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What is driving firm's performance in China?

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Formal or Informal Finance

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Abstract: China's economic development since the beginning of the reform in 1978 has been impressive. Regardless of China's poor financial banking system and lack of legal enforcements, the growth of Chinese firms makes China's GDP one of the fastest growing in the world. This paper endeavors to answer the question of formal financial system or its counterpart the alternative informal finance are associated with a faster growth of Chinese firms. I make use of a dataset based on 2'400 firms from Investment Climate Survey of the World Bank 2003. The results illustrate that although the majority of firms make use of informal finance, it cannot be confirmed that the alternative finance is linked to a superior firms' performance. It is however the formal finance that is associated with a faster firms' growth. Hence, the outcome of this paper suggests that the finance of firms based on reputation and social network is often overvalued in the literature.

Key words: *Formal finance, informal finance, Bank Finance, Self Finance, firms' performance, Collateral*

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1 Introduction

China's economic success story is impressive, within only three decades, the country which was under central planning until 1978 has managed to reduce its absolute poverty to only 10% of its population- representing a life improvement of over 600 million people (Nee and Opper, 2012). This was possible thanks to a constant economic growth at 9% per annum (Chinese Statistical Yearbooks 1981-2011). The rapid development of the Chinese private sector is taken as evidence that it is alternative informal and governmental mechanism that supports China's development. Nonetheless, research results suggest that in spite of the weakness of the financial system, financial sources from formal finance system is linked with a faster company's growth, while fund raising from alternative channels is not (Asli et al., 2010). The findings of Asli et al. (2010) was a surprise given that China's case contradicts the Weber-North hypothesis. The Weber-North hypothesis implies that economic growth requires a legal order offering stable and predictable legal framework, such as rights of contract and property (Clarke et al., 2008). The banking system with its four dominating state-owned banks in China is known for being weak, but nevertheless China is still outperforming other countries. The importance of the private sector as being the backbone of the economic growth displaying 40% of industrial profits and employing almost half of total industrial workforce (Nee and Opper, 2012) is broadly recognized in the literature by Tsai (2002), Allen et al. (2005) and Linton (2006) only to name a few authors. These authors argue that although there is a lack of legal framework enforcement and poor access to formal finance, firms relying on informal finance grow faster than their counterparts who do not. The question is whether the formal finance in China plays a role of complementary role to the informal finance or both exists as substitutes of each other.

Aim and research question

This paper attempts to answer the following questions: Is there a link between the informal financial sector and better firm performance as measured in sales growth, reinvestment rate and labor productivity? Does the informal financial sector serve as the substitute for formal finance? Is the role of informal financial sector limited to the provision of funds to a relatively minor segment of the financial market? Or is formal finance associated with a better firm performance as suggest in the common literature? The answers to these questions will provide a clearer understanding of the processes, which facilitates the growth of firms in China.

Method and data

The paper uses quantitative methods to answer the above research question. An OLS model is applied to test the hypothesis based on discussion of theory. A second extended regression selection model including the variable collateral will be introduced building up on the first basic model. The data for this study comes from the 2003 World Bank Investment Climate Survey (ICS). The survey questioned 2'400 firms of different legal statuses in 18 different Chinese cities. The World Bank designs this questionnaire to investigate and obtain a better understanding on Investment Climate on micro level in Chinese cities. Furthermore, according to the World Bank the ICS provides key investment climate indicators for China with benchmarks against their respective regional and income groups. The survey covers a range of topics including managers perception by a face-to-face interview on corruption, taxes and finance, access to finance, average of firm, infrastructure, workforce, crime, informality, trade and innovation. The theoretical framework employed for this study is built up on several scientific papers, books and statistics from China Statistical Yearbooks. Furthermore conversations and small talks with Chinese private entrepreneurs and business people in Shanghai and Anhui province delivered me a better understanding about the financial system in China. Since no recorded structured interview was conducted, no transcript is added at the end of the paper.

Limitations

Since the results of the investigation are only as qualitative reliable and consistent as are the input data the analysis is based on, one needs to be careful when interpreting the statistical outcome. Since the Survey has been implemented in cooperation with the Statistical National Bureau of China and all interviews have been conducted by face-to-face situations, a range of managers might have declared false values in order to avoid any legal or fiscal hassles with the Chinese Authorities. Additionally, the chosen variables might not be fully representative to answer the intended question and topic of interest. Moreover, since the 18 surveyed cities in China can only represent urban areas, the rural parts of China are completely neglected. Therefore it needs clearly to be mentioned and acknowledged that the obtained results cannot be valued for China as a whole, but rather only the urban area.

Disposition

The rest of the paper is organized as follows: section 2 displays a discussion on the previous literature stating opposing and contradicting views of informal and finance as complementary and as substitutes. Section 3 will discuss the characteristics of the Chinese financial system commenting on formal and informal finance and a direct comparison to finally establish the hypothesis. Part 4 describes the methodology and introduces the used data including comments on the careful treatment and interpretations of the limitations. Moreover it displays summary statistics illustrating some preliminary results. Additionally, the financial pattern of China on an international comparison to other developing countries and the financial pattern across China will be displayed. Then, the fifth part will present the results of the OLS regression, suggest an extended regression selection model and discuss the outcome Finally, the last section will conclude.

2 Previous Research

Two school of thoughts are dominant in the common literature about the role of formal the informal financial sources on the economic growth of China. The first school of thought views informal finance as a complementary role to formal finance and hence shows the existence of informal finance along-side formal finance. The second school of thought contradicts this view and sees informal finance as a substitute for formal finance and even maintains that informal source of finance has a comparative advantage over the official formal financial system. Though firstly a definition of informal finance will bring some clarification about what it is exactly meant. Schreiner (2000) defines informal finance as a contract or agreement conducted without reference or recourse to the legal system to exchange an amount of cash at present time for promises of cash at a point in the future. Similarly, the Asia Development Bank describes it as the finance sector, which is not restricted by the state in liquidity, interest rate loan deposit, reserve, etc. (Li, 2007).

2.1 Informal finance as complementary of formal finance

A considerable part of the literature on finance and law has displayed that the development of formal institutions is associated with a faster economic growth and a better allocation of resources. Moreover the significance of complementary role of the informal financial system in developing countries such as China is been recognized by scholars (Asli et al., 2010). One of the aspects of the two dominant schools of thought is that finance from informal source plays a role of complementary to its counterpart formal finance. The lower end segment of the financial market is the main part of the informal finance. This characteristically includes smaller private companies or individuals, short-term funds in rural areas operating on smaller scale and are excluded from the formal market due to

lack of tracked financial performance, opportunities for growth or information asymmetry.

Banks ask for a credible track record in order to offer a formal loan to applicants, though most of private firms in China cannot provide such a credit record because they use three different books. This makes it harder for banks to evaluate correctly the firm's creditable value and ability to repay a loan. Following this argument, it can be argued that financing from informal sources cannot substitute formal institutions due to the fact that the surveillance mechanism does not work to meet the demand for higher end demander of loans such as large institutions and international active companies.

Not only in emergent economies does informal finance play a crucial role. As shown by Guiso et al. (2004) in their study about the effect and financial development in Italy, social capital has an influence on rural regional economic and financial development. Furthermore it is especially interesting that Guiso et al. (2004) could identify that the effect of social capital- is stronger where legal enforcements are weaker and among less educated people. The important role of social capital and reputation is further suggested in Gomes' (2000) findings in his work about public firms where the legal system does not effectively protect minority shareholders against oppression. Gomes shows that even without any explicit corporate governance mechanism protecting minority shareholders controlling shareholders can implicitly commit not to expropriate them due to long-term concerns of reputation. On the same side Berger and Udell (1995) focus on the crucial role of bank-borrower relationship being an important instrument to solve the asymmetric information problem linked with financing small companies as stated above. Lastly, crucial results deliver Ayyagari et al. (2008) by comparing the financial performance of companies that report bank fund with that of firms relying on external finance from informal sources. They conclude that enterprises relying extensively on informal finance show a lower profit performance and do not grow faster than firms being financed by formal bank.

The above-presented authors display the view of informal loan as a complementary role and therefore informal source of finance exists alongside of the formal financial system.

