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Transition in Entrepreneurial Activities in China**

Ying Zhang and Geert Duysters

**ENTREPRENEURSHIP DEVELOPMENT AND THE ROLE OF ECONOMIC TRANSITION IN
ENTREPRENEURIAL ACTIVITIES IN CHINA**

Ying Zhang

UNU-MERIT, Keizer Karelplein 19, 6211TC, Maastricht, the Netherlands

Email: zhang@merit.unu.edu,

and

Geert Duysters

Horsten 1, 5612 AX Eindhoven, The Netherlands.

Email: g.m.duysters@tm.tue.nl

Abstract

This study aims to elaborate on the entrepreneurship development in China and the role of China's economic transition in Chinese entrepreneurial activities. We address China's institutional transition environment, which is argued as the necessary condition of entrepreneurship development and the 'incubator' of three generations of entrepreneurial activities. We make use of a panel dataset from 31 provinces in China in the past 4 years. Our results show that China's economic development has a significant inversed U-shaped impact on entrepreneurship development in China's transitional stage from an efficiency-driven to an innovation-driven economy. Further findings in the recent transitional stage show that education resource and regional economic openness respectively has significantly positive impact on entrepreneurship. The interactive effects of education resources and economic openness were also found to be significantly positive. We show that the fact of China's entrepreneurship development is approaching to the opportunity-oriented polar in recent years.

Keywords: Entrepreneurship development, Economic development, China

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1. Introduction

Entrepreneurship can be addressed as a phenomenon associated with entrepreneurial activity and its respective entrepreneurs who seek to generate value by identifying and exploiting new products, processes, markets, and creating or expanding economic activities (OECD, 2007a). Studies on entrepreneurship were originated at the end of 18th century from the studies of an Irish economist Richard Cantillon. Afterwards, entrepreneurship was never stopped to be studied, going through an evolutionary path from Homo Economicus to an open cross disciplinary work. The reason that this topic is so attractive is its multi-facet nature and functions that matter not only to individuals and organizations at the micro-level but also countries at the macro-level.

Minniti and Levesque (2008) argue that with the development of economics studies, there are five heterodox mainstreams of economics research which are at the roots of a significant and growing amount of recent work on entrepreneurship: boundary rationality, rule following, institutions, cognition, and evolution. At the macro level, studies in entrepreneurship are various, either on the impact of entrepreneurship on issues such as job creation, economic growth and poverty reduction (i.e. Parker, 2004; Parker and Robson, 2004; Lazear, 2004, 2005; Wagner, 2003); or on entrepreneurial performance (Audretsch and Thurik, 2001; Scarpetta et. al 2002; OECD 2003a; Brandt 2004a) and the determinants of entrepreneurship such as culture, access to finance, and R&D technology etc. (Schramm, 2006; EU, 2003; Lee et al., 2000). With regard to entrepreneurial performance and entrepreneurial impact, a majority of studies applied data from World Bank, Eurostat, and GEM databases. These studies mainly looked at entrepreneurship development in OECD countries or focused on entrepreneurship comparison between high-income and low-income economies. Despite of the diversification in data source and study objectives, consensus has been made that it is entrepreneurship that contributes to economic development by introducing innovation, enhancing rivalry, and creating competition (Wong et al., 2005), and low-income countries have higher levels of necessity entrepreneurial activities (starting a business because you were pushed into it) while high-income countries have lower levels of necessity entrepreneurial activities but higher level of opportunity entrepreneurship (starting a business to exploit a perceived opportunity) (Acs, 2006; Acs, and Varga, 2005).

Amongst all countries, the economic development of China is a hot topic both in the academic and political area. This is not only due to its rapid national catching up and improving international position, but also due to its successful economic transitional development. When reviewing the studies about China's economic development, we can see that topics are intensively focused on the fields of China's industrialization, foreign investment impact, political behaviors of Chinese government, and Chinese firms' performance etc. However, as many people know, China, by experiencing an economic transition from central planning system to market-oriented economy, has also shown a booming trend in entrepreneurship development. Before the 1980s, all the

economic activities were planned, controlled, and distributed by the government rather than by enterprises and market. Entrepreneurship was hardly developed during that period and the number of private enterprises in China got down to almost 150 thousand in the end of 1978 compared to 9 million in 1949. In contrast to the central planning system, China's economic reform since the end of 1970s has initiated a long termed institutional transition. This transition was remarked by a series of fundamental and comprehensive changes introduced to the formal and informal rules of the game that affect organizations (Peng, 2003) and have led to a series of political actions such as economic liberalization, permitting private enterprises involving into economy, and even admitting private entrepreneurship as a main component of China's economic growth etc. According to the data recorded by the National Bureau of Statistics of China over the 1990s, the contribution of private enterprises to China's total industrial output raised from 20.36 per cent in 1991 to 90.89 per cent in 1999, and the contribution to the job market increased 300 times from 1978 to 2004.

