The Effect of Regulation on Enterprises Economic Growth: Analysis of China (2012)

By Xingyu Chen

(7196839)

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Supervisor: Professor Alberto Chong

ECO 6999

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Abstract

China has been in a transition process towards a market-driven economy since the adoption of reform and open policy in 1979. Despite the imperfect regulation and market economy system, enterprises in China have experienced rapid growth over recent decades.

This study focuses on the impacts of government regulation on economic development of enterprises in the transitional economy of China. This paper uses sales growth as economic performance outcome and uses time spent in dealing with requirements imposed by regulation as a measure of regulatory intensity for each company among Chinese enterprises. With 2012 China Enterprise Surveys, I analyze the effects of regulation and other related factors on economic development of enterprises. The results show that there is a statistically significant positive relationship between regulation and short-run economic performance of Chinese enterprises. However, excessive regulation constrains the development of businesses in Chinese economy.

This paper is of great significance in explaining the non-linear relationship between government regulation and economic development. However, future study should circumvent potential endogeneity problems and monitor the impacts over a long period.

Contents

1. Introduction

Recent evidence in China indicates that enterprises in China have experienced rapid growth since opening up to external trade and investment and implementing free-market reforms in 1979. Especially by the end of 1990s, the number of private enterprises reached 1.2 million and the amount of individual enterprises increased to 31 million. And the total production of the two sectors accounted for one-third of national industrial output (International Finance Corporation (2000)). Moreover, galvanized by its World Trade Organization (WTO) admission in 2001, China has emerged among the world's fastest-growing economies over the last decade, with real annual gross domestic product growth at nearly 10% through 2013. Over recent decades, China has become the world's largest manufacturing nation, largest merchandise trading economy, largest holder of forex reserves, second largest destination of foreign direct investment (FDI), and is projected to be the world's biggest economy in 2014. Despite imperfect market economy system, the astounding growth shows in particular that China has been in a prolonged transition process toward a market-driven economy and slowly become integrated into the world economy.

The effects of regulations and regulatory environment on economic growth have been extensively studied in industrial countries. However, for emerging market economies in Asia, Latin America, Africa the Middle East and transitional economies in the former Soviet Union and China, studies about regulation impacts are relatively limited. Besides, culture, society, and political system of these developing countries are different from those of

western economies. Therefore, researches on regulation influences in developing countries are potentially helpful in reducing the gap between rich and poor countries.

A voluminous literature exists on the impact of regulations on the economic development, but most of them focus on macroeconomic growth (Dawson and Seater (2013), Loayza, Oviedo, and Servén (2004) and Jalilian, Kirkpatrick and Parker (2007)). Studies about regulation impact on enterprises growth are very limited. Hence, from a novel perspective, this article mainly focuses on firm-level evidence by exploring a unique data set of Enterprise Surveys, which contains information on the estimated level of regulations of Chinese companies.

It is obvious in diagrams that regulations and governance in China are less burdensome than the average level of countries in the East Asia and Pacific and even the average of all countries included in World Bank Enterprises Surveys.

Chart 1 provides a regional comparison of the regulation burdens in 2011 for three groups. Averagely, top managers in Chinese Enterprises spend around 0.9% time in dealing with regulations, however the average level of the whole sample is 9.9%, which suggests that China government is efficient in dealing with enterprises sector. Additionally, Chinese firms in a typical year are visited 1.2 times by tax officials. Whereas the average levels of the whole sample and countries in East Asia and Pacific area are 1.8 and 1.3 times respectively. It indicates tax departments in China are more expeditious than the average level of other states.

Chart 2 presents information about business licensing and permits delays in 2011 of the three groups. This set of indicators focus on evaluating the efficiency of handling business licensing and permit services. By contrast, countries in East Asia and Pacific countries are fastest in obtaining these licenses and services. It is noteworthy that Chinese companies averagely spend 26.3 days to get import license, but for businesses in East Asia and Pacific countries, it averagely takes 18.6 days. The probable reason for this phenomenon may be that merchandise trades with other countries is strictly censored in China because Chinese government has been keen to reduce the economy's dependence on exports and focus on internal consumption.

Chart 3 provides a snapshot of self-rated major business constraints imposed by taxes, business licensing and permits services in three regions. The computations of these indicators are based on the evaluation of the restriction as a potential constraint to the operations of the establishment in the Enterprise Surveys. According to the comparison of three regions, approximately 30.4% of the firms identify the tax rates administered in their countries to be the most pressing constraint, however in China, the proportion is only 6.3%. Notably, 20.6% of the respondent enterprises identify tax administration as a leading obstacle to their development, whereas 3.5% of firms in China perceive tax administration is the primary restriction in their growth. Similarly, 12.9% of companies in all respondent economies identify obtaining business licensing and permits as a major problem, whereas, the rate in China is only 1.5%.

Regulations should work as an adjustment mechanism supplied in response to the demand

of the public for the improvement of inefficient or inequitable market practice There is substantial interest among governments and scholars in investigating the impact of regulations on economic growth to find out the most suitable regulatory environment for entrepreneurial growth.

Previous evidences suggest that proper regulations are effectively to encourage economic growth from the view of macroeconomic (e. g. Kaufmann and Kraay (2002); Kirkpatrick and Parker (2007)). However, contrary to this point, some researchers who directly investigate this issue and find that regulation has negative effect on macroeconomic performance (e.g. Loayza, Oviedo, and Servén (2004); Dawson and Seater (2013)).

Despite these controversial and contradictory findings, investigation by Acemoglu and Robinson (2006) finds that some of the relationships between economic growth and governance are non-monotonic. Further, empirical work by Acemoglu and Robinson (2006) finds the existence of a non-linear relationship between political and economic reform, which casts light on the relation between government regulation and economic growth. Similarly, empirical investigation by Mohsen and Abbas (2011) proves the existence non-linear relationship (U-shape) between real interest rate and private investment in developing economies. These findings indicate that the relationship between governance and growth could be non-linear and non-monotonic. However, these findings have not come into widespread investigation. To allow for a non-linear effect, I construct a model based on these findings.

Apart from investigations about the regulation and macroeconomic growth, there are

numerous studies on the role of the regulations in the growth of enterprises. Some researchers highlight evidence suggesting that enterprises in economies with business-friendly regulations are growing faster while companies with burdensome business regulations develop slower. (e. g. Djankov, La Porta, Lopez-de-Silanes and Shleifer (2002); Alesina et al. (2005); Djankov McLiech and Ramalho (2006); Besley and Burgess (2002)). Consistent with this notion, studies about Chinese enterprises have shown that without adequate regulatory environment, the entrepreneurs are reluctant to make long-term investments (Tan (1996)). Recent work by Sheng, Zhou and Li (2011) compares the effects of business connections and political administration on enterprises performance. They confirm that, in the transitioning economy, government should shift from guiding economic activities to facilitating a business friend environment for enterprises in China.

