“Do state-owned enterprises add more value from banking relationships than private-owned enterprises? The case of China”

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Do state-owned enterprises add more value from banking relationships than private-owned enterprises? The case of China

Abstract

Establishing a banking relationship is a common practice in credit financing across the world, especially in China. This banking relationship has been assumed to be particularly beneficial to both state-owned enterprises (SOEs) and privately owned enterprises (POEs). However, under such a special planned economy associated with a huge banking system, if credit resources are distributed equally between SOEs or POEs is still a puzzle. The issue about whether banking relationships add more values to SOEs than to POEs has never been tested. Using a 2SLS simultaneous equation model with Tobin's *Q* and banking relationships are endogenous, we find that on average POEs show a higher Tobin's *Q* than SOEs, while no significant differences are found in the number of banking relationship between SOEs and POEs. For POEs, firms without borrowing from banks are having the highest Tobin's *Q* of 15. 3, however, this relationship is decreasing with the increasing number of banks. By contrast, SOEs perform best (with a Tobin's *Q* of 9.5) while dealing with four banks. The relationship between *Q* and banking relationship is not monotonically decreasing for SOEs, it is non-linear: the curve slopes downward until the number of banking relationships reaches approximately 4 and then slopes slightly upward. After controlling for the corporate characteristics, Chinese SOEs seem to gain more value from banking relationships compared to POEs, where a negative relationship is always shown. The share privatization in 2005 significantly increases firm value after controlling for banking relationships for both SOEs and POEs. The results of this study thus have some implications for policy makers.

Keywords: firm performance, state-owned ownership, private-owned firmes, banking relationships, financial reform.
JEL Classification: G30, G31.

Introduction

Having an effective banking relationship is widely viewed as an important part of creating firm value. There is a rich body of literature, which examines the value of banking relationships to firm value. Banks play a very important role in finance. Banks can determine firms' capital structure and the costs of capital since banks influence the availability and interest rate of loans. In addition, banks also influence the client firms' governance by monitoring investment decisions, indirectly owning company shares and appointing directors (Petersen and Rajan, 1994; Santos and Rumble, 2006). In sum, extant studies indicating a positive effect of bank loans on the firms' value, which is measured by Tobin's *Q* (see, Boot, 2000). Recent literature suggests that close relationships between banks and firms may help firms improve access to finance, create value and ultimately improve firm performance by widening contracting flexibility ex ante (Boot and Thakor, 1994), reducing agency problems through enhanced control (Rajan, 1992). Thus, a bank-firm relationship indirectly affects firm performance.

This study extends the existing literature by analyzing the case of China. China's banking sector has been the main source of financing for the Chinese firms. As an important role of the banking sector in China, it is worth further exploring the impact of the banking relationship on the difference in firm value between state-owned enterprises (SOEs) and private-owned enterprises (POEs). The capital resources for SOEs are greater than those for POEs. SOEs are the major economic components in China, 95.6% of their working capital and 99.8% of their inventories are financed by state-owned commercial bank finance (Bonin, 1999). State-owned banks dominate the Chinese banking sector and they are often interested in SOEs because they tend to have existing relationships with the banks and share the same governors – the Chinese Government. Moreover, large banks prefer to finance SOEs, while POEs are financed by small banks. This is because SOEs receive the support from the government and thus have as better reputation than POEs. Therefore, the risk of lending to SOEs is lower since they are not forced to go into bankruptcy due to the inefficiency. Additionally, SOEs are in general an important instrument of government policy "facilitate structure change". For example, China's Government supports SOEs in joint venturing and licensing agreements with foreign firms to acquire foreign technology. Hence, thanks to the preference from Government, SOEs can also borrow capital from banks more easily and can get below market-interest rates on loans from state-owned banks.

Generally, state-owned firms are more advantageous compared to privately owned firms in dealing with banks. SOEs benefit from preferred access to bank capital, below-market interest rates on loans from state-owned banks, favorable tax treatment and require policies that create a favorable competitive environment for SOEs relative to other firms and large capital injections when necessary. In con-

trast, POEs had been operating in a restricted business environment until 1997, when they were recognized as an important component of the economy. "They were denied entrance to certain industries, paid higher taxes, had limited access to loans from state banks, market information, land and other resources, and often encountered interference from local governments" (Asian Development Bank, 2002; IFC 2000, pp. 35-59) and private business people were even denied as party membership. We treat SOEs as firms with a strong banking relationship which have a higher firm value from a banking relationship because the government owns both SOEs and major banks in China and launches lending policy to support SOEs.

The arguments indicate that SOEs have some limits for performing more efficiently than POEs. Martin and Parker (1997) contend that while SOEs 's authorities are not only maximizing profit, but also pursuing non - profitobjectives, such as producing a larger amount or particular type of output and service, employing a larger labor force or offering welfare benefits to their employees. These public responsibilities may hinder their ability to achieve efficiencies and financial objectives. Moreover, SOEs may suffer from weak monitoring due to unmotivated directors. Directors in SOEs have no incentive to monitor or be accountable for their decisions since they cannot benefit from SOE's profit. Niskanen (1971) suggests that politicians and bureaucrats may prefer their own goals and preferences, such as employment and prestige to firm productivity. Consequently, there is strong belref that private ownership is inherently superior to state ownership (De Alessi, 1983).

The purpose of this study is to provide empirical evidence of the impact of bank-firm relationships on a firm's value in China. The country provides an excellent opportunity to investigate this topic. Firstly, the existing literature on this topic in China is very limited. Secondly, the major source of borrowing for Chinese industrial companies is banks. Thirdly, China has its own characteristics of strong bank-firm relationships, which are different from those in Japan or Germany. All major Chinese banks and most listed firms are directly or indirectly owned by the Chinese government. The unique of bank and firm ownership makes China a valuable context to test the link between banking relationship and firm performance.

In this paper, using the two stage least squares (2SLS) to test the relationship among firm performance (measured by Tobin's *Q*) and the bank relationship, we find a significant non-linear relationship between the number of banking relationships and the listed firms' performance. Moreover, this study shows that Chinese stated-owned firms add more value from a banking relationship than private-firms. The remainder of the paper is organized as follows. The next section reviews the development of the literature associated with the banking relationships of SOEs and POEs. Section 2 describes the methodology and data collection procedures and formulates some simultaneous equations. Section 3 discusses the empirical results. The final Section concludes.

1. Literature review

1.1. Value of banking relationships. Some recent studies have examined the impact of banking arrangements on firm performance. Weinstein and Yafeh (1998) investigate the case of Japan and support a positive relationship between the number of creditors and firm profitability if main bank clients in their sample have fewer other credit sources. Inversely, Gorton and Schmid (2000) studied the impact of banking relationships on the performance of German firms and suggest a negative correlation between the number of credit relationships and firm performance. Other papers have indicated an indirect connection between the number of creditors and firm performance. For example, Horiuchi (1994) measures firm performance as profit-to-asset ratios and reports no significant differences among Japanese firms having one, two, or three main banks as regards their performance. Similarly, Houston and James (1996) find that for US firms, there is no difference of profitability levels between firms with multiple banking relationships and those with single ones.

