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## The IPO of Industrial and Commercial Bank of China and the ‘Chinese Model’ of privatizing large financial institutions

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We examine the privatization process of the Industrial and Commercial Bank of China (ICBC), the largest bank in the world by market capitalization, and its dual initial public offerings (IPOs) in the Hong Kong and Shanghai Stock exchanges in 2006. The Chinese government retains majority equity ownership of ICBC while foreign institutional investors hold minority equity stakes. Other large financial institutions went through the same reform process and have similar, post-IPO ownership structures. The largest Chinese banks, as a group, outperformed their counterparts from other emerging and developed markets before and during the 2007–2009 financial crisis. We argue that the ‘Chinese model’ of privatizing and managing large financial institutions can be advantageously used in other countries.

**Keywords:** banks; IPO; privatization; non-performing loans; stock returns

*JEL Classification:* G2, G3, L1

### 1. Introduction

Large financial institutions have been at the center of the 2007–2009 global financial crisis and the ongoing Euro Zone debt crisis. With perverse incentives, these ‘too big to fail’ institutions from developed countries took on excessive risks that were concealed from the public and regulators, and their downfall triggered the near collapse of the global financial system and led to massive welfare losses around the world. Even with substantial regulatory reforms such as the Dodd–Frank Act in the US, much debate remains on how to restrain these large institutions without excessive regulations that would discourage any risk-taking behavior, an essential part of all profit-maximizing corporations.<sup>1</sup> Effective monitoring of large financial institutions is of particular importance in emerging economies, since the banking sector plays a more important role in supporting economic growth than financial markets in most countries (e.g. Levine 2002). But this task can be a tall order in the developing world characterized by the lack of sophisticated institutional investors and underdeveloped markets and institutions.

In this paper, we examine the privatization process of the Industrial and Commercial Bank of China (ICBC), the largest bank in the world in terms of market capitalization, and its dual initial public offerings (IPOs) in the Hong Kong Stock Exchange (HKSE) and Shanghai Stock Exchange (SHSE). ICBC’s largest shareholder is the Chinese government while foreign institutional investors hold minority stakes. Many other large financial institutions went through the same

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reform process and have similar ownership structures after the IPO. We find that the largest Chinese banks, as a group, outperformed large banks from other emerging and developed economies before, during and after the 2007–2009 crisis. Our conclusion is that the ‘Chinese model’ of privatizing large financial institutions can be advantageously used in other emerging countries, because it provides a balance between effective monitoring and maintaining the competitiveness of these institutions in the market place.

China’s intermediation sector has been dominated by a few large but inefficient financial institutions for many years. The four largest, state-owned commercial banks (‘Big Four’) have nationwide networks of branches and control the majority of assets in the banking system. Before the crisis, the most glaring problem of the banking sector had been high levels of non-performing loans (NPLs), most of which accumulated in the ‘Big Four’ banks from poor lending decisions to state-owned enterprises (SOEs). Following the Asian Financial Crisis in 1997 and especially after China joined the World Trade Organization (WTO) in December 2001, a series of reforms began and focused on state-owned banks, with the goal of improving their efficiency – i.e. to make these banks behave more like profit-maximizing commercial banks and lower the level of NPLs.

A critical part of ICBC’s reform process was to strengthen its capital base and asset quality, and two steps were undertaken. First, the Ministry of Finance (MOF), through the establishment of a bank holding company – the Central Huijin Investment Company, injected capital (e.g. government bonds and foreign currency reserves) into ICBC and other banks. Second, four asset management companies, established by the central government, assumed the NPLs of the Big Four banks. In particular, Huarong Asset Management Corporation took the bad loans that were transferred from ICBC’s balance sheet. ICBC’s legal status was changed from state-owned to a ‘joint-stock limited company’ in October 2005, with the MOF and Huijin as promoters.

The next phase of the privatization process was to list the large banks on the HKSE, so that they would be subject to international banking accords (e.g. Basel II), disclosure requirements and governance mandates. Prior work has emphasized the benefits from improved corporate governance, since listing a domestic firm on an exchange located in more developed financial markets can be a ‘bonding’ mechanism for the firm to enhance protection of minority investors and reduce the agency costs of the controlling shareholders (e.g. Coffee 1999, 2002; Stulz 1999; Reese and Weisbach 2002). On the other hand, the Chinese government, through various agencies, will retain majority ownership of all the banks while attracting foreign institutional investors as minority shareholders. ICBC’s IPOs, carried out simultaneously on the SHSE and HKSE on 27 October 2006, were successful – they raised a total of \$22 billion, the largest amount of any IPO up to that point. From July 2010 onwards, all Big Four banks that were previously wholly state-owned have been corporations listed on HKSE. Other large financial institutions, including insurance companies, have gone through a similar privatization process and are also listed on HKSE and domestic exchanges.

Next, we compare the performance of the largest five Chinese state-owned banks (Big Four plus the Industrial Bank of China) with other large, non-state-owned banks from China, the largest banks from emerging markets (both state-owned and non-state-owned) as well as the largest banks from developed countries over the period of 2006–2011. The five largest Chinese banks have improved their performance considerably as compared to the pre-IPO period and the upward trend continued during 2006–2011. As a group, these banks generate higher returns on assets (ROA), returns on equity (ROE) and excess stock returns than all the other groups of banks from developed and emerging markets during the period.

We also look at two measures of risk-taking activities – Tier 1 capital ratio, a balance sheet measure, and the standard deviation of daily stock returns (on an annual basis), a market based

measure. There is no significant difference, using either measure, between the five state-owned banks from China and other banks from developed and emerging markets during the sample period. This indicates that the superior performance of the state-owned banks from China is not driven by *less* risk-taking during a period of global financial crisis. This also supports the view that majority government ownership in these state-owned banks from China has *not* stifled risk-taking activities of these banks relative to privately owned banks.

Overall, we conclude that the ‘Chinese model’ of privatizing state-owned banks has been successful in improving efficiency. The main implication of our results is that such a model – partially privatizing large state-owned financial institutions and converting them into listed companies with a diverse investor base *and* the government retaining the majority stake – can be used in other emerging economies. Prior studies have emphasized the adverse effects of government ownership of banks – inefficiencies due to poor incentives and agency problems in the form of ‘tunneling’ by insiders and connected borrowers.<sup>2</sup> We argue that the impact of the adverse effects can be significantly reduced if state-owned banks are listed on foreign exchanges and committed to enhancing minority shareholder protection and reducing agency costs. Moreover, as a publicly listed firm, profit maximization is part of their goals and these banks are also subject to international standards and face competition from other banks in the domestic and international sectors.

One of the key lessons from the 2007–2009 crisis is how to contain excessive risk-taking by large financial institutions. Risk-taking was justified as generating the highest possible returns to the shareholders; but excessive risk-taking by large institutions leads to higher systemic risk and more fragility. In this regard, the government, as the controlling shareholder of large financial institutions, can impose *non-profit* goals such as systemic stability (of the financial system) *and* ensure continued lending during recessions and crisis periods.<sup>3</sup> In developing countries, legal and financial institutions are underdeveloped, and market-based forces such as institutional investors, who play a prominent role in the governance of listed firms in developed countries, are weak or nonexistent. In such an environment, government and government-appointed officials are perhaps the only force that can rein in excessive risk-taking of large financial institutions; as long as these banks are competitive relative to non-state banks in the country/region, majority government ownership should not smother risk-taking. We also discuss how a government can enhance its presence in a banking sector dominated by privately owned banks. As observed during the crisis period, the government can obtain *majority* equity stakes of large banks in exchange for a capital injection, or acquire an entire financial institution in danger of collapsing.

Our paper extends the literature on privatizing state-owned companies. Prior research generally finds that (partial) privatization (in transition and developing economies) improves efficiency and performance.<sup>4</sup> We show that listing state-owned banks in foreign exchanges is an important step in the privatization process, and that government ownership of listed banks has benefits, especially during crisis-prone periods and environments. Our paper also contributes to a growing literature examining China’s banking industry. In particular, Berger, Hasan, and Zhou (2009) find that minority foreign ownership of the Big Four banks is associated with improved operating performance. We extend their analysis by showing that listing the Big Four banks on HKSE is another important step in reforming these banks and that these listed banks actually outperformed large banks from emerging and developed markets during the 2007–2009 crisis period.

Section 2 of the paper provides background information on China’s banking sector and documents the privatization process of ICBC and its dual IPOs. In Section 3, we compare the performance of the largest Chinese banks with majority state ownership with other large banks in the world. Finally, Section 4 concludes.