The motivation for this paper is to advance my understanding of regulation impacts on economic development employing a widely used and accepted methodology on a firm level data. I also investigate whether the patterns differ from state-owned enterprises to private businesses.

This paper contributes to the literature in the following ways: It is the first Chinese study in which the overall influences of regulation on sales performance in enterprises are explored with an econometric model. The goal of this study is twofold. First, I seek to estimate the strength of the regulatory influence on the growth of the representative enterprises in China. More precisely, using dataset of the 2012 China Enterprise Surveys, I accomplish this

through econometrical modeling the variations in enterprises sales performance on their time in dealing with regulations. Second, I include other control variables about firm characteristics, financial and trade categories. Such an analysis helps in better understanding of Chinese economic growth structure and business environment. Finally, the results of the study are provided that there is a statistically significant positive relationship between regulation and short-run economic performance of Chinese enterprises. However, excessive regulations constrain the development of business in Chinese economy.

The rest of the article proceeds in five sections. In section 2, I will introduce some literatures relating to the regulation effects and government-firm relationships. Section 3 presents the Enterprises Surveys and describes the data, including details of the restrictions imposed on the sample and a preliminary statistical analysis of the sample. Section 4 lays out the empirical models with different specifications. The main results are presented in section 5, followed by interpretation of the outcome and discussion about the endogeneity problems, besides I also conduct robustness checks about this model. Section 6 briefly concludes the paper and summarizes main findings.

2. Literature review

I organize the discussion of relevant literatures in three steps. First, I briefly describe the issue and current research status of this problem. Second, I provide some empirical arguments to justify why and how regulation may affect economic development with a summary of empirical studies. Finally, I conclude this section by a summary of empirical

studies which link firm's profitability to regulation in place.

2.1 Regulation theories

As defined in early studies, economic regulation is all kinds of taxes and allowance as well as to explicit legislative and to governmental controls over rates, entry and other aspects of economic activity (Posner (1974)). Therefore, it is widely acknowledged that governmental regulations, combined with overall economic and social transformation, have had a significant effect on financial growth in developing economies in the last few decades.

For example, according to conventional wisdom, there should be a positive relationship between governance and growth (Hall and Jones (1999)). However, in the study of Huynh & Jacho-Chavez (2009), the authors use the measurements defined in World Governance Indicators to examine the empirical relationship between governmental regulations and growth by applying nonparametric methods. And the results suggest that only three of the six measures are statistically and economically related to the growth(in the six regulation measures, the effects of voice, stability, and law are significantly related to growth, however effects of government, regulatory and corruption are insignificant), and targeted reforms to improve governance are effectively to encourage economic growth.

2.2 Macro-level effects of regulation

Although a voluminous literature exists on the impacts of regulations on the economic development, not many studies have focused on the effects of governmental regulations on the development of enterprises. However, there is a voluminous discussion on the

relationship between governmental regulations and macroeconomic development (macroeconomic indicators such as output levels, employment and investment), some of which sheds light on factors that affect the growth of business.

Dawson and Seater (2013) use a new time-series based method to measure the extent of national regulation in the United States. This paper investigates the impacts of regulation on macro dynamics of several performance variables. And the study obtained the finding that the effects of post-1949 regulation are statistically and economically significant on aggregate output, labour, physical capital and total factor productivity (TFP). Furthermore, the authors suggest that regulations have allocative effects in changing the combination of factors used to produce output, and the overall effect of regulation on output growth rate is negative and substantial.

Loayza, Oviedo, and Servén (2004) provide an empirical analysis on the impacts of regulations on macroeconomic performance with a large sample of industrial and developing countries in the 1990. It examines the impact of regulations from three dimensions: fiscal, labor and output and finds that the regulatory burden varies considerably across countries. Taxes are most highly regulated in developed countries while the regulatory environments are slack in other developing economies. The results also show that a country with a heavier regulatory burden tends to reduce growth and increases volatility.

However, extant literatures assert that better regulatory can result in improvements in economic performance by improving the environment conditions for capital creation

(World Bank, 2003). Jalilian, Kirkpatrick and Parker (2007) reinforce this statement by exploring the role of regulation in economic growth through econometric modeling the impact of fluctuations in the quality of regulation on economic development in developing countries. The results suggest a strong link between regulatory quality and economic performance, and a "good" regulation is associated with a higher economic growth in lower-income economies.

Kaufmann and Kraay (2002) investigate the correlation between governance and income with a newly-updated set of worldwide governance indicators covering 175 nations for the period 2000-2001. The authors separate the effects between governance and incomes into a robust positive causal effect going from better governance to higher incomes, and a weak and even negative causal effect running in the opposite direction from incomes to governance. The result confirms existing evidence that governance matters significantly for economic growth in the long run and also demonstrates that as the development process unfolds, the governance improvements will not take place automatically.

2.3 Firm-level evidence

While most researchers acknowledge the influences of governmental regulation on economic growth, there emerge numerous studies on whether regulation plays an enhancing or inhibiting role in the growth of enterprises in recent years.

Previous study by Djankov McLiech and Ramalho (2006), with objective measures of business regulations in 135 countries derived from the World Bank datasets, finds that

businesses in countries with business-friendly regulations grow faster, such as firms in New Zealand, the United States, Singapore and Hong Kong (China). However, businesses in countries with more burdensome business regulations grow slower.

Research by Djankov, La Porta, Lopez-de-Silanes and Shleifer (2002) analyzes the regulation of entry in 85 countries and the regulatory impacts on start-up firms in these economies and finds that countries with heavier regulation of entry is generally associated with greater corruption and larger unofficial economies, yet not with better quality of public or private assets. In addition, less democratic countries regulate the businesses more heavily, even controlling for economic development levels of the countries.

Some other researchers have analyzed this causality from different viewpoints. Alesina et al. (2005) examine the entry barriers and regulatory effect in regulated monopolies. They find that the reduction of entry barrier and adjustment costs results in a greater level of investment. The results also present that when the regulator can determine the conditions of entry and can not set the number of entrants, the net effect of a more competitive-oriented regulation will depend on the impact of regulations on entrants, and effect can be ambiguous.