There are also studies that aim to explain the factors that determine the number of banking relationships and whether this number influences value. Carletti (2004) argues that multiple lenders have greater influence in monitoring a firm less than a single lender might. Carletti Cerasi, and Daltung (2007) found that multiple banking relationships led to higher per-project monitoring costs whenever the benefits of greater diversification dominate the costs of free riding and duplication of effort. Cosci and Meliciani (2006) also show that an increasing in the number of banking relationships is due to an over-leveraging only for those firms that do not have a main bank.

Ongena and Smith (2000) find that there is a different trend of dealing with lenders in different markets. The more concentrated banking systems tend to reduce the number of banking relationships, while the presence of public bond markets tends to increase the average number of banks per firm. Fok, Chang, and Lee (2004) report a negative relationship between the number of domestic bank relationships and firm performance, but a positive relationship between the number of foreign bank relationships and firm performance. Degresy and Ongena (2001) find that firms that maintain multiple banking relationships may suffer from higher transaction

costs while single banking relationship can benefit firms by lower hold-up costs or larger overall credit lines (Von Thadden, 1994), hence it is negative to firm performance.

It can be seen that having a banking relationship is equally important for both the bank and the firm. This helps a firm access the required funds for its operation or expansion, while helping the bank gain the required information from the firm. However, for large firms, it is less necessary because they seem to have abundant capital and better channels to raise capital, such as issuing equity. In addition, they do not have to pay interest and their equity is appreciated at high value.

1.2. Ownership structures of Chinese firms and their banking relationships. Clarke and Du (1998) describe the various ownership structures of Chinese firms. They provide data on output, numbers of firms, and other important factors, for SOEs, collectively owned enterprises, POEs, and others. They also outline a brief history of these ownership structures. Kynge (2000) notes that about half of all firms that call themselves collectives should be relabelled as private. Koretz (2001) reports that China's private sector accounts for over 75% of the country's output and that private company's earnings have been growing rapidly since 2000. This growth is partly due to foreign direct investment. In addition, the private sector is now more reliant on stock offerings than on bank debt as a source of capital. Kynge (2000) reports on a study by the International Finance Corporation, an arm of the World Bank, that private firms in China generated 33% of GDP in 1998 compared with 37% from SOEs. The growth due to private firms seems to be phenomenal.

The divergence in earnings quality or banking relationships between SOEs and POEs has become less evident since the bank reforms in 2002. After two-and-a-half decades of reforms, China's SOEs no longer dominate the economy. Nevertheless, that does not undermine the sector's significance to the country. Wang and Yung (2011) find that earnings quality is better among Chinese SOEs than among POEs. In particular, they find that SOEs have lower levels of abnormal accruals and better accruals quality in general and that the result is particularly pronounced for the period prior to the Chinese stock market liberalization in 2002. Second, the results show that state ownership plays an important role in lowering abnormal accruals and improving accruals quality even after controlling for tunnelling. Finally, they find that the divergence in earnings quality between SOEs and POEs is mainly driven by the deterioration in earnings quality among SOEs. The result is consistent with the implication that SOEs are not immune to market pressure in a liberalized economy.

The banking relationship can improve the exchange of information between the bank and SOEs/POEs. Through the banking relationship, a borrower might be inclined to reveal more information than in a transaction-oriented interaction and the lender might have stronger incentives to invest in producing information (Boot, 1999, 2000). The empirical literature on the impact of banking relationships on loan conditions is mixed, with some studies finding that loan interest rates are lower when relationships are stronger (Petersen and Rajan, 1994; Berger and Udell, 1995), while others find no effects on loan rates (Elsas and Krahnen, 1998) or even an increase in rates (Degryse and Cayseele, 2000).

The Chinese banking system is in the midst of a generational program of reform as it transitions to be more open to and supportive of the emergence of China into the global economic system after decades of communism and state ownership. The banking system in China used to be monolithic, with the People's Bank of China (PBC), which is the central bank, as the main entity authorized to conduct operations in that country. In the early 1980s, the government started opening up the banking system and allowed for state owned specialized banks to accept deposits and conduct banking business. These four specialized banks are the Industrial & Commercial Bank of China (ICBC), China Construction Bank (CCB), Bank of China (BOC) and Agricultural Bank of China (ABC).

In 1994, the Chinese government established three more banks, each of which is dedicated to specific lending purposes. These policy making banks include the Agricultural Development Bank of China (ADBC), the China Development Bank (CDB) and the Export-Import Bank of China. The four specialized banks have all conducted initial public offerings and have varying degrees of ownership by the public. Despite these IPOs, the banks are all still mostly owned by the Chinese Government.

China has also allowed a dozen joint stock commercial banking institutions and more than a hundred city commercial banks to operate in the country. There are also banks in China dedicated to rural areas of the country. Foreign banks were also allowed to establish branches in China, and to make strategic minority investments in many of the state owned commercial bank. In an effort to separate policy-related lending from commercial banks in China, three policy banks were created in the mid 1990s (China Development Bank, Import and Export Bank of China, and Agricultural Development Bank of China), and a law was enacted establishing the four specialized banks (ABC, BOC, CCB and ICBC) as state-owned com-

mercial banks responsible for managing their own operations and risks, in accordance with prudential regulations.

The move to commercialize the Chinese banks occurred against a backdrop of earlier misdirected lending and poor bank performance. Much of the Chinese banks' lending during the late 1980s and 1990s was to state-owned enterprises, many of which were loss-making and relies on bank credit to continue financing their activities, but ultimately did not repay these loans (Lardy, 1999). Bank lending had also contributed to a boom and subsequent bust in the real estate and stock markets in the early 1990s (Huang, 2006). As a result, banks' non-performing loans increased significantly: by the late 1990s the large state-owned banks' aggregate non-performing loan (NPL) ratio exceeded 30 per cent (Huang, 2006). These banks were severely undercapitalized at this time (relative to minimum international regulatory standards) and had only small loan loss provisions (Lardy, 1999).

One of the key forms of evidence of Chinese banks subsidizing SOEs is reported. A disproportionate share of credit extended to SOEs relative to other forms of enterprises in China. Almost of state-owned commercial bank new loan commitments were given to SOEs. In addition, some observers claim that the SOE's preferential access to credit increased when the Chinese government implemented a stimulus package following the 2007 global financial crisis. The other major form of evidence frequently cited to support claims of Chinese banks subsidizing SOEs is the claim that SOEs generally provide loans at lower interest rates than other types of companies in China. It is generally agreed that prior to the initiation of financial reforms in 1997, the Chinese government fixed interest rates for both bank deposits and loans. Moreover, Chinese banks were required to provide loans to SOEs at fixed interest rates lower than those extended to other types of enterprises.

1.3. Changes in banking relationships after bank reforms. China shows the highest level of state ownership of banks of any major economy in the world. The sector's assets are extremely large in relation to the size of the economy. After entering the WTO, China permitted for the entry of foreign banks. However, the banking system remains heavily concentrated with the dominance of Big Four. In 2009, the Big Four represented approximately 50% of the formal sector's assets and deposits. Foreign banks accounted for only about 2% of total assets. While the Big Four accounts for approximately 40% of total loans. In the fourth quarter of 2011, the five largest Chinese banks contributed 62% to total banking profits. Because China's equity and bond markets remain underdeveloped, the Big Four carry out the majority of financial intermediation and play a critical role in the allocation of resources.