## 2. China's financial intermediation sector and the privatization process of ICBC<sup>5</sup>

Between 1949 and 1979, China's entire financial system consisted of one bank, the People's Bank of China (PBOC), managing deposit-taking, lending and payment system functions of the state planning system. In 1979, PBOC's international trade and foreign exchange businesses were spun off to the Bank of China (BOC), while the agriculture and fixed investment and construction functions were allocated to the Agricultural Bank of China (ABC) and the China Construction Bank (CCB), respectively. In 1984, PBOC became the central bank after its savings and loan functions were transferred to ICBC. In 1993 and 1994, three policy banks (the State Development Bank of China, the Export–Import Bank of China and the Agricultural Development Bank of China) were established, and the largest four specialized banks became the Big Four commercial banks. Along with nine joint-stock commercial banks, they formed the top-tier structure of the Chinese banking system, which also included numerous cooperatives and finance companies.<sup>6</sup>

For most of the past three decades China's banking sector, and to some extent the entire financial system, was dominated by the Big Four banks. For example, Demirgüç-Kunt and Levine (2001) compare the five-bank concentration (share of the assets of the five largest banks over total banking assets), and find that China's concentration ratio of 91% at the end of 1997 was one of the highest in the world. The concentration ratio has been falling sharply since 1997 with the entrance of many non-state banks and intermediaries. Currently there are more than 30,000 banks and non-bank financial institutions operating as legal entities in China, although the Big Four banks still control more than half of the total banking assets.

The most significant problem for China's banking sector had been the amount of NPLs within state-owned banks, especially the Big Four banks. In 2000 and 2001, the total amount of NPLs within the banking sector was about 20–23% of GDP, much higher than other large economies, with most of the bad loans accumulated in the Big Four banks from poor lending decisions to SOEs. Recognizing the importance of and its responsibility in reducing NPLs in the Big Four banks, the Chinese government began to take actions to improve the banking industry's asset quality, risk management and capital base in the late 1990s. To reduce the level of NPLs and improve the banks' capital adequacy, the government injected large amounts of capital into the banks. In 1998, the MOF issued RMB270 billion in bonds to enhance the capital adequacy of the Big Four banks. At the end of 2003, Central Huijin Investment Company was established. The PBOC, through Huijin, injected multiple rounds of capital (foreign currency reserves mostly in the form of US dollars, T-bills, Euros and Yen) into these banks to improve their balance sheets. In addition, four asset management corporations – Huarong, Great Wall, Xinda, and Oriental were established in 1999 to assume RMB1.4 trillion worth of NPLs from the Big Four banks.

With the help of sustained economic growth, the government's concerted effort during the past decade has paid off, as NPLs in China have steadily been decreasing and dropped below 2% of GDP in each of the past three years.<sup>7</sup> All of the Big Four banks have become publicly listed and traded companies in recent years, with the government retaining majority control. With prudent investment approaches, these banks have not been severely affected by the 2007–2009 global financial crisis, and are currently among the largest banks, both in terms of market capitalization and assets, in the world, as shown in Table 1. While the stock prices of most of the large banks in Europe and the US fell on concerns in the Euro Zone in 2011, shares of ICBC and the largest bank from Australia held up well. With the anticipation of further and potentially substantial write downs in assets for the largest European banks, all the Chinese banks are expected to move up in rankings of (book) assets in the coming months.

Table 1. Top banks in the world (as of August, 2011).

Rank	Bank name	HQ country	Market cap. \$ B(as of Aug. 2011)	Total return (%) YTD
<i>Panel A: Top 10 banks measured by market capitalization (\$billion)</i>				
1	Ind and Comm Bank of China-A	China	235.31	0.86
2	China Construction Bank-H	China	196.66	-14.46
3	HSBC Holdings Plc	United Kingdom	177.23	-16.94
4	JP Morgan Chase & Co	United States	158.31	-17.34
5	Wells Fargo & Co	United States	143.76	-20.94
6	Agricultural Bank of China-H	China	137.49	-6.23
7	Bank of China Ltd-H	China	130.22	-21.41
8	Citigroup Inc	United States	107.64	-39.93
9	Bank of America Corp	United States	96.16	-45.50
10	Commonwealth Bank of Australia	Australia	83.28	-0.30
				Total assets (\$trillion)
<i>Panel B: Top 20 banks measured by total assets (August, 2011; \$trillion)</i>				
1	BNP Paribas	France		2.79
2	HSBC Holdings Plc	United Kingdom		2.69
3	Deutsche Bank AG-Registered	Germany		2.68
4	Mitsubishi UFJ Financial GRO	Japan		2.49
5	Barclays Plc	United Kingdom		2.40
6	Royal Bank of Scotland Group	United Kingdom		2.32
7	Credit Agricole SA	France		2.31
8	Ind and Comm Bank of China-A	China		2.30
9	Bank of America Corp	United States		2.26
10	JP Morgan Chase & Co	United States		2.25
11	Citigroup Inc	United States		1.96
12	Mizuho Financial Group Inc	Japan		1.94
13	China Construction Bank-H	China		1.82
14	Banco Santander SA	Spain		1.79
15	Bank of China Ltd-H	China		1.78
16	Societe Generale	France		1.68
17	Sumitomo Mitsui Financial Gr	Japan		1.66
18	Lloyds Banking Group Plc	United Kingdom		1.57
19	Agricultural Bank of China-H	China		1.57
20	UBS AG-Reg	Switzerland		1.47

Note: Largest banks in the world ranked by market capitalization and total assets at the end of August in 2011.

Source: *Bloomberg*.

Following the Asian Financial Crisis in 1997, a series of reforms began in China's banking sector, with the central goal of improving the efficiency and competitiveness of the banking sector. Another round of reforms began in 2002, after China joined the WTO, which requires each member country to (eventually) liberalize its banking sector and financial system. On the operations side, many banks broadened their loan portfolios and tapped into the massive and uncharted territories of consumer and household products such as credit cards, auto loans and mortgages. The more diversified loan portfolios allow banks to substantially enhance their capacity and generate higher and steadier streams of fees and commissions. Reforming their organizational structure and providing more incentives to individual employees within banks was another major step toward improving efficiency. A key structural change is decentralization – so that many tasks

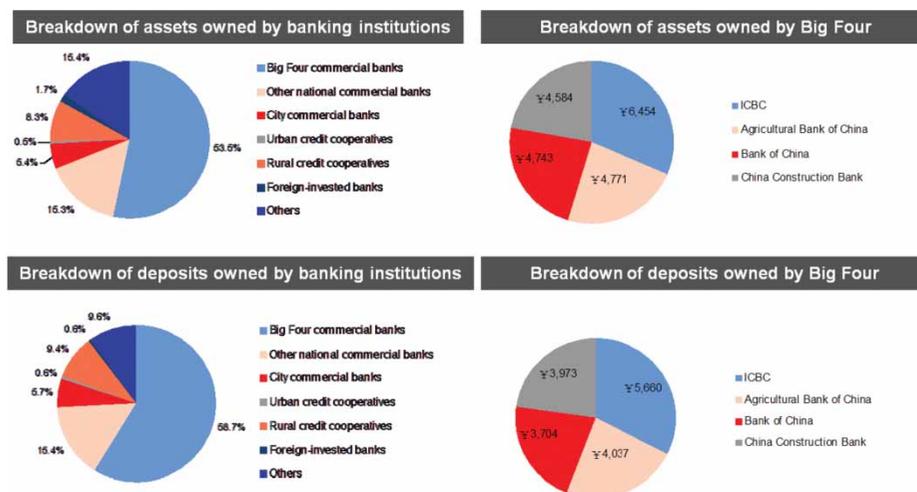


Figure 1. Chinese banking industry structure (as of 31 December 2005).

Source: China Statistics Yearbooks (2003–2006) and Almanac of China's Finance and Banking (2002–2006).

went from group-based processes to individual based. In corporate lending, the new policies grant more authority to individuals in charge of different steps of making loans and monitoring borrowers and hold them responsible for poor performance.<sup>8</sup>

The banking sector also became less concentrated with the entry of new banks and non-bank institutions. In 2001, the total assets, deposits, and loans made of all 'other commercial banks,' where various joint ownerships are forged among investors and local governments, and foreign banks, were about a quarter of those of the Big Four banks; in 2008, the scale of these institutions in the same categories was more than half of the Big Four banks. Figure 1 presents the structure of China's banking industry at the end of 2005. Among the Big Four banks, ICBC remained the largest bank in terms of both assets and deposits.