Djankov et al. (2004), with the same dataset of Djankov et.al (2002), investigate the regulation of labour markets in 85 countries (mainly focusing on employment rules, collective bargaining laws, and social security regulations) and find that richer countries, even with more generous social security systems, regulate less on labour market than poorer countries do. Heavier labour regulation is associated with a larger unofficial

economy, lower labour force participation rate, and higher unemployment rate, especially for the young.

2.4 Non-monotonic Relationship between Regulations and Economic Growth

Although there exist numerous literatures concluding that regulations and rules enhance or hinder economic growth both from macroeconomic and firm-level aspect, some researchers argue that the relationship between regulation and economic performance are possibly not monotonic. Acemoglu and Robinson (2006) claim the existence of a linear relationship between political and economic liberalization. In this paper, the authors emphasize the link between the level of political and the likelihood of economic reform critical to the production. It is crucial to note that the non-linearity of the relation between political and economic freedom may explain the link between government regulation and economic performance of economies that are in transition toward a more open, market-oriented economy.

An application of a non-linear relationship is the research conducted by Mohsen and Abbas (2011). Based on the evidence that real interest rates are frequently negative in most of the emerging countries due to governmental controls on the nominal interest rates and burdensome regulation in the monetary market, this paper tries to examine the non-linear relationship (inverted U) between real interest rate and private investment in developing economies. The results indicate that the effect of real interest rates on investment in the private sector is positive below the threshold level. However, when the real interest rates increase beyond the estimated threshold, they have negative effects on private investment.

2.5 Study about Chinese Enterprises

It has been suggested that the influence of public regulation on economic growth is stronger in developing countries (Stiglitz, 1998). Understanding institutional context of governmental regulation and its implications is critical when designing a regulatory framework for developing countries (Estache and Wren-Lewis (2009)). A small, most empirical, literature about the regulatory impacts on business has emerged in the recent two decades.

With respect to Chinese studies, research by Tan (1996) examined the characteristics of perceived political and regulatory environment and strategic orientations among Chinese enterprises in the private sector. With a survey data of Chinese private businesses and multiple regression models, this paper found that, from a policy standpoint, in the absence of adequate legal protections and regulations, the business owners are constantly concerned about the possible appropriation of their assets. Consequently, they are reluctant to make long-term investments in the growth of their enterprises.

Moreover, Sheng, Zhou and Li (2011) use a survey data of 241 Chinese firms to analyze the effect business ties and political ties on the performance of these businesses. In this research, business ties are defined as informal connections with buyers, suppliers, competitors and other market collaborators, while political ties are defined as informal connections with government officials at various administration levels. The results show that the business ties have stronger influence on performance than political ties and both impacts depend on institutional and market environments. The findings of this research

imply that as China has been transitioning toward a free-market economy. The role of government should change from guiding to facilitating economic activities. Furthermore, firms operating in China should adapt their ties utilization to changing social and economic environments.

3. Data, variables and descriptive analysis

This section contains a brief description on the main source of data: 2012 China Enterprise surveys data. And then I also present the sample restrictions and define basic patterns of the key variables of interest included in the model.

3.1 Data

The source of data in this paper is the 2012 China Enterprise Surveys data files. The China Enterprise Surveys, administered by the World Bank and its partners across 25 cities in China, is a representative countrywide survey and covers a broad range of business environment topics including access to finance, corruption, infrastructure, crime, competition, and performance measures. In the survey, the sample of establishments is randomly selected to represent economy. A total of 2,848 enterprises were interviewed during the period November 2011-March 2013. Their locations, cultures and economic conditions varied dramatically, allowing researchers to find explanations for the significant regional variations.

After these restrictions, regulation data for 2,419 firms are collected out of the 2,848 sampled. Summary statistics are reported in Table 1. 260 of the 429 firms did not provide

responses to the main questions: annual sales and senior management's time spent on dealing with regulations, 91 firms declined to answer other questions. Since I focus the study on the financial development during the period 2009 to 2011, 78 firms that were not established before 2009 are removed. The missing data raises concern about possible selection bias. Although the data set does not provide reason why some of the enterprises did not volunteer respond to these questions. I checked if the group of firms contains missing information on main variables (260 firms), and the responding group of firms differs significantly on observables (size, locations and industries). And there is no (observable) evidence suggesting that the sample of 2,419 firms is not representative.

3.2 Variables

Dependent variable

The main purpose of this paper is to test the impact of regulation on the growth of the enterprises. As the measure of enterprise financial development, I use historical annual sales data, which was collected in 2009 and 2011. In consideration of the dispersed distribution, the sales data are taken natural logarithm. The rate of growth is estimated with the following equation:

$$GROWTH = [log(sales\ in\ 2011) - log(sales\ in\ 2009)]/2 \qquad (1)$$

Ideally, the growth of a firm would be analyzed over a longer time horizon; however, the measure is constrained by availability of data. Thus I only focus this study to a short-term trend in economic development.

Independent variables

Obviously, when investigating the relationship between regulation and growth of businesses, it is necessary to somehow scale the level of regulatory impact on firms. So I construct a variable for the regulation for each firm named $REGUL$, which is measured by the percentage of time of the top management in dealing with requirements imposed by government regulations.

Empirically, regulation is expected to show a non-linear relationship related to financial development (Acemoglu and Robinson (2006) and Mohsen and Abbas (2011)).

Based on these findings, I construct a non-linear model to examine if there is a linear relationship between the predictor Regulation and a non-linear transformation of this predictor. Specifically, I include regulation ($REGUL$) and regulation squared ($REGULsq$) to describe a monotonic relationship with one inflection point.

Control variables

Firm size has become a routine to use as a control variable in empirical corporation-level studies. Larger firms tend to hold larger market shares, causing firm size to be highly correlated with sales amount and growth of firms. I include the firm size variables based on the number of full-time employees for each firm: $SMALL$: 5-19 employees, $MEDIUM$: 20-99 employees, $LARGE$: ≥ 100 employees.

Additionally, since firm capital levels may be correlated with economic growths of firms (as

larger businesses have more sources and they are more mature in dealing with governmental regulations than small and medium firms) and the sizes of firms may also affect future financial growth, I include log ($sales\ in$ 2009) as a control ($LSALES09$). Similarly, firm's age (AGE) is also included in the model, since age is found to be correlated with growth in many firm-level studies, and may be correlated with regulation level if longer established firms have more experiences in contacts with governmental officials and dealing with requirements imposed by regulations. A dummy variable (Gov) is also included in the model to control for whether the observation is a state-owned company.