Because of countrywide economic reforms and government budgetary considerations, SOEs currently have became increasingly reliant on bank loans to finance their operations and investment needs because of the economic reforms and considerations of government budgetary. Andrew and Cole (2011) indicate that, state-owned banks continue to favor SOEs and provide significant benefits for SOEs such as allow them to borrow funds at favorable interest rates, debt forgiveness, and loans to un-creditworthy enterprises.

2. Methodology

2.1. Data sources. To construct the sample for this study, four databases were employed: (a) the China Stock Market and Accounting Research (CSMAR) database; (b) the Ju-Chao Website of Listed Firms Information Release Panel; (c) the Shanghai Stock Exchange; and (d) the Shenzhen Stock Exchange. There are excess of 10,929 observations from around 1,400 firms listed on the Shanghai and Shenzhen exchanges over the ten-year period between 1999 and 2008.

2.2. Banking relationships data source. We examine the banking relationship questions by using listed firms' annual report over the period from 2000 to 2008. Since the information pertaining to the borrowing and lending of each firm at the end of each fiscal year is not included in the CSMAR, we therefore obtain this information on long-term loans, short-term loans, and the numbers of bank-firm relationships that firms borrow from directly from the annual reports of each listed company downloaded from the Ju-Chao Website. For each firm for different years, the detailed qualitative descriptions in the annual reports are manually transferred to the quantitative data by ourselves. We obtain the amounts borrowed and the descriptions with regard to the borrowing of each firm from the corresponding annual report. A borrowing term less than or equal to one year, or less than one business cycle, are regarded as a short-term loan, while the other loans are regarded as long-term loans.

As for the number of banking relationships, some annual reports release the names of the banks that firms borrow from, while others do not. The information for those who report such information in detail is coded on an Excel sheet and calculations are performed. For those firms that do not release such information, the information is treated as missing data. To minimize the ratio of the missing data, we double check other websites including those of the Shanghai and Shenzhen Stock Exchanges to make sure the available data has not been ignored. Besides, we define the "bank" as a 'commercial bank', so that

firms that borrow from credit unions, leasing companies, financial trust companies, branch offices, or other financial intermediations are not included in our definition of the number of banking relationships.

Of particular note, prior to and in the year 2000, most of the annual reports are extremely simple by releasing only an abstract without detailed borrowing information. As such, the data on the numbers of bank relationships is not complete in 2000. Starting with 2001, the annual reports have been becoming more complete so that the bank-firm relationships data can thus be collected. Compared to the extant research, our data provide more dimensions of information than the data of Sheard (1989), Hoshi et al. (1990), and Kang and Shivdasani (1997), who consider only the largest creditor.

In addition, some firms with obvious errors in their financial reports were omitted, such as firms with negative debt or negative sales. We also eliminated firms with missing data in relation to short-term and long-term debt or other required variables.

2.3. Models and variables. Since the two equations are estimated using the same data, their error terms may be correlated. To address this problem, we use 2SLS regression, which is an extension of the linear regression model that can solve correlated errors between equations.

This study thus investigates the nature of the relation between the banking relationship and corporate performance as measured by Tobin's *Q* using a 2SLS regression for Chinese listed firms. It also examines the added value of the banking relationships of SOEs and POEs. We use the percentage of shares owned by the state as a proxy for state ownership.

Given the potential simultaneity of banking relationships and corporate performance variables, it is reasonable to adopt a 2SLS regression to address the endogeneity issue. The simultaneous equation system consists of two equations with banking relationship and firm performance as the endogenous variables and includes control variables that are common to banking relationship and corporate performance equations. The two simultaneous equations are specified as follows:

$$TOBINQ_{it} = \beta_0 + \beta_1 BR_{it} + \beta_2 LogTA_{it} + \beta_3 Growth_{it} + \beta_4 Capexta_{it} + \beta_5 RDSales_{it} + \beta_6 Leverage_{it} + \beta_7 Age_{it} +$$

$$+ \beta_8 Payout_{it} + \beta_9 Firmtype\_D_{it} + \beta_{10} BR\_SOE_{it} + \beta_{11} Industries\_D_{it} + \beta_{12} Event\_2005_{it} + \varepsilon_{it}, \quad (1)$$

$$BR_{it} = \lambda_0 + \lambda_1 TOBINQ_{it} + \lambda_2 LogtA_{it} + \lambda_3 Age_{it} + \lambda_4 Leverage_{it} + \lambda_5 Earn\_Vol_{it} + \lambda_6 Firmtype\_D_{it} + a_{it}. \quad (2)$$

Since the banking relationship and firm value may be endogenous to one another, we employ the Hausman specification test (Hausman, 1978) to confirm the existence of endogeneity. Further, the identification test and excluded-instruments F-test results also show that the two dependent variables are endogenous in relation to each other in this system.

2.4. Variables definitions. *2.4.1. Corporate performance equation, Tobin's Q (equation (1)).* Differ to Deserts and Lehn (1985), who used accounting profitability to measure firm performance, this study uses Tobin's *Q as dependent variable* . There are two important differences of these two measures. One is in time perspective, accounting profit rate focus on back ward looking but forward looking for *Q*. In attempting to assess the effect of banking relationships on firm performance, is it more sensible to look at an estimate of what banking relationships *will* accomplish. The second difference is in who is actually measuring performance. For the accounting profit rate, the accountant may be constrained by standards set by his or her profession.

Tobin's *Q* is widely used as an indicator of firm performance. In this study, we measure Tobin's *Q* as similar to Chung and Pruitt (1994):

$$Tobin's\ Q = (MVE + DEBT)/BVTA. \quad (3)$$

Here, *MVE* is the firm's market value of equity, *DEBT* is the book value of the firm's total debts, and *BVTA* is the book value of total assets of the firm. We finally come to the core question addressed in this paper: how do banking relationships affect the performance of Chinese firms? The relationships for Tobin's *Q* are delineated in equation (1). *BR* is banking relationship, measures the number banks that firms deal with. We expect a negative relationship between banking relationships and Tobin's *Q* in the sample from China since maintaining a single banking relationship can save monitoring costs (Diamond, 1984) and transaction costs. Multilateral banking does not only entail higher transaction costs, but also more competitive interest rates. Moreover, if a firm obtains financing from one source, less information is leaked to established competitors than if the firm uses multiple sources. For a firm, it is more difficult to communicate with multiple lenders, and there may be a loss of flexibility for the borrowing firm, as its actions have to be coordinated with more than one lender. Thus, we come to the hypothesis: firms using single financing are more profitable than those using multilateral financing.

Leverage which shows the availability of external finance, denoted as the lagged ratio of total debt (long-term and short-term debt) divided by total debt plus the market value of total equity. Agreed with Demsetz and Villalonga (2001) and Odegaard and Bohren (2001) provide empirical evidence of a negative influ-

ence of financial leverage on performance, we expect a negative relation between leverage and firm performance in China.

Age measures the firm age that is the number of years since firms were established. The finance literature has also looked at age-related performance issues. Almus and Nerlinger (1999) find that firm age affects negatively growth, which means older firms grow slower than younger firms so we hypothesize that AGE effect negatively on Tobin's *Q*.

