory Commission.

Table 1 shows the distribution of the observations.<sup>1</sup> Our sample contains four state wholly owned banks with 32 observations, three policy banks with 20 observations, 10 domestic joint-equity banks with 78 observations, 29 city-level commercial banks with 119 observations, and 14 Chinese-foreign joint-equity banks and exclusive foreign capital banks with 73 observations. Of the 60 sample banks, 47 (78%) had not experienced any corporate control change by December 2004. Of these, four (7% of the total)

are state wholly owned banks, three (5%) are policy banks, two (3%) are domestic joint-equity banks, 24 (40%) are city-level commercial banks, and 14 (23%) are newly established foreign banks.

The remaining 13 (22%) of the 60 banks have experienced some form of control change. Domestic joint-equity banks account for 8 (13% of the total) of the cases, with two banks being partially sold to foreign investors, two banks going public, and the other four banks experiencing both a foreign acquisition and a public listing. The remaining five cases (8% of the total) are all city-level commercial banks that have been acquired by foreign investors. Table 2 provides detailed information for the banks that have experienced foreign acquisitions.

###### 4.1.2. Bank ownership

Table 3 provides a summary of the ownership structure of the banks' top 10 shareholders.<sup>2</sup> There are three types of shareholders, namely, the state, private investors, and foreign investors. As the table shows, the state holds an average stake of 35.87% in the city-level commercial banks and 51.60% in the domestic joint-equity banks. A closer look at the control structure of these banks shows that the state is the largest shareholder in 23 out of 29 city-level commercial banks and eight out of 10 domestic joint-equity banks. Private investors have an average stake of 24.37% in the city-level commercial banks and only 4.60% in the domestic joint-equity banks. Four of the city banks and one of the domestic joint-equity banks' largest shareholders are private investors. In contrast, foreign investors own an average equity stake of 1.35% in the city banks and 1.12% in the domestic joint-equity banks. This ratio is quite low compared to the figures presented in other research. This is because only a small portion of these banks were acquired by foreign investors. In fact, in the selected city and domestic joint-equity banks, the average share of foreign investors is 17.16% and 11.94%, respectively, with foreign investors being the largest shareholder in two city-level commercial banks and one domestic joint-equity bank.

<sup>1</sup> Detailed bank information, including owners, history, size, number of employees, and number of branches, are available upon request.

<sup>2</sup> Detailed information with respect to the 10 largest owners of each bank is available upon request.

Table 2  
Summary of banks partially acquired by foreign investors

	Acquisition year	Total foreign shares (%)	Largest foreign investor	Rank	Ownership percentage (%)	Second largest foreign investor	Ownership percentage (%)	Third largest foreign investor	Ownership percentage (%)
Bank of Beijing Co. Ltd.	2004	24.90	ING Bank N.V	1	19.90	International Finance Corporation	5.00		
Bank of Communications	2004	18.33	HSBC	2	18.33				
Bank of Shanghai	2002	15.00	HSBC	2	8.00	International Finance Corporation	7.00		
China Everbright Bank	1996	1.90	Asia Development Bank	5	1.90				
China Minsheng Bank Corporation	2003	3.90	Asia Financial Holding PTE Ltd.	7	3.90				
Hangzhou City Commercial Bank	2004	19.91	Commonwealth Bank of Australia	1	19.91				
Industrial Bank Co. Ltd.	2004	24.98	Hang Seng Bank	2	15.98	Tetrad Ventures PTE Ltd.	5.00	International Finance Corporation	4.00
Jinan City Commercial Bank	2004	11.00	Commonwealth Bank of Australia	2	11.00				
Nanjing City Commercial Bank	2001	15.00	International Finance Corporation	3	15.00				
Shanghai Pudong Development Bank	2003	4.62	Citigroup Incorporation	5	4.62				
Shenzhen Development Bank Co. Ltd.	2004	17.89	Newbridge Asia AIV III, L.P.	1	17.89				

Table 2 reports the foreign ownership shares in the banks partially acquired by foreign investors.

