Bank Lending Margins in China and the Effects of the June 2012 Liberalization*

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Abstract

Financial liberalization in China has begun to allow more flexibility in bank interest rate setting but may threaten bank profit margins. This paper documents the initial response to the June 2012 initiative that, for the first time, allowed Chinese banks to meaningfully depart from the benchmark rates laid down by the People's Bank. We use an event study to assess the initial effects on bank share prices and compare the response of the larger state-owned banks to the smaller commercial banks. We identify significant reactions in both the Shanghai and Hong Kong markets.

Keywords: China; banks; lending; regulation

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> Banking reform in China is a microcosm of the larger, heated struggle to redefine the distribution of authority and the future of China's economic and political institutions.
>
> (Bell and Feng, 2013, p. 296)

1. Introduction

Under the 1933 Glass-Steagall Act, US banks were not permitted to pay any interest on checking accounts and interest payments on savings accounts were capped. This effectively allowed US banks to enjoy an assured interest margin between lending rates and deposit rates that persisted until competition from the fledgling money market mutual fund industry in the mid-1970s allowed depositors free access to market rates. The resultant drain on deposits precipitated the interest rate deregulation undertaken under the 1980 Depository Institutions Deregulation and Monetary Control Act and the 1982 Garne-St. Germain Act. Until June 2012, the Chinese banks faced analogous restrictions to those imposed upon US banks before 1980 together with a guaranteed net interest margin. Although the 2012 measures fell far short of the near-complete deregulation undertaken in the United States in 1980-1982, this nevertheless represented an important step that, for the first time, allowed banks to offer depositors a premium (of up to 10%) to the benchmark deposit rate laid down by the People's Bank of China. At the same time, banks became able to offer borrowers up to a 20% discount to benchmark lending rate.[1]

The 2012 interest rate liberalization followed an extended period of quiescence in the reform process, which has followed a pace slower than in other national experiences such as the

[1] Previously no premium to the deposit rate of any kind had been permitted and discounts on the lending rate had been limited to 10%.

Nordic, Korean and Turkish cases (Feyzioğlu, Porter and Takáts, 2009).[2] With the preconditions for further reform having apparently been in place for some time, the timing of the 2012 move may well, as in the US case, have been at least partially prompted by competition from new financial products. In China, wealth management products have been enjoying rapid growth and are attractive because despite higher risk they offer significantly higher returns than traditional bank deposits. Assets held in wealth management products grew from almost nothing in 2010 to reach 7-10% of deposits by the end of 2011 (Orlik, 2012). China Banking Regulatory Commission (cbrc.gov.cn) data reveal a subsequent doubling of wealth management product assets from RMB 4.59 trillion at the end of 2011 to RMB 9.9 trillion at the end of the third quarter of 2013. This latter figure is equivalent to $US 1.63 trillion and, as Yu (2014) points out, is already larger than the entire Australian economy. Meanwhile, Fitch Ratings (2012) calculated that as much as half of all new deposit growth in China was coming from wealth management products by the end of 2012.

The allure of wealth management products was augmented by investors fleeing the plunging stock market in 2013. With the People's Bank of China cracking down on lenders raising short-term funds to fund long-term loans, borrowing costs soared and the resultant credit crunch severely hurt the stock market. The overnight rate spiked to record levels, briefly touching an intraday high of 30% on June 20, 2013.[3] Even though overall credit growth remained strong, with total credit levels nearing 180% of GDP by the turn of the year, liquidity troubles persisted to the extent that many banks had to "ask borrowers not to draw down credit

[2] Despite continued interest rate regulation, Xu, van Rixtel and van Leuvensteijn (2013) find evidence that competition in Chinese loan markets increased over the 1996-2008 based on the profit elasticity approach.
[3] Although not officially confirmed, it is believed that the People's Bank privately urged the big banks to raise their interest rate limits while publicly chastising them for being too cautious and exacerbating market volatility (Huo, 2013).

lines" (Sender, 2014). Funding problems have been exacerbated by increasing competition for household savings owing to the attraction of the higher returns available at non-traditional financial institutions (or "shadow banks"). Trust companies are the most important of these shadow banks, with assets under management growing from just RMB 0.9 trillion at the end of 2007 to RMB 3 trillion at the end of 2010 – before soaring to RMB 7.5 trillion by mid-2012 (Forensic Asia, 2014).[4] He, Wong and Yu (2014) show that, while interest rate trends in the shadow banking sector follow the ups and downs in the regular three-month deposit rate, they are considerably more volatile. It is on the lending side that much larger discrepancies occur, however, with shadow bank lending rates ranging as high as an annualized 120%, typically on short-term loans of less than a year in duration (Forensic Asia, 2014).

Chinese policymakers must address not just the safety of the wealth management products now being offered by the established banks but also the growth of shadow banks offering such higher return, higher risk products outside the traditional, regulated banking sector. The potential dangers associated with these new products were highlighted by the RMB 140 million default by the Shanghai branch of Huaxia Bank in December 2012. Of particular concern are the "nonstandard" wealth management products that invest in assets not traded on any open market. In July 2013 the China Banking Regulatory Commission issued new rules requiring registration of all wealth management products before their sale to the public along with limitations on nonstandard wealth management products not exceeding 35% of a bank's total wealth management products or 4% of their total assets (Zhu, 2013). Concerns persist about maturity mismatches arising from relatively short-term wealth management products being used to fund longer-term loans, however. This can force banks to draw down other funds, or

[4] Other smaller players include microcredit companies, loan guarantee companies, and financial leasing and small loan companies.

borrow on the interbank market, to make the cash payouts on maturing wealth management products – a phenomenon that may well have contributed not only to the aforementioned cash crunch in June 2013 but also to its reoccurrence in December 2013 (Yu, 2014).

Although bank issuance of wealth management products can offer a new revenue stream and help limit the diversion of funds towards non-traditional financial institutions, the profit margins on such products typically remain smaller than on traditional bank accounts even after allowing for the narrowed spreads permitted under the June 2012 legislation. This implies that the liberalization measures have potentially offsetting effects on bank profitability. Insofar as the outflow from regular bank deposits into shadow banks and wealth management products generally is curtailed, the banks would benefit from keeping more customers in relatively higher margin deposit accounts. On the other hand, shrinkage in the existing net interest rate spread would naturally, in itself, be a negative. And it is this latter effect that seemed to drive the initial investor concern that greeted the June 2012 legislation. In this paper, we document investor reactions via an event study of bank shares prices in both the Shanghai and Hong Kong markets. We also document the extent to which Chinese banks have so far taken advantage of the new freedoms permitted in 2012 and discuss the possible future ramifications and prospects for the reform process.