2.2 Informal finance as a substitute of formal finance

The opposing view of informal and formal finance being complement to each other is when both counterparts act as substitute for each other, more precisely: informal source of finance is a substitute for formal finance. As stated by Stiglitz (1990) informal finance and institution make use of comparative advantage in monitoring the borrower and lender. The role of informal finance in household capital accumulation in Taiwan is a broad consensus that Taiwan has achieved remarkable economic growth regardless of an underdeveloped formal financial sector (Besley and Levenson, 1996). *"...The financial system as a whole must have contained enough resilience and elasticity to meet the most urgent needs of a rapidly growing economy in a great transformation process"* (Lundberg, 1979). This flexibility is attributed to the large curb market, which builds the bridge between the demand of small businesses and consumers excluded from the formal bank credit market.

In line with the argument of substitution is Tsai (2004) where she argues that informal and formal finance are imperfect substitutes for two reasons. Since China is an immense diverse country, hence the credit market is segmented by social dynamics and local political interests. Secondly, the government sanctions microfinance programs that are often structured in a way that fail to serve its indented clientele. From this, Tsai (2004) concludes that informal finance is not simply an appearance of weaknesses in the formal financial system, but rather an outcome from local political, institutional and market interactions. Furthermore Tsai (2004) states that the persistence of informal finance is traced to three further interacting reasons: the limited supply of formal credits, the political and economic segmentation of local markets, and lastly limits in state capacity to implement policies. Another considerable finding comes from Allen et al. (2005) where they compare growth in the formal sector and in the informal sector. The

latter grows faster and provides more economic growth than the formal sector although poor applicable legal and financial mechanisms do not favour the informal system. Allen et al. (2005) imply that effective informal channels and governance mechanisms such as relation and reputation-based channels exists and that in itself promotes the economic growth. They further suggest that China is an important counterexample to the findings in the finance, growth and law literature. As above-mentioned China's economic success contradicts the Weber-North hypothesis of economic development relies on a secure legal framework and enforcement of property rights.

The above-presented authors display the view of informal loan as a substitute role, although informal finance has a comparative advantage over formal finance.

3 Chinese Financial System

The pattern of economic growth in emerging economies such as China is an important phenomenon in recent economic history. Their transition to affluence itself is important because it directly affects the well being of more than half of the world's population. Furthermore, this pivotal transition also provides a great opportunity for researcher and economic scientists to understand and empirically test the economic established paradigm to find out whether they still hold true or not. One crucial discussion in current financial growth and financial literature tackles the issue of whether formal or informal finance is associated with a faster economic growth and an optimal resource allocation. The status of transitional China's development path is an ideal economy to test this because essentially, it is in an economic catching up process. Secondly, the formal financial system is heavily dominated by the state. Thirdly informal financial sources play a significant role because the majority of the private sector is excluded from the formal financial system and although they are the backbone of the Chinese economy (Naughton, 2006).

3.1 Formal financial system

The Chinese Financial system is strictly dominated by the Big Four Banks namely Bank of China, Industrial and Construction Bank of China, Agricultural Bank of China and China Construction Bank. These banks were commercialized in 1995 (Chen and Shih, 2004). The four banks account for more than 60% of all financial assets in China. Formal lending by state owned banks is the major and most crucial type of formal lending next to trade credit and equity. For political and ideological reasons or as Xu (Xu in Lin and Zhu, 2007) calls it a social objective, a large share of bank funding is obtained by SOES regardless of their profitability. Since the SOEs benefit from a durable governmental financial backup- meaning that in situations of tight financial situation, new financial liquids flow from the

state to the SOEs- and the state Banks allocate the money, a high ratio of Non Performing Loans (NPLs) has been accumulated. This situation leads obviously to a permanent lack of incentive to run business in an efficient manner since in worst case scenario, the state bails out the SOE whose NPLs is included in the financial balance sheets of the state banks. As Naughton (2006) states many “zombie firms” were kept alive by steady monetary infusions although these firms had no perspective of repaying their loans. Additionally, the continuing rule of the Communist Party and the pervasive politicization of the economy guaranteed the funding of many unproductive projects, which lead to disastrous shape of the banking system. For example, in the mid 90s banks were paying 24% for long-term deposits annually, while charging only 14% for them. These circumstances were reinforced by the attitude of banks that bad loan to a SOE is not as bad a bad loan to a private company.

As La Porta et al. (2002) report in their studies that a high governmental involvement in the ownership of the banks goes hand in hand with a reduced economic growth, which is in line with Chinese banks’ poor profitability and institutional framework (Cousin, 2006). For these reasons the private sector is left constrained. Although the private economy contributes to more than 40% of industrial output, the total lending of commercial banks to the private segment is less than 5.7% (Hu and Wang, 2007). A majority of formal bank fund in the Chinese economy is secured by guarantees, called collateral. An interesting findings by Gregory and Tenev, (2001), they illustrated that the only type of accepted collateral by most of the commercial banks is land, buildings or real estates. A report of the Bank of China confirms this finding and adds that moveable assets are infrequently used because of a restrictive secured lending system.

Considering the relationship between the development of the financial system in China and growth in China, different perspectives are described and mentioned in the finance growth literature. Chen and Degryse (2006) employed the data of 27 Chinese provinces over a period time from 1995 to 2003 to study whether the financial development of two different types of institutions- namely formal bank and informal financial institutions- have an uneven impact on the growth of the

local economy. Their findings confirm the view that formal banking developments are associated with a statistically significant and economically relevant positive effect on local growth. Furthermore, Cull and Xu (2003) find out using a sample of Chinese SOEs covering a time period from 1984 to 1994 that bank finance was positively related to profitability and certain types of reforms. In 1985 a “loan-for-grants” reform was launched, whereby budgetary allocations of investment were replaced by bank funds, by which the political goal was to harden the soft budget constraints. Later in the 1990s as banks were held more and more assumed bailout responsibilities, the relationship between bank finance and profitability became weaker. Research by Liu and Li (2001) illustrated that an opposing result albeit they covered an overlapping period time reaching from 1985 1998. Using a panel provincial data their findings indicate that nonstate financial sources of funding are generally more promoting output growth.

Although the Chinese banking system is still dominated by the Big Four and a misallocation of lending resources can be indentified, it has improved since the beginning of the reforms in the 1980s. Cheng and Degryse (2006) comment on the status of the formal Chinese banks that they make use from distinctive advantages. The formal financial system is according to their finding less costly than other urban and rural credit cooperative. Moreover, the state owned banks have a larger geographic scope as China offers an immense potential of future financial needs of clients. Another advantage of the regulated formal banks has been proven during the global financial crisis in 2008. In November 2008, RMB 4 trn. stimulus package which was launched by the Chinese Government passed very quickly. This was largely due to the fact that it is the sate that controls and monitors the formal financial system, so it is able to channel the fiscal and monetary policy efficiently through the one-bodied institution without a large extent of bureaucratic constraints (The economist, 10.11.2008). Though it needs to be questioned whether the prompt financial policy response to the crisis has been effective, since it further promoted the bailing-out lending attitude of SOEs with the consequence that the rate of NPLs has further increased (Schüller and Schüler, 2009). As Gregory and Tenev (2001) illustrate the formal financial system lack in development. This goes in line with the findings of Durnev et al. (2004) who compare China’s monetary system with

other Asian economies in transitions. Due to weak property rights, a lack of legal enforcements and political rent seeking, China is graded as having one of the poorest functioning stock markets.

Regarding the accession of the WTO, China has assigned the stepwise opening of its foreclosed and protected formal bank system. The declaration by Wen Jiabao, Chinese Prime Minister during his visit in Wenzhou that the “monopoly of grip of state-run-banks must be broken”, at the same time he hinted that financial reforms to partly legitimize the informal financial system would be launched nationally when a successful trial in Zhejiang province ends (The economist, 7.4.2012).

3.2 Informal financial system

Next to Schreiner’s definition of informal finance presented in the section of previous researches, Allen et al. (2007) describe the informal financial sector of non-delegated monitors (private moneylenders, pawnbrokers), which does not collect information about the borrower in order to evaluate lenders’ creditworthiness for their own risk management and of delegated lenders (money houses, private illegal banks operating prohibited by the People’s Bank of China). Tsai (2002) estimates the share of informal finance in China in the year 2003 representing one fourth of the formal finance, 740-830 bn. RMB (89-100 bn. USD¹). Though, firstly as informal lending is not officially registered and secondly since China’s economy has impressively grown since 2003, it might be obvious that the unreported numbers are considerably higher.