#### 4.2. Models

Our analyses focus on the effects of a change in ownership on bank performance. Following the methodology proposed by Berger et al. (2005), we evaluate the static effects of maintaining different types of governance over the long term, the selection effects associated with different types of ownership changes, and the dynamic effects of the two types of ownership changes. The basic regression model takes the form:

##### Bank Performance Measure

$$\begin{aligned}
 &= \text{Constant} + \beta_1 * \text{Static Ownership Indicators} \\
 &+ \beta_2 * \text{Selection Ownership Indicators} \\
 &+ \beta_3 * \text{Dynamic Ownership Indicators\_Dummies} \\
 &+ \beta_4 * \text{Dynamic Ownership Indicator\_Years Since} \\
 &+ \beta_5 * \text{Control variables} + \beta_6 * \text{Year Fixed Effects} \\
 &+ \text{Error Term.} \tag{1}
 \end{aligned}$$

The variables specified in (1) are defined in Table 4. Below, we discuss the main variables we use by category, that is, we discuss measures of performance, measures of ownership structure, and other control variables.

#### 4.3. Performance variables

In the bulk of our empirical analysis we focus on four performance measures. First, we use two measures of bank profitability, return on assets (ROA), defined as profits relative to total assets, and return on equity (ROE), defined as profits (net income after taxes) relative to equity. According to Rhoades (1998), ROA is biased upwards for banks that earn significant profits from off-balance sheet operations such as derivative activities, as these activities generate revenue and expenses but are not recorded as assets. We therefore employ ROE as an alternative measure of profitability. Next, we measure efficiency using the cost to income ratio (COI). Finally, in order to investigate asset quality across banks, we use the ratio of impaired loans to gross loans (that is, non-performing loans or NPL) as a performance measure.



Table 3  
Ownership in city-level commercial banks and joint-equity banks

	State shares	Private shares	Foreign shares
<i>Panel A: Descriptive statistics, ownership of top 10 shareholders in city-level commercial banks</i>			
Mean	.359	.2437	.0135
Median	.31	.21	.00
Standard deviation	.170	.189	.046
Minimum	.05	.00	.00
Maximum	.68	.81	.25
Percentiles 25	.24	.08	.00
Percentiles 50	.31	.21	.00
Percentiles 75	.49	.33	.00
Number of observations	119	119	119
<i>Panel B: Descriptive statistics, ownership of top 10 shareholders in joint-equity banks</i>			
Mean	.516	.046	.011
Median	.49	.030	.00
Standard deviation	.237	.081	.04
Minimum	.04	.00	.00
Maximum	1.00	.29	.25
Percentiles 25	.34	.0000	.00
Percentiles 50	.49	.03	.00
Percentiles 75	.65	.05	.00
Number of observations	78	78	78

#### 4.4. Ownership structure variables

To analyze banks' changes in ownership, we employ the framework developed by Berger et al. (2005) whereby static, selection, and dynamic effects are considered together. Recall that static effects refer to operating performance differences among banks that have observed no change in governance, selection effects are those related to performance differences among banks that have observed some ownership change, and dynamic effects represent performance changes that are due directly to the change in ownership. This framework has been applied to the context of Argentina by Berger et al. (2005), Brazil by Beck et al. (2005a), Nigeria by Beck et al. (2005b), and South East Asia by Williams and Nguyen (2005).

The static dummy variables identify those banks that have not faced any change in ownership over the sample period. Four static dummy variables are introduced, one for policy banks (*static\_policy*), one for city-level commercial banks (*static\_city*), one for domestic joint-equity banks (*static\_joint-equity*), and one for newly established Chinese-foreign joint-equity banks and banks capitalized entirely by foreign funds (hereinafter referred as foreign banks, *static\_foreign*). These dummy variables equal one for the corresponding banks for all time periods. Big Four state-owned banks comprise the excluded reference case, and thus the coefficients on the static dummies measure the performance difference between the state-owned banks and other groups of banks that maintain the same ownership structure.