2. The Pre-2012 Setting for China's Banking System

When China's economic reforms began in 1978, government control over banking activities was absolute. The People's Bank of China functioned not only as a central bank but also as a loan-issuing bank. Even after state-owned commercial banks (SOCBs) were established to take over lending operations, they not only remained under government ownership but also were subject to

a centrally-controlled credit plan until 1998. Following China's World Trade Organization (WTO) entry in December 2001, however, joint-stock ownership was established in all of the SOCBs coupled with foreign ownership stakes and the gradual opening up of China's market to foreign banks. A growing number of joint-stock commercial banks had already been founded subject to People's Bank approval with majority government ownership. Beginning with the Shenzhen Development Bank in 1991, minority share holdings of the joint-stock banks have been listed on the Shanghai and Shenzhen stock exchanges with expansion nationwide permitted in 1993. Meanwhile, four of the five SOCBs, namely the Bank of China (BOC), the Bank of Communications (BOCOM), China Construction Bank (CCB) and the Industrial and Commercial Bank of China (ICBC), had initial public offerings (IPOs) in 2005-2006. The Agricultural Bank of China (ABC) followed with a world-record-sized dual Shanghai and Hong Kong IPOs in 2010.[5] The massive scale of these SOCBs is reflected in Table 1, which shows that ABC, BOC, CCB and ICBC are all among the seven largest banks in the world based on market capitalization.

China's state-owned banks were required to make loans to loss-making state-owned enterprises under the pre-1998 national credit plan. Government pressure for redistributive lending fostered the accumulation of large levels of non-performing loans by ABC, BOC, CCB and ICBC that were removed only under a series of recapitalizations preceding their IPOs.[6] SOCB efficiency levels and prudential levels still continued to lag behind China's joint stock

[5] Even though the central government's stress on ABC maintaining the flow of funds to the rural economy and poorer areas of the country had continued even after the other SOCBs adopted their new shareholding structures, ABC's lending behavior appears to have gradually become more similar to the other SOCBs that had successful IPOs in 2005-2006 (Burdekin and Tao, 2011a).

[6] BOCOM was never subject to the credit plan and only classified as a SOCB in 2007 following the rapid growth enjoyed since its 2005 IPO. See Burdekin (2008, chapter 7) on the credit plan and the initial recapitalizations. The ABC recapitalization, meanwhile, is detailed in Burdekin and Tao (2011a).

banks, however (Fu and Heffernan, 2007; Shih, Zhang and Liu, 2008; Ariff and Can, 2008; Lin and Zhang, 2009; Matthews, Zhang and Guo, 2009). On a more positive note, some recent data suggest that the SOCBs have enjoyed at least some progress in closing the gap (Jia, 2009) and achieving higher profitability (Lu, Fung and Jiang, 2007). Hwa and Lei (2010, p. 234) go further in asserting that, based on the profitability, improved asset quality and the high return on equity seen through 2008, the SOCB level of financial performance was consistent with them already having come "a long way in reforming themselves into a modern commercial bank."

There is concern in some quarters that growth has, at times, have been too rapid, however, and that bank lending may have been more closely tied to asset markets than to the real economy. For example, the volume of bank lending activity appears to have been significantly correlated with stock market gains over the 2004-2010 period. Bank officials' own concern with this pattern is suggested by the fact that measures of banker confidence based on People's Bank of China surveys typically show declines when the stock market is booming (Burdekin and Tao, 2011b). The likelihood that such periods of higher lending volumes will be associated with renewed NPL buildup may also lie behind Tan and Floros' (2012) finding of a negative relationship between GDP growth and bank profitability in China over the 2003-2009 interval. Continued Chinese banking profitability and efficiency gains will be dependent not just upon the regulatory environment but also upon stability in the macroeconomic environment – highlighted by the ongoing tension between fostering sufficient growth while simultaneously striving to avoid excessive asset price inflation and, especially, housing bubbles (see also Burdekin and Tao, 2014).

Recent profitability for the Chinese banking system as a whole has been bolstered by an effectively guaranteed spread between lending and deposit rates based upon the benchmark

levels set by the People's Bank. Indeed, this spread actually tended to rise in size over the years, expanding from a low of 2.16% in the second half of 1998 to 3.06% in July 2011 (Yan, 2012). Guaranteed interest rate spreads not only gave Chinese banks an incentive to lend as much as possible but also to lend to larger borrowers with less default risk (typically the government's own SOEs) given the negligible scope for varying the interest rate charged with the borrower's default risk. Periodic concerns with excess lending led the People's Bank to impose (formal or informal) quotas on banks, with banks deemed guilty of lending too much facing such punitive measures as forced purchases of central bank bills (see Burdekin, 2008, chapter 4). In conjunction with the massive fiscal spending undertaken under China's 2008 stimulus program, the People's Bank of China relaxed these lending constraints, however. This allowed the banks to lend freely and full year lending in 2009 totaled RMB 9.6 trillion, representing nearly half of that year's GDP. Substantial amounts of the funds lent seem to have been used not in financing real economic activity but in speculation in the nation's stock and property markets. Rising bank loan issuance was accompanied by a soaring real estate market as well as a 60% rise in the Shanghai stock market over the first six months of 2009.

Although bank lending and deposit rates remained tightly regulated, interbank call rates were first liberalized in 1996. Other liberalization measures included the establishment of market-determined rates for bond repos in 1997 and the development of tradable secondary market for central bank bills in 2003 – followed by a full United States-style tender offering system in March 2006 (see Burdekin, 2008, chapter 4). A benchmark money market yield curve was provided under the Shanghai Interbank Offered Rates introduced in January 2007 (He, Wang and Yu, 2014). Although lending rates were permitted to be set up to 10% below the benchmark rate in October 2004, no further flexibility was introduced and deposit rates remained

rigidly tied to the People's Bank benchmark rate until June 2012. Despite relative sluggishness in China's real economy, high spreads between the benchmark lending and deposit rates helped the combined net interest income of the five SOCBs reach RMB 606.092 billion in the first half of 2011, up 24.32% from the same period in 2010 (Yan, 2012). Robust profitability was accompanied by continuing sound levels of capital adequacy amongst the SOCBS in 2012 (Table 2).