In general, why does informal finance exist at all? The most often mentioned reason to explain the existence of informal finance is the lack of well-functioning developed financial system. Moreover, the starkly regulated financial system in China of the Big Four state-owned banks do not meet the needs of the whole market, especially those of the private sector, so as a consequence they have to

¹ Converted at average exchange rate 8.27 RMB/USD in 2003 under www.tradingeconomics.com/china/currency

avoid the formal market and rely on its counterpart. One of the advantages of informal finance is the low deposit interest rate compared the formal banking sector, currently 3.25 % ²with a higher inflation rate. The incentive to put money on a bank account is low and hence individuals rather are willing to lend money to relatives, friends and acquaintances. Interesting enough that in general this kind of lending is interest free, instead the return favor comes in form of favor, honor and respect or other benefits such as insurance premium which means that if the lender happens to be in need in future time, the present borrower is expected to return the favor. In order for this system to function properly; it is embedded in a social framework, which will be discussed later on. This finding is affirmed by the statement of Ms. Yin, private entrepreneurs in Shanghai (name changed) „ *I borrow money from friends at zero interest rate, they invest in me because they trust me, though I owe them a favor and honor.*“

Additionally, the formal banking sector is heavily inefficient in the form of credit rationing, requirements of collateral and guarantee, complicated and time-consuming procedures. This inefficiency leads to a higher demand for funds in the informal sector since individuals and private firms are not willing to accept the hassle of the formal banks. Though, the most important advantage of informal finance is due to information asymmetry. Arnott and Stiglitz (1990) with the peer monitoring view are in line with the central theory in the literature that informal finance has a relative advantage. In China, informal finance is serving the lower end segment of individuals or firms that cannot access formal financial sources due to lack credit rating, missing growth chances or information asymmetry. The issue of information asymmetry is a crucial one: it is present between the borrower and lender which leads to moral hazard situation and an adverse selection problem which plays a decisive role for loan approval decisions (Ayyagari et al., 2008). The adverse selection problem is present before the lender obtains a loan because the borrower does not know well enough the financial situation of the lender since the borrowing bank needs to rely on hard information or verifiably documented information such as financial statements, credit rating, audit etc. Moral hazard comes in afterwards

² www.china.deposits.org/

when the lender might change his behavior and not repay the loan. For this reason formal banks require a security deposit from lenders in form of collateral. Because companies have not sufficient of hard information, often a loan application is rejected as shown in figure 1.

The informal lending takes a range of forms in China. As reported by Tsai (2001) and displayed in table 1 a distinction of the legality of the finance source is whether the POBC sanctions it. However as China is diverse and local politics affect local financial conditions, certain channels might be legal only in several areas. The borrowing between individuals and trade credit are the most common strategies of firms to deal with a shortage of liquidity. The categorization of trade credit as informal finance based on Allen et al. (2008) for my empirical analysis that is non-delegated characteristics is in line with Cull et al. (2009) and further existing literature, although trade credit is considered formal financial system in developed countries.

A popular informal source is the rotating credit associations. This involves a certain number of participating persons who pool their money and rotate the disbursal of the collective pot to each member. This system is tolerated in certain provinces, whereas in other provinces rotating credit associations have been closed (Tsai, 2004). Informal financial market is based on trust and networking through acquaintances.

Table 1: Categorization of Informal Financing according to Tsai

Legal	Semi-legal	Illegal
Interpersonal lending	Rural Cooperative Foundations (until 1999)	Professional Brokers and Money Lenders (Loan Sharks)
Trade Credit	Fake Collectives, Red Hats	Private Money Houses
Rotating Credit Associations (in some areas)	Cooperative Savings Foundations	Rotating Credit Associations (in some areas)
Pawn Shops (in some areas)	Pawn Shops (in some areas)	Pyramidal Investment Associations (ponzi schemes)

Source: Tsai (2001)

In social networks, the level of trust equals the total of the weakest link values over all disjoint paths connecting borrower and lender. In China the expression

for personal network is Guanxi, which is often translated as connections or relationship, though these terms do not properly stand for the entire meaning of Guanxi. McNally (2010) defines Guanxi as a form of social capital that acts as a binding agent among social actors. Guanxi stands for the dynamism of building personal relationships within networks and is a central element of the Chinese society.

Moreover, social networks are often used for trust-intensive exchanges. Karlan et al. (2008) show in their study that network connections between individuals are used as social collateral to secure informal borrowing, and that trusted recommenders can reduce asymmetric information by using soft information. The kinship network and trust in the context of China between private entrepreneurs play a crucial role in protecting individuals' rights, reducing transaction costs and building bridges to market information when property rights are not fully present and market institutions underdeveloped (Peng, 2004). In the southern Chinese province Guangdong more than 8 out of 10 of total informal lending relies on interpersonal credit between individuals without asking for any security deposits (Zhang et al., 2002). Therefore the enforcement instruments of informal institutions are through informal norms and social capital rather than by the legal system.

3.1 Formal against informal finance

In order to summarize the discussions of formal and informal finance, these two counterparts will directly be compared.

Since the formal financial system in China is dominated by state owned banks, the financial system has governmental characteristics. Moreover the formal financial system consists of delegated monitors. On the other hand, as Tsai (2004) and Allen et al. (2007) state the informal financial system operates without state charter and mostly moneylenders and individual lenders are two of the main actors. Since the individuals moneylenders and informal delegated lenders are sanctioned by the PBC and hence illegal, these operators do not use official courts to solve disputes. Additionally, informal finance only seldom

requires collateral and hence it attracts all firms that were not able to show adequate collateral to formal banks. In contrast, formal financial intermediaries lend only on collateral and can count on the state legal enforcement to put in force the reimbursement of unpaid loan claim (Cousin, 2006).

My used definition of formal against informal finance is consistent with two other frequently used definitions. The first one comes from the finance literature that non-bank finance is illustrated by using the social capital of sanctioning frauds and network playing a monitoring and self-enforcing control mechanism in order to guarantee reimbursement of loans. This definition is in line with theoretical literature in finance on optimal financing capital structures. The second definition suggests that informal finance is not put in relation with a delegated monitor as is done for the formal finance.

As it will be displayed when introducing the variables of the analytical model, my definition of informal finance is based and is in line with the one from Allen et al. (2005) stating that informal finance is everything but not finance from banks. I will include the categories of retained earnings, loans from acquaintances, informal sources, trade credits and funds from investments and equity in order to define the informal finance system.

Therefore, based on my discussion on formal and informal finance and its association with firm's growth performance, I can establish the following hypothesis, which will be tested.

The formal finance is linked with a higher growth of firms in China

4 Methodology, Data & Summary Statistics

This section lays quickly an overview of the proceeded methodology, discusses the data from a critical perspective and displays some preliminary results based on summary statistics.

4.1 Methodology

The linear model below will be employed:

$$Y_i = \alpha + \beta_{ii}x_i + \beta_i C_i e_i,$$

where Y_i represents the dependent variable, β_i stands for the intercept and X_i for the independent variables. α stands for the constant interception in the empirical analysis. The three dependent variables Sales Growth₍₀₁₋₀₂₎, Labor Productivity₍₀₁₋₀₂₎ and Reinvestment Rate₍₀₂₎ are displayed as Y_i . The dependent variables Bank Access, Bank Finance and Self Finance represented in the x_i , whereas C_i stands for the set of control variables firm size measured by numbers of employees, age, legal status private, state owned and cooperative, density of competitors, 18 Chinese cities and finally industry sectors. Moreover the error term e_i , reflects the differences between the actual Y_i and the Y_i in the model during the empirical testing. It essentially means that the model will not be fully accurate and does not completely represent the established relationship between the dependent and independent variables.