The selection dummy variables identify those banks that have faced some change in ownership over the sample period. Two selection dummy variables are introduced, one for

banks that have been at least partially acquired by a foreign firm (*selection\_foreign*), and one for banks that have gone public (*selection\_listing*). The selection dummy variables equal one for the corresponding banks for all time periods. In the regression the coefficients on the selection dummies identify the performance difference between the Big Four state-owned banks and the groups of banks that have been selected to undergo some type of ownership change.

The dynamic dummy variables identify those banks for which the selection dummies take the value of one to capture the precise moment at which the ownership change took place. Two dynamic dummy variables are introduced, one for banks that have been at least partially acquired by a foreign firm (*dynamic\_foreign*), and one for banks that have gone public (*dynamic\_listing*). These dynamic dummy variables equal one for the corresponding banks for all time periods starting the second year following the given intervention, and equal zero for the periods prior to the ownership change and for all periods for banks that have not observed any ownership change.

The dynamic dummy variables capture the one-time changes in performance that arise at the time of the interventions. However, the interventions may be persistent, that is, they may also have a long-term impact. We therefore introduce variables that measure the time that has lapsed since the event occurred. Since we use yearly observations in our sample, these variables are measured at the annual frequency. Two dynamic time indicators are introduced, one for banks that have been at least partially acquired by a foreign firm (*dynamic\_foreign\_time*), and one for banks that have gone public (*dynamic\_listing\_time*). Typically, the time variable equals one in the year following the change, two in the second year following the change, and so on. Following Berger et al. (2005) and Nakane and Weintraub (2005), we delete observations in the year of and the year following the events. Thus, the time variable starts with two for the second year following the change. This treatment mitigates noise associated with the ownership change, for example, the legal fees, consultant expenses, due diligence costs, updating of strategies, etc.<sup>3</sup>

#### 4.5. Other control variables

The control variables include the logarithm of lagged assets and year fixed effects to help account, respectively, for differences in bank size and the many changes in market and regulatory conditions over the year. In robustness tests, we include controls for additional bank characteristics. In particular, we use the fee to income ratio, which is the percentage of non-interest revenue in total revenue, to capture business orientation, and we include the ratio of loans to banks to total assets, which controls for loan portfolio orientation.

<sup>3</sup> We also conduct analyses including observations the year after the events and the results are similar. We thank the referee for suggesting this test.

Table 4  
Variables employed in regression models

Symbol	Definition
<i>Endogenous variables</i>	
ROE	Return on equity
ROA	Return on asset
NPL	Impaired (non-performing) assets to total loans
COI	Costs to operating income
<i>Exogenous variables</i>	
Static dummies	
static_policy	Dummy indicating a policy bank that underwent no changes in ownership over the entire 1997–2004 interval. Equals 1 or 0 for all periods for a bank
static_foreign	Dummy indicating a foreign bank that underwent no changes in ownership over the entire 1997–2004 interval. Equals 1 or 0 for all periods for a bank
static_city	Dummy indicating a city commercial bank that underwent no changes in ownership over the entire 1997–2004 interval. Equals 1 or 0 for all periods for a bank
static_joint-equity	Dummy indicating a joint-equity bank that underwent no changes in ownership over the entire 1997–2004 interval. Equals 1 or 0 for all periods for a bank
Selection dummies	
selection_foreign	Dummy indicating a bank that underwent a foreign acquisition over the 1997–2004 interval. Equals 1 or 0 for all periods for a bank
selection_listing	Dummy indicating a bank that underwent a public listing over the entire 1997–2004 interval. Equals 1 or 0 for all periods for a bank
Dynamic dummies	
dynamic_foreign	Dummy indicating the years following a bank's foreign acquisition. Equals 0 prior to the bank's change and 1 starting the second year following the change. Observations in the year of and the year following the change are deleted. Equals 0 for all periods for banks that did not undergo a foreign acquisition
dynamic_listing	Dummy indicating the years following a bank's public listing. Equals 0 prior to the bank's change and 1 starting the second year following the change. Observations in the year of and the year following the change are deleted. Equals 0 for all periods for banks that did not undergo a public listing
Dynamic time indicator	
dynamic_foreign_time	Number of years since a foreign acquisition. Equals 0 for all periods prior to a bank's foreign acquisition and starts with 2 for the second year following the change. Observations in the year of and the year following the change are deleted. Equals 0 for all periods for banks that did not undergo a foreign acquisition
dynamic_listing_time	Number of years since a public listing. Equals 0 for all periods prior to a bank's public listing and starts with 2 for the second year following the change. Observations in the year of and the year following the change are deleted. Equals 0 for all periods for banks that did not undergo a public listing
Other control variable	
Lnasset	Log of total assets in period $t - 1$ for each bank
Fee income ratio	The percentage of non-interest revenue in total revenue
Loans to banks ratio	The percentage of loans to banks to total assets
Year fixed effects	Year dummies, with 1997 excluded as the base case
Deregulation	Dummy that equals 0 prior to the deregulation and 1 in the year of deregulation and thereafter