3. Initial Effects of the June 2012 Liberalization Measures

Even though liberalization may mean lower margins, this should have the beneficial long-run effect of encouraging innovation and perhaps encouraging greater lending to small businesses (Orlik, 2012). More rapidly growing smaller businesses may be willing to pay a premium to the benchmark lending rate that could allow relatively strong net interest margins to be maintained in spite of any higher rates being paid out to depositors. Increasing the flow of funds to smaller private companies could itself offer an important boost to the economy generally given the limited access to bank funds for such companies that have typically forced them to resort to the much higher rates demanded in informal credit markets. Negative effects on traditional interest margins under the new policy could also potentially be offset by the benefits arising from stemming some of the outflow to even lower margin wealth management products.

In practice, the initial negative reaction to the June 2012 reforms suggested that any such prospective longer-run benefits were seen as being outweighed by the more immediate prospective hit to net interest margins and profitability levels. The potential impact on interest margins is depicted in Figure 1 and concerns with the impact on bank profitability were voiced from the outset. For example, according to Wanguo Security's Jun Ni:

> The speed and intensity of the policy move have exceeded market expectations. For the banks it is more bearish.[7]

It is important to note that the June 2012 liberalization was not preannounced or widely anticipated in advance. This means that bank share price movements around the announcement date should offer an accurate read of initial investor reactions to the policy liberalization as opposed to their having already factored this in earlier on.

The new benchmark rate announced by the People's Bank of China on June 8, 2012 permitted up to a 20% discount on lending rates and a 10% premium on the deposit rate. This was soon followed by an additional July 6, 2012 adjustment that widened the permitted lending rate discount to 30%. As shown in Table 3, all five SOCBs set their one-year deposit rates at 3.25% after the implementation of the new policy, less than the maximum 3.3% permitted relative to the 3% benchmark rate and actually unchanged from before June 2012 given that the old benchmark rate had been 3.25% (Jingu, 2012). This still left the SOCBs with a tighter spread of 2.75% relative to the one-year lending rate as compared to the 3% spread enjoyed in 2011, however. Meanwhile, the smaller Chinese banks raised their one-year deposit rates to the maximum allowed level of 3.3%, resulting in an even smaller spread of 2.7%. This is the first time a deposit interest rate differential between the SOCBs and the other banks has been seen in China as previously they were all simply required to mechanically conform to the same benchmark rate.

The higher deposit rates offered by the smaller banks compared to the SOCBs suggests that the smaller banks are taking advantage of the new freedoms to attract more depositors through offering more attractive terms. The SOCB decision, on the other hand, to maintain the highest spread the benchmark rates might reflect their simply not being as concerned about

[7] As quoted in Lin (2012) but with our translation from the original Chinese text.

depositor inflows as the smaller banks. A key related issue is the question of just how price sensitive are depositor funds. Chinese depositors could hardly be used to comparison shopping between banks given an environment that, for so long, all but guaranteed that essentially the same terms would be offered by each. While this would certainly be unfavorable for the smaller banks in the short run, there is at least the possibility that depositor mobility increases going forward as there is more awareness of cross-bank variation. The SOCBs may well find themselves under more pressure to raise depositor rates not just because of any loss of market share with respect to the smaller banks but also the competition from the rapidly growing shadow bank sector.

From a short-run perspective, however, we hypothesize that any initial negative investor reaction at the time of the June 2012 liberalization would have been directed more towards the smaller banks than to the SOCBs because of the shrinkage in their net interest margins. In order to test this hypothesis we conducted an event study focusing on bank share price reactions to the June 7, 2012 policy announcement. It is commonly believed that market begins responding to announcement in advance. As in MacKinlay (1997), the event's impact on firm i on event date t is measured by the abnormal return (AR_{it}):

$$AR_{it} = R_{it} - E(R_{it}|X_t) \quad (1)$$

where R_{it} and $E(R_{it}|X_t)$ are the firms actual and normal returns respectively. X_t is the conditioning information for the normal return model. To estimate the normal return, we adopt the standard market model:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \quad (2)$$

where R_{mt} is the market return on day t and ε_t is the error term on date t. Using a 90 day estimation window to estimate α and β, the sample abnormal return is:

$$AR_{it} = R_{it} - \hat{\alpha}_i - \hat{\beta}_i R_{mt} \quad (3)$$

The cumulative abnormal return (CAR_i) from the start of the event window (τ_1) to the end of the event window (τ_2) for firm i is then simply the sum of the included abnormal returns:

$$CAR_{it} = \sum_{t=\tau_1}^{\tau_2} AR_{it} \quad (4)$$

We compared the Shanghai market reactions of the five SOCBs over the week surrounding this announcement to the reactions of 11 smaller commercial banks (Table 4) and then repeated this analysis over a two-week period surrounding the announcement date (Table 5).[8] For each bank, we use adjusted daily closing prices to construct daily returns series and Shanghai A-share index to construct market returns. The results presented are for cumulative abnormal returns (CARs) relative to the Shanghai A-market index benchmark and utilize a 90 day estimation period.[9] Over the one-week window depicted in Table 4, we see no significant share price reaction by the SOCBs either individually or as a group but a highly significant negative reaction for the smaller banks as a group. Under the two-week window shown in Table 5, we find some evidence of a negative reaction of the SOCB share prices as a group (significant at the 95% confidence level) but none of the individual SOCB share prices reactions is

[8] Summary statistics of the actual returns over the estimation window are provided in Table A1. The market model regression results as well as estimated constants and betas for each bank are reported in Table A2.

[9] Further exploration using a 30 day estimation window yielded an essentially identical pattern of results.

significant. Meanwhile, there is an even stronger negative reaction for the group of smaller banks (99% confidence level) and four of the 11 banks also evince individually significant negative reactions. This suggests that negative investor reactions were indeed more concentrated on the smaller banks, and justifiably so given that the smaller banks were the ones to actually raise their deposit rates after the liberalization whereas the SOCBs initially did not.

The more substantial negative reaction of the smaller bank share prices indicated in the econometric analysis is consistent with the trends depicted in Figure 2. Although a modest decline in SOCB share prices is evident during June-August 2012, this pales in comparison with the much sharper drop in the smaller banks group's average share price over this same interval. Analysis of the SOCB share prices in the Hong Kong market suggests somewhat greater investor concern than that evidenced in the Shanghai market, however. The results of reapplying the event study analysis to the Hong Kong market are shown in Table 6, which provides results for the same one-week and two-week windows. The benchmark index used to generate the abnormal returns in Hong Kong is the Hang Seng Finance sub-index. In this case, there is always a negative share price reaction that is significant at the 99% level for the SOCBs as a group – although only ICBC yields an individually significant coefficient.[10] This implies that the June 2012 policy announcement pushed down the Hong Kong share prices of the SOCBs relative to their Shanghai prices. In this way it added to the discount attached to such shares by Hong Kong investors seemingly more concerned about the consequences than their Shanghai counterparts.