As outlined in the literature review, there are numerous factors that affect financial development. Financial access is of primary importance in the growth rate of enterprises, so I include a dummy variable ($LOAN$) denoting whether an establishment has a line of credit or a loan from a financial institution and a dummy variable ($CHACCOUNT$) denoting whether an establishment has a checking or savings account. In addition, the growth rate of firms can also depend on the market structure in which they operate. Therefore I include a dummy variable ($EXPORT$) to control for firms that generate more than 10% of their sales from exports, a dummy variable ($FOREIGN$) to control for foreign ownership defined as 10% or more share in firm ownership and another dummy variable (QC) to control for whether the firm have an internationally-recognized quality certification.

Since a correlation between growth and the types of business have been reported in many researches, the current legal status will also be an important control. Therefore I include a group of dummies variables for firms' current legal status: $openshare$: Shareholding

company with shares traded in the stock market, *closedshare*: Shareholding company with non-traded shares or shares traded privately, *solepro* : Sole proprietorship, *partnership*: Partnership, *ltdpartnership*: Limited partnership, *other*: Other legal status. Summary statistics and a correlation matrix for the basic variables are listed in Table 1 and Table 2.

3.3 Descriptive analysis

The average growth of 2,419 firms during the period 2009-2011 is 0.227, and for the top managers in the firms, the percent of time spent in dealing with requirements imposed by governmental regulation is 1.284%. Moreover, 21.8% of these firms generate more than 10% of their sales from exports, while for only 5.8% of the firms, foreign ownership defined as 10% or more share in their firm ownership. 59.7% of these enterprises have an internationally recognized quality certification. Additionally, 50% of these firms whose legal status are sole proprietorship, which is followed by the Limited partnership firm with a proportion of 33.8%. 5.0% of these companies are state-owned companies. Besides these characteristics, these observation firms are evenly distributed in the 25 cities.

From the correlation matrix (Table 2) for main variables in this study, it is easy to find that regulation level is positively related to enterprises growth and government-owned firms grow slower. Small-sized firms grow faster than medium and large firms. Businesses with a higher sales level in 2009 are developing slower. In addition to that, enterprises with foreign shares and exporters have higher growth rates. Shareholding companies with shares traded in the stock market (open share companies) have significantly lower rate of

growth than firms of other legal status, whereas firms of sole proprietorship and partnership are growing at significantly higher speeds.

4. Econometric model

The aim of this paper is to investigate the effects of governmental regulations on the financial development of enterprises in Chinese society.

The baseline econometric specification is

$$GROWTH_i = \alpha_0 + \alpha_1 REGUL_i + \alpha_2 {REGUL_i}^2 + \alpha_3 LSALES09_i + \alpha_4 MEDIUM_i + \alpha_5 LARGE_i + \alpha_6 AGE_i + \alpha_7 Gov_i + \varepsilon_i \quad (2)$$

where $GROWTH_i$ is the sales growth rate of firm i as computed in equation (1), $REGUL_i$ is my proxy for regulation, which is measured by the per cent of time of the top management of firm i in dealing with requirements imposed by government regulations during a typical week. A quadratic term ${REGUL_i}^2$ is included to test for the possibility of a U-shaped relationship between regulation and firm's sales growth rate. $LSALES09_i$ is the logarithm of sales value of firm i in 2009 and is used to control the capital value of firm i. $MEDIUM_i$ is a binary variable that equals one if firm i has 20-99 employees, zero otherwise. Similarly, $LARGE_i$ is a binary variable that equals one if firm i has more than 100 employees, zero otherwise. $SMALL_i$ is used as the reference group for $MEDIUM_i$ and $LARGE_i$ groups. AGE_i is a variable to measure the period of years of firm i since began operation. Gov_i is a binary variable that equals one if firm i is a state owned company, zero otherwise. ε_i is a random disturbance term.

The next two empirical specifications are extensions of equation (2). In the second regression, I experiment with several other potential explanatory variables, including variables controlling for trade and financial characteristics:

$$GROWTH_i = \alpha_0 + \alpha_1 REGUL_i + \alpha_2 REGUL_i{}^2 + \alpha_3 LSALES09_i + \alpha_4 MEDIUM_i + \alpha_5 LARGE_i + \alpha_6 AGE_i + \alpha_7 Gov_i + \alpha_8 QC_i + \alpha_9 LOAN_i + \alpha_{10} CHACCOUNT_i + \alpha_{11} EXPORT_i + \alpha_{12} FOREIGN_i + \theta_{legal} + \mu_i \qquad (3)$$

where $LOAN_i$ is a binary variable that equals one if firm i has a line of credit or a loan from a financial institution. $CHACCOUNT_i$ is a binary variable that equals one if firm i has a checking or savings account, zero otherwise. Moreover, $EXPORT_i$ is a binary variable that equals one if firm i generate more than 10% of their sales from exports, zero otherwise. $FOREIGN_i$ is a binary variable that equals one if more than 10 % of firm i is owned by private foreign individuals, companies or organizations, zero otherwise. QC_i is a binary variable that equals one if firm i has an internationally-recognized quality certification, zero otherwise. μ_i is a random disturbance term.

θ_{legal} is a legal status categorical dummy variables that indicates whether firm i is: Shareholding company with shares traded in the stock market ($openshare$), Shareholding company with non-traded shares or shares traded privately ($closedshare$), Sole proprietorship ($solepro$), Partnership ($partnership$), Limited partnership ($ltdpartnership$) or Other legal status ($other$). It is used to capture the impact of current legal status on the growth rate of firms.

In the third regression, I run regression with location fixed effects:

$$GROWTH_i = \alpha_0 + \alpha_1 REGUL_i + \alpha_2 REGUL_i{}^2 + \alpha_3 LSALES09_i + \alpha_4 MEDIUM_i + \alpha_5 LARGE_i + \alpha_6 AGE_i + \alpha_7 Gov_i + \alpha_8 QC_i + \alpha_9 LOAN_i + \alpha_{10} CHACCOUNT_i + \alpha_{11} EXPORT_i + \alpha_{12} FOREIGN_i + \theta_{legal} + \varphi_{loc} + \eta_i \qquad (4)$$

where φ_{loc} captures city-level characteristics such as business environment and market conditions that may affect the economic development of firms. η_i is a random disturbance term.

5. Empirical results and interpretation

5.1 Major findings

The regression results are presented in Table 3. Initially, I run a linear regression of growth only with regulation variables and basic characteristics of firms, such as firm size, firm age and an indicator for state-owned firm. As Table 3 indicates, the effect of government regulation is significantly positive. However, it is noteworthy that the coefficient on quadric term of regulation is negative, which indicates that increase in senior manager's time in dealing with the requirements imposed by governmental regulation will hinder the acceleration of firms' growth and this effect is statistically significant at the 95% confidence level. Besides that, companies with larger sales levels in 2009 are growing slower during this period. It is consistent with the evidence that companies in mature industries have passed the rapid growth period and have an established pattern of market share, earnings, and profits, and they are developing at lower rates than companies in emerging industries

and growing industries.