## 5. Empirical results

We first report the results of our main tests of the effects of corporate governance changes on our bank performance measures. We then briefly discuss the findings on the relation between ownership structure and bank performance.

Table 5 presents the baseline regression results. The number of observations for regressions on ROA and ROE is 309. Due to missing values for COI, the number of observations for the regression on COI is 301. Similarly, because the NPL ratio of some banks is not been included in Bankscope, when we use NPL as the performance indicator the number of observations for the regression on NPL is only 149.

As Table 5 illustrates, beginning with the static effects, policy banks realize significantly higher efficiency than the Big Four banks. Newly established foreign banks are statis-

tically significantly more profitable and more efficient than the Big Four in terms of ROA and COI, consistent with the empirical literature. The city-level commercial banks and domestic joint-equity banks are both more profitable and more efficient than the Big Four banks, again consistent with the literature, with coefficients that suggest state-owned banks are 7.7% and 6.2% points less profitable than city banks and domestic joint-equity banks, respectively.

The underperformance of the four banks associated with high state ownership is consistent with the theoretical arguments of the agency view, the social view, and the political view of state ownership. Most existing empirical findings support these arguments. For instance, Sapienza (2004) shows that state-owned banks allocate portfolios for political advantage. Other empirical studies also support the argument that state-owned enterprises are more