China's success in economic transition reminds us of an argument from McMillan and Woodruff (2002) that the success or failure of a transition economy can be traced in large part to the performance of its entrepreneurs since much of the task of devising new ways of doing business in transition economies has been taken on by entrepreneurs who end up acting as reformers. This argument clearly shows the necessity to study the development of entrepreneurship in transition economies. However, despite the fact that studies on entrepreneurship have increased dramatically and the fact that China has experienced a very rapid development in the private sector, studies associated with China's entrepreneurship development are still rare. Only a small number of studies exist but pay attention to entrepreneurship's institutional environment & culture dimensions (i.e. Li and Materlay, 2001) and the development of small family firms (i.e. Poutziouris et al., 2002). The relationship between entrepreneurship development and economic transition in Chinese context is still underdeveloped.

Therefore, our motivation in this study is to fill this gap in the existing literature by primarily identifying the relationship between entrepreneurship development and economic transition in the Chinese context. We follow McMillan and Woodruff (2002) in arguing that *whereas it is China's gradual entrepreneurship development that contributes to China's subsequent economic development, China's institutional transition is undoubtedly a necessary precedent condition of emergence of private sector*. Our research question is try to answer *'to what extent economic transition promoted the development of entrepreneurship in China?'*

In order to answer this research question, the investigation is focused on the analysis of institution transitional environment and its impact on entrepreneurship. We specifically pay attention to the recent economic transition stage and organized a panal dataset from 31 provinces

in China from 2005 till 2008. In order to figure out the importance of institutional transition in the progress of entrepreneurship development, another five aspects involving in the economic transition were considered: the impact of education resource, economic openness, unemployment, initial income, and their interactive impacts on the entrepreneurship development were respectively studied.

This study primarily contributes to the completion of a virtuous circle between entrepreneurship and economic development, especially for such economic transitional countries as China. Given the existing studies on the role of entrepreneurship in national economic development, this study can give rise to an insight on the reversed impact of economic transition on entrepreneurship. Since we aim to increase our current understanding of the relationship between entrepreneurship and education resources, unemployment, and regional economic openness, we may help policy makers on the role of entrepreneurship and the way to promote entrepreneurship by pushing economic transition.

The study is structured as follows. In section 2, we generally elaborated the evolution of entrepreneurship development and its corresponding institutional transition since 1978 in China. The aim of this section is to provide a better understanding on China's institutional environment for entrepreneurship development. Afterwards in section 3, we discuss the theoretical background and associated hypotheses. The central research question is then answered by six working hypotheses. Section 4 introduces the methodology applied in the data collection and model estimation; regression results are displayed in section 5; finally, section 6 and 7 are for discussion and study limitations.

2. The Institutional Environment of Entrepreneurship Development in China

In addition to the studies of entrepreneurship development in developed countries, the development of entrepreneurship in current emerging economies are much more attractive. Policy makers, analysts, and economic theorists are curious about the entrepreneurship in emerging countries especially those that have been experiencing institutional transition (such as Russia, Poland, China, and Vietnam). These transition economies are much 'qualitatively different' (Newman, 2000) in the sense of transition approach (such as 'dropping central planning' through shock therapies such as Poland and Russia or gradually growing out of central planning through gradualist policies such as China and Vietnam), however, the emergence of a large body of entrepreneurial start-ups and adjustment in building 'new rules of the game' (North, 1990:3) in 'three pillars'¹(Scott, 1995) are the things that they have in common.

¹ Scott (1995) proposed that at the most fundamental level institutions have three pillars: *regulative pillar* which focuses on formal rule systems and enforcement mechanisms (North, 1990); *normative pillar* defines legitimate means to pursue

Meyer and Bytchkova (2006) claim that a successful entrepreneurial economy depends not only on initial conditions in the transition economy but also on the speed and consistency with which the reform process has been applied. China's attempting to establish an entrepreneurial economy was accompanied by an institutional transition effort since decades ago when China transferred from a central planning system to a market-oriented economy. In order to dive deeper into China's entrepreneurship development, the evolutionary path of China's entrepreneurship development and its institutional transition environment will be firstly elaborated.