[10] We could not repeat the analysis for the smaller banks because of a lack of Hong Kong cross-listings for this group. A few of the banks, including China CITIC Bank and China Minsheng Bank Corp are traded there, and more may follow (with China Everbright Bank recently undertaking a Hong Kong IPO, for example), but we do not have a sufficiently representative sample for the period of our study. See Appendix Table A.1 for further details on the banks listed in each market, including their IPOs dates.

Substantial pricing differentials between a firm's Shanghai and Hong Kong listings are observed not just for the banks but across the board, reflecting such factors as mainland China's capital controls limiting investor access to offshore markets and exchange rate expectations as well the role of differential market and company sentiment levels (see, for example, Burdekin, 2008, chapter 8). For the specific case of the SOCBs, lower Hong Kong valuations are not surprising given that investors there have access to bank listings all over the world whereas Shanghai investors are for the most part limited to mainland Chinese offerings. Even if Shanghai investors share some of the same concerns about future profitability, liquidity, and market share following the June 2012 liberalization measures, they may simply lack better options. It also worth bearing in mind that the SOCBs account for more than a quarter of the entire Shanghai Stock Exchange market capitalization – making them an inescapable part of any investment strategy linked to the market index. In that sense, the negative results seen in the Hong Kong market likely offer a more telling indictment of SOCB prospects going forward. That is, whereas their relative position within mainland China may not have suffered, outside investors may be reacting to a perceived across the board negative impact on bank profitability going forward.

4. Conclusions and Future Prospects

The June 2012 bank interest rate liberalization represents a major step in China's banking reform that at least moves the banking system closer to market-determined rates. Complete liberalization is targeted for 2017 according to the timeframe laid out by Chen Yulu, a member of the People's Bank's monetary policy committee.[11] For those looking for more rapid action, it

[11] Chen's 2013 report also calls for convertibility of the capital account by 2020 (Kazer, 2013).

is worth remembering that the United States itself maintained rigid deposit interest rate ceilings up until the 1980s. Notwithstanding the negative initial investor reactions to the reform announcement, there are a number of longer-run positives that may well extend to promoting greater bank efficiency and perhaps finally offering some incentive to allocate more funds towards smaller companies that have enjoyed rapid growth but enjoyed little access to bank funds to further their expansion. It remains to be seen whether the higher rates now being offered by the smaller banks relative to the SOCBs will themselves draw customers into the smaller banks and potentially put at least a small dent in the SOCBs' vast depositor base. Both sets of banks also have to contend with the growing competition from trust companies and the shadow bank sector.

Immediately after the June 2012 reform was enacted, China International Capital Corporation CICC), a leading investment bank, emphasized that interest rate liberalization would challenge bank operation and management skills and that investors would be better off holding the big banks in the short run – but should be prepared to move to the smaller banks after the market digested the earnings drop owing to their prospective higher returns arising from currently depressed prices (Mao and Luo, 2012). As reflected in the stronger negative investor reactions, the empirical work seems to confirm the CICC perspective that it is the smaller banks that stood to be most impacted by the 2012 reform in the short run. Their higher rates must inevitably reduce their profitability relative to the SOCBs unless they are, indeed, successful in attracting more depositors to make up in volume for their reduced margin per account. With interest rate income accounting for almost 80% of overall bank operating revenue in China (Wei,

2013), this is a much more important question than it would be for western banks that derive less revenue from this traditional source.[12]

Concerns surrounding narrowing net interest margins are by no means the only short-run risk for China's banking system, however. Tightening liquidity, as reflected in the credit crunches observed in June 2013 and December 2013, could be an ongoing problem if the funding problems associated with wealth management products are not resolved. There is also the danger that ties between trust companies and banks could lead to the banks having to subsidize losses from shadow banking activities. BBVA (2013) project a possible increase in Chinese bank NPLs to as high as 7.1% by 2017 if such risks are realized, while forecasting that an increase from 1.6% in 2013 to 3.4% in 2017 is likely based on existing trends alone. As it stands, total overdue loans among China ten largest listed banks increased by 20.42% between the end of 2012 and the end of June 2013 (PWC, 2013). With upward pressure on NPLs and downward pressure on bank profits seemingly inevitable in the short to medium term, it would not be surprising if investors continued to favor the larger banks best equipped to weather the storm. It is therefore not obvious that there is anything on the immediate horizon to reverse the negative initial investor reactions to the small banks seen in this paper's event study.

[12] Among the SOCBs themselves, ABC seems best equipped to weather any margin pressure given that it had the highest 2012 net interest margin of 2.81% – followed by CCB with 2.75%, ICBC with 2.66%, BOCOM with 2.59%, and BOC with 2.15% (Wei, 2013).

References

Ariff, M and L Can (2008). Cost and profit efficiency of Chinese banks: A non-parametric analysis. *China Economic Review*, 19(2), 260-273.

BBVA Research (2013). China banking watch: Bank profits expected to stall. Banco Bilbao Vizcaya Argentaria, Hong Kong, June 24 [http://www.bbvaresearch.com/KETD/fbin/mult/130624_China_Banking_Watch_Profit_Outlook_EN_tcm348-392310.pdf?ts=392013].

Bell, S and H Feng (2013). *The Rise of the People's Bank of China: The Politics of Institutional Change*. Cambridge, Mass.: Harvard University Press.

Burdekin, RCK (2008). *China's Monetary Challenges: Past Experiences and Future Prospects*. New York: Cambridge University Press.

Burdekin, RCK and R Tao (2011a). An ABC guide to provincial lending patterns in China: Progress and prospects. *The Chinese Economy*, 44(5), 34-54.

Burdekin, RCK and R Tao (2011b). Bank lending, inflation, and China's stock market (2004-2010). *Economics Research International*, Article ID 652983, 7 pages [doi:10.1155/2011/652983].

Burdekin, RCK and R Tao (2014). Chinese real estate market performance: Stock market linkages, liquidity pressures, and inflationary effects. *The Chinese Economy*, 47(2), in press.