LogTA is defined as firm's total assets, which computed the logarithm of the firm's book value of total assets. Serrasqueiro and Macas Nunes (2008) and Mansfield (1962) suggest that large firms are more likely to exploit economies of scale and enjoy higher negotiation power over their clients and suppliers; thereby we expect a positive relationship between the scale of firms and their performances.

Payout is calculated as the ratio of total declared dividends divided by total outstanding shares. As Bhattacharya (1979) and Miller and Rock (1985) consider optimal dividend payments as signals of future profitability, we hypothesize *Payout* is positively associated with performance.

We include several control variables that may have a significant impact on performance. *Firm Type_D* is an ownership dummy variable, which is used to test the influence of firm ownership, which equals 1 if firms are owned by a state or otherwise a "0" will be given if firms are privately owned. The sales growth rate (*Growth*), R&D expenses as a proportion of total assets (*RDSales*) and capital expenditure ratio (*CAPEXTA*) are considered as financial ratios to evaluate the return and innovation which impact efficiency (Yu et al., 2012). A positive association is expected between these variables and performance.

Industries_D is an industry dummy. We divided Chinese firms into 5 industries, namely Public Utilities, Real Estate (Property) Development, General, Industrial (Manufacturing) and Commercial. These industry types are based on the classifications of the China Securities Regulatory Commission. We employ firm diversification as a dummy variable, for example 1 for Public Utilities and 0 for others, or 1 for General and 0 for others. We also add BR_SOE as an indicator of number of relationships multiplied by the dummy variable of firm type, which equals to 1 if firms are state-owned.

Finally, an *Event*_2005 was controlled for in the equation, which equals 1 if the year was after share privatization in 2005 and equals 0 otherwise. The Share-split Reform in 2005 were strongly believed to increase firm performance measures include output, profitability, employment, solvency, and productive efficiency. Thus, we expect the reforms in 2005 to positively affect firm value.

2.5. Banking relationship equation (equation (2)). The dependent variable *BR* represents the banking relationship, which is measured by the number of banks that firms deal with.

Tobin's *Q* (*TOBINQ*) is often utilized as a proxy for a firm's growth opportunity or performance. There is an obvious causality between free riding on too many banking relationships and poor performance, but an indirect effect can also cause the causality to go the other way. Firms that perform well require less monitoring by banks, to avoid the conflicts of shareholders hence the relationship between Tobin's *Q* and banking relationship is inverse.

Rheinbaben and Ruckers (2004) indicate that the number of banking relationships increases with firm age and size. We use *LogTA*, the logarithm of the firm's book value of total assets, to measure firm size. Ogawa et al. (2007) support the theory that larger firms have more banking relationships since those firms face less information asymmetry and hence find it easier to gain access to public debt or the equity market. Hence, one might expect larger firms to be more likely to have a greater number of banking relationships.

Age is defined as the number of years since the firm's first incorporation. According to Houston and James (1996), firms with multiple banking relationships are larger and have longer operating histories than those firms with a single banking relationship. This result supports the view that younger firms relying more on a single banking relationship while older firms favor dealing with multiple banks.

We also include several additional control variables. *Leverage* is used as a proxy for a firm's default risk, calculated as the lagged ratio of total debt divided by total debt plus the market value of total equity, where total debt is defined as the sum of long-term and short-term financial debt. *Earn_Vol* (earnings volatility) is the firm's risk measured by the five-year standard deviation of earnings before interest, taxes, and depreciation (*EBITD)* divided by total assets (Johnson, 1997). Miarka and Yang (1997) analyzed the large Japanese manufacturing firms and pointed out that firms with a strong dependency on bank loans decide on more risk-averse investment projects. Thus, we expect *Earn_Vol* to affect negatively banking relationships.

3. Empirical results and discussion

Table 1 shows the results of summary statistics on the endogenous and exogenous variables. For theendogenous variables, firm performance (Tobin's *Q*) has the average value of 6.6. It illustrates that there is a few firms reach the high performance, for example 40. The second endogenous variable is number of banking

relation, which has the average value of 3. Few firms only have one relationship with a bank, and only few firms have more than 4 banks to deal with. These results show that most of sample firms maintain a multiple banking relationships.

The *LogTA* represents the size/scale of the firm gets the average value of 5085119813, means almost Chinese firms have huge assets which help them easier to access to capital from lenders. The average growth rate of the firms is a one percent. However, there is only a few firms have negative growth rate or has very high percentages of growth rate. Similarly, the average age of the firm (*Age*) is 26 years. The average of R&D expenditures of sample firms is 4.1%. Compare to industrial country like the US and the UK, Chinese firms have higher R&D expenditure than USA and British firms (3%). The reason is since Chinese is a younger economy than two industrial countries, thus, to develop as the second largest economy in the world, Chinese firms have spent a lot in R&D. The mean value of *Firmtype_D* is 0.646, almost state firms deal with more than 1 bank. Other variables have been illustrated in Table 1.

Table 1. Summary statistics of the full sample

The sample consists of Chinese firm year observations listed on the China Stock Market and Accounting Research (CSMAR) database, the Ju-Chao Website of Listed Firms Information Release Panel, Shanghai Stock Exchange and the Shenzhen Stock Exchange during 1999-2008. *BR* is banking relationship; is the number of banks that firms borrow from. *TOBINQ* is the market-to-book ratio of (the book value of total assets minus the book value of equity plus the market value of equity) to the book value of total assets. *Earn_Vol* refers to firm-level risk earning volatility, measured by standard deviation of the five-year *EBITDA* divided by total assets; *LogTA* is firm size measured by the logarithm of the market value of assets, where the market value of assets is the sum of the market value of equity plus the book value of debt; *Age* is firm age which is the number of years since the firm was first incorporated; *Leverage* is the lagged ratio of total debt divided by total debt plus total equity (total debt is the sum of long-term and short term financial debt); *Payout* is dividend share measured by total dividend declared divided by the total outstanding share; *Growth* is the sales growth rate; *Capexta* is the capital expenditure ratio, which is capital expenditure divided by total assets; *RDSales* is the R&D expenditure ratio, which is measured by research and development expenditure divided by the total sales of the firm. *Firm type_D* is dummy variable where *Firm type_D* equals to 1 for state-owned firms and 0 for private-owned firms.

Panel A: Summary Statistics for Full Sample					
Variables	Obs.	Mean	Median	25%	75%
Endogenous					
TOBINQ	10,894	6.596	1.828	1.324	2.779
BR	6,407	2.857	2.000	1.000	4.000
Exogenous					
LogTA	10,927	5085119813	1457037156	20.519	21.788
Growth	10,925	1.083	0.145	-0.024	0.338
Capexta	10,912	-0.196	0.028	0.004	0.004
RDSales	10,885	10,885	0.020	0.005	0.049
Leverage	10,927	0.668	0.498	0.359	0.627
Age	10,928	26.159	22.000	13.000	31.000
Payout	10,433	0.012	0.002	0.000	0.017
Earn_Vol	10,109	2.90e	2.83e	1.17e	7.48e
Firm type_D	1,088	0.646	1.0000	0.000	1.000
Panel B: by Firms Types					
Variable			Private-owned	State-owned	T_test
Endogenous					
TOBINQ			13.709	2.740	1.390*
BR			3.074	2.728	5.708***
Exogenous					
LogTA			20.929	21.349	0.1729
Growth			2.516	0.305	2.541**
Capexta			0.295	0.143	-0.043
RD Sales			0.048	0.037	9.246***
Leverage			0.718	0.642	0.174
Age			6.737	6.274	6.398***
Payout			0.009	0.014	0.999
Earn_Vol			2.32e	3.23e	0.677
Panel C: Correlation Metrix					
LogTA	1.0000				

[1] This item excludes non-financial liabilities, such as accounts payable, provisions for pensions, deferred taxes, and other provisions for future liabilities.