Chinese banks are jointly regulated by the PBOC and the China Banking Regulatory Commission (CBRC). The publicly listed banks, along with all other listed companies, are also subjected to the supervision of China Securities Regulatory Commission (CSRC, equivalent to the SEC in the US). The MOF determines tax and local accounting rules for the banks. The PBOC limits the movements of interest rates on both deposits and loans by setting base rates and upper and lower bounds, which vary over business cycles and with loan maturities. Within the bounds, however, lenders can freely set interest rates and use other non-pricing tools (e.g. maturity, loan covenants) to control risk (e.g. Stiglitz and Weiss 1981; Qian and Strahan 2007).<sup>9</sup>

## 2.1 The privatization process for ICBC

Prior to the IPO, ICBC had undertaken several rounds of reforms, with the focus on establishing efficient operations, sound corporate governance and modern risk management systems. For example, ICBC realigned customer-oriented business activities including corporate and personal banking and treasury operations, and centralized capital and financial management with a better reporting platform and a comprehensive review system. In addition, ICBC went through a series of financial restructuring activities to enhance its capital adequacy, with the key dates and events

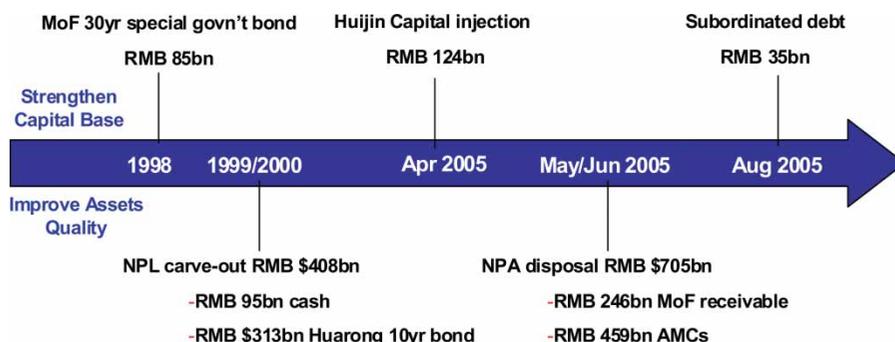


Figure 2. Financial restructuring of ICBC.  
Source: Company data, Deutsche Bank's analyst report.

summarized in Figure 2. The MOF injected RMB85 billion into ICBC through a special issue of 30-year government bonds in 1998. In 1999 and 2000, NPLs in the amount of RMB408 billion were transferred to (state-owned) Huarong AMC, in exchange for RMB95 billion of cash and non-transferable 10-year government bonds with face value of RMB313 billion. To prepare for the IPO, in 2005 ICBC received another round of capital injection (RMB124 billion) from Huijin and land use rights worth RMB20 billion from the central government, disposed of a total of RMB705 billion of non-performing assets from its books, and MOF further amended the terms of the special government bonds issued to it.

In April 2006, a consortium comprised of Goldman Sachs, Allianz Group (through its subsidiary, Dresdner Bank Luxembourg S.A.), and American Express, acquired an 8.45% equity stake in ICBC (Goldman's stake is 5.75%) at the Latest Practicable Date (latest date for compiling statistics prior to the IPO filing). ICBC also worked with Goldman Sachs to strengthen their corporate governance practices, risk management and internal controls, and enhance their treasury, asset management, corporate and investment banking operations as well as their NPL disposal capabilities. They collaborated with Allianz to develop bank assurance products and services, and collaborated with American Express to expand their bank card business, risk management and customer services. Figure 3, Panel A shows ICBC's ownership structure just before the IPO. Table 2, Panel A lists the largest shareholders and the size of their ownership stakes as of July, 2011. The Chinese government remains the largest and controlling shareholder, while foreign institutional investors from the US and Japan continue to hold minority stakes.

Establishment of a Board of Directors is an important part of the corporate governance practice of publicly listed firms. The design of ICBC's board is in accordance with the Provisional Guidelines on Due Diligence of the Board of Directors of Joint Stock Commercial Banks in China. There were 14 members on the board just before the IPO: four executive directors, seven non-executive directors, and three independent directors. Six of the seven non-executive directors were government officials prior to joining ICBC's board, and the other one is from Goldman Sachs. Two independent directors are professors from Tsinghua University, one of the leading academic institutions in China, and the other is a former investment banker from Hong Kong. Table 2, Panel B illustrates the history of the composition of the ICBC board since its IPO in 2006. In 2010 ICBC increased its board size to 16 and also added two more independent board members (for a total of 6).

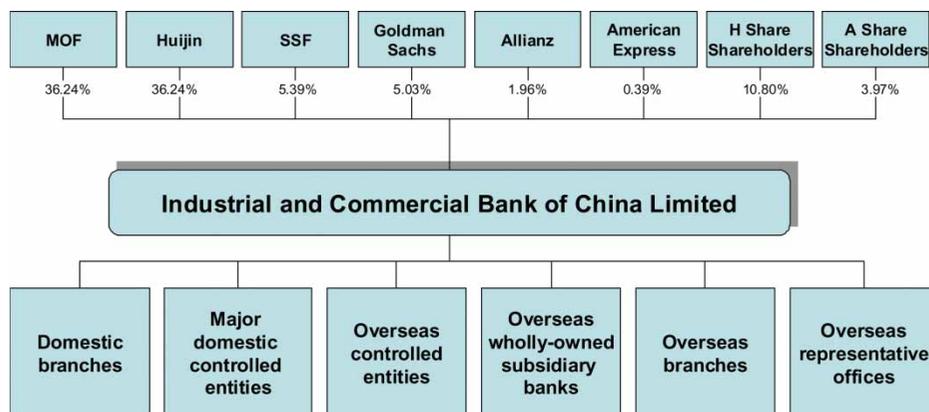


Figure 3. ICBC share holding and group structure (Assume neither the H-share nor A-share over-allotment option is exercised.).

Source: ICBC Hong Kong Offering Memorandum 20 October 2006.

Table 2. ICBC's ownership and governance structures.

Substantial shareholders disclosure								
<i>Panel A: ICBC majority shareholders (as of July 2011)</i>								
<i>A Shares</i>	Institution name (all long, beneficial unless noted)		% class shares		% total shares			
	China Ministry of Finance		45		33.81			
	Huijin		45		33.81			
<i>H Shares</i>	Social Security Fund		18.17		4.52			
	Goldman Sachs		11.68		2.91			
	Goldman Sachs (controlled interest)		0.18		0.05			
	Nomura Holdings (long-position; controlled interest)		5.66		1.41			
	Nomura Holdings (short-position; controlled interest)		4.45		1.11			
	JP Morgan Chase		0.48		0.12			
	JP Morgan Chase (investment manager)		1.52		0.38			
	JP Morgan Chase (custodian)		2.79		0.69			
	JP Morgan Chase (short position)		0.41		0.1			
	Capital Research and Management (investment mgr.)		5.77		1.44			
Year	Size	% Executive directors (insiders)	% Government officials	% Independent directors	Average age	Average tenure	% Foreign directors	% Female directors
<i>Panel B: ICBC board of directors (characteristics and how it evolves over time after the IPO)</i>								
2006	14	28.6	21.4	21.4	51.6	n/a	28.6	7.1
2007	14	28.6	21.4	28.6	53.1	n/a	28.6	7.1
2008	14	28.6	21.4	28.6	54.2	n/a	28.6	7.1
2009	14	28.6	21.4	28.6	n/a	n/a	28.6	7.1
2010	16	25.0	18.8	37.5	53.8	7.4	25.0	6.3

Notes: The list of majority shareholders and their % of shareholdings are given. '% class shares' is the % of shareholdings of the respective share class. '% total shares' is the % of total number of shares outstanding.

Source: ICBC Annual Report and *Bloomberg*.

ICBC's board has four committees: strategy, audit, risk management, and nomination and compensation; under the risk management committee, a related party transaction committee was also established. Most listed companies in China have a supervisory board besides the Board of Directors, similar to the two-tier boards in Germany and other continental European countries. ICBC's supervisory board has five members, two of whom are external. Two of the three internal supervisors are appointed by the State Council. The two external supervisors have had prior government experience, and one (internal) supervisor representing ICBC employees is the general manager of the Legal Affairs Department.

On the compensation front, ICBC implements an EVA (economic value added) based incentive scheme, such that employee pay is tied to their personal performance and the contribution made by their respective work units. This scheme is intended to attract, retain, motivate, and develop a high quality workforce. ICBC compensates their directors, supervisors, and senior management with salaries, bonuses, enterprise annuities, social security plans, and housing subsidy plans. These executives and directors can also participate in a share appreciation rights plan, similar to (restricted) stocks and stock option grants in US companies. Established in preparation for the IPO, the benchmark price of the plan is based on the market value of the stocks that are traded on the HKSE.

Finally, ICBC exerted concerted efforts to implement a series of modern risk management systems. With the promulgation of China's Commercial Banking Law in 1995, ICBC began to operate on a more commercial-bank basis and started to more proactively manage their risks. Its current risk management framework covers credit, liquidity, market, and operational risks. The Risk Management Department at the head office reported directly to the bank's Chief Risk Officer (CRO), a position established in July 2006. This department is primarily responsible for coordinating the bank's efforts in establishing their comprehensive risk management framework, preparing consolidated reports on their credit, market, and operational risks, developing methodologies for the quantification of credit risk, developing and implementing the internal rating-based project and monitoring and managing their NPLs. In addition to establishing a bank-wide risk management framework and related systems, ICBC undertook a number of initiatives to enhance their risk management capabilities: (1) strengthening the independence of the internal audit functions; (2) developing enhanced risk management information systems; and (3) increasing employees' accountability for their own performance and compliance with the bank's policies and procedures. ICBC also made efforts to align their risk management and internal control capabilities with international best practices.