Feyzioğlu, T, N Porter and E Takáts (2009). Interest rate liberalization in China. IMF Working Paper 09/171, August [http://www.imf.org/external/pubs/ft/wp/2009/wp09171.pdf].

Fitch Ratings (2012). Chinese banks: Issuance of wealth management products heats up as year-end approaches, December [www.fitchratings.com].

Forensic Asia (2014) Chinese shadow banking: Growing fast and raising risk. Special Report No. 4, Asianomics Group, Hong Kong, January 9 [http://www.asianomicsgroup.com/assets/files/document/20140109chineseshadowbanking.pdf].

Fu, X and S Heffernan (2007). Cost X-efficiency in China's banking sector. *China Economic Review*, 18(1), 35-53.

He, D, H Wang and X Yu (2014). Interest rate determination in China: Past, present, and future. HKIMR Working Paper No. 04/2014, Hong Kong Institute for Monetary Research, February [http://www.hkimr.org/uploads/publication/375/wp-no-04_2014-final-.pdf].

Huo, K (2013). 央行表态流动性整体适度 多因素叠加致利率波动. 财新网, June 24 [http://finance.qq.com/a/20130625/004336.htm].

Hwa, E-C and Y Lei (2010). China's banking reform and profitability. *Review of Pacific Basin Financial Markets and Policies*, 13(2), 215-236.

Jia, C (2009). The effects of ownership on the prudential behavior of banks—The case of China. *Journal of Banking & Finance*, 33(1), 77-87.

Jingu, T (2012). China resumes interest rate liberalization. *Lakyara*, 148, 1-5 [http://www.nri.co.jp/english/opinion/lakyara/2012/pdf/lkr2012148.pdf].

Kazer, W (2013). China needs interest rate, capital account reforms, but at measured pace. *Wall Street Journal*, May 25 [http://online.wsj.com/article/BT-CO-20130525-700944.html].

Lin, X and Y Zhang (2009). Bank ownership reform and bank performance in China. *Journal of Banking & Finance*, 33(1), 20-29.

Lin Y (2012). 央行降息致存贷差缩小 银行股白菜价仍未止跌. 深圳特区报, June 11 [http://finance.sina.com.cn/money/bank/guangjiao/20120611/105412277848.shtml].

Lu, Y, H-G Fung and X Jiang (2007). Market structure and profitability of Chinese commercial banks. *The Chinese Economy*, 40(5), 100-113.

MacKinlay, AC (1997). Event studies in economics and finance. *Journal of Economic Literature*, 35(1), 13-39.

Mao, J and J Luo (2012). 金融：等待最后一跌 银行买点将至. 行业研究 机构：中金公司 [http://yanbao.stock.hexun.com/dzqt298611.shtml].

Matthews, K, X Zhang and J Guo (2009). Nonperforming loans and productivity in Chinese banks, 1997-2006. *The Chinese Economy*, 42(2), 30-47.

Orlik, T (2012). Charting the brouhaha over China's banks. *Wall Street Journal*, June 11 [http://blogs.wsj.com/chinarealtime/2012/06/11/charting-the-brouhaha-over-chinas-banks/].

PWC (2013). Non-performing loan ratio at top 10 listed Chinese banks under pressure. PricewaterhouseCoopers, Shanghai, September 17 [http://www.pwccn.com/home/eng/pr_170913.html].

Sender, H (2014) China credit crackdown risks causing a drought. *Financial Times*, February 12, p. 22.

Shih, V, Q Zhang and M Liu (2007). Comparing the performance of Chinese banks: A principal component approach. *China Economic Review*, 18(1), 15-34.

Tan, Y and C Floros (2012). Bank profitability and GDP growth in China: A note. *Journal of Chinese Economic and Business Studies*, 10(3), 267-273.

Wei, B (2013). 国有五大银行较量净息差 农行连续两年居首. 中国经营报, March 30 [http://finance.sina.com.cn/money/bank/bank_hydt/20130330/011915001691.shtml].

Xu, B, A van Rixtel and M van Leuvensteijn (2013). Measuring bank competition in China: A comparison of new versus conventional approaches applied to loan markets. BIS Working Paper No. 422, Bank for International Settlements, Basel, Switzerland [http://www.bis.org/publ/work422.pdf].

Yan, Y (2012). 银行业“不劳而获” 代表呼吁收窄存贷款利差. 民营经济报, March 10 [http://biz.cn.yahoo.com/ypen/20120310/916249.html].

Yu, X (2014). Wealth management products aren’t part of shadow banking. *China Daily*, February 19 [http://www.chinadaily.com.cn/china/2014-02/19/content_17290414.htm].

Zhu, G (2013). China orders banks to register wealth management products. *Wall Street Journal*, July 12 [http://online.wsj.com/article/SB10001424127887324425204578601322260593206.html].

Table 1: China and the World's Largest banks

1. *Industrial and Commercial Bank of China*, $233.6
2. *China Construction Bank*, $207.6
3. HSBC (UK), $202.4
4. Wells Fargo (USA), $200.2
5. JP Morgan Chase (USA), $187.6
6. *Agricultural Bank of China*, $142.9
7. Citigroup (USA), $141.8
8. Bank of America (USA), $133.2
9. *Bank of China*, $128.80
10. Commonwealth Bank (Australia), $122.3

Notes: Ranking based on market capitalization as of April 30, 2013 (in $US billions); Chinese banks in italics.

Source: Relbanks.com [http://www.relbanks.com/worlds-top-banks/market-cap]

Table 2: Bank Profitability in the 2012 Reform Year

	Capital/ Asset Ratio	*Return on Assets*
ABC	5.30%	1.42%
BOC	6.03%	1.48%
CCB	6.19%	1.80%
ICBC	5.76%	1.76%

Notes: Capital ratios reflect tier 1 capital; Data are as of December 31, 2012

Source: *The Banker* [http://www.thebanker.com/Top-1000-World-Banks/2013]

Table 3: Chinese Bank Interest Rate Spreads Following the June 2012 Liberalization