Afterward, I introduce financial variable, trade factors and indicators for current business legal status to give insight on the business climate in China. The coefficient on regulation illustrates that, when other factors are holding constant, a one-percentage-point increase in top manager's time of the typical work week for dealing with regulations will improve a firms' economic growth by approximately 1.62%(smaller than the outcome in the first regression). The findings raise the possibility that some of the financial and trade factors influence firms' performance and growth by affecting enterprises' efficiency in dealing with governmental regulations for the reason that regulations exist to guarantee fair competition and to protect the financial interests of companies in complex economic environment. In addition to that, coefficient on LOAN and QC explains that firms having a line of credit or a loan from a financial organization significantly grow faster. Similarly, firms with an internationally recognized quality certification are developing at a higher rate.

Finally, location fixed effects is included in the model to capture characteristics in the city-level. The impact of regulation on the growth of businesses is still significantly positive, and the effect of regulation on the rate of growth imposed by regulation is still significantly negative. Concretely speaking, ceteris paribus, a one-percentage point increase in top manager's time in dealing with the requirement imposed by governmental regulation will increase a firms' economic performance by approximately 1.13%, and the increment also depends on the original time spending in dealing with regulations. Moreover, a

one-percentage point increase in dealing with regulations will averagely reduce this acceleration of growth by 0.04%. Controlling for locations, there is a statistically stronger relationship between large-size firm and growth, the coefficient on the indicator for large-size firms implies that the average economic growth rate for large firms is higher than that of medium and small firms. The results from the third regression also indicate that state-owned enterprises are growing faster than private businesses after introducing city-level effects. A probable explanation can be that state-owned enterprises are administrated by both central government and local governments and city-level effects filter out factors such as local business environment and local market conditions that may affect the economic development of firms, therefore the coefficient on the indicator for state-owned firm implies that the average growth rate of state-owned firms is higher than that of the firms in private sector.

5.2 Endogeneity problem

Endogeneity problem is one of the crucial important issues that can arise from empirical research. Endogeneity can emerge from measurement errors, reverse causal effects or omitted variables.

A variety of sources can cause measurement error, such as mistakes caused by human carelessness and flaws in the measurement instrument. In this study, as mentioned in Section 3, the sample is restricted to firms that provide clear responses to survey questions. For example, some enterprises spontaneously gave no answer to the question “In fiscal year 2011, what was this establishment’s main product, that is, the product that represented the

largest proportion of annual sales?"(2012 China Enterprise Surveys). Probably, annual sales are not a good method to evaluate these firms' performance, so I exclude these observations. However, by restricting the sample, there arise certain differences between the measured value and the true value.

Reverse causality refers to a cause and an effect that could have feedback loops. In this study, for instance, faster-growing firms are more actively exploring new markets and launching new businesses and they devote more time to dealing with regulations, such as spending time obtaining valuable licenses, preferential market access. And in a long term these strategies may lead to growth. In this situation, economic growth preceded and caused the increasing time spent on regulation instead of the other way around.

Furthermore, a potential problem with these results is that the regulation may be endogenously determined by other factors, such as political ties. Informal social connections with governmental officials provide firms with crucial access to policy or industrial information. On the other hand, Chinese government controls a sizable portion of resources, such as land, subsidies and tax breaks. Unofficial ties with the government at various levels offer shortcuts to these resources. Therefore, strong, long-term unofficial government connections improve enterprises economic growth and affect the cooperation of government and firms. Political ties, as an omitted variable, induce a correlation between the exogenous explanatory variables and the error term, which causes the endogeneity problem.

5.3 Robustness issues

As discussed earlier, ceteris paribus, regulation significantly enhance enterprises economic growth. However, when other factors are holding constant, the development for state-owned companies is slower than private firms. Normally state-owned enterprises in China are governed by both local governments and the central government, and they might grow at different rates since their objectives or their exposure to obstructions might differ from those of other companies. For instance, state-owned firms can have advantages in dealing with the administrative system, and they can be less subject to misconduct or corruption by financial intermediaries and more exposed to governmental influences, which can explain the phenomenon.

Therefore in the robustness analysis, I re-estimated the basic model separately for state-owned companies. Although state-owned companies are directly affected by government institutions and governmental regulations, the governmental environment (including cultural, political and other factors) has effects on enterprises in the private sector. So I also separately run a regression for private firms. The highlights of the results are:

The promotion effect of regulation is more pronounced among state-owned companies, specifically, under the same level of regulation and holding other conditions constant, the average growth rate of state-owned enterprises is significantly 63.60% higher than that of private companies. Additionally, the impacts of regulation on the acceleration of economic growth are significantly negative for both state-owned firm group and private firm group.

The effect on state-owned companies is twice as strong as the effect on private companies.

Larger sales level in 2009 will result in a significantly slower economic growth. As sales level in my study is used as an index of firm size, this finding is consistent with previous studies (e.g. Evans (1987) and Capasso and Cefis (2012)), which indicates that firms' growth decreases at a diminishing rate with firm size. Furthermore, significant differences are observed from the firm sizes classified by employee quantities. Specifically speaking, for state-owned businesses, large-size (more than 100 employees) and medium-sized (20-99 employees) firms are both growing slower than small-size firms (less than 20 employees), however, private medium and large establishments are developing at a noticeably higher rate than small private firms.

With regard to factors in financial categories, having a checking account or saving account causes a growth-reducing effect on both state-owned firm group and private firm group, although 95.8% of enterprises in the sample have a checking or saving account. Moreover, this effect is more statistically significant for private firms. Obtaining a line of credit or a loan from a financial institution enhances economic growth for firms in both groups and the influence is stronger for private firms.

6. Conclusion

In this paper, I attempt to fill a gap in the existing literature about regulation impacts on enterprises economic development by investigating the non-linear relationship between enterprises financial performance and the time spent on dealing with governmental

regulations. I do this using the data from the World Bank Enterprise Surveys, which contains a broad range of business environment topics. The results imply that there is a statistically significant positive relationship between regulation and short-run economic performance of Chinese enterprises. However, excessive regulations constrain the development of business in Chinese economy.

To my knowledge, this study provides the first micro-level support with Enterprise Survey datasets for firm-based theories on the effects of regulations that have attracted much attention in recent years.