I will be applying an OLS regression with robust standard error. Hence I estimate *the regression model*:

$$\begin{aligned}
& \text{Sales Growth}_{(01-02)} / \text{Labor Productivity}_{(01-02)} / \text{Reinvestment Rate}_{(02)} = \alpha \\
& + \beta_1 \text{ Bank Access} + \beta_2 \text{ Bank Finance} + \beta_3 \text{ Self Finance} + \beta_4 \text{ Size} \\
& \text{Dummy} + \beta_5 \text{ Age Dummy} + \beta_6 \text{ private firm} + \beta_7 \text{ SOE} + \beta_8 \\
& \text{Cooperative} + \beta_9 \text{ Competition Dummy} + \beta_{10} \text{ City Dummy} + \beta_{11} \text{ Industry} \\
& \text{Dummy} + e_i,
\end{aligned} \tag{1}$$

4.2 Data

The data on surveyed Chinese companies is delivered by the World Bank Investment Climate Survey, which was conducted in 2003 in cooperation with the Enterprise Survey Organization of the Chinese National Bureau of Statistics. This survey is standardized to the World Bank Enterprise Survey using a uniform sampling methodology to set benchmark across countries worldwide and to measure the business climate as well firms' performance under the countries' legal and economic environment. Firms are randomly surveyed with a restriction on minimum firm size defined by number of employees. One of the strengths of the survey is that it covers micro and small firms as well categorized into different ownership types, which is essential for my analysis. Another advantage of the survey is the coverage of small and medium companies (SMEs). Hence, in addition to information on commercial financial sources such as bank finance, the questionnaire includes information on sources on financing that are associated with small firm finance e.g. trade credit and finance through informal sources such as money lender or finance through friends and family, which is crucial in order to answer my research questions. Nevertheless, a downside of the survey is that GM's have an incentive to underreport economic values in order not get in conflict with Chinese authorities e.g. tax authority although through the random selection of firms this risk is being minimized. Another limitation is that the different financing patterns are displayed in terms of percentage of total finance and not as debt/asset ratio as it is commonly done in literature. Furthermore important to be notified is the classification of private firms and SOEs. As in the survey, the registration of the legal status of the company is decisive. Ten different legal classifications are listed from publicly

traded or listed company, non-publicly-traded shareholding companies over division of a domestic/multinational firm to Cooperatives. I will make use of firms with a registered legal status private firm, SOE and cooperative. Companies with status of private, non-listed company-representing 677 (28.21% of all 2'400 surveyed firms), State owned company (636, 26.5%) and Cooperative (387, 16.1%) will be considered. Finally, the ICS 2003 give the opportunity for surveyed managers to circle more than one legal status that applies for their firm, which is an additional source of inaccuracy. As a consequence the clear distinction of firm ownership type is starkly affected. Hence it is not possible to state whether the analyzed 677 registered as private, non-listed companies take other types of ownership types. Consequently this clearly affects the outcome of the statistical analysis.

It is essential to properly analyze the data set, since sometimes data can contain missing values. This happens when for instance surveyed managers do not or cannot answer all questions; therefore the number of observation can vary a lot although the same dataset is used. For this reason it is statistically and scientifically crucial to be aware of its presence and avoid sample sizes with too few observations.

Figure 1 displays a map of China and where the sampled firms by region are displayed. The questionnaire consists of two main parts. The first one contains general information about the firm and its relations with different stakeholder (suppliers, clients, government) and qualitative questions about the GM's opinion on the business environment. The second part questions firm's personal manager and acquaintance asking for balance sheet and other quantitative information on employee training, wages, educations, etc. Most of the questions pertain only the year 2002, some few panels also display answers from 1999 to 2002.

4.3 Introducing variables

As my main independent variable I use the variable Bank access. This variable illustrates if a firm has an overdraft facility from a formal financial institution. I employ it as a proxy for a measurement of accessibility to financial system. It takes the value 1 if the firm's manager states that the company has a bank loan and overdraft facility or a line of credit, and the value 0 if this is not the case. I will mainly make use and focus of the proxy Bank access in my regressions because it is defined very clearly and is not affected by any misclassification errors.

Moreover I use the variable Bank Financing, the manager of the firm is asked to identify for the year 2002 the contribution of the several different financial sources. I use it as a proxy for an indicator figure based on the financing proportion of working capital. Working capital is calculated as present asset deducted by current liabilities, which represents the needed cash to finance daily business activities such as salaries, purchase of raw material, inventories, etc (investorwords). This proxy takes the value of 1 if the manager reports that the firm makes uses of more than 50% of local commercial banks finance, which is a summation of SOE banks, other commercial banks, urban and rural credit cooperative. The proxy Bank Financing takes the value 0 if the value of percentage of total financial contribution of bank finance is smaller than 50%.

Lastly in order to measure the Self Fnance and to be consistent with the classification of Allen et al. (2005), I introduce the variable Self Finance which includes retained earnings, informal sources, loans from family and friends, trade credit, investment funds, equity and the other classification. It excludes the finance from formal financial banks and institutions. Hence, this proxy is representative for the informal financial system that is opposed to the two other proxies Bank Access and Bank Finance.

Firm's performance

In order to measure the financial performance of a firm, I will use three key determinants that are Sales Growth, Reinvestment Rate and Labor Productivity. Since not all of these three key figures are directly indicated in the ICS 2003, I will use several other variables to construct them. Note that both Labor Productivity and Sales Growth are growth numbers since they cover a change from year 2001 to 2002, whereas the Reinvestment Rate is simply given by the perception of the firm's manager.

Sales Growth measures the increase or decline in annually sales. It is calculated as the log of firm sales of the time period 2001 and 2002. Moreover the proxy reinvestment rate is represented by the share of net profit in percentage, which is reinvested in the establishment of 2002, meaning that it is not distributed to owner, shareholders or state. Thus the reinvestment rate is the part that is not distributed as a dividend. In case of a negative reinvestment rate, it hasn't been registered as such but the value has been filled with a "no answer". Thus, 385 out of total 2'400 times the perception of the firm's managers about the reinvestment rate has been negative.

Finally, the proxy labor productivity is calculated as Total Sales minus Total Material Costs divided by total amount of employees. Since this figure is a growth one, I log the change in labor productivity from the year 2001 to 2002.

In order to compensate the potential exogenous shocks that might affect my three chosen proxies Sales Growth₍₀₁₋₀₂₎, Reinvestment Rate₍₀₁₋₀₂₎ and Labor Productivity₍₀₂₎ covering only one year firms' performance, I have checked the outcomes and deviations by using a time period from 1999 to 2002 covering three sequential years for Sales Growth₍₉₉₋₀₂₎ and Labor Productivity₍₉₉₋₀₂₎. None of the results (not displayed in this paper) show any signs of exogenous shocks causing stark deviations from the proxies covering only a time period of one year. Therefore I solely rely on the three firm's performance measurement proxies of one year time period.

Control variables

A set of control variables is incorporated in the regression analysis in order to minimize confounding effects. As the ICS 2003 delivers plenty of useful information, I include size, age, legal ownership type, cities and sectors. A large benefit of the ICS 2003 is the fact that it also includes as well very small firms. The control variables are size of firm measured in amount of employees, age of the firm, legal status private firm, cooperative and SOE, density of main competitors of the firm, industry sectors and cities.

Hence, I include a dummy variable for different types of size. In order to measure the size of the company, I introduce the proxy of average number of total employees including contractual employees that work at given time in the plant in the year 2002 which I log for the analysis. The variable size is sub grouped into five classes: micro represents firms until 10 employees, small more than 10 to 50, medium, more than 50 until 250, large enterprises occupy more than 250 until 1'000 employees. Finally, the type enterprise is characterized by an amount of workforce exceeding 1'000.

The same device is implemented for the variable age; as size I categorize them into three classes. Young firms are established less than 5 years ago, middle firm are aged between 5 and 20 years, whereas old firms are founded more than 20 years ago.

As for the legal status, firms with the legal status of private, non-listed, state owned company and cooperative/collective are included as they represent two third of all firms' types.

I also include a dummy for competition to identify the amount of competitors of the firm perceived by the manager. The ICS 2003 classifies this proxy into five classes: 1-3 competitors, 4-6, 7-15, 16-100 and lastly more than 100 competitors.

Moreover the ICS 2003 groups the surveyed firm into 14 industries, from business services over transportation until electronic equipment. I have created two categories of industries, namely manufacturing and service industries summed up in table 4.

4.4 Summary Statistics

Table 5 presents the summary statistics of the above-presented variables. As we can deduct from it 25.4% of all firms have an overdraft of facility and therefore access to formal financial system. This represents 593 firms. Having a look at the proxy bank finance only one fifth of firms finance their business through formal financial source being more than 50% of the total financial pattern. These finding of formal bank finance is not more frequently represented goes hand in hand with the previous discussed observations of financial pattern across China.

Interesting is the proxy measuring the Self Finance, representing the part of which is not financed through a formal financial fund. Almost three out of four companies use this method of finance. Especially, firms with the legal status of private firm type (over 80%) rely on self-finance. This finding is in line with the result of Gregory and Tenev (2000) who states that retained earnings is the most important source of finance for private entrepreneurs in China. Note that the category of retained earnings is included according to Allen et al. (2005), therefore I can conclude the consistence. More interesting is the fact that even SOE, which are financially backed up by the government, make use of this method of finance excluding the bank institutions, namely more than 65%. This outcome is in line with the previous mentioned findings of Allen et al. (2005) discussed above.