	Deposit Rates							*Loan Rates*					
	Demand	3 m	6 m	1 y	2 y	3 y	5 y	6 m	6-12 m	1-3 y	3-5 y	5 y+	Effective Date
Big 5 State-Owned Commercial Banks													
Agricultural Bank of China	0.350	2.85	3.05	3.25	3.75	4.25	4.75	5.60	6.00	6.15	6.40	6.55	7/6/2012
Bank of China	0.350	2.85	3.05	3.25	3.75	4.25	4.75	5.60	6.00	6.15	6.40	6.55	7/6/2012
Bank of Communications	0.350	2.85	3.05	3.25	3.75	4.25	4.75	5.60	6.00	6.15	6.40	6.55	7/6/2012
China Construction Bank	0.350	2.85	3.05	3.25	3.75	4.25	4.75	5.60	6.00	6.15	6.40	6.55	7/6/2012
Industrial & Commercial Bank of China	0.350	2.85	3.05	3.25	3.75	4.25	4.75	5.60	6.00	6.15	6.40	6.55	7/6/2012
Smaller Chinese Banks													
Bank of Beijing	0.385	2.86	3.08	3.3	3.75	4.25	4.75	5.60	6.00	6.15	6.40	6.55	9/13/2012
Bank of Nanjing	0.350	2.86	3.08	3.3	4.125	4.675	5.225	5.60	6.00	6.15	6.40	6.55	7/6/2012
Bank of Ningbo	0.385	2.86	3.08	3.3	4.125	4.675	5.225	5.60	6.00	6.15	6.40	6.55	7/6/2012
China CITIC Bank	0.385	2.86	3.08	3.3	3.75	4.25	4.75	5.60	6.00	6.15	6.40	6.55	7/6/2012
China Everbright Bank	0.385	2.86	3.08	3.3	3.75	4.25	4.75	5.60	6.00	6.15	6.40	6.55	7/6/2012
China Merchants Bank	0.385	2.86	3.08	3.3	3.75	4.25	4.75	5.60	6.00	6.15	6.40	6.55	7/6/2012
China Minsheng Banking Corp.	0.385	2.86	3.08	3.3	3.75	4.25	4.75	5.60	6.00	6.15	6.40	6.55	7/6/2012
Huaxia Bank	0.385	2.86	3.08	3.3	3.75	4.25	4.75	5.60	6.00	6.15	6.40	6.55	7/6/2012
Industrial Bank	0.385	2.86	3.08	3.3	3.75	4.25	4.75	5.60	6.00	6.15	6.40	6.55	7/6/2012
Ping An Bank	0.385	2.86	3.08	3.3	3.75	4.25	4.75	5.85	6.31	6.4	6.65	6.8	7/6/2012
Shanghai Pudong Development Bank	0.385	2.86	3.08	3.3	3.75	4.25	4.75	5.60	6.00	6.15	6.40	NA	9/13/2012

Table 4: Shanghai Event Study with 1 Week Window and 90 Day Estimation Period

Big 5 State-Owned Commercial Banks	**CARs**	**t-statistic**
Agricultural Bank of China	-0.0003653	-0.0312641
Bank of China	0.0050476	0.9225549
Bank of Communications	-0.0113839	-0.6914414
China Construction Bank	-0.0008161	-0.0683665
Industrial & Commercial Bank of China	-0.0009134	-0.0950467
GROUP	-0.0016862	-0.63

Smaller Chinese Banks	**CARs**	**t-statistic**
Bank of Beijing	-0.0217601	-1.177897
Bank of Nanjing	-0.0093494	-0.3403617
Bank of Ningbo	-0.0398624	-1.075423
China CITIC Bank	-0.0428571	-1.743042*
China Everbright Bank	-0.0009036	-0.0910375
China Merchants Bank	-0.0394461	-0.8666891
China Minsheng Banking Corp.	-0.0216041	-0.5038533
Huaxia Bank	-0.0184015	-0.6263145
Industrial Bank	-0.0431415	-1.330461
Ping An Bank	-0.0413134	-1.79596*
Shanghai Pudong Development Bank	-0.0308441	-1.27929
GROUP	-0.0281348	-6.35***

Notes:
***, **, and * denote significance at the 99%, 95%, and 90% confidence levels;
CARs are the cumulative abnormal returns for each bank relative to the Shanghai A-share index.

Table 5: Shanghai Event Study with 2 Week Window and 90 Day Estimation Period

Big 5 State-Owned Commercial Banks	**CARs**	**t-statistic**
Agricultural Bank of China	-0.0105699	-0.4291709
Bank of China	-0.0578355	-1.048763
Bank of Communications	-0.0539979	-1.581563
China Construction Bank	0.0103996	0.6420322
Industrial & Commercial Bank of China	-0.0515288	-0.8908029
GROUP	-0.0327065	-2.38**

Smaller Chinese Banks	**CARs**	**t-statistic**
Bank of Beijing	-0.0425839	-2.155874**
Bank of Nanjing	-0.0192463	-0.670055
Bank of Ningbo	-0.0439143	-1.000537
China CITIC Bank	-0.0580015	-2.148426**
China Everbright Bank	-0.0743062	-1.499082
China Merchants Bank	-0.0520998	-1.158936
China Minsheng Banking Corp.	-0.0472631	-1.140524
Huaxia Bank	-0.0530075	-1.878243*
Industrial Bank	-0.0632089	-1.935287*
Ping An Bank	-0.0382623	-1.217244
Shanghai Pudong Development Bank	-0.0185829	-0.5472219
GROUP	-0.046407	-9.08***

Notes:
***, **, and * denote significance at the 99%, 95%, and 90% confidence levels;
CARs are the cumulative abnormal returns for each bank are relative to the Shanghai A-share index.

Table 6: Hong Kong Event Study Results for the Big 5 Chinese Banks

1 Week Window and 90 Day Estimation Period	CARS	t-statistic
Agricultural Bank of China	-0.0156053	-0.8738856
Bank of China	-0.0716881	-1.283503
Bank of Communications	-0.0315326	-0.908074
China Construction Bank	-0.0174459	-0.5295194
Industrial & Commercial Bank of China	-0.1003804	-0.1003804**
GROUP	-0.0473305	-2.84***

2 Week Window and 90 Day Estimation Period	CARs	t-statistic
Agricultural Bank of China	-0.0495338	-0.7268276
Bank of China	-0.0471071	-0.7169831
Bank of Communications	-0.0032355	-0.0642564
China Construction Bank	-0.0107455	-0.1924761
Industrial & Commercial Bank of China	-0.06673	-0.9975638
GROUP	-0.0354704	-2.92***

Notes:
***, **, and * denote significance at the 99%, 95%, and 90% confidence levels;
CARs are the cumulative abnormal returns for each bank relative to the Hang Seng Finance sub-index.