However, a number of shortcomings should be mentioned. Firstly, I have looked solely at short-term effects. Secondly, the findings of this study are difficult to compare with other researches due to the limitation of data (other researches do not use sales growth as the measurement for enterprises performance). Thirdly, I cannot distinguish the effects of different regulations although I can examine the overall effects of regulations. Lastly, given the nature of the data and the problem of identifying causal effects, the findings should be interpreted with care.

Due to data limitation, this paper does not address the issue of causality or control for endogeneity in a regression framework. Thus, much more work is still required in this area. Another important feature to consider is variances of these measures across time. These important considerations can be investigated in a future study.

Appropriate intensity of regulation can be stimulating for enterprises economic

performance, but excessively high intensity of regulations turn to be detrimental, in agreement with the previous findings. Therefore, the results of this paper also have significant policy implications. Since China has been transitioning to a free-market economy, the government should properly adjust its role in facilitating economic activities and allocate social resources optimally. On the other hand, enterprises in Chinese economy should effectively cooperate with the government and capitalize their opportunities to foster economic growth.

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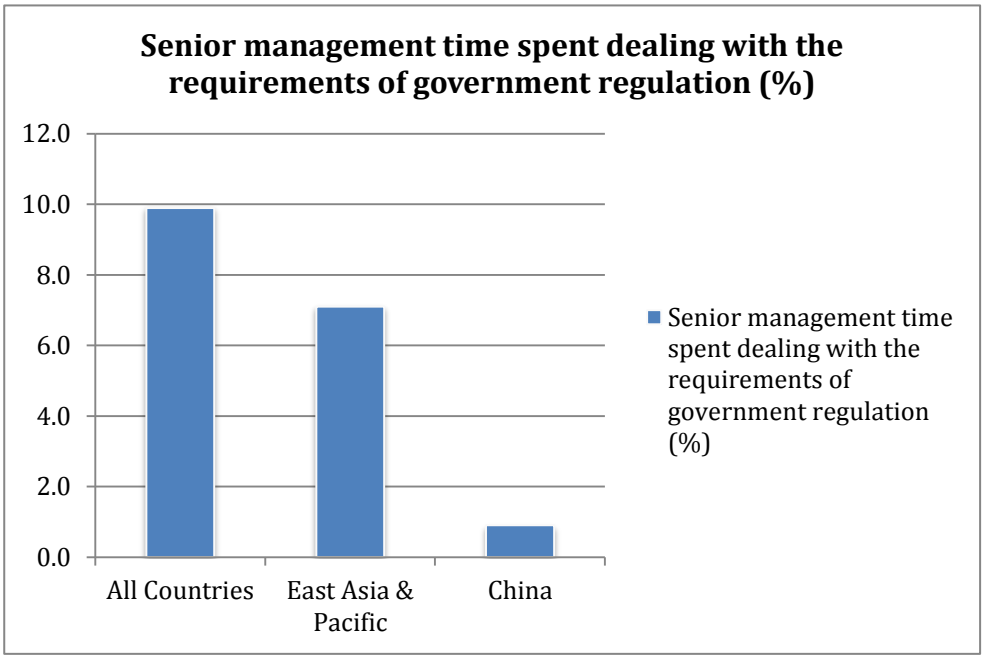
Appendix