In average the sales growth lays at 7.79% annually. Moreover it is interesting that the sales growth of private firms is slightly lower (7.18%) than the one of the SOEs (8%), whereas the value for cooperative firms is at 6.5%. Additionally, the labor productivity lays at 2.2%, here as well SOEs can present a higher figure than the private companies. Since private entrepreneurs have a large incentive than SOEs to operate efficiently because they cannot profit from governmental financial support in case of bad financial performance, it surprises to observe that sales growth and labor productivity is higher for SOEs. Though, these two figures do not imply much about the efficient business operation since sales can fully be financed through non-performing loans (NPLs). The third figure

reinvestment rate delivers an average rate of 17.6%, of which the value of private firms is twice as high as the rate of SOEs (25.5%). From this output, I can deduce that private firms need to a larger extent to reinvest their net profits in order further increase the future sales, whereas SOEs do not have this pressure because they can use financial resources from the state.

In average a firm's age is 16 years: though private entrepreneurs are in average only a bit more than 8 years old whereas SOEs have a mean three times as high. This finding is consistent with the recent economic development since China's opening in 1978, when private companies were prohibited and had to operate in illegality while SOEs were always patronized and promoted by the state (Naughton, 2006).

Moreover private firms (677) and SOEs (636) represent each a little bit more than 25% of all surveyed firms, whereas in average one out of seven firms have the legal status of a cooperative.

Lastly, firms' managers perceived in average 7-15 competitors, while this value lays closer to the latter number since the competitor dummy is 3.9 and the value 4 presents 16-100 perceived competitors within the main business line in domestic market.

As above-mentioned only 25% percent of 2'333 surveyed firms have stated having access to formal financial loan. Though what happens to the remaining 75% of companies? From the 1'466 companies, which didn't obtain financial access, 84% of them didn't even apply for a bank loan for several reasons such as application procedure for bank loan is too cumbersome, collateral requirements were too stringent or firms didn't expect it be approved. Of the 219 firms that applied for a loan but the application was rejected, a major reason (70%) for denial is a lack collateral. For the private sector firms, this value is somewhat higher. These findings are displayed in figure 2.

Table 5: Summary Statistics

Variable	Number of obs.	Mean	SD	Min	Max
Finance					
Bank Access	2'333	0.254	0.43	0	1
Bank Finance	2'400	0.197	0.397	0	1
Self Finance	1'919	0.736	0.3922	0	1
Performance					
Sales Growth (01-02)	2'329	0.0779	0.025	-0.844	16.41
Labor Productivity (01-02)	1'529	0.0217	0.0182	-7.943	11.89
Reinvestment Rate (02)	2'115	0.1761	0.3229	0	1
Features					
Size	2'346	121'641	110'723	0	3.87 e+7
Age	2'400	15.98	14.39	3	53
Private Firm Dummy	2'400	0.28	0.4501	0	1
SOE Dummy	2'400	0.265	0.4414	0	1
Cooperative Dummy	2'400	0.16125	0.3678	0	1
Competition Dummy	2'326	3.8822	0.13525	1	5

Source: Own calculation based on World Bank Investment Climate Survey China (2003)

The correlation matrix of finance access variables and firm performance is exhibited in table 6. The variable Bank Access and Bank Finance are highly significant and have a correlation value of 0.69, which does not surprise enormously since both are measuring the formal accessibility to financial system. Moreover Bank Finance stands for a formal bank financial contribution of more than 50% and for this reason it is in line with Bank Access.

Additionally, the variable Self Finance that is as well highly significant at 1% level with the two other Finance variables. As expected, Self Finance is starkly negatively correlated with Bank Access (-0.74) and Bank Finance (-0.93) stating the two opposing blocks of formal finance (Bank Access and Bank Finance) versus informal finance (Self Finance). This finding in the correlation matrix goes hand in hand with the above-mentioned fact that formal and informal finance each represented by the proxies might be a substitute for each other.

Furthermore, the correlation matrix presents another attention grabbing outcome. The three proxies Sales Growth (01-02), Labor Productivity (01-02) and

Reinvestment Rate₍₀₂₎ are- when except from the value -0.0084 between Reinvestment Rate₍₀₂₎ and Bank Access- positively correlated with the formal financial proxies, whereas the correlations with Self Finance takes negative values. From this finding, I might derive that informal finance source leads to lower financial firm performance, though these first results from the correlation matrix need to be interpreted carefully and will obtain additional support from the OLS regression following.

Finally, Sales Growth₍₀₁₋₀₂₎ and Labor Productivity₍₀₁₋₀₂₎ have a significant at 1% level correlation value of 0.64, whereas Reinvestment Rate₍₀₂₎ presents a much weaker relationship with the two other performance variables.

4.5 Chinese Financial Pattern

I will at first have a closer look at China's financial pattern compared with other developing countries using Ayyagari et al.'s (2008) findings in order to identify China's status compared with other countries such as Bangladesh, Brazil, Indonesia, India, Nigeria and Russia. Since I am only relying on the Investment Climate Survey (ICS) 2003 for China, I cannot make own analysis of financial pattern to evaluate the status of Chinese firms compared with other developing countries. This is the reason why I make use of Ayagari et al.'s (2008) findings in their cross-country analysis. In the second part I will analyze the financial pattern within China myself using the ICS 2003 including 18 cities.

In both ICS 2003 and 2006 the firms' managers are asked following question: *identify the contribution of each of the following financing sources for your establishment's new investments*. The following answers are given, which summed up give 100%: internal financial source such as retained earnings, loans from friends and family, informal sources represent the source of informal finance where's finance from local commercial banks stays for formal finance. The classification of other is not exactly defined by the ICS 2003. Moreover I apply the categorization of Allen et al. (2005) of Bank Finance and Self Finance to

distinguish between formal and informal finance, as it will be explained later on when introducing my variables.

China on an international comparison

The 2006 Investment Climate Survey includes 67 developing countries covering more than 40'000 companies.

Ayyagari et al. (2008) find out in their comparison of the financing pattern of China with other developing countries that China has by far the lowest figure of finance from self-retained earnings (15%). Although on international comparison this value is relatively low, as Gregory and Tenev (2000) finds out in their report about sources of Chinese firms between 1995 and 1998, the classification of self-retained earnings is the most important one for private companies in China, which makes more than half of the total financing source. Compared with China, Bangladesh and Russia have far higher values of 60% and 83% of self-retained earnings respectively. Furthermore it is interesting to see that not even 6% of the firms in China rely on loans from friends and family whereas in Indonesia this value is 18%, although Tsai (2001) identifies borrowing and lending between individuals such as from friends and family as one of the most important informal lending channels. In the category *other* China has the highest value of 43% of all countries. Since this classification is not very meaningful, I introduce the classification of Allen et al. (2007) of Bank Finance and Self-Fund Raising including retained earnings, informal sources, loans from family and friends, trade credit, investment funds, equity and the other classification (See table 2 for an overview of the classification by Allen et al. 2005). Considering this new classification, China is in the same range as the other developing countries with a self-Fund Raising rate of 80% and 20% Bank Finance. This finding of China not being an anomaly in the use of Self-Fund-Raising is not consistent with the results of Allen et al. (2006). Moreover they state that the source of self-fund raising is the most important one, more surprisingly even for SOEs it plays a crucial role where the figure lays between 45% and 65%.

Though when interpreting these results, one needs to be careful. First of all, Ayyagari et al. (2008) as using data from the World Bank Investment Climate Survey, the quality of data is supposed to match high quality standards. Moreover, the number of observations of for example in Indonesia with a smaller sample size than 300 firms is more than four times smaller than the one of China. Secondly, it is not further identified whether the firms are located in rural or urban areas, which might lead to different outcomes. Although the ICS 2006 core survey instrument is the same all over the countries and delivers comparable figures the raised concerns are not to be neglected.

Financial Pattern across China

As Tsai (2002, 2004) and Tsui et al. (2004) state, China is a very diverse country with dissimilar local conditions due to uneven macro economical involvement of the local and central government. As table 3 displays a variation of the financing pattern across China considering the source of financing in percentage. 18 surveyed cities grouped by regions, size by employees and ages of the firm. Additionally, I distinguish between the legal status of ownership type private firm and SOE. In order to be consistent with Allen et al's (2005) classification, bank finance and self-finance are displayed too.