APPENDIX

Table A1: Summary Statistics for the Shanghai and Hong Kong Markets

Shanghai A-Share Market

Big 5 State-Owned Commercial Banks	IPO Date	Average Returns*	Standard Deviation of Returns*
Agricultural Bank of China	07/15/10	-0.00035	0.00092
Bank of China	07/05/06	-0.00065	0.00084
Bank of Communications	05/15/07	-0.00023	0.00099
China Construction Bank	09/25/07	-0.00148	0.00107
Industrial & Commercial Bank of China	10/27/06	-0.00122	0.00105
Smaller Chinese Banks			
Bank of Beijing	09/19/07	-0.00047	0.01209
Bank of Nanjing	07/19/07	-0.00079	0.01494
Bank of Ningbo	07/19/07	0.00149	0.01936
China CITIC Bank	04/27/07	-0.00061	0.01215
China Everbright Bank	08/19/10	-0.00007	0.01047
China Merchants Bank	04/09/02	-0.00114	0.01074
China Minsheng Banking Corp.	12/19/00	-0.00047	0.01218
Huaxia Bank	08/12/03	-0.00160	0.01470
Industrial Bank	01/23/07	-0.00009	0.01277
Ping An Bank	04/03/91	0.00053	0.01169
Shanghai Pudong Development Bank	09/23/99	-0.00128	0.01126
Shanghai A-Share Index	--	-0.00071	0.00928

Hong Kong Market

Big 5 State-Owned Commercial Banks	IPO Date	Average Returns*	Standard Deviation of Returns*
Agricultural Bank of China	07/16/10	0.00019	0.01726
Bank of China	06/01/06	0.00041	0.01262
Bank of Communications	06/23/05	-0.00050	0.01639
China Construction Bank	10/27/05	-0.00071	0.01616
Industrial & Commercial Bank of China	10/27/06	0.00008	0.01390
Hong Kong Market Index	--	-0.00068	0.01345

*For a 90 day estimation window (90 days surrounding the event date, excluding the event window).

Table A2: Estimated Beta Coefficients for Each Market

Regression Results for the Shanghai A-Share Market

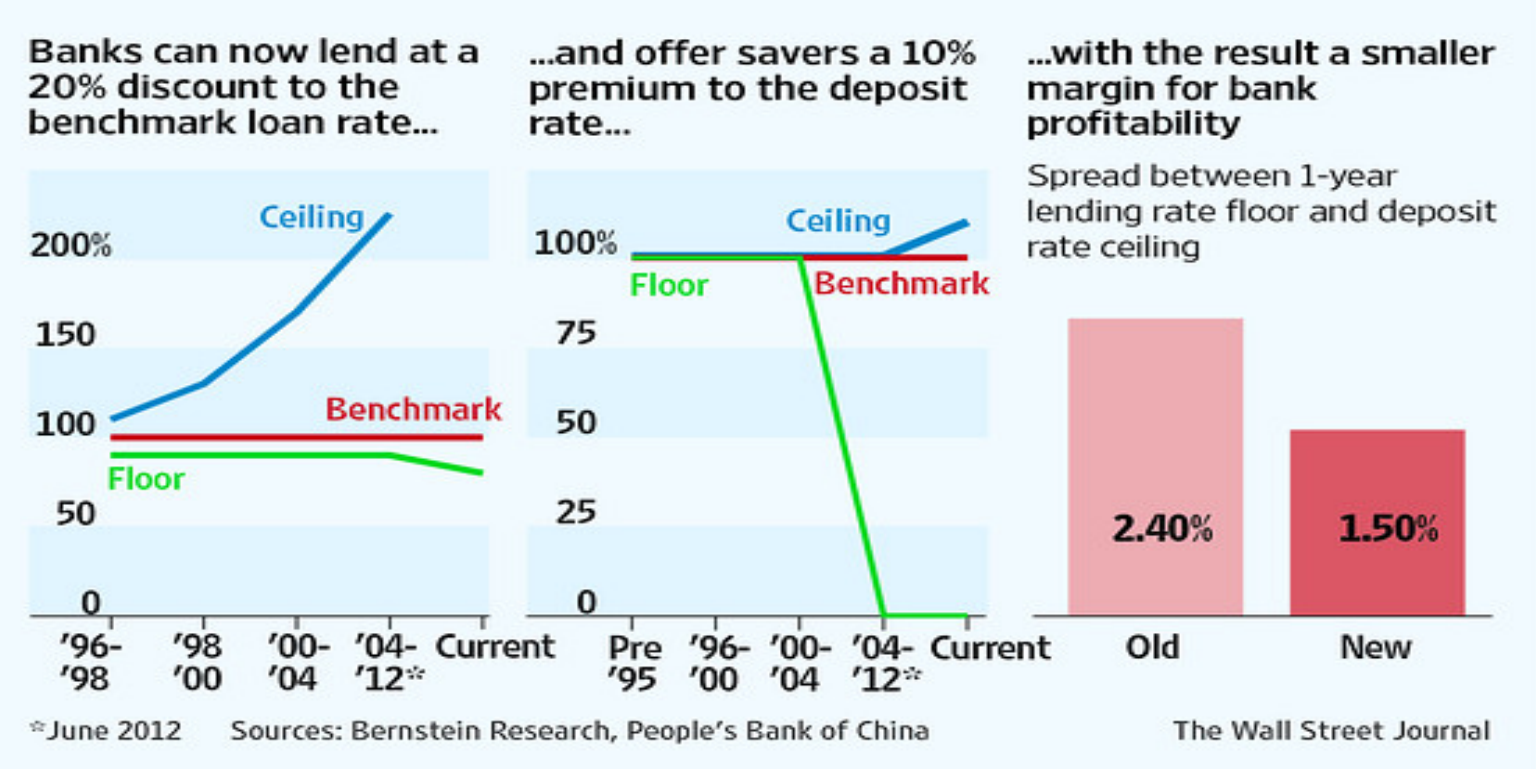
Big 5 State-Owned Commercial Banks	Constant	Beta	R-Squared	Adjusted R-Squared	No. of Obs
Agricultural Bank of China	-0.0002 (0.0009)	0.214** (0.098)	0.051	0.041	90
Bank of China	-0.0006 (0.0009)	0.189** (0.094)	0.045	0.034	88
Bank of Communications	-8.18e-05 (0.00096)	0.270** (0.104)	0.073	0.062	88
China Construction Bank	-0.00114 (0.00096)	0.490*** (0.104)	0.202	0.193	90
Industrial & Commercial Bank of China	-0.00093 (0.00097)	0.433*** (0.104)	0.169	0.159	88
Smaller Chinese Banks					
Bank of Beijing	2.53e-05 (0.00104)	0.769*** (0.112)	0.355	0.347	88
Bank of Nanjing	7.40e-05 (0.00123)	1.032*** (0.133)	0.412	0.405	88
Bank of Ningbo	0.00226 (0.00159)	1.341*** (0.173)	0.412	0.405	88
China CITIC Bank	-7.92e-05 (0.00101)	0.826*** (0.108)	0.406	0.400	88
China Everbright Bank	0.00025 (0.00096)	0.586*** (0.104)	0.271	0.262	88
China Merchants Bank	-0.00069 (0.00091)	0.706*** (0.097)	0.379	0.372	88
China Minsheng Banking Corp.	0.00032 (0.00111)	0.738*** (0.115)	0.339	0.330	88
Huaxia Bank	-0.00078 (0.00126)	0.977*** (0.139)	0.364	0.357	82
Industrial Bank	0.00058 (0.00101)	0.931*** (0.109)	0.458	0.452	88
Ping An Bank	0.00106 (0.00090)	0.872*** (0.096)	0.488	0.482	88