## 2.2 *The dual IPOs of ICBC*

In terms of the stock exchange where the Big Four banks are listed, the goal of the Chinese government had been very clear from the beginning that the IPOs should be conducted at HKSE. HKSE is one of the most developed exchanges in Asia (and in the world) and Hong Kong is an important financial center in Asia. Upon listing, these banks would follow more stringent disclosure requirements and governance mandates than firms listed only on the domestic exchanges and those required by international banking accords. In addition to the traditional benefits of listing overseas (and cross-listing), such as having access to more capital, recent research shows that there can be additional benefits from improved corporate governance. This is because listing a (domestic) firm on an exchange located in more developed markets is a commitment device (or 'bonding' mechanism) of the firm to enhance protection of minority investors and reduce the agency costs of the controlling shareholders. As a result, many such cross-listed firms are traded

at a premium over similar firms that are only listed on domestic exchanges (e.g. Doidge, Karolyi, and Stulz 2004).

One unique aspect of ICBC's IPO is that it planned to carry out an H-share offering in HKSE (Hong Kong dollars) and an A-share offering in SHSE (RMB) on the same day. It was the first ever simultaneous IPO of two types of shares (H-shares and A-shares) in two different stock exchanges. Specifically, the H share offering, the primary target of the offerings, includes a Hong Kong Public Offering and an International Offering, and the offering prices for A-shares and H-shares would be the same after taking into account the (spot) currency conversion (RMB and HKD) rate on the issuing day.<sup>10</sup> The H-share underwriting syndicate included both renowned foreign and Chinese investment banks, while the Shanghai A-share underwriting syndicate included only Chinese investment banks. The H-share international offering underwriters solicited prospective investors' indications of interest in acquiring the H shares. In particular, ICBC and the investment banking syndicate solicited qualified institutional buyers in the US (as defined in SEC Rule 144a) and outside of the US in accord with SEC Regulation S. The targeted investors included sovereign, institutional, corporate, and retail investors with the goal of establishing a wide and stable shareholder base. ICBC was expected to use the net proceeds from the Global Offering to strengthen its capital base and support the ongoing growth of its businesses.

ICBC was listed on both the HKSE and SHSE on 27 October 2006. It was the world's largest IPO up to that point in time valued at US\$21.9 billion. ICBC raised US\$14 billion in Hong Kong (H-shares) and another US\$5.1 billion in Shanghai (A-shares). Due to heavy subscriptions, all of the Green Shoe options for over-allotment of the shares were exercised (by investment banks). At the end of its first trading day, ICBC's shares closed up almost 15% in Hong Kong, and its first week return was 17%. Meanwhile, ICBC's Shanghai-listed A-shares recorded more modest gains on its first day (5.1%) and first week (4.8%). ICBC continued to improve its operating performance after the IPO. During the first year post IPO, ICBC's net profits increased about 60%, higher than the average growth rate in profitability of 30% per year before its IPO. During the post-IPO period of 2006–2010, while ICBC's total assets and profits (gross and net) have been growing rapidly, NPL ratios have been falling steadily (Table 3, Panel B).

In fact, as shown in Panel A of Table 3, the IPOs of the largest five state-owned Chinese banks (Big Four plus Bank of Communications) were all successful, as measured by the first day and week returns and amount raised. All five banks are listed on HKSE, and all but the Construction Bank (PCBC) are also listed on SHSE. In particular, the IPO of the Agricultural Bank of China, the last of the Big Four, carried out in July 2010, amid all the uncertainties of the post-2007–2009 global crisis and ongoing Euro Zone crisis, raised over \$22 billion total from HKSE and SHSE. All of these banks attracted foreign institutional investors to hold minority stakes.

The privatization process in China's financial intermediation sector is not limited to the Big Four banks. In recent years, numerous large banks and non-bank financial institutions such as insurance companies went public both on SHSE and HKSE. Table 4, Panel A lists the dates of large banks' (outside the Big Four) IPOs – all of these banks were listed in SHSE, and four banks were also listed in HKSE. Panel B lists the dates of the four largest insurance companies' IPOs – all four companies were listed in Hong Kong and two of them were also listed in Shanghai.

### **3. Comparing banks' performance and risk-taking activities**

To justify our main conclusion that the 'Chinese model' of privatizing large financial institutions is suitable for other emerging countries, we must demonstrate that the privatized Chinese institutions outperform their peers from other developing countries. Therefore, we compare the

Table 3. IPOs of state-owned banks in China.

	ICBC		BOC		PCBC	BComm	ABC <sup>b</sup>	
	HKSE (HK\$)	SHSE (RMB)	HKSE (HK\$)	SHSE (RMB)	HKSE (HK\$)	HKSE (HK\$)	HKSE (HK\$)	SHSE (RMB)
<i>Panel A: Performance of Chinese banks' IPOs<sup>a</sup></i>								
IPO date	10/27/06	10/27/06	6/1/06	7/5/06	10/27/06	6/23/05	7/15/10	7/16/10
Offer price	3.07	3.12	2.95	3.08	2.35	2.5	3.2	2.68
Proceeds	124.95B	46.64B	82.86B	20.00B	59.94B	14.64B	93.8B	68.5B
1st day return (%)	14.66	5.13	14.41	22.73	0.00	13.00	2.20	1
1st week return (%)	16.94	4.81	19.49	19.16	-1.06	13.00	9.10	1.90
Foreign ownership (%)	7.28	-	14.40	-	14.39	18.33	40.80	-
Year	Total assets	Total profit	Net profit	ROA (%)	ROE (%)	NPL/ loans (%)	NPL/ assets (%)	
<i>Panel B: ICBC operating performance post-IPO<sup>c</sup></i>								
2006	7,509,118	71,521	49,336	0.66	10.47	5.47	1.75	
2007	8,684,288	115,114	81,990	0.94	15.06	2.57	1.29	
2008	9,757,654	145,301	111,151	1.14	18.31	2.13	1.07	
2009	11,785,053	167,248	129,350	1.10	19.05	1.39	0.75	
2010	13,417,887	166,324	127,795	0.95	16.83	1.00	0.54	

Note: Information on the IPOs of the Big Four banks and that of Bank of Communications (BComm) are given. BOC, ICBC and ABC were listed in both the HKSE (HK dollar) and SHSE (RMB), while PCBC and BComm only listed shares on the HKSE. First day (first week) return is percentage return of closing price of first day (fifth trading day) over offer price. Foreign ownership indicates size of ownership stakes of foreign institutions and investors at the date of IPOs.

<sup>a</sup>Source: IPO prospectuses submitted to SHSE and HKSE; SHSE and HKSE.

<sup>b</sup>In USD, ABC raised \$22.1 billion from its IPO, beating the record of \$21.9 billion from ICBC's IPO. However in terms of RMB, ICBC still holds the record of largest IPO since the RMB has appreciated significantly since 2006.

<sup>c</sup>Source: ICBC Annual Reports.

performance of the largest five state-owned banks from China, including ICBC, with other large banks from both emerging and developed markets. We also compare the performance of large state-owned institutions versus non-state-owned institutions from a number of developed and emerging economies, as well as the performance of institutions from emerging economies versus those from developed countries.

Table 5 lists the names of the large banks, their headquarter countries and size (book assets and market capitalization), with data on banks' accounting and financial information as well as stock returns (as of August, 2011) obtained from *Bloomberg*. Panel A lists the largest five state-owned banks from China (Big Four and the Industrial Bank of China); Panel B shows the largest four state-owned banks from other emerging economies – Russia, South Africa and Indonesia; all the nine state-owned banks (in China and elsewhere) are publicly listed and traded. Panel C lists the largest 21 listed banks that are non-state-owned from both developed nations (12 banks) as well as nine banks from emerging countries including China, Brazil and India.<sup>11</sup> We classify a bank to be (ultimately) state-owned if the government's ownership stake is at least 30%.<sup>12</sup> The average total asset of Chinese state-banks is \$1,558 billion, which is slightly larger than that of the group of non-state banks (\$1,435 billion). State-owned banks from other emerging markets are much smaller, with average total assets of \$165 billion. When we compare the performance of banks from emerging markets with those from developed markets we also have three groups: the five

Table 4. IPOs of Chinese banks and financial institutions.