First of all, one can conclude that private firms rely more on retained earnings compared to SOEs. Moreover when analyzing the column local commercial banks in table 3 significant more SOEs than private firms finance their loan through local banks. Secondly, according to Dollar et al. (2004), the eastern part of China is more developed independently of the ownership type, the investment climate from cities more in the west and northeast is worse as confirmed by the figures coastal (29% for private firms, 36% for SOEs; and its counterpart northwest (6% for private firms, 24% for SOEs). Interesting enough is Langzhou, a city located in Northwest of China, where all firms (100%) of the private sector rely on Self Fund Raising. This observation is in line with Dollar et als.' (2004) findings. Cities in the central region seem to be within both extremes. The financing pattern seems to correlate with the climate investment quality as above shown between

coastal and northwest. Furthermore, when looking at loans from friends and family, a great variation is identified between Hangzhou (1%) and Kunming (24%) for private firms, whereas as expected only a marginal of SOEs obtain loans from friends and family. In line with Nee and Opper's (2012) argument that once a private firm has passed its initial stage of business cycle growth, it is not socially accepted to further rely on loans from friends and family but to invest the retained earnings to finance the further business development. Figures from private firms loans from friends and family considering the growing age of the company goes in hand with a decline of reliance on friends and family an increase financing from retained earnings. Four of the 18 cities are classified as export processing zones: Shenzhen, Dalian, Hangzhou and Wuhan. Their use of other type of financing from 22% for Hangzhou to 75% for the city of Dalian applied for private firms, their counterpart SOE shows a similar pattern. This might suggest that under the classification other overseas investment from Macau, HK, or Taiwan might be included.

Considering the financing classification distinguishing formal bank finance and informal finance as Self Finance from Allen et al. (2005), the financing outline throughout all Chinese regions show that in none of the provinces the formal bank finance is preferred to informal finance. On average three out of four private firms rely on informal finance, whereas and surprisingly almost two third of SOEs make use of informal finance, which is unexpected since the government in general guarantees for their financial health situations.

Hence, it will be interesting to see whether formal finance is associated with a higher firm's performance although it is less often used as source of finance for Chinese companies, or whether informal finance can be linked with a faster economic firms' growth.

5 Results & Discussion

5.1 Basic model

Table 7 presents the results of the OLS regression for each of all three performance-measuring variables.

Table 7: Basic model

	Sales Growth (01-02) (SD)	Profit Reinvestment rate (02) (SD)	Labor productivity (01-02) (SD)
Bank Access	0.083*** (.05)	0.073** (.13)	-0.010 (.04)
Bank Finance	0.04* (.03)	0.230 (.18)	0.050 (.09)
Self Finance	-0.430** (.16)	-0.027** (.18)	-0.010 (.15)
Micro	-0.034 (.18)	0.290 (.19)	0.390 (.05)
Small	-0.090 (.07)	0.030 (.18)	0.003 (.18)
Medium	-0.124 (.09)	0.039 (.1)	0.030 (.12)
Large	-0.189** (.02)	0.039*** (.07)	-0.093 (.18)
Young	0.032 (.16)	-0.090 (.14)	-0.093 (.08)
Middle	0.040** (.08)	0 (.19)	-0.030 (.11)
Old	-0.069 (.18)	-0.089 (.02)	0.023 (.19)
Private Firms	-0.001 (.03)	0.086 (.11)	-0.028 (.03)
SOEs	-0.01 (.1)	-0.043 (.1)	0.048 (.13)
Cooperatives	-0.149 (.14)	0.082 (.1)	-0.039 (.03)
Competitors 1-3	0.03 (.09)	0.052 (.15)	0.03 (.14)
Competitors 4-6	0.04 (.08)	0.082 (.16)	-0.076 (.14)
Competitors 7-15	0.065 (.08)	0.007 (.17)	0.039 (.14)
Competitors 16-100	-0.076** (.12)	0.05 (.1)	-0.04 (.09)
Competitors >100	-0.204 (.09)	0.09 (.17)	-0.093 (.17)
Constant	0.39 (.19)	-0.002 (.03)	0.47** (.06)
Obs.	2187	1949	1920
R²	0.15	0.14	0.22

Significance level at 1% ***, 5% **, 10% *

Source: Own calculation based on World Bank Investment Climate Survey China (2003)

The control variables enterprises measuring the amount of employees, service industry sector and the cities Zhenzhou, Chongqing and Langzhou are omitted. Cities control variables are not displayed. Moreover in order to check whether outliers- an observation whose dependent variable is unusual given its value on the predictor variables- drive the findings, robustness checks have been conducted. By using the regression towards the mean, no standardized residuals have values exceeding the values critical values, and hence the OLS regression is robust. The likelihood ratio chi-square between 21.04 and 39.4 and p-values of 0.001 for all three models measuring firm performance tells me that my model fits significantly. Moreover the R square varies between 14% and 22% stating that the chosen variables are not the best predicting another variable though these R square values are statistically significant and acceptable.

As for the variable Bank Access the value of Sales Growth₍₀₁₋₀₂₎ and Reinvestment Rate₍₀₂₎ both coefficient values are positive and significant at 1% level respectively at 5% level. Moreover the variable Bank Finance presents a slight positive value at 10% significance level and positive values for Sales Growth₍₀₁₋₀₂₎, though for Reinvestment Rate₍₀₂₎ and Labor Productivity₍₀₁₋₀₂₎, these values are non-significant. Additionally and very interesting when considering the previous discussion about the formal and informal financial source affecting firms' economic growth is the last independent variable Self Finance. The significant coefficient of -0.43 confirms me that the informal finance is associated with a negative growth of firms' performance, measured in sales growth. The same findings are present considering the at 5% significant coefficient of -0.027, Self Finance has as well a minor negative impact on Reinvestment rate.

Lastly, the performance proxy Labor Productivity₍₀₁₋₀₂₎ has a minor negative value too, although not significant.

Considering the control variables, the cities Shenzhen, Wenzhou and Nanchang- all along the coast- have relatively high sales growth value compared to other cities located in other regions of China (cities not displayed). This result is

confirmed by the study of Dollar et al. (2004) about the credit ranking of Chinese cities. Coastal cities like Shenzhen, Wenzhou or Nanchang received a higher creditworthiness compared to other non-coastal cities of China. Moreover, it seems that larger and older firms are growing at a lower rate. As well, it looks like markets with a high density of competitors demonstrate an inferior growth rate. This fact might be attributed that a higher competition with a lot of firms lowers the profit margins since all participating firms want a share of the total profit.

5.2 Extended regression selection effect

Though there are two main concerns I need to be aware when considering the equation 1, namely the problematic of reverse causality and the bank financing decision might be endogenous.

Firstly, I am interested in the relationship between formal external finance and firms' growth or the other way around namely informal Self Finance affects negatively firm financial performance. Though it might be that it is caused by reverse causality. This retrocausality problematic deals with the cause and effect in reverse, so that the effect precedes the cause. Since I am only paying attention to establish a connection between formal finance and firm growth, the direction of causality does not matter. In case that faster growing firms would prefer formal bank finance, formal financial source is the favored choice of finance to its counterpart informal finance.

Secondly, a problem of endogeneity might occur. This issue arises when variables, which are supposed to influence a particular result, depend themselves on that outcome. In this situation the decision of financing through banks might be an endogenous judgment. This says that firms in China might do a self-selection when using formal bank loan or apply for a bank finance. A lot of firms do not even apply for a formal loan since these firms do not expect that they application might be accepted by the bank. Since I am particularly

interested in the consequence of formal finance on the growth of firms that are being bank finance, I need to introduce a selection effect. This will permit me to distinguish between the performance of firms financed by banks and those which are not financed through a formal fund. Heckmann and Robb (1985) advise the use of an average treatment effect, which is a measurement figure applied for comparison to intervene in randomized experiments. According to Heckmann and Robb (1985), the average treatment effect is given by

$$\gamma = E(Y_a | \text{Bank}=1) - E(Y_b | \text{Bank}=0)$$

where, Y_a presents whether the performance of the firm is financed by bank and Y_b the performance is not formally financed.