Chart 1 regulation burden



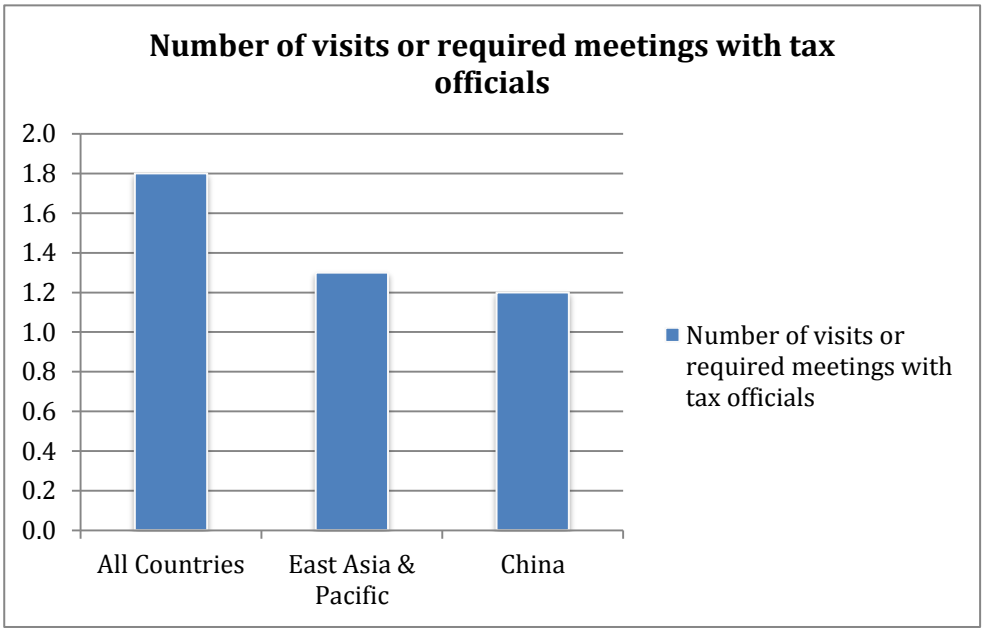


Chart 2 Efficiency of Business Licensing and Permit Services

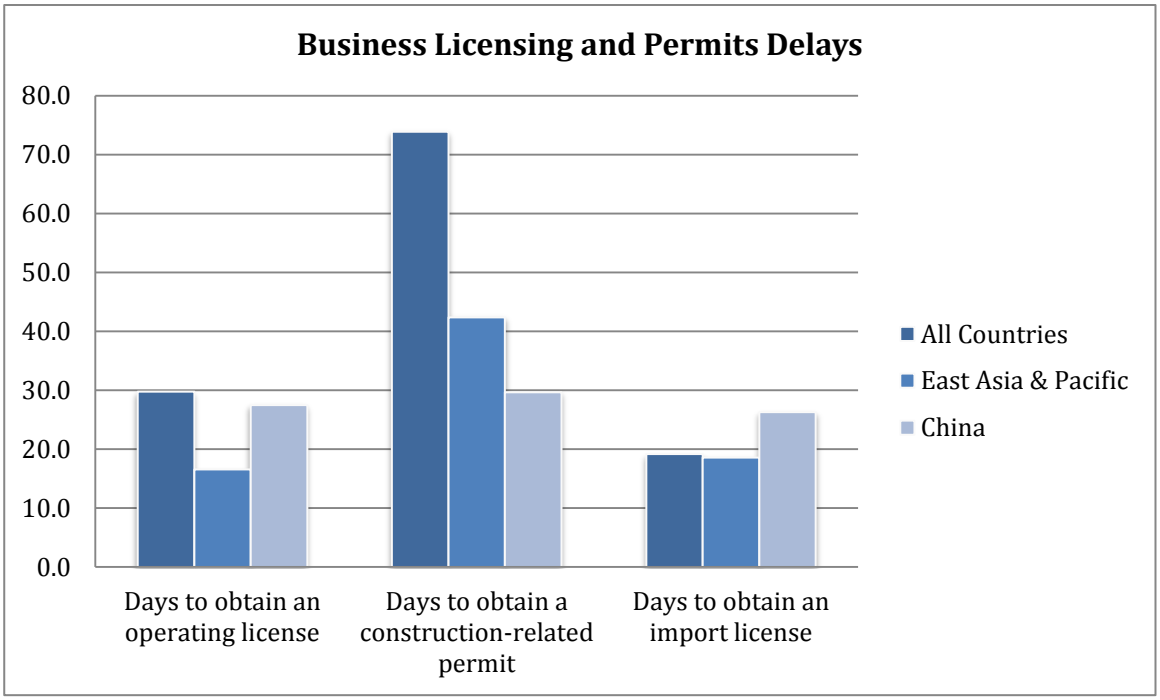


Chart 3 Self-evaluated Business Constraint

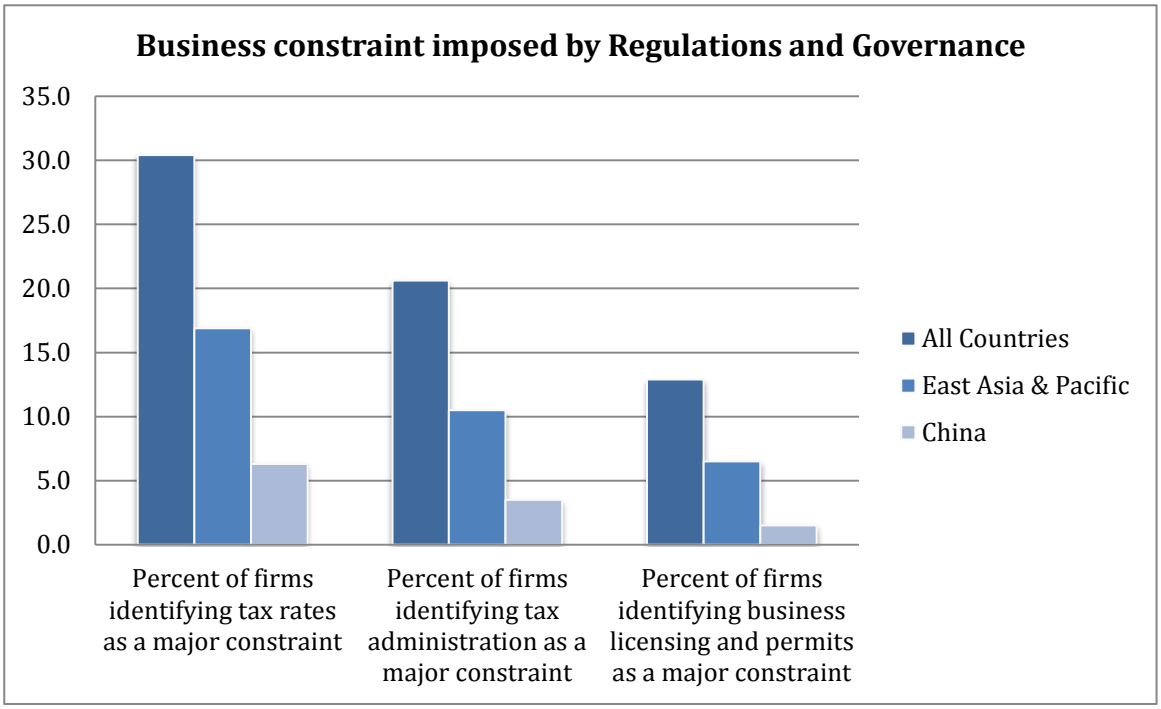


Table 1.Summary Statistic:

Variables	Enterprise Surveys
	2011 China
GROWTH	0.227 (0.555)
REGUL	1.284 (3.361)
REGULsq	12.936 (132.689)
LSALES09	16.475 (1.758)
SMALL	0.360 (0.480)
MEDIUM	0.352 (0.477)
LARGE	0.288 (0.453)
AGE	13.091 (8.475)
LOAN	0.311 (0.463)
CHACCOUNT	0.958 (0.200)
EXPORT	0.218 (0.413)
FORGEIGN	0.058 (0.234)
openshare	0.020 (0.138)
closedshare	0.044 (0.205)
solepro	0.500 (0.500)
partnership	0.084 (0.278)
ltdpartnership	0.338 (0.473)
other	0.015 (0.123)
QC	0.597 (0.490)
Gov	0.050 (0.217)
Hefei	0.029 (0.168)
Beijing	0.025 (0.156)
Guangzhou	0.048 (0.214)
Shenzhen	0.044 (0.205)
Foshan	0.050 (0.216)
Dongguan	0.040 (0.195)

Shijiazhuang	0.045	(0.207)
Tangshan	0.035	(0.184)
Zhengzhou	0.048	(0.215)
Luoyang	0.048	(0.215)
Wuhan	0.041	(0.197)
Nanjing	0.045	(0.208)
Wuxi	0.043	(0.202)
Suzhou	0.038	(0.192)
Nantong	0.048	(0.213)
Shenyang	0.038	(0.192)
Dalian	0.042	(0.201)
Jinan	0.045	(0.207)
Qingdao	0.047	(0.211)
Yantai	0.048	(0.215)
Shanghai	0.010	(0.097)
Chengdu	0.040	(0.195)
Hangzhou	0.031	(0.172)
Ningbo	0.041	(0.199)
Wenzhou	0.033	(0.179)
Observations	2,419	

Note: the sample is restricted to enterprises established before 2009 or in 2009.