Institution name	A shares IPO date	H shares IPO date	Total assets	Total market cap
<i>Panel A: Banks' IPOs</i>				
Shenzhen Development Bank	10/05/1987	Unlisted	727,610	59,942.24
Shanghai Pudong Development Bank	10/11/1999	Unlisted	2,191,411	173,850.3
China Minsheng Banking Corp.	19/12/2000	26/11/2009	1,823,737	177,003
China Merchants Bank	09/04/2002	22/09/2006	2,402,507	335,049
Huaxia Bank	12/09/2003	Unlisted	1,040,230	70,072.7
Industrial Bank Co. (Xingye)	05/02/2007	Unlisted	1,849,673	142,596.4
China Citic Bank Corp.	27/04/2007	27/04/2007	2,081,314	247,133
Bank of Nanjing	19/07/2007	Unlisted	221,493	25,770.34
Bank of Ningbo	19/07/2007	Unlisted	263,274	30,510.82
Bank of Beijing	19/09/2007	Unlisted	733,211	59,971.42
China Construction Bank	25/09/2007	27/10/2005	10,810,320	1,569,350
China Everbright Bank	18/08/2010	Unlisted	1,483,950	129,795.7
<i>Panel B: IPOs of insurance companies</i>				
China Pacific Insurance (Group)	25/12/2007	23/12/2009	475,711	230,446
Ping An Insurance	01/03/2007	24/06/2004	1,171,627	500,338
PICC Property and casualty	Unlisted	6/11/2003	201,785	159,551
Taiping Insurance	Unlisted	29/06/2000	154,484	30,686

Source: *Bloomberg*.

largest state-owned banks from China, the other 10 large banks (four state-owned and six non-state-owned) from emerging markets and 15 (non-state-owned) banks from developed markets. Banks from developed markets have the largest average total asset value of \$2,187 billion, while banks from emerging markets (excluding the five large Chinese state-owned banks) have average total assets of \$435 billion.

### 3.1 Comparing the performance of banks

#### 3.1.1 Univariate comparisons

Table 6 reports the summary statistics of operating performance of the banks in our sample over the period 2006–2011; we choose 2006 as the first year of our sample period because ICBC became listed in that year. Based on year-by-year data, the top five state-owned banks from China, as a group, have significantly improved their performance in terms of both ROA and ROE as compared to the pre-IPO period and continued the upward trend during 2006–2011; over the same period the ratios of NPLs/Total Loans show a steady downward trend (not reported in tables). In Panel B, Table 6 we first compare the five state-owned banks from China versus all the other banks (state-owned and non-state) banks from emerging markets. While the Chinese state-owned banks have lower ROA during 2006–2011 than the other banks there is no significant difference between these two groups in terms of ROE or NPL ratios. We also compare all the banks from emerging markets (a total of 18 banks) versus those from developed markets (12 banks). Perhaps not surprisingly, banks from developed markets have significantly worse performance (both ROA and ROE) during the global crisis period than those from the developing countries due to their exposure to the housing markets in the US and Europe. These banks also have more NPLs in 2009 and 2010 but there is no significant difference in NPLs between the two groups over the entire period.

Table 5. Largest banks in the world (as of the end of August in 2011).

Country	Name	Total assets (billion US dollar)	Market cap (billion US dollar)
<i>Panel A: Top 5 state-owned banks in China</i>			
China	Ind and Comm Bank-A	2304.516	208.651
China	China Const Bank-H	1818.539	161.358
China	Bank of China-H	1776.572	115.713
China	Agricultural-A	1568.722	126.531
China	Industrial Bank-A	323.322	21.495
<i>Panel B: Top state-owned banks in other emerging markets</i>			
Russia	SBERBANK	325.843	45.057
South Africa	Standard Bank Gr	203.318	17.978
South Africa	Firststrand Ltd	103.241	13.499
Indonesia	Bank Negara Indo	27.235	8.031
<i>Panel C: Top non-state-owned banks in the world</i>			
UK	HSBC Holdings Plc	2690.987	133.304
Germany	Deutsche Bank-Reg	2683.982	27.593
Japan	Mitsubishi UFJ F	2489.883	61.582
UK	Barclays Plc	2398.678	26.007
China	Bank of Commun-H	672.620	40.692
Brazil	Banco Do Brasil	579.395	36.737
France	Credit Agricole	2312.689	14.215
Brazil	Itau Unibanco BA	487.354	63.605
US	Bank of America	2261.319	61.414
Brazil	Bradesco SA-Pref	441.722	50.381
US	JP Morgan Chase	2246.764	114.125
China	China Merch Bank-A	408.921	37.335
US	Citigroup Inc	1956.626	69.914
China	Shang Pudong-A	379.842	25.492
Japan	Mizuho Financial	1941.564	35.239
India	State Bank of India	369.587	25.052
Spain	Banco Santander	1787.548	62.235
China	China Citic Bank-H	347.350	28.664
France	SOC Generale	1680.316	16.005
China	China Minsheng-A	334.322	23.059
Japan	SMFG	1663.766	38.710

Source: *Bloomberg*.

Table 7 reports average *monthly* excess stock returns for the different groups of banks. We retrieve monthly return data from 2006 to August 2011. Excess return of a bank in a given month is calculated by subtracting the market index return of the exchange where the bank is listed from the bank's monthly stock return. We compute equally weighted average return (using value-weighted average returns yields very similar results) for different groups of banks. Panel A shows that the sample mean is negative for the whole sample, indicating the banks in our sample underperform their respective markets during the sample period. However, as Panel B shows, banks from emerging markets have positive excess returns while banks from developed markets have negative excess returns, and hence the underperformance is mainly driven by banks from the latter group. State-owned banks in China have lower average returns than other banks from emerging markets, but the difference is not statistically significant.

Table 6. Summary statistics of operating performance for top banks.

Panel A: Summary statistics of operating performance of top banks in the world <sup>a</sup>									
	Mean		Median		Std. dev.		N		
ROA (%)	0.802		0.814		0.706		180		
ROE (%)	14.421		16.250		11.618		180		
Non-performing loans/total loans (%)	2.453		1.985		2.538		180		
Panel B: Comparison of operating performance <sup>b</sup>									
	State-owned banks from China				Other banks from emerging markets				Difference
	Mean	Median	Std. dev.	N	Mean	Median	Std. dev.	N	
ROA (%)	1.074	1.108	0.174	30	1.380	1.125	0.680	60	-0.306***
ROE (%)	19.682	20.155	4.513	30	21.163	20.197	6.785	60	-1.481
Non-performing loans/total loans (%)	2.868	2.131	4.528	30	1.950	1.563	1.555	60	0.918
	All banks from emerging markets				All banks from developed markets				Difference
	Mean	Median	Std. dev.	N	Mean	Median	Std. dev.	N	
ROA (%)	1.288	1.125	0.592	90	0.348	0.360	0.459	90	0.940***
ROE (%)	20.731	20.176	6.215	90	8.597	10.651	12.409	90	12.133***
Non-performing loans/total loans (%)	2.308	1.639	3.073	90	2.604	2.289	1.844	90	-0.296

Notes: Comparison of operating performance of top banks in the world from 2006 to the first half of 2011. Banks are ranked by total assets at the end of August, 2011. Banks with government ownership not less than 30 percent are named as state-owned banks. All values are in terms of percentage. (See Table 5 for the list of banks.)

Source: *Bloomberg*.

<sup>a</sup>Summary statistics of operating performance of all top 30 banks (15 from emerging markets and 15 from developed markets).

<sup>b</sup>Comparison of operating performance of the top 5 state-owned banks from China and that of other banks from emerging markets and the operating performance of top banks from emerging markets and that of banks from developed banks.

\*\*\*1% significance level.

\*\*5% significance level.

\*10% significance level.

### 3.1.2 Regression results

Table 8 reports regression results on operating performance (Panels A and B), NPLs (Panel C) and monthly excess stock returns (Panel D). Specifically, we estimate the following model:

$$\begin{aligned} & \text{Operating Performance or Excess Stock Returns}_{i,t} \\ &= \alpha_{i,t} + \beta_1 \frac{\text{State-Owned}_i}{\text{Government ownership}_i} \\ &+ \beta_2 \text{China} * \text{State-owned}_i + \beta_3 \text{Bank Characteristics Controls} + \varepsilon_{i,t}. \end{aligned}$$

We include an indicator to identify state-owned banks, and it takes on the value of one if a bank's government ownership stake equals or exceeds 30%. We also use the continuous variable – the

Table 7. Stock performance of top banks.

Panel A: Summary statistics of monthly stock excess return of top banks <sup>a</sup>									
Mean		Median		Std. dev.		N			
-0.139		-0.841		9.553		1740			
Panel B: Comparison of monthly stock excess returns <sup>b</sup>									
State-owned banks from China				Banks from other emerging markets					
Mean	Median	Std. dev.	N	Mean	Median	Std. dev.	N	Difference	
0.308	-0.532	7.539	240	0.615	-0.308	7.797	600	-0.308	
Banks from emerging markets				Banks from developed markets					
Mean	Median	Std. dev.	N	Mean	Median	Std. dev.	N	Difference	
0.539	-0.343	7.729	840	-0.666	-1.295	10.731	900	1.205***	

Notes: Monthly stock excess returns for top banks are given. Excess return is calculated by subtracting the market index return of the exchange a bank is listed on from the bank's monthly stock return. All values are in terms of percentage (See Table 5 for the list of banks.)

Source: *Bloomberg*.

<sup>a</sup>Summary statistics of monthly stock excess returns for all top 30 banks (top 15 from developed markets and top 15 from emerging markets, ranked by total assets at the end of August, 2011).