In order to solve the problem of endogeneity, an instrumental variable is needed that has an association with bank finance but no correlation with the performance of the firm. As suggested by Johnson et al. (2002) in their previous studies collateral is an ideal determinant. As displayed by figure 2, collateral is the main constraint of why a bank loan application has been rejected. Therefore in order to solve the endogeneity concern, I introduce a Collateral dummy variable. This proxy takes the value 1 if the surveyed company has stated that the bank required collateral as security deposit and it takes the value 0 if no collateral was needed, the firm didn't apply for a loan because of too stringent requirements of the bank of a financial guarantee or the fund application was denied.

Table 8: Extended regression selection effect

	Sales Growth (01-02) (SD)	Profit Reinvestment rate (02) (SD)	Labor productivity (01-02) (SD)	
Bank Access	0.23** (.14)	0.11*** (.17)	0.09 (.12)	
Collateral	0.872* (.11)	0.731* (.15)	0.896* (.06)	
Micro	0.093* (.09)	0.29 (.16)	0.39 (.16)	
Small	0.11 (.11)	0.079 (.15)	-0.003 (.03)	
Medium	0.29 (.13)	0.039 (.17)	0.173 (.16)	
Large	0.693* (.07)	0.395 (.08)	-0.093 (.15)	
Middle	-0.008 (.07)	-0.02 (.1)	-0.11 (.17)	**
Old	-0.02 (.04)	-0.14 (.02)	-0.125 (.08)	
Private Firms	0.02* (.09)	0.09 (.15)	0.149 (.16)	
SOEs	0.042 (.15)	0.093 (.05)	0.093 (.03)	
Cooperatives	-0.05 (.15)	0 (.14)	0.002 (.09)	
Competitors 4-6	0.38** (.12)	0.41* (.04)	0.32 (.07)	
Competitors 7-15	0.204 (.15)	0.238 (.1)	0.291 (.03)	
Competitors 16-100	-0.076 (.09)	0.05 (.07)	-0.04 (.1)	
Competitors >100	0.09 (.02)	0.139 (.06)	0.172 (.14)	
Manufacturing Industry	0.0129 (.15)	0.0003 (.13)	0.002 (.02)	
Constant	0.39 (.07)	0 (.15)	0.47** (.14)	
Obs.	810	810	810	
R²	0.12	0.07	0.17	

Significance level at 1% ***, 5% **, 10% *

Source: Own calculation based on World Bank Investment Climate Survey China (2003)

As displayed in table 8, the modified regression analysis on the selection of firms that receive formal bank finance, shows some interesting results. Firstly, as it is controlled for selection effects- collateral is required- as introduced above, the observed sample size reduces to 810 because the selection model only considers the positive answers whether a collateral as security deposit was needed or not. Of the obtained answers from firms' managers this represents almost 60% of

total 1'374. Furthermore when comparing the coefficients from table 7 without taking into account the collateral selection effect and the modified regression with the selection effect, I can observe that the values for Bank Access are larger. Sales Growth is significant at 5% level (0.23) and profit reinvestment rate is at 10% level (0.11). This output delivers a starker relationship between formal finance from banks and the growth from firms. Therefore I can conclude that there is evidence that bank finance is linked with a faster firms' growth.

Moreover, I have checked on firms that have applied for a bank loan but had not obtained it due to a denial decision and on companies that did not apply for bank loans at all. Therefore these companies have no other choice but to rely on informal finance in order to finance their operating businesses. The results suggest that these firms do not grow faster or reinvestment at a larger rate than firms using bank finance.

To summarize my obtained outcome, my results contradict the findings of Allen et al. (2005) who find out that the private sector outperformance the SOEs measured by total size of output and growth performance. Since the legal market protections of minority and outsiders are only weakly protected and the legal enforcement is constrained, the private sector rely on informal non-banking finance. Following on from this Allen et al. (2005) conclude that the private companies relying on alternative Self Finance and social reputation and relationships as a proof against the actual finance growth literature that firstly an establishment and development of the formal financial market is a precondition of the economic growth of companies. Allen et al. (2007) rely their findings on an analysis based on only 17 surveyed companies located in two most developed economic regions of China. Hence this technique arises doubts about the overall validity of their results. In contrast to them, I base my empirical analysis relying on a much broader dataset containing 2'400 firms in 18 cities throughout China. Although, I must admit that firms located in rural regions are not represented at all and hence my statistical outcome does not fully represent the situations of all Chinese firms, I believe that my findings are more representative and bring in a higher credibility and creditworthiness than the findings of Allen et al. (2005). Relying on my regression results I find out that the

use of formal finance system-represented by the proxies Bank Access and Bank Finance- is linked with a higher firm growth. Sales Growth, Reinvestment Rate and Labor productivity mostly have positive higher values when allied with formal bank finance than the proxy Self Finance standing for informal finance. I cannot find any evidence supporting the suggested results of Allen et al. (2005) that unconventional informal finance has a positive effect on firms' growth or even play a role of replacement.

Though what might be the reasons that would explain my findings of formal finance is associated to higher firm performance in China? One possible explanation would be the issue of governmental help through political connections of the firms' managers. It is apparent that a politically well-connected CEO might influence the bank lending process through bribing and illicit payments. For this reason I have tested my model adding two additional variables: political connections of the CEO, which measures the position of the firm's manager in the party starting from not being a party member (1) up to a position as party secretary (5). For reasons of simplicity, I have distinguished between either being part of the Communist party or not and neglected the ranks. Moreover, I have included a governmental help dummy proxy with the variable *did governmental official assist you in obtaining bank financing in the year 2002?* This can be answered either with a yes or a no. 85% of all firms state that they have not received any governmental assistance in this form. The results display that no direct link can be identified between firms obtaining governmental help and a better firm financial result, whereas political show no significant outcomes.

Hence, my statistical findings are in line with the common finance growth literature that formal finance is associated with a higher financial growth. These results are in line with Cull and Xu (2007) who find out that regardless of a lack of secured property right and efficient banking system in China, non-bank finance does not play a crucial economic role. Notwithstanding the weaknesses of the formal Chinese system, my results show that companies that have loans from the formal financial system do perform better.

6 Conclusion

The economic growth of the Chinese economy is a mystery. Its financial system and formal institutions are largely underdeveloped and despite this fact, the economy and especially the private sector have grown constantly. Hence, China's case can be illustrated an example against the dominating growth and finance literature. Allen et al. (2005) explain that one reason for this extraordinary economic growth is the alternative informal financial mechanism are crucial and are good substitutes for the formal financing channel.

Based on the 2003 Investment Climate Survey covering 2'400 firms in 18 cities, this paper analyzed whether formal bank finance can be connected to a faster firm growth measured in sales growth, labor productivity and reinvestment rate. On an international comparison with other Asian developing countries China does not rely more on informal finance than other economies. Its share on self-retained earnings is comparably low with 15% of total finance options. Contrary to earlier findings from Tsai (2002, 2004), Allen et al. (2005), loan raising from informal financial sources is not linked with a faster firm's growth. Hence my findings cannot support and oppose the common belief that non-formal finance plays a substitution role for formal bank system to promote economic growth. As discussed in the section informal financial system (3.2), it seems that informal finance is especially limited to the provision of funds to the lower segment of the financial market including smaller firms. Furthermore, when using the extended regression selection model considering the effect of collateral looking at firms that did not apply for bank loans or applications were rejected, no evidence that these firms are associated with a faster growth. Therefore the regression results suggest that the effect and the role of inter-personal relation based informal financial system in China is being overrated.

As mentioned extensively my results cannot be valued for China as a whole since rural areas are completely neglected due to data limitations. More precisely, my results suggest that the formal finance system in urban areas is associated with a

higher firm growth measured in sales growth, labor productivity and reinvestment rate. In order to state whether the rural areas of China rely on informal finance as suggested by Tsai (2002), further research focusing on rural countryside are needed.