From 1978 till now, China's entrepreneurship development can be divided into *three phases*. Each phase showed an evolution with its corresponded generation of entrepreneurs, institutional environment, and relevant government policies. *The first generation* of Chinese entrepreneurs were emerged in the time of the 'Four Modernizations' reform program proposed by Deng Xiaoping to encourage entrepreneurial activities in the early 1980s. This program was aimed to deal with the economic crisis that lasted from 1966 to 1976 in China's Culture Revolution. According to the decision in the Third Plenum of the Chinese Communist Party's 11th Central Committee, Deng Xiaoping's policy in 1980s was to allow Commune and Brigade Enterprises to enter into non-agricultural industries (Gregory, Tenev, and Wagle, 2000). With the first generation of entrepreneurs' effort, light industry grew extremely rapidly from 1979 up through 1984 (Wong, 1988).

Since the mid 1980s, private entrepreneurial activities had started to evolve to the *second phase*, which was characterized by the organizational mode of township and village enterprises (TVEs). These two kinds of enterprises are mostly owned by privates or collectively owned by local governments. Together with the newborn private enterprises, the commune and brigade enterprises from the first phase were also restructured into TVEs. According to the study of Liao and Sohman (2001), the contribution of TVEs in the late 1980s accounted for 20 percent of China's gross output.

The evolution to *the third phase* of Chinese entrepreneurial activities was somehow stimulated by the entry of foreign investment in the late 1980s. For many years the central government focused on attracting foreign investment and ignored the development of domestic private enterprises with unfair treatment, discrimination and ideological biases. Private enterprises were therefore largely restricted to develop only in the rural areas. In order to enter urban market as well as other sectors, organizational mode such as *Getihu* (in Chinese) was triggered to emerge. Even though this kind of organizational mode was only permitted to hiring fewer than eight² employees

valued end; and finally *cognitive* pillar refers to taken-for-granted beliefs and values that are imposed on, or internalized by, social actors (DiMaggio&Powell,1983).

² The policy that Chinese government set cutoff between *gutihu* and enterprise is based on the theory of Marx which clearly addresses a business with more than seven employees could support an owner to begin exploiting labors (from <<Das Kapital>>, Karl Marx, 1867).

and could not be registered in the name of enterprise at the Industry and Commerce Office, *Getihu* had executed its important function in leading entrepreneurial activities in urban areas and other sectors in the end of 1980s.

After the era of *Getihu*, the third phase of entrepreneurship development was then representative by the emergence of private sectors and another organizational mode----*Si ying qiye*. On April 12, 1988, the private sector was permitted to develop within the limits prescribed by law (the First Plenary of the Seventh People's Congress approved Article 11 of the 1988 amendment to the Constitution of the People's Republic of China). In June 1988, the Chinese central government issued the Tentative Stipulations on Private Enterprise (TSPE), clarifying that a unit with privately owned assets that hires more than eight employees can be regarded as a private enterprise (*si ying qiye* in Chinese). This is a landmark in the path of China's market-oriented reform and also the landmark for entrepreneurship development because private enterprises were for the first time recognized to coexist with stated-owned enterprises. However, since this political adjustment was taken under the situation of various opinions on private sectors in economy, this reform did not receive exciting consequences as expected: GDP growth rate was slowed down to 4.4 % and 3.9% in 1989 and 1990, and the total employment in TVEs was reduced by 3 million between 1988 and 1990 (People's Daily, March 23, 1990).

In order to eliminate the diversity in opinions on private sectors in the transitional China, in early 1992, Deng Xiaoping took the "South Touring Talk" . Deng's speech about 'Try to get rich quickly through entrepreneurial activities' terminated the intensive debate on the 'glorious to be rich'. Very soon in the Fourteenth Party Congress in September of 1992, the goal of economic reform in China was set to build China as a *socialist market economy*. Even though this particular addressing sounds irregular to the principle of western economics, this economic philosophy introduced by the Chinese Communists in China's specific economic transition stage significantly dispelled the bias on entrepreneurship and blurred the boundary between state- and private owned businesses. Following this important decision, a series of reforms were executed afterwards, from turning large state-owned enterprises into more independently run companies, selling off the smaller ones (*zhuada fangxiao* in Chinese) (Young, 1995), to changing policies in foreign exchanges, taxes, the monetary system, the financial system, and even streamlining government bureaucracy (Qian, 1999). By 1996, this step of reforms had a notable consequence in triggering second boom of entrepreneurial activities and fifty to seventy percent of SOEs having been privatized.