<sup>b</sup>Comparison of monthly stock excess returns of the top 5 state-owned banks in China and those of other banks from emerging markets and also monthly stock excess returns of banks in developed markets and those of banks in emerging markets.

\*\*\*1% significance level.

\*\*5% significance level.

\*10% significance level.

percentage of government ownership – in a different specification. In some models we include characteristics of the banks (size, profitability and leverage) measured in the *first* year of the sample period (2006) as controls to draw better inferences on the performance in later years. In all the models, we include country and year fixed effects to control for all the country-level factors, constant over time, that may affect performance and to control for changing macroeconomic and financial conditions. We cluster standard errors by countries so as to allow for possible correlations among error terms from banks headquartered in the same country. Finally, we include the interaction of the China indicator (takes on the value of one for all Chinese banks) and the state-ownership indicator to single out the group of Chinese state-owned banks from other banks (the China indicator itself is absorbed by country fixed effects). We also compare banks from developed markets versus those from emerging markets. Similar to the first test discussed above, we employ the following model:

$$\begin{aligned} & \text{Operating performance or excess stock return}_{i,t} \\ & = \alpha_{i,t} + \beta_1 \text{Developed}_i + \beta_2 \text{Initial controls} + \varepsilon_{i,t}, \end{aligned}$$

where *Developed* is an indicator that equals one if a bank is from developed markets, and zero otherwise.

From Panel A, we do not observe any difference in ROA for the group of state-owned banks and non-state banks when we do not control for initial bank conditions (Models 1 and 2). We do find that the state-owned banks from China have higher ROAs than other banks, while other

Table 8. Regression: operation performance and stock market performance.

<i>Panel A: ROA<sup>a</sup></i>							
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
State-owned	0.0484 (0.09)		-1.7164 (0.00)***		0.0346 (0.10)	-0.3153 (0.03)***	
Government ownership		-0.0245 (0.00)***					
China*State-owned			1.6472 (0.11)***			0.4897 (0.06)***	
Developed				-1.0815 (0.00)***			-0.1326 (0.12)
Log(Total Assets in 2006)					-0.0000 (0.03)	-0.0541 (0.03)*	0.0167 (0.02)
100 *Profitability in 2006					-0.3394 (1.43)	0.2720 (0.24)	0.2164 (0.29)
Leverage in 2006					-0.0195 (0.01)	-0.0147 (0.01)	-0.0174 (0.01)
Intercept	1.1065 (0.21)***	0.6293 (0.06)***	1.2761 (0.04)***	1.1190 (0.18)***	0.9022 (0.29)***	1.4428 (0.32)***	0.6817 (0.19)***
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R <sup>2</sup> (%)	65.58	59.74	66.11	65.69	67.25	67.97	67.31
No. of observations	303	303	303	303	291	291	291
<i>Panel B: ROE<sup>a</sup></i>							
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
State-owned	-1.2171 (2.15)		-8.8609 (0.00)***		-0.2273 (3.21)	-10.8280 (0.40)***	
Government ownership		0.0207 (0.01)***					
China*State-owned			9.2260 (0.73)***			14.8372 (1.67)***	
Developed				-2.8966 (0.43)***			-0.7684 (1.62)
Log(Total assets in 2006)					-1.6076 (0.78)**	-3.2470 (0.79)***	-1.5880 (0.40)***

100 *Profitability in 2006					-1.7575 (5.24)	1.6670 (3.24)	-1.5120 (5.93)
Leverage in 2006					-0.0719 (0.17)	0.0722 (0.25)	-0.0525 (0.21)
Intercept	20.7982 (2.75)***	21.5035 (3.69)***	19.9915 (2.72)***	19.5230 (2.15)***	40.4076 (5.43)***	56.7854 (9.60)***	39.9781 (3.70)***
Country fixed effects	Yes						
Year fixed effects	Yes						
R <sup>2</sup> (%)	47.16	66.52	51.1	48.35	36.43	39.04	36.44
No. of observations	303	303	303	303	291	291	291

*Panel C: Non-performing loans/total loans<sup>a</sup>*

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
State-owned	1.5234 (0.28)***		1.2966 (0.00)***		0.4969 (0.48)	1.5196 (0.11)***	
Government ownership		0.0461 (0.00)***					
China*State-owned			0.3113 (0.26)			-1.4436 (0.29)***	
Developed				-0.2217 (0.00)***			0.1222 (0.43)
Log(Total assets in 2006)					0.2618 (0.24)	0.4409 (0.18)**	0.3380 (0.25)
100 *Profitability in 2006					0.8132 (0.49)*	0.2797 (0.90)	0.8055 (0.51)
Leverage in 2006					-0.0013 (0.07)	-0.0183 (0.06)	-0.0133 (0.07)
Intercept	1.4576 (0.33)***	1.2133 (0.29)***	1.4272 (0.34)***	2.3365 (0.00)***	-2.5688 (2.95)	-4.2589 (2.18)*	-3.3098 (3.18)
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R <sup>2</sup> (%)	16.56	30.91	16.59	11.35	41.69	43.97	52.66
No. of observations	225	225	225	225	217	217	217

(Continued)

Table 8. (Continued)

Panel D: Monthly Stock Excess Return <sup>a</sup>							
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
State-owned	-0.4790 (0.43)		-1.7164 (0.00)***		-0.5124 (0.47)	-1.8865 (0.20)***	
Government ownership		-0.0245 (0.00)***					
China*State-owned			1.6472 (0.11)***			2.1539 (0.43)***	
Developed				-1.0815 (0.00)***			-0.6028 (0.33)*
Log(Total assets in 2006)					0.1157 (0.19)	-0.2067 (0.20)	0.0223 (0.13)
100 * Profitability in 2006					-0.3394 (1.43)	0.5972 (1.35)	0.2884 (1.55)
Leverage in 2006					-0.0430 (0.03)	-0.0075 (0.03)	-0.0101 (0.03)
Intercept	0.3398 (0.59)	0.3231 (-0.42)	0.1773 (-0.46)	0.7888 (-0.51)	-0.7819 (1.66)	2.3437 (1.88)	-0.1476 (0.58)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R <sup>2</sup> (%)	1.50	1.51	1.56	1.41	1.57	1.64	1.47
No. of observations	3760	3760	3894	3760	3557	3557	3691

Notes: This table reports regression results for operating performance and stock returns of top banks. State-owned is the dummy variable which takes the value of one if government ownership of a bank is no less than 30% percent, and zero otherwise. Government Ownership is the percentage of shares owned by government. China\*State-owned is an interaction term representing state-owned banks from China by taking the value of one. Developed is the dummy variable which takes the value of one if the bank is headquartered in developed markets, and zero otherwise. Models 5–7 in each panel are controlled for total asset, profitability and leverage in 2006. Profitability is measured by net income divided by total assets. (See Table 5 for the list of banks.)

Source: *Bloomberg*.

<sup>a</sup>Regression results. Excess return is calculated by subtracting market index return of the exchange a bank is listed on from the bank's monthly stock return. Standard errors are clustered by countries.

\*\*\*1% significance level.

\*\*5% significance level.

\*10% significance level.

state-owned banks from emerging markets have lower ROAs than non-state banks (Model 3). Adding the initial bank controls strengthens the dominance of state-owned banks from China over other banks. The coefficient in Model 6 indicates that ROA of state-owned banks in China is 0.17% higher (0.4897–0.3153; significant at 1%) than that of all the non-state banks from emerging and developed markets. On the other hand, the ROA of banks from developed markets is 1.08% lower than that of banks from emerging markets (Model 4); this effect loses statistical significance when we add initial controls (Model 7). We obtain similar results on ROE in Panel B. In particular, the coefficient in Model 6 indicates that ROE of state-owned banks in China is 4% higher (significant at 1%) than that of all the non-state banks from emerging and developed markets. Given the sample mean of 14.4% and standard deviation of 11.6% (Table 6, Panel A), this effect is also economically significant.

Panel C reports for NPLs (dependent variable is NPL/total loans). Models 1–3 indicate that state-owned banks, including the five state-owned banks from China, have more NPLs than non-state banks. However, once we control for the initial conditions state-owned banks from China actually have less NPLs than non-state banks (0.076% lower NPL ratio), while other state-owned banks have more NPLs than non-state banks (Model 6). We also find that banks from developed markets have higher NPLs than banks (state and non-state banks) from emerging markets; once again, this effect loses significance after controlling for initial conditions (Model 7). Finally, Panel D reports the results for monthly excess stock returns. After controlling for the initial conditions, the stock returns of Chinese state-owned banks are 26.7% higher than those of the non-state banks (Model 6, significant at 1%). On the other hand, banks from developed markets have much lower returns than banks from emerging markets (marginally significant, Model 7).