Table 2 Correlation Table of Main Variables

	GROWTH	REGUL	LSALES09	SMALL	MEDIUM	LARGE	Gov
REGUL	0.0718***						
LSALES09	-0.1878***	0.0070					
SMALL	0.0257	-0.0256	-0.4180***				
MEDIUM	-0.0171	0.0150	-0.0275	-0.5531***			
LARGE	-0.0092	0.0113	0.4722***	-0.4767***	-0.4686***		
Gov	-0.0204	0.0396**	0.0819***	-0.0445**	0.0069	0.0398*	
AGE	-0.0053	0.0104	0.2087***	-0.1593***	-0.0019	0.1709***	0.1503***
LOAN	0.0675***	0.1677***	0.2764***	-0.1856***	0.0040	0.1926***	-0.0095
CHACCOUNT	0.0171	0.0342*	0.0949***	-0.0587***	0.0068	0.0551***	-0.0285
EXPORT	0.0257	0.1501***	0.1837***	-0.1539***	0.0302	0.1313***	-0.0791***
FORGEIGN	0.0234	0.0344*	0.0788***	-0.1011***	0.0322	0.0732***	-0.0485**
QC	0.0035	0.0665***	0.3138***	-0.2411***	0.0689***	0.1829***	-0.0182
openshare	-0.0922***	0.0189	0.1978***	-0.0666***	-0.0203	0.0920***	-0.0039
closedshare	-0.0143	0.0246	0.0997***	-0.0554***	0.0197	0.0379*	-0.0396 **
solepro	0.0105	-0.0898***	-0.1768***	0.1510***	-0.0395*	-0.1184***	0.1676 ***
partnership	0.0210	0.0098	-0.0332	-0.0107	0.0472**	-0.0384**	-0.0282
ltdpartnership	-0.0031	0.0568***	0.1158***	-0.1150***	0.0133	0.1080***	-0.1350 ***
other	0.0481**	0.0627***	-0.0374*	0.0188	-0.0073	-0.0122	-0.0285

	AGE	LOAN	CHACCOUNT	EXPORT	FORGEIGN	QC	openshare
LOAN	0.0560***						
CHACCOUNT	-0.0131	0.0866***					
EXPORT	0.0346*	0.1800***	0.0551***				
FORGEIGN	-0.0346*	0.0630***	0.0340*	0.1951***			
QC	0.1052***	0.1344***	0.0435**	0.1535***	0.0771***		

openshare	0.0742***	0.0569***	0.0139	0.1098***	0.0562***	0.0773***	
closedshare	0.0311	0.0002	0.0346*	0.0240	-0.0012	0.0687***	-0.0298
solepro	-0.0324	-0.2248***	-0.0724***	-0.0669***	-0.0884***	-0.1167***	-0.1392***
partnership	-0.0240	-0.0496**	-0.0185	-0.0376*	0.0586***	0.0520**	-0.0423**
ltdpartnership	0.0194	0.2267***	0.0748***	0.0530***	0.0364*	0.0374*	-0.0994***
other	-0.0228	0.0910***	-0.0245	-0.0087	0.0268	0.0130	-0.0174

	closedshare	**solepro**	**partnership**	**ltdpartnership**
solepro	-0.2140***			
partnership	-0.0650***	-0.3034***		
ltdpartnership	-0.1529***	-0.7138***	-0.2167***	
other	-0.0267	-0.1246***	-0.0378*	-0.0890***

Note: the sample is restricted to enterprises established before 2009 or in 2009.

*, **, *** indicate significance levels of 10%, 5%, and 1%, respectively

Table 3 Regression Results

Dependent variable: GROWTH

	(1)	**(2)**	**(3)**	**(4)**	**(5)**
	2013 China Enterprise Surveys	2013 China Enterprise Surveys	2013 China Enterprise Surveys	State-owned Companies	Private Companies
REGUL	0.0237***	0.0162**	0.0113*	0.0467**	0.0170*
	(0.0052)	(0.0055)	(0.0060)	(0.0161)	(0.0063)
REGULsq	-0.0004***	-0.0003*	-0.0002*	-0.0007**	-0.0003**
	(0.0009)	(0.0001)	(0.0001)	(0.0002)	(0.0002)
LSALES09	-0.0786***	-0.0871***	-0.0882***	-0.0310	-0.0910***

	(0.1874)	(0.0199)	(0.0210)	(0.0364)	(0.0213)
SMALL	Omitted	Omitted	Omitted	Omitted	Omitted
MEDIUM	0.0345	0.0130	0.0266	-0.0358	0.0318
	(0.0236)	(0.0219)	(0.0224)	(0.0739)	(0.0236)
LARGE	0.1404**	0.1129	0.1354**	-0.0223	0.1356*
	(0.0497)	(0.0481)	(0.0476)	(0.0959)	(0.0495)
Gov	-0.0199	-0.0036	0.0040	--	--
	(0.0342)	(0.0356)	(0.0372)		
AGE	0.0015	0.0020	0.0021	0.0014	0.0018
	(0.0017)	(0.0017)	(0.0018)	(0.0019)	(0.0020)
LOAN		0.1252***	0.1268***	0.0367	0.1353***
		(0.0335)	(0.0345)	(0.0867)	(0.0340)
CHACCOUNT		0.0709	0.0274	-0.0215	-0.0775
		(0.0294)	(0.0371)	(0.0533)	(0.0304)
EXPORT		0.0379	0.0351		
		(0.0313)	(0.0340)		
FORGEIGN		0.0519	0.0357		
		(0.0380)	(0.0368)		
openshare		-0.3636	-0.3918		
		(0.3585)	(0.3403)		
closedshare		-0.1072	-0.1046		
		(0.1060)	(0.1120)		
solepro		-0.1024	-0.1165		
		(0.0955)	(0.0969)		
partnership		-0.0768	-0.0924		
		(0.1100)	(0.1132)		
ltdpartnership		-0.1214	-0.1362		
		(0.0959)	(0.0938)		
other		Omitted	Omitted		

QC		0.0533*	0.0423		
		(0.0214)	(0.0235)		
Observations	2,419	2,419	2,419	120	2,299
Constant	1.4250***	1.5426***	1.6281***	0.6619***	1.5187***
	(0.2762)	(0.2761)	(0.2845)	(0.5505)	(0.2875)
R-squared	0.053	0.072	0.091	0.104	0.065

Note:

1. Three samples are restricted to enterprises established before 2009 or in 2009.

2. *, **, *** indicate significance levels of 10%, 5%, and 1%, respectively

3. Robust standard errors in parentheses.

4.the regression outcomes of baseline econometric model are in Specification (1). In Specification (2), financial factors, trade factors and other characteristics are included. In Specification (3), city-level effects are added as additional control.

In Specification (4), basic model separately re-examined for state-owned companies. Similarly, in Specification (5), basic model re-examined for private companies.