Table 1 (cont.). Summary statistics of the full sample

Panel C: Correlation metrix								
Growth	-0.0026	1.0000						
Capexta	0.1219*	0.0006	1.0000					
RDSales	-0.1409*	-0.0090	0.0084	1.0000				
Leverage	-0.1176*	-0.0001	-0.8437*	-0.0063	1.0000			
Age	0.0937*	0.0189*	-0.0194*	0.1013*	-0.0347*	1.0000		
Payout	0.0415*	-0.0040	0.0034	-0.0244*	-0.0070	-0.0638*	1.0000	
Earn_Vol	0.1596*	-0.0005	0.0003	-0.0183	0.0009	0.0091	0.0032	1.0000

Table 2 shows the sample distribution and the Tobin's *Q* and *BR* across different years, industries, ownership types and events. First, over the period of 1999 to 2008, the firm performance of Chinese enterprises has the decreasing shape from 2000 to 2005 and then jumps up from 2006 to 2008. For the number of banking relationships (*BR*), it seems that the firms build more relationships with the banks year by year from a 1.9 bank in 2000 jump to a 3.17 in 2008 (see Panel A). Second, the Tobin's *Q* and *BR* in five industries (Panel B) show that commercial industry has the highest Tobin's *Q*, while Public Utilities show the lowest Tobin's *Q*. The remaining industries have the similar value of Tobin's *Q*. As for the bank relationships, Public Utilities industries have the lowest number of banking relationships (0.62). However, the highest value of *BR* is distributed to General Industry (see Panel B). Third, Panel C compares the Tobin's *Q* and BR based on the owned situation (state-owned and private-owned), the results found that private state firms have higher 6 times Tobin's *Q* of state firms. Private-owned firm also has higher value of *BR* than stated owned firms. Finally, Tobin's *Q* and *BR* values have been evaluated by events Panel D. In 2005, when the firms started to privatize, the firm performance (Tobin's *Q*) has the lowest performance, compares to in 2003 and 2007. Since the policy of privatization in 2005 is not closed, results to the lower firm performance than before. However, in 2007, after 2 years of privatization, firms are well performing, illustrates that the privatization is effective. About *BR*, banking relationship increases gradually during 2003 and 2007, since the economy develops, demanding for capital of firms raises so they have to multiply their number of banks deal with. Panel E shows the relationship of Tobin's *Q* and the number of banking relationship from 0 to 10. For POEs, the firm performance is at the peak of 15.287 when they do not borrow from banks. For SOEs, they perform best (Tobin's *Q* equals to 9.504) when they deal with 4 banks.

Table 2. Sample distribution analysis

	Tobin's *Q*	Banking Relationships
Panel A: by Years		
	2.88	0
2000	3.93	1.90
2001	3.00	2.29
2002	2.38	2.39

Table 2 (cont.). Sample distribution analysis

	Tobin's *Q*	Banking Relationships
Panel A: by Years		
2003	1.91	2.57
2004	1.63	2.85
2005	1.47	2.99
2006	4.39	3.12
2007	5.16	3.18
Panel B: by Industries		
Public Utilities	1.56	0.62
Real Estate (Property) Development	2.06	2.71
	Tobin's Q	Banking Relationships
Panel A: by Years		
General	2.59	3.20
Industrial (Manufacturing)	2.38	2.86
Commercial	9.16	2.89
Panel C: by Ownership-types		
State-owned	2.913	3.157
Private-owned	13.70	3.07
Panel D: by Events		
2003 independent directors	1.91	2.57
2005 stock split	1.47	2.99
2007 stock split implement	5.16	3.18
Panel E: by Banking Relationships		
BR = 0	9.418	2.719	15.287
BR = 1	2.521	2.166	3.243
BR = 2	2.241	2.055	2.564
BR = 3	2.808	2.930	2.576
BR = 4 reflection point)	6.866	9.504	2.576
BR = 5	2.244	1.848	2.698
BR = 6	1.900	1.722	2.108
BR = 7	2.034	1.861	2.281
BR = 8	2.074	1.566	2.639
BR = 9	1.863	1.810	1.966

Table 3 shows the results of the Simultaneous Equations Model that Tobin's *Q* and *BR* (number of banking relation) are endogenous variables. In Tobin's *Q* regression, the coefficient on *BR* is negative and significant for the full sample and both SOEs and POEs. Interestingly, the coefficient of the BR square of SOEs is positive and statistically significant. The result shows that for SOEs, as the banking relationship increases, the firm performance decreases, up to a point, and after that point any increase in the banking rela-

tionship leads to an increase in firm performance. In contrast, for POEs, the relationship between banking relationship and firm performance is always inverse. Private firms, which have greater banking relationships, perform poorly than others. It indicates that POEs with less growth opportunities are more likely to initiate multiple banking relationships. Because of under-performing, those firms cannot meet the need to borrow a big loan from main bank. Thus, they need to multiply their banking relationship. The result seems to conform an implication of Yosha (1995) and von Rheinbaben and Ruckes (1998). However, *BR_SOE*, banking relationship of SOEs has a positive impact on the firm's performance. A state firm with multiple banking relationships will have better performance. It illustrates that the capital they raise from banks play an important role in increasing their profit and SOEs use these loans effectively. Hence, the value, which SOEs add from banking relationship, is significant and more than POEs do.

The coefficient on *Firmtype_D* is negative and significant, showing that state-owned firms have lower Tobin's *Q* than private-owned firms, thus SOEs are under-performing compared to POEs. The coefficient on *LogTA* is positive and significant, meaning that large firms perform better than small firms. *Capexta*, the capital expenditure ratio has positive and significant effect on Tobin's *Q*, suggesting that firms that spend greater capital expenditure exhibit high performance in the short run. The relationship between *Growth* and Tobin's *Q* is not significant for the full sample and the state-owned firms, whereas it is positive and significant for private firms. Profits play a dominant role in the capacity to access financial resources since it is simultaneously a source of internal financing and also a hook to attract external sources of financing. Since POEs are disadvantageous compared to SOEs in raising capital from outside so the internal finance is drastically curial for them to make profit. Hence, there is a positive significant relationship between POE's performance and sales growth rate. The coefficients of *RDSales* and *Leverage* both carry positive impacts on Tobin's *Q* but only *Leverage* is significant, suggesting that highly-leveraged firms perform better and firms putting more inputs on R&D have higher firm value measured by Tobin's *Q*. On the other hand, *Payout* impacts a negative affect on Tobin's *Q*, firms pay higher dividend per share have worse performance. The coefficients of *Event*_2005, *Event*_2003 and *Event*_2007 are all positive and significant to firm performance, suggesting a higher efficiency after the reform of stock split implement in Chinese listed firms. As expected, the coefficient on the control variables *Age*, *LogTA* and *Leverage* all have significant coefficients. The coefficient on *Industries_D* is significant, meaning that firms in different industries exhibit different growth rates. Our findings also suggest that achieving superior performance is tied primarily to firm characteristics, but it also depends on appropriate positioning within an industry. Industry affiliations also have important and direct influences on firm performance through their interaction. Because of differences in sunk, barriers to entry, fixed-cost requirements and other structural features of industries, firm performance may differ significantly by industry.