Shanghai Pudong Development Bank	-0.00068 (0.00092)	0.801*** (0.099)	0.43	0.423	88

Regression Results for the Hong Kong Market

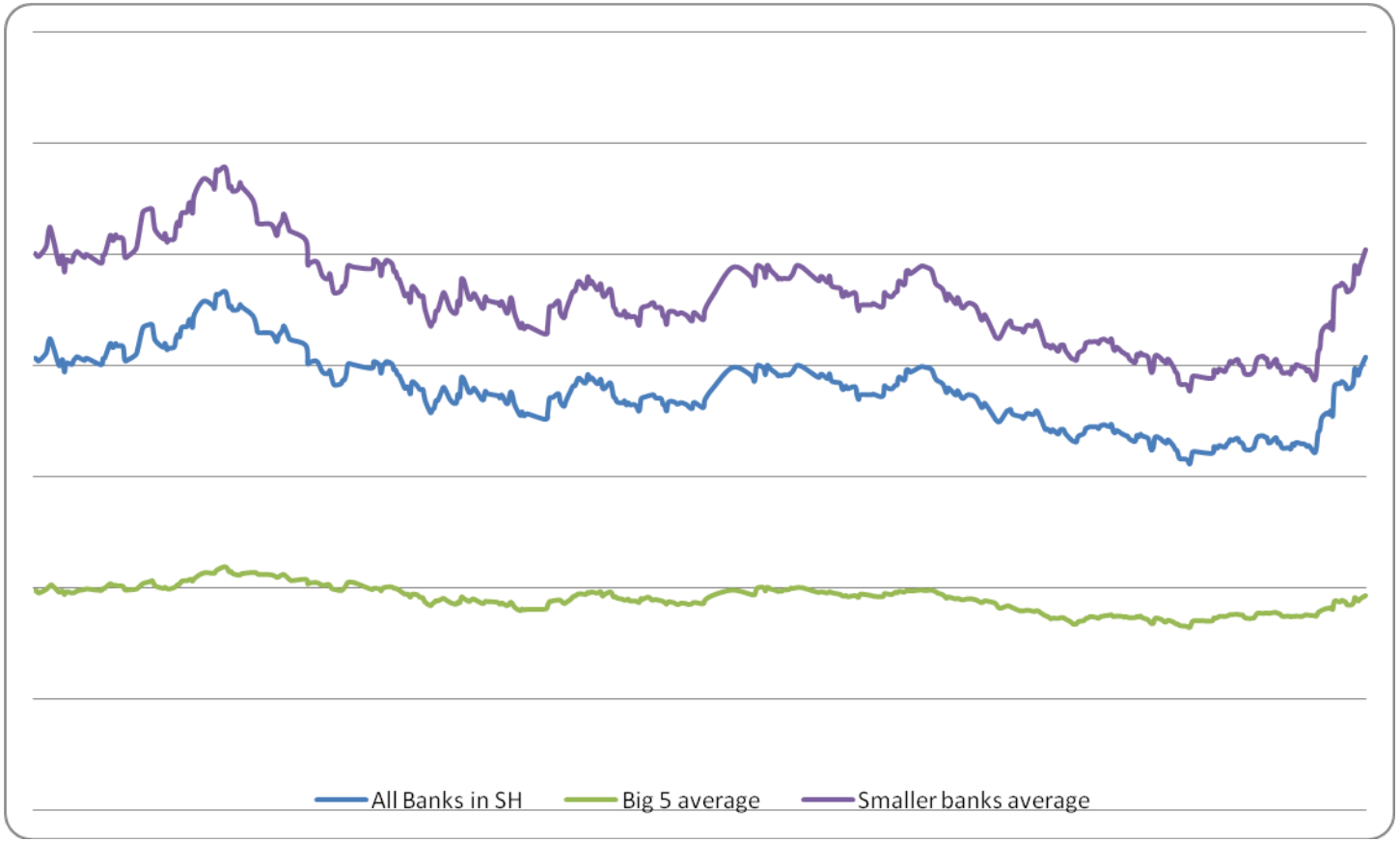
Big 5 State-Owned Commercial Banks	**Constant**	**Beta**	**R-Squared**	**Adjusted R-Squared**	**No. of Obs**
Agricultural Bank of China	0.00093 (0.00098)	1.083*** (0.0733)	0.713	0.709	90
Bank of China	0.00095 (0.00069)	0.803*** (0.0517)	0.733	0.730	90
Bank of Communications	0.00020 (0.00091)	1.037*** (0.0682)	0.724	0.721	90
China Construction Bank	-2.54e-05 (0.00095)	1.001*** (0.0709)	0.694	0.690	90
Industrial & Commercial Bank of China	0.00072 (0.00063)	0.935*** (0.0468)	0.820	0.818	90

Figure 1: Potential Effects of the June 2012 Liberalization



Source: Orlik (2012)

Figure 2: Bank Share Price Movements in Shanghai, 2011-2012



Notes: The "Big 5" are the Agricultural Bank of China, Bank of China, Bank of Communications, China Construction Bank, and the Industrial and Commercial Bank of China; the "Smaller banks" are all the remaining banks traded on the Shanghai stock exchange (see also Tables 4 & 5); and the figures are share price averages for each group.