Table 5  
Bank performance and ownership change

	Models excluding dynamic time indicators				Models including dynamic time indicators			
	ROE	ROA	COI	NPL	ROE	ROA	COI	NPL
(Constant)	5.272 (0.112)	1.390 (0.000)***	69.063 (0.000)***	30.775 (0.013)**	5.231 (0.115)	1.375 (0.000)***	69.498 (0.000)***	31.985 (0.015)**
<i>Static dummies</i>								
static_policy	-0.790 (0.713)	-0.135 (0.355)	-14.468 (0.035)**	-18.961 (0.170)	-0.777 (0.717)	-0.131 (0.367)	-14.569 (0.034)**	-19.961 (0.167)
static_foreign	3.051 (0.162)	0.344 (0.021)**	-15.447 (0.027)**	-1.158 (0.891)	3.020 (0.167)	0.340 (0.022)**	-15.348 (0.028)**	-1.322 (0.878)
static_city	7.652 (0.000)***	0.117 (0.363)	-14.273 (0.020)**	-7.668 (0.192)	7.560 (0.000)***	0.107 (0.408)	-13.988 (0.023)***	-7.754 (0.192)
static_joint-equity	6.238 (0.008)***	0.116 (0.468)	-12.519 (0.096)*	-11.354 (0.124)	6.212 (0.009)***	0.113 (0.481)	-12.499 (0.099)*	-11.382 (0.127)
<i>Selection dummies</i>								
selection_foreign	12.990 (0.000)***	0.283 (0.023)**	-13.652 (0.020)**	-16.095 (0.004)**	12.974 (0.000)***	0.281 (0.024)**	-13.619 (0.021)**	-16.242 (0.004)***
selection_listing	14.365 (0.000)***	0.334 (0.065)*	-18.303 (0.031)**	-18.422 (0.007)***	14.386 (0.000)***	0.335 (0.063)*	-18.371 (0.031)**	-18.652 (0.007)***
<i>Dynamic dummies</i>								
dynamic_foreign	-3.372 (0.104)	0.006 (0.964)	-5.894 (0.371)	6.440 (0.102)	3.126 (0.507)	0.285 (0.373)	-16.738 (0.266)	5.016 (0.564)
dynamic_listing	-5.094 (0.300)	-0.024 (0.942)	-1.782 (0.909)	4.615 (0.587)	-13.086 (0.544)	-0.302 (0.836)	8.375 (0.903)	0.701 (0.984)
<i>Dynamic time indicators</i>								
dynamic_foreign_time					-1.832 (0.109)	-0.090 (0.244)	3.312 (0.364)	0.482 (0.822)
dynamic_listing_time					3.379 (0.708)	0.113 (0.853)	-4.192 (0.884)	2.371 (0.870)
<i>Other control variable</i>								
Lnasset	0.249 (0.185)	-0.041 (0.002)***	-0.488 (0.427)	-0.703 (0.293)	0.243 (0.196)	-0.041 (0.001)***	-0.470 (0.445)	-0.719 (0.288)
Number of observations	309	309	301	149	309	309	301	149
R-squared	0.310	0.332	0.125	0.246	0.313	0.329	0.121	0.246

Notes: ROE = net income/equity \* 100, COI = cost/operating income \* 100, NPL = impaired loans/gross loans \* 100, ROA = net income/total assets \* 100. All specifications include year fixed effects (not shown). *P*-values are in parentheses. \*, \*\* and \*\*\* denote significance at 10%, 5%, and 1% levels, respectively.

likely to be involved in government intervention (Clarke et al., 2005; Classens and Peters, 1997; Djankov, 1999; Shirley and Nellis, 1991; World Bank, 1995).

With respect to the selection effects, the results suggest that banks involved in foreign acquisitions outperform banks not involved in foreign acquisitions; the ROE, ROA, NPL, and COI are all statistically significantly better for banks selected for foreign acquisitions than for those that are not. The selection effects appear to be similarly strong for the banks that go public; those selected to go public also have statistically significantly better ROE, ROA, NPL, and COI than those that are not. These findings are not consistent with the empirical literature and thus are particularly noteworthy. The positive selection effect may be due to the fact that private (both domestic and foreign) investors tend to target the better banks. This is not necessarily the case, however. For example, Berger et al. (2005) find that the Argentine banks that were privatized recorded poor performance prior to privatization.

We therefore argue that the Chinese government selected better banks for privatization, foreign acquisition, and public listing activities in order to attract foreign investors and avoid failure of reform. Indeed, this conjecture finds support by many government officials and economists in government think tanks.<sup>4</sup>

<sup>4</sup> On the subject of the privatization of state-owned enterprises, many Chinese officials and economists refer to the Chinese saying: “the most beautiful girl in a family gets married first”. For example, a major economist and Vice Chairman of the Financial and Economics Affairs Committee in the National People’s Congress, Li (1997, 1998), elaborates upon this principle in his speeches and articles. Xu Guangchun, President of Communist Party of China (CPC) in Henan Province, encouraged local officials to speed up the reform of state-owned enterprises and the sale of state-owned assets based on this principle (Henan Daily, July 6, 2005). Shenzhen Municipal Government declared in 2002 that Shenzhen Development Bank should adhere to the policy of “the most beautiful girl in a family gets married first” to bring in foreign investors (China Business Post, September 28, 2002).