Table 3. Results of simultaneous equations model between firm value and banking relationships

Model	(1)	(2)	(3)	(4)	(5)	(6)
	Full sample		State-owned firms		Private-owned firms	
Coefficients	*TOBINQ*	*BR*	*TOBINQ*	*BR*	*TOBINQ*	*BR*
TOBINQ		0.107***		0.128***		0.105***
		(-0.0167)		(-0.0240)		(-0.0231)
BR	-3.675*** (-0.660)		-2.824*** (-0.572)		-2.872*** (-0.746)	
BR^2	2.475*** (0.346)		1.571*** (0.816)		-1.839*** (-0.412)	
Firmtype_D	-7.050***	-0.651***				
	(2.112)	(0.0655)				
BR_SOE	1.803***					
	(0.645)					
LogTA	0.930***	0.452***	1.151***	0.450***	1.099*	0.470***
	(0.193)	(0.0310)	(0.279)	(0.0371)	(0.578)	(0.0549)
Age		0.00458**		0.00374*		0.00746*
		(0.00184)		(0.00203)		(0.00388)
Capexta	1.984***		1.069***		2.803***	
	(0.632)		(0.391)		(0.987)	
RDSales	0.739		0.931		0.833	
	(1.179)		(0.791)		(1.377)	
Leverage	0.220***	0.0435***	0.739***	0.211***	0.188***	0.0346***
	(0.0211)	(0.00547)	(0.128)	(0.0231)	(0.0307)	(0.00599)

Table 3 (cont.). Results of simultaneous equations model between firm value and banking relationships

Model	(1)	(2)	(3)	(4)	(5)	(6)
Growth	0.000921		0.00937		0.00168*	
	(0.00125)		(0.00825)		(0.000947)	
Payout	-0.0539		-0.00886		-0.00554	
	(0.0706)		(0.0412)		(0.137)	
Earn_Vol		0.0692 (1.231)		0.117 (0.538)		1.289 (1.632)
Event_2003	0.024*** (1.271)		0.082*** (1.115)		0.030*** (0.326)	
Event_2005	0.517*** (1.641)		0.409*** (0.175)		0.030** (1.375)	
Industries_D	0.715*** (1.213)		0.412*** (1.191)		0.375*** (1.219)	
Constant	-11.90***	-6.164***	-19.35***	6.763***	-26.10	-6.599***
	(4.394)	(0.668)	(5.506)	(0.819)	(16.17)	(1.182)
Observations	5,684	5,684	3,621	3,621	2,063	2,063
Pusedo R2	0.197	0.089	0.176	0.098	0.184	0.193

Notes: This table shows the results of a two-stage least squares simultaneous equations model. The first model is based on the log of the number of banking relationships (*BR*), the second model on firm value (*TOBINQ*).

BR is banking relationship, means the number of bank relationships obtained, *TOBINQ* is the market-to-book ratio of (the book value of total assets minus the book value of equity plus the market value of equity) to the book value of total assets. *BR_SOE* is dummy variable, equal 1 for the banking relationship of SOEs, equal 0 otherwise. *Earn_Vol* refers to firm-level risk earning volatility, measure by standard deviation of the five year of *EBITD* divided by total assets; *LogTA* is firm size measured by the logarithm of the market value of assets, where the market value of assets is the sum of the market value of equity plus the book value of debt; *A* is firm age which is the number of years since the firm was first incorporated; *Leverage* is the lagged ratio of total debt divided by total debt plus total equity (total debt is the sum of long-term and shortterm financial debt); *Payout* is dividend share measured by total dividend declared divided by total outstanding share; *Growth* is the sales growth rate; *Capexta* is the capital expenditure ratio, which is capital expenditure divided by total assets; *RDSales* is the R&D expenditure ratio, which is measured by research and development expenditure divided by the total sales of the firm. *Firmtype_D* and *Industries_D* are dummy variables where Firm type_*D* equals to 1 for state-owned firms and 0 for private-owned firms; *Industries_D* is firm diversification, namely Public Utilities, Real Estate (Property) Development, General, Industrial (Manufacturing) and Commercial. *Event*_2005 is dummy variable which equals to 1 if year after 2005 and 0 otherwise.

In banking relationship regression, the coefficient on *TOBINQ* is negative and significant, it reflects that firms with better performance deal with fewer banks. This result is in line with those presented by Nakatani (1984) and Weinstein and Yafeh (1998), who found negative relationships between main bank relations and firm performance even before the 1980s, with the positive sign. However, firm level risk (*Earn_Vol*) does not have impact on the number of banks that firms deal with. The older and larger firms have advantages in dealing with number of banks since they have greater reputation. They are more likely to exploit economies of scale and enjoy higher negotiation power over their lenders, thus firms with higher *Age* and *LogTA* can deal with more banks. The correlation of *Leverage* shows the default risk of firms and Tobin's *Q* is positive and significant, implies that riskier firms have greater banking relationships. It agrees with Cosci and Meliciani (2002), using data provided by a large Italian bank, find that the number of banking relationships is positively correlated with a firm's leverage and the riskiness of the sector in which the firm operates. According to Ward and Price (2006), financial leverage is the proportion of capital, which is financed by debt as opposed to equity. Therefore, the higher the leverage, the higher the amount of debt in the capital structure of a firm. Capital structure refers to the relative amounts of debt and equity a firm utilizes to finance its operational activities. Hence, a firm with higher capital structure needs to maintain more banking relationships. *Firmtype_D* has negative and significant impact on banking relationship like firm performance. It illustrates that state firms have less banking relationship than private firms. State firms are more stabilize and get protection from Chinese government so they do not need to deal with multiple banks to save transactional cost. Table 4 classifies the relationship between Tobin's *Q* and banking relationship of POEs, SOEs and full samples. In general, if firms maintain number of banks from low level to the highest level; there is a significant relationship between *Tobin's Q* and banking relationship. For full sample and POEs, the relationship is negative as the difference of Tobin's *Q* between the lowest and highest level of banking relationship is minus. Interestingly, for SOEs, the correlation is positive when they maintain below high level of banking relationship but from the high level to the highest level of banking relationship, the correlation is inverse. Generally, as the difference between the lowest and highest level of banking relationship and firm value is positive so we can conclude that SOEs add more value from banking relationship than POEs.