7 Literature Review

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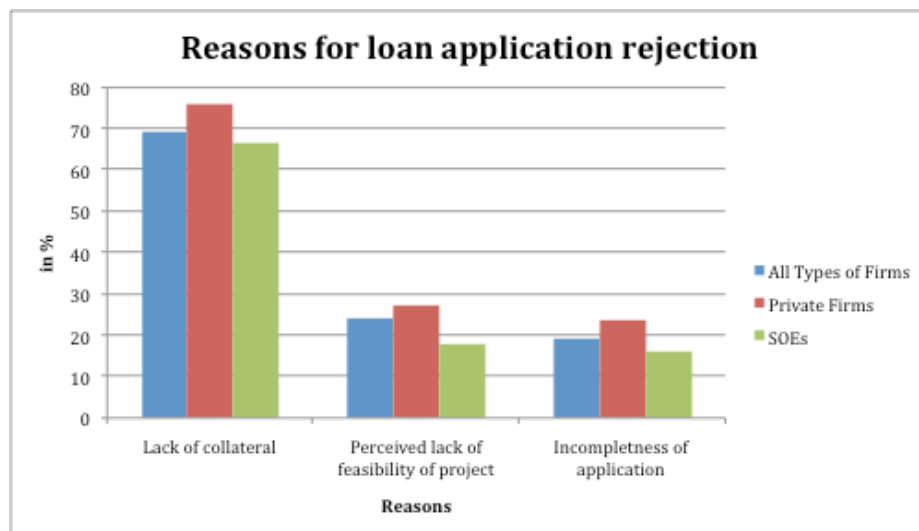
8 Appendix

Figure 1: 18 Chinese cities sampled into five regions



Source: Own representation based on World Bank Investment Climate Survey China (2003)

Figure 2: Reasons for loan application rejection for all types of Firms, Private Firms and SOEs



Source: Own representation based on World Bank Investment Climate Survey China (2003)

Table 2: Classification of loan source according to Allen et al. (2005)

Bank Finance	Self Fund Raising
Local commercial loan	Retained Earnings
Foreign commercial banks	Loans from friends and family
	Trade credit
	Investment Funds
	All equity

Source: Allen et al. (2005)

Table 3: Financial Pattern throughout China across the regions

Region	Province	Number of Firms		Retained Earnings		Local Commercial Banks		Family and Friends		Informal Sources		Other		Bank Finance		Self Fund Raising	
		Private Firms	SOE	Private Firms	SOE	Private Firms	SOE	Private Firms	SOE	Private Firms	SOE	Private Firms	SOE	Private Firms	SOE	Private Firms	SOE
Across Cities in China																	
Beijing	Northeast	22	36	9.04	8.68	20.47	43.45	2.76	1.88	9.76	2.28	13.80	32.25	20.47	43.45	73.52	56.54
Changchun	Northeast	39	46	27.46	28.91	17.41	21.42	2.96	0.75	2.64	3.5	33.04	54.325	20.47	21.42	62.58	78.58
Changsha	Central	44	45	36.53	5.8	29.07	38.24	10.92	0	0	9.6	21.70	39.48	29.07	38.24	70.93	61.76
Chongqing	Southwest	41	39	12.27	12.36	26.20	50.28	11.57	1.57	3.50	0	20.97	29.97	26.20	50.28	73.80	49.71
Dalian	Northeast	16	28	9.81	4.78	0.00	25.85	0.43	0	4.81	0	74.93	60.78	0	25.85	100	74.15
Guizhou	Southwest	34	29	15.21	8.25	34.34	50.20	3.60	0	0	0.31	32.78	36.37	0	50.20	100	49.72
Haerbin	Northeast	25	59	21.75	7.50	11.00	13.63	7.50	0	0	0	48.15	63.63	11.00	13.63	89.00	86.37
Jiangzhou	Coastal	20	26	12.55	6.28	38.70	38.57	1.75	0	0	0	21.75	37.42	41.20	38.57	58.80	61.43
Jiangmen	Coastal	24	23	2.26	5	36.36	36.66	1.21	0.83	0	0.83	29.85	52.5	36.36	36.66	68.39	63.34
Kunming	Southwest	37	19	20.5	7	31.61	61.28	23.61	0.05	4.61	0	11.76	21.42	31.61	61.28	38.72	38.72
Lanzhou	Northwest	13	41	7.69	17.125	0.00	21.18	1.34	0	3.07	0	40.00	59	0.00	21.18	100.00	78.82
Nanchang	Central	42	48	22.75	12.44	29.24	29.88	14.51	2.32	2.32	5.7	14.28	48.83	29.24	29.88	70.76	76.3
Nanning	Southwest	51	44	20	27.66	11.08	23.7	19.97	1.25	4.05	11.96	16.24	29.75	11.08	23.7	89.92	76.3
Shenzhen	Coastal	73	17	12.56	12	11.96	23.66	8.00	0	0	0	56.80	49.5	11.96	23.66	88.04	76.34
Wenzhou	Coastal	40	11	10.04	10	30.06	44	13.37	0	0	0	17.01	24.69	30.06	44	69.94	56
Wuhan	Central	54	41	13.58	1.0	5.15	55	14.81	1.02	5.09	1.07	58.65	94.85	5.15	55	94.85	48
Xian	Northwest	28	37	6.19	7.51	13.69	27.93	11.30	0.27	4.54	0.1	48.57	54.29	13.69	27.93	86.31	72.17
Zhengzhou	Central	68	47	15.07	19.02	9.79	16.73	21.90	2.94	1.34	0.23	32.69	56.44	9.79	16.73	90.21	83.27
Total		677	636														
Across Regions in China																	
Central		206	181	21.98	11.82	18.31	34.96	15.54	1.57	1.88	3.31	31.79	42.36	18.31	34.96	81.69	65.04
Coastal		165	77	9.35	12.82	29.27	35.72	8.86	0.21	0.00	0.21	23.70	28.50	12.74	25.46	62.26	49.55
Northwest		41	78	6.94	12.32	6.85	24.51	12.57	0.14	3.81	0.05	22.14	28.32	3.42	12.25	48.58	37.75
Northeast		102	139	17.02	12.80	12.22	26.09	8.31	0.66	4.30	1.45	12.65	11.09	16.10	23.57	33.90	26.43
Southwest		163	161	17.00	13.82	25.81	46.39	14.69	0.72	3.04	1.50	22.69	29.38	25.81	46.39	74.19	53.61
Across Firm Size																	
Micro		20	4	2.3	0	7.69	0	26.92	0	5.38	0	39.23	100	7.69	0	92.31	100
Small		286	120	12.38	17.51	11.32	17.86	14.72	1.23	2.97	1.57	39.00	47.97	11.32	17.97	88.68	82.03
Medium		261	201	17.33	12.41	24.14	25.68	13.86	1.75	2.07	1.98	26.75	47.9	24.56	25.68	75.64	74.34
Large		97	190	18.469	8.82	29.67	44.74	5.74	0.07	0.61	1.18	28.18	38.01	29.67	44.73	70.33	55.27
Entreprise		13	121	18.42	6.92	40	48.03	0	0.71	6.66	1.72	23.83	39.17	40.00	48.03	60.00	51.97
Average		170	1124														
Age																	
No more than 5 years		240	75	13.8	12.62	18.26	26.22	16.1	7.87	1.31	4.82	33.14	36.7	18.26	26.22	81.74	73.78
Between 6 and 20 years		412	227	16.14	16.74	20.42	24.68	11.81	0.4	2.70	1.19	31.17	46.69	20.56	24.68	79.44	75.32
More than 20 years		25	334	10.65	6.75	17.43	43.33	13.18	1.28	7.60	1.14	42.86	42.56	17.43	43.33	82.57	56.67
Average		844	2636	13.53	12.04	18.70	31.41	13.70	3.18	3.87	2.38	35.72	41.98	18.75	31.41	81.25	68.59

Source: Own calculation based on World Bank Investment Climate Survey China (2003)

Table 4: Classification of 14 sub industries into 2 main industries

Manufacturing industry	Service industry
Garmant & leather products	Information technology
Electronic equipment	Accounting & non-banking financial services
Electronic parts making	Advertisement & marketing
Household electronics	Business services
Auto & auto parts	
Food processing	
Chemical products & medicine	
Biotech products & medicine	
Metallurgical products	
Transportation equipment	

Source: Own table based on World Bank Investment Climate Survey China (2003)

Table 6: Correlation matrix of relevant variables

	Bank Acces	Bank Finance	Self Finance	Sales Growth (01-02)	Labor productivity (02)	Reinvestment Rate (02)
Bank Acces	1					
Bank Finance	0.6940***	1				
Self Finance	-0.7441*	-0.9390*	1			
Sales Growth (01-02)	0.0986***	0.1426***	-0.1602*	1		
Labor productivity (02)	0.0236	0.0416**	-0.0392	0.6470***	1	
Reinvestment Rate (02)	-0.0084	0.0662***	-0.044**	0.0755***	0.0156	1

Significance level at 1% ***, 5% **, 10% *

Source: Own calculation based on World Bank Investment Climate Survey China (2003)