The estimated coefficients for the static and selection dummy variables are quite robust to the different measures of performance and to the inclusion of the time variables. In evaluating the dynamic effects of foreign acquisitions and public listings, we note that the coefficients on the dynamic dummies are not statistically significant in all the regressions that exclude the dynamic time indicators or that include the dynamic time indicators.

The results concerning the dynamic effect, both short term and long term, are not surprising for three reasons. First, foreign acquisitions usually involve detecting past non-performing assets and writing them off using gross profits, and investigating the “creative” or even fraudulent accounting numbers and correcting them in accordance with GAAP. Second, as Berger et al. (2005) document, much of the performance improvement captured by the

dynamic effect for Argentine banks is likely due to the practice of enhancing privatized banks by placing non-performing loans into residual entities. In China, however, partially privatized banks do not enjoy such privileges: while the Big Four state-owned banks can place non-performing loans into asset management companies and obtain an injection of funds from the government, banks may receive fewer subsidies from the government following an acquisition or a public listing. Third, unlike in Brazil and Argentina, in China the domestic banks involved in a foreign acquisition or public issuance outperform those that do not prior to the ownership change. It is more difficult to improve the performance of better banks than to improve the performance of worse banks. In comparison, Boubakri et al. (2005) document that in a sample of 81 banks from 22 developing countries, bank profitability increases but,

Table 6  
Bank performance and ownership change: robustness checks

	ROE	ROA	COI	NPL	ROE	COI
(Constant)	5.334 (0.119)	1.429 (0.000)***	62.901 (0.000)***	23.590 (0.071)*	5.134 (0.132)	63.324 (0.000)***
<i>Static dummies</i>						
static_policy	-0.300 (0.893)	-0.114 (0.448)	-23.552 (0.000)***	-10.718 (0.456)	-1.307 (0.568)	-20.796 (0.002)***
static_foreign	2.959 (0.205)	0.383 (0.016)**	-17.206 (0.011)**	-13.139 (0.159)	2.790 (0.231)	-16.692 (0.013)**
static_city	7.605 (0.000)***	0.108 (0.403)	-14.665 (0.008)***	-9.473 (0.107)	7.520 (0.000)***	-14.517 (0.009)***
static_joint-equity	6.285 (0.008)***	0.131 (0.415)	-14.796 (0.030)**	-12.709 (0.081)*	6.200 (0.009)***	-14.576 (0.032)**
<i>Selection dummies</i>						
selection_foreign	12.930 (0.000)***	0.285 (0.022)**	-12.976 (0.015)**	-17.547 (0.002)***	12.879 (0.000)***	-12.831 (0.015)**
selection_listing	14.293 (0.000)***	0.341 (0.059)*	-17.042 (0.027)**	-21.987 (0.001)***	14.237 (0.000)***	-16.858 (0.028)**
<i>Dynamic dummies</i>						
dynamic_foreign	3.225 (0.495)	0.289 (0.366)	-18.657 (0.170)	4.310 (0.612)	-3.459 (0.105)	-4.821 (0.417)
dynamic_listing	-13.153 (0.543)	-0.291 (0.842)	8.613 (0.890)	-0.436 (0.990)	-5.145 (0.294)	-2.181 (0.877)
<i>Dynamic time indicators</i>						
dynamic_foreign_time	-1.866 (0.104)	-0.094 (0.227)	4.104 (0.212)	0.773 (0.713)		
dynamic_listing_time	3.424 (0.705)	0.108 (0.860)	-4.551 (0.861)	3.223 (0.819)		
<i>Other control variables</i>						
Ln asset	0.180 (0.340)	-0.043 (0.001)***	-0.070 (0.900)	-0.778 (0.239)	0.220 (0.242)	-0.052 (0.926)
Fee income ratio	-0.008 (0.303)	-0.001 (0.199)	0.193 (0.000)***	0.090 (0.096)*	-0.007 (0.393)	0.189 (0.000)***
Loans to banks ratio	0.004 (0.894)	-0.002 (0.492)	0.038 (0.705)	0.262 (0.006)***	0.007 (0.837)	0.028 (0.782)
Deregulation					9.940 (0.076)*	-26.077 (0.233)
Number of observations	309	309	301	149	309	301
R-squared	0.315	0.334	0.291	0.296	0.320	0.299