Table 4. Results of Tobin's *Q* across different quintiles of banking relationships and firms types

BR Tobin's *Q*	Lowest	#2	#3	#4	Highest	Differences highest-lowest
Full sample	10.85	2.413	2.808	2.244	2.425	-8.428
SOEs	2.05	2.716	2.938	2.314	2.184	0.128
POEs	13.27	2.954	2.683	2.517	2.475	-10.797
T-test	1.37	5.06***	2.41***	3.383***	4.733***	

Conclusions

This paper has consisted of an examination of the interrelationships between banking relationships and firm value using a panel data of Chinese publicly listed firms over a ten-year period from 1999 to 2008. This paper uses a simultaneous equation, two stage least squares analysis to examine the relationship between the number of banking relationships and firm performance. The authors employed panel data in order to rigorously compare the SOEs and POEs in their characteristics, behavior, and performance, controlling for several factors, including size of firm, age of firm, sales growth rate, earning volatility, R&D expenditure, capital expenditure, events, and industries.

As for empirical prediction, the authors find more value from banking relationship of state-owned corporations than privately held firms. One possible explanation for this result is that SOEs are subject to governmental policy burdens, such as the demands for higher employment, specific production outputs, or the execution of special projects. Besides, SOEs remains the familiar relationship with large state-banks because of the same governors so they can easily borrow capital from banks with lower interest rates, flexible collateral. The authors also find that there is a non-linear relationship between the number of banking relationship and firm performance. On the other hand, interestingly, the interaction of banking relationships and state-owned dummy variable has a positive effect on firm performance, which implies that state-owned firms have large network resources that belong to the similar owners of the banks they deal with. Hence, the bank relationship negatively influences a firm's performance, while positively adds value to a firm when bank relationships interact with the owner of the firms, which are the state. The existed SOEs after the privatization are profitable firms so they attain more supported policies from the Government to access capital from banks. The benefit from these banking relationships help SOEs competes not only with POEs but also foreign companies. When the competition is high, firm value that firms create is also high thus the banking relationship of those SOEs effect positively on firm performance.

The Chinese banking system has boomed in recent years. The monopoly system of Chinese state-owned banks allows them to make huge profits as they have the authority to charge a big interest spread between the deposit and lending rates. The state-monopoly banking system benefits state-owned firms through banking relationships but hinder private-owned firms. In the effort to absorb private capital into its financial sector, China launched, the China Banking Regulation Commission in 2012. It lifted the restrictions on private ownership in the banking sector by allowing non state-owned companies to buy over 20% of the shares in regional banks and rural lenders, thereby they could met certain requirements and access bank loans easily. Chinese Government has been targeted at breaking up the monopoly position of some major banks to further the transparency of the whole banking system as well as the efficiency of whole Chinese firms.

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Appendix

Table 1A. The differences of endogenous and exogenous variables pre- and post-events

Variables	Full	Pre event 2005 (1)	Post event 2005 (2)	Pre event 2007 (3)	Post event 2007 (4)	T-test (1)-(2)	T-test (3)-(4)
Endogenous							
TOBINQ	6.596	2.5307	14.612	2.651	33.866	1.392*	2.492***
BR	2.857	2.5108	3.159	2.716	3.170	10.427***	5.626***
Exogenous							
LogTA	21.199	21.0464	21.145	21.116	21.487	16.371***	11.729***
Growth	1.083	4230	2.385	0.828	3.178	2.053***	1.705**
Capexta	-0.196	0535	-0.662	-0.120	-0.858	-1.872	-1.339
RDSales	0.041	0378	0.474	0.038	0.053	5.131***	8.036***
Leverage	0.668	5044	0.934	0.643	0.748	2.246***	2.246***
Age	26.159	5.0818	8.347	5.777	8.686	48.029***	29.015***
Payout	0.012	01499	0.010	0.013	0.010	-3.439	-1.669
Earn_Vol	2.90e	0000	1.47e	1.59e	9.86e	2.081**	2.800**
BR_SOE	2.8557	2.5072	3.159	2.713	3.170	22.695***	14.128***

Table 2A.Variable definitions of the corporate performance equation

Variable label	Variable name	Description	Predicted sign
TOBINQ	Proxy for Tobin's *Q* (simple)	Market value of equity plus book value of debt ÷ Book value of total assets	
BR	Banking relationship	The number of banks that firms deal with	-
LogTA	Firm's total assets	The logarithm of the firm's book value of total assets	+
Growth	Sales growth rate	$(Sales_t - Sales_{t-1}) / Sales_{t-1} \times 100$	+
Capexta	Capital investment ratio	Capital expenditure ÷ Total assets	+
RDSales	R&D expenditure ratio	R&D expenditure ÷ Total sales	+
Leverage	Proxy for the firm's default risk	Lagged ratio of total debt divided by total debt plus the market value of total equity, where total debt is defined as the sum of long-term and short-term financial debt	+
Age	Firm age	Number of years incorporated as a public limited company	-
Payout	Dividend per share	Total dividend declared ÷ Total outstanding shares	+
Industries_D	Industry dummy	Firm diversification	+
Firmtype_D	Firm type dummy	*Firmtype_D* = 1 for state-owned firms and 0 otherwise	+
BR_Soe	Banking relationship of SOE	Number or banking relationship of SOE	+
Event_2005	Event dummy	*Event_*2005 = 1 if year is after share privatization in 2005 and = 0 otherwise	-
BR	Banking relationship	Number of banks that firms deal with	
Endogenous variable			
TOBINQ	Proxy for Tobin's Q (simple)	Market value of equity plus book value of debt ÷ Book value of total assets	-
Explanatory variables			
LogTA	Firm's total assets	The logarithm of the firm's book value of total assets	+
Age	Firm age	Number of years incorporated as a public limited company	+
Leverage	Proxy for the firm's default risk	Lagged ratio of total debt divided by total debt plus the market value of total equity, where total debt is defined as the sum of long-term and short-term financial debt	+
Earn_Vol	Firm-levelrisk (earnings volatility)	Standard deviation of the five year of earnings before interest, taxes, and *EBITDA* ÷ Total assets	-
Firmtype_D	Ownership dummy of firms	*SOE* = 1, *POE* = 0	+

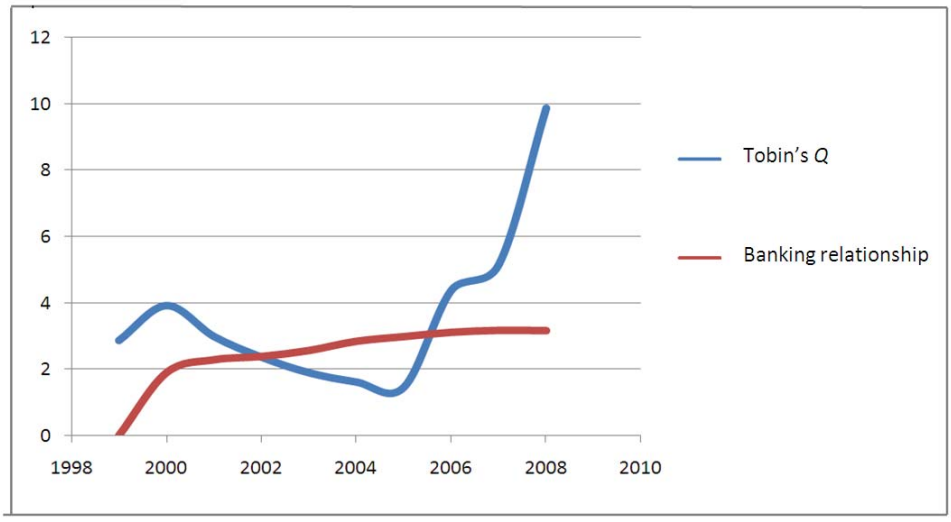

Fig. 1. The relationships between Tobin's *Q* and banking relationships across years (1999-2008)