### 3.2 Comparisons of banks' risk-taking activities

Results from Panels A–D of Table 8 above demonstrate that the largest state-owned banks from China have performed well relative to other large banks from both emerging and developed markets over the period 2006–2011. One caveat of these results is that they may be driven by the fact that state-owned banks behaved 'cautiously' in the sense that they did not take any risk and this strategy worked well during the period of global crisis and uncertainty. We examine this hypothesis next. To measure risk-taking activities, we follow recent work, and, in particular, Beltratti and Stulz (2010), and Minton, Taillard, and Williamson (2011), to construct two measures: a balance sheet measure and a market-based measure.

Regulators monitor and control banks' risk-taking activities by imposing capital requirements and restrictions on investments. A frequently used measure is the Tier-1 capital ratio, defined to be the ratio of Tier-1 capital (a large component is equity capital) to risk-adjusted assets, and we obtain annual data from *Bloomberg*. Higher Tier-1 ratios imply that a bank sets aside more capital as reserves and lends/invests less in risky loans and projects, and therefore the bank is 'safer' in the sense that the additional 'buffer' reduces the likelihood of the bank running into financial distress. Panel A of Table 9 shows that both the mean and median Tier 1 capital ratio for the whole sample is above 9% for the sample period (2006–2011). From Panel B, Table 9, we can see that as a group, the average Tier 1 capital ratio of the five largest Chinese state-owned banks is not significantly different from that of the other banks from emerging markets (state and non-state-owned) from emerging markets. In fact, these state-owned Chinese banks do not show any difference in Tier-1 ratio in any year of the sample period from the non-state or state-owned banks from emerging markets (not reported). We do find that banks from developed markets have lower Tier-1 ratios than banks (state and non-state) from emerging markets over the sample period

Table 9. Comparison of banks' risk taking: balance sheet measure.

Panel A: Banks' risk-taking: Tier-1 capital ratio (%) <sup>a</sup>								
Mean	Median			Std. dev.			N	
9.709	9.370			2.540			180	
Panel B: Comparison of banks' risk-taking: Tier-1 capital ratio (%) <sup>b</sup>								
State-owned banks from China				Other banks from emerging markets				Difference
Mean	Median	Std. dev.	N	Mean	Median	Std. dev.	N	
9.604	9.920	1.539	30	10.357	9.375	3.504	60	-0.753
Emerging markets				Developed markets				Difference
Mean	Median	Std. dev.	N	Mean	Median	Std. dev.	N	
10.106	9.540	3.003	90	9.359	8.750	2.002	90	0.748*

Notes: This table compares the risk-taking of top banks. Risk-taking is measured by the Tier-1 Capital Ratio. All values are in terms of percentage. (See Table 5 for the list of banks.)

<sup>a</sup>Summary statistics of Tier-1 capital ratio of all top 30 banks (15 from emerging markets and 15 from developed markets, ranked by total assets at the end of August, 2011).

<sup>b</sup>Comparison of Tier-1 capital ratio of top 5 state-banks from China and that of other banks from emerging markets, and Tier-1 capital ratio of banks from emerging markets and that of banks from developed markets.

\*\*\*1% significance level.

\*\*5% significance level.

\*10% significance level.

Source: *Bloomberg*.

(the difference is significant at 10% level), and these differences are the most pronounced in 2006 and 2007. These results suggest that large banks in developed countries were taking excessive risks as compared with their counterparts in the developing world prior to the near collapse of the financial system in 2008.

One limitation with the Tier-1 capital ratio to measure risk-taking activities is that banks from emerging markets typically have more difficulty in raising capital than the banks from the developed markets, and as a result they typically maintain lower levels of Tier-1 capital ratio than their counterparts from developed markets. Therefore, we adopt another measure for risk-taking that is based on stock returns. Specifically, this market-based measure is the *annualized* standard deviation of *daily* stock returns, with a higher standard deviation interpreted as higher degrees of risk-taking activities by the banks (perceived by market participants). From Panel B of Table 10, we can see that state-owned banks from China still do not show any significant difference from other banks from emerging markets using the market-based measure over the sample period, and no difference is observed in any of the years (not reported). All the banks from emerging markets, as a group, take less risk during the entire period of 2006–2011 than large banks from developed markets (the difference is again significant at 10% in Panel B). In year-by-year comparisons (not reported), banks from the developing world have much lower standard deviation than those from the developed world in the sub-period of 2008–2011, but the reverse is true before the global crisis (2006 and 2007).

Table 11 verifies whether univariate comparisons in Tables 9 and 10 still hold in multivariate regressions. The regression models are similar to those in Table 8 with the dependent variable Tier-1 capital ratio (Panel A) and annualized standard deviation of daily stock returns (Panel B).

Table 10. Comparison of banks' risk taking: market-based measure.

<i>Panel A: Banks' risk-taking: market-based measure<sup>a</sup></i>									
Mean		Median		Std. dev.		N			
0.028		0.024		0.015		180			
<i>Panel B: Degree of risk taking: market-based measure<sup>b</sup></i>									
State-owned banks from China				Other banks from emerging markets					
Mean	Median	Std. dev.	N	Mean	Median	Std. dev.	N	Difference	
0.024	0.022	0.010	30	0.027	0.024	0.010	60	-0.003	
Emerging markets				Developed markets					
Mean	Median	Std. dev.	N	Mean	Median	Std. dev.	N	Difference	
0.026	0.024	0.010	90	0.030	0.027	0.018	90	-0.004*	

Notes: This table compares risk-taking of top banks. Risk-taking is measured by annual standard deviation of daily stock returns. (See Table 5 for the list of banks.)

Source: *Bloomberg*.

<sup>a</sup>Summary statistics of annual standard deviation of daily stock returns of all top 30 banks (top 15 from emerging markets and top 15 from developed markets, ranked by total assets at the end of August, 2011).

<sup>b</sup>Comparison of annual standard deviation of daily stock returns of the top 5 state-owned banks from China and that of top banks from other emerging markets and banks from emerging markets and those from developed markets.

\*\*\*1% significance level.

\*\*5% significance level.

\*10% significance level.

Confirming the result in Table 9, Model 6 in Panel A shows that there is no difference in Tier-1 ratio between the state-owned banks from China and other banks after controlling for banks' initial conditions. Tier-1 ratios of banks from developed markets are 2% lower than those from emerging markets (Model 7, significant at 1%), a stronger result than the difference in means in Table 9. From Panel B, state ownership has no effect on the standard deviation of stock returns (Models 1 and 2), and when initial conditions are controlled for the largest state-owned Chinese banks actually have higher standard deviation than non-state banks (Model 6), although the magnitude of the difference is small.

Overall, results from Tables 9–11 show that the state-owned banks from China do not illustrate less risk-taking incentives than banks from other emerging markets, using either the balance sheet or market-based measure. Combined with results on the operating and stock performance, we can conclude that the superior performance of these Chinese state-owned banks is *not* driven by lack of risk-taking over the period of 2006–2011.

### 3.3 Discussion

We have described the 'Chinese model' of privatizing state-owned banks – a process that includes a series of reforms to improve the efficiency of the banks and listing them in foreign (and domestic) stock exchanges with the government retaining the majority ownership with foreign institutional investors holding minority stakes. We have shown that this privatization model has been successful in improving profitability and reducing NPLs of the banks. We have also shown that these publicly listed banks *do* take risks similar to non-state banks from other emerging markets and developed

Table 11. Regression: risk-taking of top banks.

<i>Panel A: Tier-1 capital ratio</i>							
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
State-owned	1.0314 (0.41)**		-0.1200 (0.00)***		0.6523 (0.26)**	0.3020 (0.23)	
Government ownership		0.0050 (0.00)					
China*State-owned			1.4506 (0.15)***			0.4793 (0.61)	
Developed				0.0143 (0.00)***			-1.9770 (0.32)***
Log(Total assets in 2006)					0.7943 (0.23)***	0.7457 (0.29)***	1.0549 (0.16)***
100*Profitability in 2006					-0.1374 (1.38)	-0.0267 (1.39)	0.7653 (1.65)
Leverage in 2006					-0.0242 (0.03)	-0.0198 (0.03)	0.0046 (0.04)
Intercept	8.4061 (0.23)***	8.7677 (0.08)***	8.2738 (0.15)***	8.8517 (0.00)***	-1.1508 (2.48)	-0.6758 (3.08)	-4.5432 (1.17)***
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R <sup>2</sup> (%)	52.10	34.46	52.69	50.27	55.69	55.74	56.37
No. of observations	303	303	303	289	278	278	278
<i>Panel B: Annual standard deviation of daily stock return</i>							
State-owned	0.0001 (0.00)		0.0090 (0.00)***		0.0042 (0.00)***	0.0073 (0.00)***	
Government ownership		-0.0000 (0.00)					
China*State-owned			-0.0113 (0.00)***			-0.0043 (0.00)***	
Developed				-0.0021 (0.00)***			-0.0033 (0.00)
Log(Total assets in 2006)					-0.0040 (0.00)***	-0.0035 (0.00)***	-0.0030 (0.00)***
100*Profitability in 2006					0.0022 (0.00)	0.0011 (0.00)	0.0043 (0.00)
Leverage in 2006					0.0008 (0.00)**	0.0008 (0.00)*	0.0008 (0.00)*
Intercept	0.0251 (0.00)***	0.0252 (0.00)***	0.0261 (0.00)***	0.0254 (0.00)***	0.0714 (0.01)***	0.0668 (0.01)***	0.0596 (0.01)***
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes

(Continued)

Table 11. Continued

<i>Panel B: Annual standard deviation of daily stock return</i>							
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
$R^2$ (%)	7.73	7.73	9.01	2.74	11.44	11.59	10.73
No. of observations	342	342	342	342	332	332	332

Notes: The risk-taking of top banks are reported. Risk-taking is measured by Tier-1 capital ratio and annual standard deviation of daily stock returns. State-owned is the dummy variable which takes the value 1 if government ownership of a bank is no less than 30% percent, and zero otherwise. Government Ownership is the percentage of shares owned by government. China\*State-owned is an interaction term representing state-owned banks from China by taking the value of one. Developed is the dummy variable which takes the value 1 if the bank is headquartered in developed markets, and zero otherwise. Models 5–7 in each panel are controlled for total assets, profitability and leverage in 2006. Profitability is measured by net income divided by total assets. (See Table 5 for the list of banks.)