Notes: ROE = net income/equity \* 100, COI = cost/operating income \* 100, NPL = impaired loans/gross loans \* 100, ROA = net income/total assets \* 100. All specifications include year fixed effects (not shown). P-values are in parentheses. \*, \*\* and \*\*\* denote significance at 10%, 5% and 1% levels, respectively.



depending on the type of owner, efficiency, risk exposure, and capitalization may increase or decrease in the post-privatization period. They find that on average banks chosen for privatization are associated with lower efficiency and lower solvency than banks kept under government ownership.

Table 6 reports results of the robustness checks. In first four columns we control for business and portfolio orientation. The results are similar and confirm our previous results regarding static and selection effects. We do not find any significant relation between the dynamic dummies or the dynamic time indicators and performance. The results also suggest that the fee to income ratio is negatively associated with efficiency and asset quality, while the interbank loan ratio is negatively associated with asset quality. In the last two columns we control for the deregulation of the banking industry, as in 2003 China allowed foreign banks to formally enter China. Deregulation is a dummy that equals one after the deregulation and zero otherwise. The results on ROE and COI are similar to the previous results.<sup>5</sup> Though not reported the results for ROA and NPL are similar.

## 6. Conclusion

In the 1990s and early 2000s, the Chinese banking sector underwent huge transformations. The purpose of this study is to evaluate how bank performance has been affected by changes in ownership. The empirical sections of the paper make use of an unbalanced panel data set for 60 banks, with annual observations from 1997 to 2004. Given the varied nature of ownership changes during the sample period, we follow Berger et al. (2005) and control for static, selection, and dynamic effects. The results regarding the static effects of bank ownership show that Big Four state-owned banks tend to observe poorer long-term performance on average than the city-level commercial banks, domestic joint-equity banks, and the newly established Chinese-foreign joint-equity and exclusive foreign capital banks. The selection effects show that banks that are at least partially acquired by foreign firms or those that go public significantly outperform those that do not prior to the ownership change. These findings suggest that the government sells the equity of better banks first to attract foreign and private investors, which may help to push the reform efforts forward.

The dynamic results suggest the banks that undergo a foreign acquisition or public listing do not observe post-ownership change performance improvements, a result that is not consistent with similar studies for other countries. As Berger et al. (2005) document, much of the performance improvement captured by the dynamic effect in Argentine banks is likely due to the practice of enhancing privatized banks by

placing non-performing loans into residual entities. In China, however, partially privatized banks do not enjoy such privileges: while Big Four state-owned banks can place non-performing loans into assets management companies and obtain an injection of funds from the government, banks may receive fewer subsidies from the government following an acquisition or a public listing. In addition, unlike in Brazil and Argentina, in China the domestic banks involved in a foreign acquisition or public issuance record better performance prior to the ownership change.

Our results provide some support for the ongoing bank ownership reform in China. We find the state ownership is negatively related to bank performance, with the Big Four banks, which are the largest banks, observing the worst performance. In 2005 the Construction Bank of China sold a portion of equity to foreign investors and was publicly listed in Hong Kong. Similarly, the Bank of China sold a portion of equity to foreign investors and was publicly listed in Hong Kong and Mainland China in 2006. We conclude that ownership reform of the other Big Four banks, joint-equity banks, and city-level commercial banks should continue to be pushed forward.

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<sup>5</sup> We thank the referee for suggesting these tests.

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