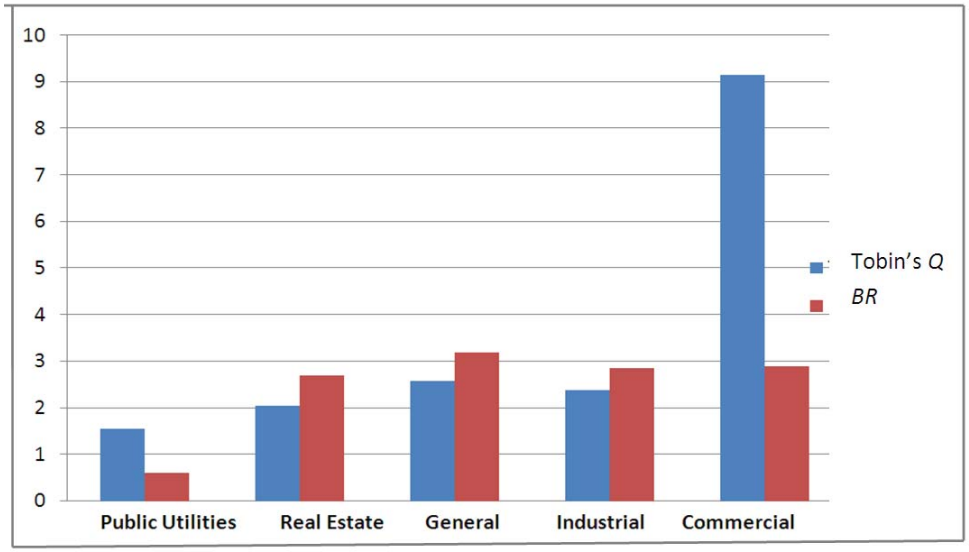

Fig. 2. The relationships between Tobin's *Q* and banking relationships across different industries

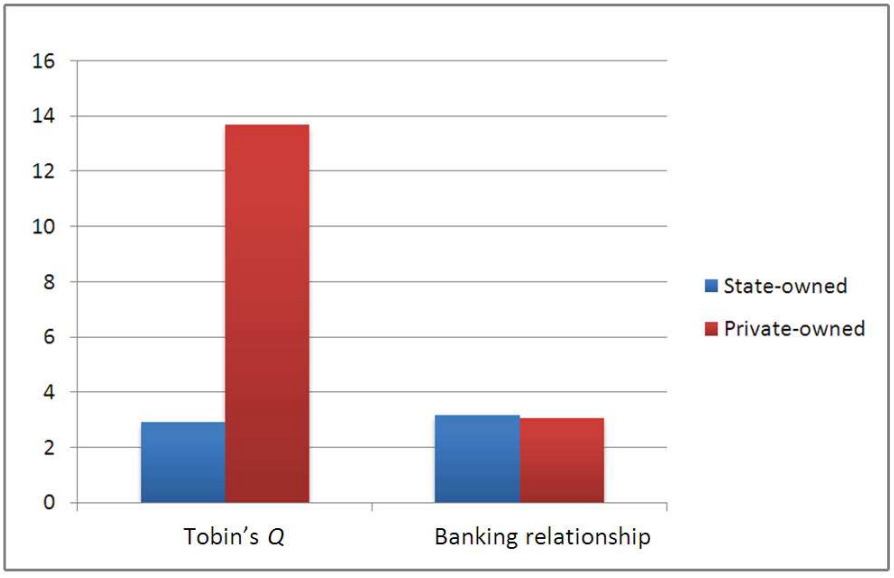

Fig. 3. The relationships between Tobin's *Q* and banking relationships by different ownership types

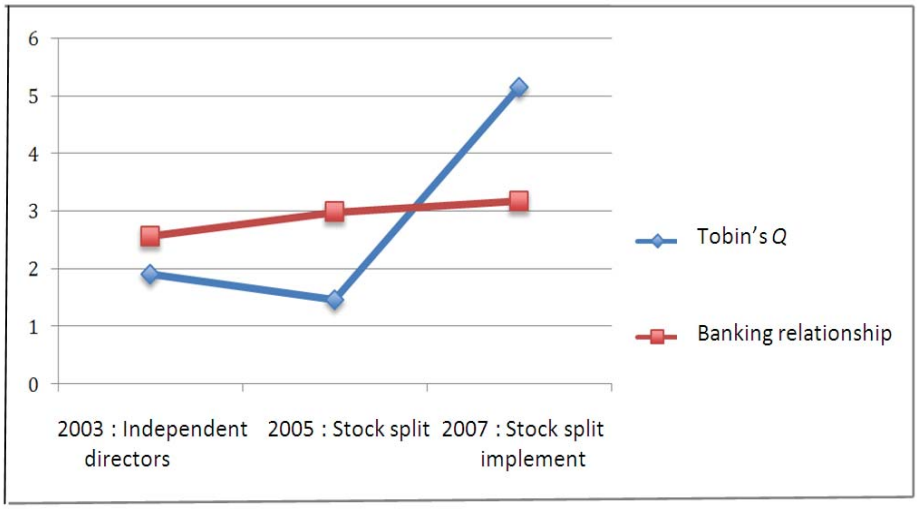

Fig. 4. The relationships between Tobin's *Q* and banking relationships pre- and post- different events

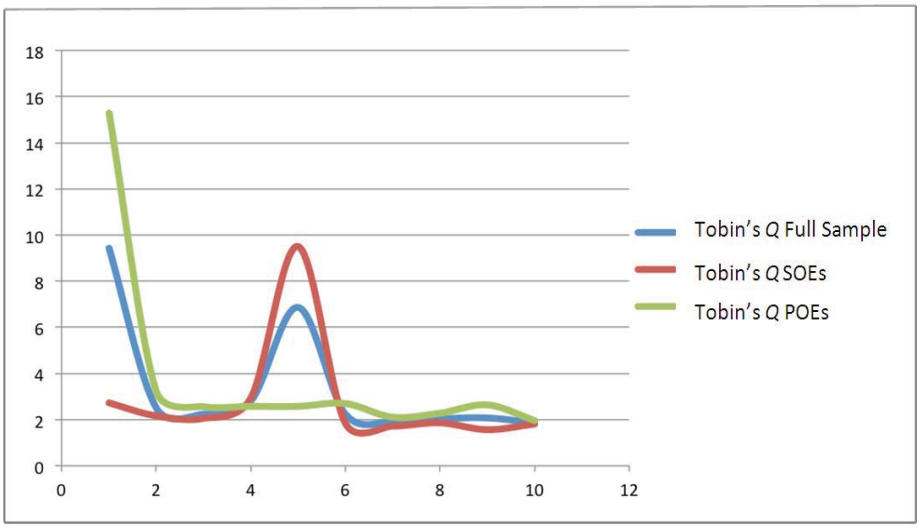

Fig. 5. The relationships between Tobin's *Q* and banking relationships by the number of banking relationships