\*\*\*1% significance level.

\*\*5% significance level.

\*10% significance level.

markets. Based on these results, we advocate that such a model of reforming and privatizing large financial institutions can be considered in other emerging economies.

Government ownership of banks has adverse effects – for example, inefficiencies resulting from poor or lack of incentives and ‘tunneling’ by insiders and politically connected borrowers. However, the Chinese experience indicates that one way these adverse effects can be substantially reduced is to convert state-owned banks to publicly listed companies in domestic and/or foreign exchanges. One of the lasting lessons from the 2007–2009 crisis is how to manage risk-taking by (leveraged) large financial institutions. The government, as the controlling shareholder of large financial institutions, can better impose and enforce *non-profit* goals such as systemic stability and continued lending during recessions and crisis periods (even if continued lending generates some losses in the short-run) than private entities. This assessment is more likely to hold in developing countries, characterized by underdeveloped markets, an imperfect regulatory environment and lack of sophisticated institutional investors who can monitor large financial institutions.

Another advantage of a government bank in environments with frequent shocks and crises is liquidity provision by the government. In efficient markets this would be provided by the private sector (such as Warren Buffet’s investments in Goldman Sachs and GE in 2008 and his current investment in Bank of America). However, as we learned from the 2007–2009 crisis, markets and private sectors failed to provide sufficient liquidity and the government (through the Federal Reserve and Treasury Department) acted as ‘lender of last resort.’ In developing markets the role of private investors and institutions in liquidity provision is limited, so it is perhaps more natural to have the government-owned banks participate in liquidity provision, which could help avoid panics in the system upon negative shocks.

Overall, there is a tradeoff in having some large, listed financial institutions ultimately owned by the government: the cost is lost efficiency during normal periods while the benefits come from more financial stability and reduced adverse impacts during crisis periods. In environments with underdeveloped markets and institutions and frequent shocks and crises, we argue that government and government-appointed officials are perhaps the only force that can reign in excessive risk-taking of large financial institutions; as long as these banks are sufficiently competitive as compared to privately owned banks in the country, majority government ownership should not

stifle risk-taking completely. Given the enormous costs of bailing out the large financial institutions in the US and Europe during the recent crises, we believe the Chinese model should be given much more consideration in other developing countries.

How to establish a banking sector with a mixture of state-owned and privately owned banks? This is a legitimate question because some countries differ from China in that they do not have many existing state-owned banks or a history of nationalizing banks. In this regard, the four state-owned banks that we examined in our sample have very different backgrounds and paths to state ownership. While Sberbank of Russia operates in a country that transitioned from a socialist economy with a rich history of SOEs, Bank Negara of Indonesia was designated as the central bank at its inception and takes on various functions of a commercial bank, similar to the path of the Big Four banks in China. On the other hand, the Standard Bank and First Rand Bank, both of South Africa, started out or at one time were foreign owned, but later on the foreign investors sold off their ownership stakes to domestic investors including the state.<sup>13</sup> In addition, as observed during the crisis period, the governments of developed and developing countries can obtain *majority* equity stakes of large banks in exchange for a capital injection, or acquire an entire financial institution in danger of collapsing. Another question is whether there is an optimal mix of state and private banks given their differences and relative strengths. We leave this question to further research.

#### 4. Conclusions

In this paper, we examine the privatization process of the ICBC and its successful IPOs in both the HKSE and SHSE. As the largest bank in the world in terms of market capitalization, ICBC's largest shareholder is the Chinese government while foreign institutional investors hold minority ownership stakes and they also enter business relationships with the bank. Listing previously state-owned financial institutions in exchanges outside Mainland China with a similar ownership structure represents how the government (partially) privatizes the financial intermediation sector. The largest five state-owned and listed Chinese banks, as a group, have significantly outperformed large non-state-owned banks from other emerging economies before and during the 2007–2009 crisis. Moreover, the superior performance is not due to less risk-taking by these state-owned banks – in fact, we find no difference in risk-taking activities by these banks and other non-state banks from emerging markets using either a balance sheet or a market-based measure.

Based on our analyses, we conclude that the ‘Chinese model’ of privatizing large financial institutions has been highly successful for China. We also advocate that similar models should be considered in other emerging countries, because it provides a balance between effective monitoring and maintaining the competitiveness of these institutions in the marketplace. With perverse incentives, ‘too big to fail’ institutions from developed countries took on excessive risks and their downfall triggered the most severe financial economic crisis since the Great Depression. A fierce debate remains on how to monitor and restrain these large institutions without excessive regulations. Appropriate monitoring of large financial institutions is of particular importance in emerging economies since the banking sector plays a more important role in supporting economic growth than financial markets in most countries. But this task can be a tall order in a developing world characterized by lack of sophisticated institutional investors and underdeveloped markets and institutions. It is under these conditions that we believe the Chinese model of managing large institutions can be particularly valuable.

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## Notes

1. See, e.g. Acharya et al. (2010) on a review of the Dodd–Frank Act and regulations on financial institutions, and Johnson and Kwak (2011) on the adverse impact of the large financial institutions.
2. With a cross-country sample La Porta, Lopez-De-Silanes, and Shleifer (2002) find government ownership of banks to be associated with less financial development. Sapienza (2004) shows inefficiencies in the lending process by state-owned banks in Italy, and Dinc (2005) shows the influence of political elections in the lending process in a sample of emerging markets.
3. Consistent with this argument, Beltratti and Stulz (2010) study an international panel of large banks and find that pro-shareholder boards are associated with higher (lower) performance before (during) the crisis, reflecting decisions that sought to maximize shareholder value but that did not perform as expected when the crisis hit.
4. For example, Bonin, Hasan, and Wachtel (2005a, 2005b) examine privatization of banks in Eastern European countries, and Dinc and Gupta (2011) examine the political influence of privatizing banks in India. See Megginson (2005) for a review of bank privatizations and Megginson and Netter (2001) for a review on privatization of all types of firms.
5. For a review of China's financial system (banking sector, financial markets and beyond), see, for example, Allen, Qian, and Qian (2008), and Allen et al. (2011).
6. All of the non-bank financial institutions can be classified into or more of the following: trust and investment companies (TICs), finance companies, financial leasing companies, rural credit cooperatives and urban credit cooperatives.
7. A large number of new loans were extended as a result of China's massive economic stimulus plan in 2008–2009; a significant fraction of these loans went to local governments and were invested in infrastructure and real estate related projects. There are concerns about a new wave of NPLs resulting from these loans; see Allen et al. (2011) for more details.
8. Qian, Strahan, and Yang (2011) find that decentralization in the lending process improves the quality of an internal borrower risk measure of a large bank. Bailey, Huang, and Yang (2011) show that the stock market is 'informed' about the lending process, and reacts negatively to firms that obtained bank loans but have poor performance and high agency costs.
9. China liberalized lending rates on the upside after 2003; rates on deposits have not been liberalized unless the deposit, in foreign currencies, is above US\$3million (RMB deposits have fixed rates regardless of the size of the deposits).
10. See Allen *et al.* (2012) for the valuation of ICBC shares using an equity cash flow model and more details on the IPO process.
11. Our classification of emerging and developed markets follows that in Country of Domicile in *Bloomberg*. In particular, emerging markets include: Asia Pacific, Eastern Europe, Latin America and Caribbean and Middle East and Africa.
12. Ideally, we need to include ownership types for each year during our sample period, but *Bloomberg* only reports the most recent ownership type (in most cases ownership types are stable over time).
13. There are other state-owned banks that are *not* listed and thus not in our sample. One example is Banco Estado of Chile, which has been owned by the state for more than a century. In addition to being one of the largest and most successful commercial banks in Chile, the bank has contributed to nation-building through its social and national goals.

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