From the late 1990s, China's entrepreneurship development entered into a new era. In September 1997, Chinese Communists' Fifteenth Party Congress confirmed private ownership as an important component in China's economy. In 1999, the Second Plenary of the Ninth People's

Congress gave the private sector a same legal footing as the public sector in the economy. Meanwhile, China's central government introduced a series of incentives such as providing the Innovation Fund for Technology Small and Medium Enterprises (SMEs), investing high-tech Zones, proliferating Science Parks and technology business incubators etc. to encourage the development of technology-based entrepreneurship; Technology-oriented entrepreneurs were encouraged to invest in start-ups in science parks with incentives such as 18 percent decreased corporate income tax, exemption of income tax in the first three years, and no restrictions on local residence permit etc. By 2006, China had already six thousand industrial parks and fifty-eight national level science parks (Cai, Todo, and Li-An Zhou, 2007).

We summarize the evolutionary path of entrepreneurship development and its associated institutional transition in table 1. Besides the three phases of entrepreneurship development elaborated above, we want to additionally highlight that China's entrepreneurship development is characterized by its *relationship-based network*. This network did not only include an association with business partners such as suppliers, customers, and competitors etc., but also to large extent involve a wide and deep political interactions with governments in the pre-1999 era. Peng (2003) argued that the institutional transition is comprised of two phases: "the relational contracting" (North, 1990:34) stage and the rule-based stage. As pre-1999 is characterized by various uncertainties in formal institutional constraints, entrepreneurs during that period were forced to rely heavily on informal, interpersonal relationship and had to rapidly build ties in professional networks with other entrepreneurs and managers as well as government officials. Political network in pre-1999 was very important because it is the basis of starting a new business in the environment of limited property rights protection and entrepreneurs' constrained access to bank loans (Bai, Lu, and Tao, 2006). In post-1999 period, with the development of China's intellectual property protection (especially after 2001 when China joined WTO) and China's high-level education, a technology-based entrepreneurial era based on a rule-based network is opened up.

Table 1 the evolution of entrepreneurship development in China

Phase	Time Period	Institutional Transition			Entrepreneurship		Economic Consequences
		Policy	Transition	Institutional Situation	Entrepreneurs	Remarks	
1	The end of 1970s - 1984	“Four Modernizations” ----Third Penum of the Chinese Communist Party’s 11 th Central Committee	Introducing market-oriented policy	Uncertainty like resource allocation disruption by no previous market information	Commune and Brigade entrepreneurs (CBEs)	- small scale business - self-employed - low-social status,	Mainly in Non-agriculture industries; Light industry was developing
2	1985- the end of 1980s	TVEs		A request in an equilibration of demand and supply manifested in adjustment of relative prices	Restructured CBEs and TVEs	low education - network-based business both with	20% of GDP in China in the late 1980s
3	3.1: the end of 1980s	- FDI policy; - Discriminating domestic private firms	- permit <i>individual business</i> less than 8 people entering into urban area	Indicated by macroeconomic stabilization (such as reduced inflation, resumption of economic growth, reduced extreme uncertainty and increased incentives for Schumpeterian entrepreneurs). This stage had been lasting a dozen of years till the end of 1990s, as price mechanism was founded to convey	<i>Getihu</i> , TVEs	business partners and with political governments	- The economic development was slowed down to 4.4 % and 3.9% of GDP growth rate in 1989 and 1990. - Credit was sharply cut to rural enterprises and total employment in TVEs fell by 3 million between 1988 and 1990
	3.2: 1988-1991	- Private sector was permitted at Tentative Stipulations on Private Enterprise (TSPE) in 1988	- Private enterprises were at the first time permitted to coexist and develop with state-owned enterprises within the limits prescribed by law;		<i>Si ying qiye</i> , TVEs	- high-educated entrepreneurs: engineers and SOE managers; -mainly in the sectors of restaurant, transportation, and manufacturing -More attention is	
	3.3: 1992-1996	- Deng’s South Touring Talk “Try to get rich quickly through entrepreneurship”	- Turning large state owned enterprises into more independently run companies;		<i>Si ying qiye</i> , TVEs	attributed to network with business partners in order to increase competitive	

		<ul style="list-style-type: none"> - Fourteenth Party Congress in September of 1992 “socialist market economy” 	<ul style="list-style-type: none"> - Selling off the smaller ones (zhua da fang xiao in Chinese); - Changing policy in foreign exchanges, taxes, the monetary system, the financial system; - Streamlining government bureaucracy 	market information on supply and demand		capability	end of 1996
3.4: 1997-2008	the Fifteenth Party Congress: the Second Plenary of the Ninth People’s Congress	<ul style="list-style-type: none"> - the private ownership was firstly stated as an important component; - the legal footing of private sector was approved; - the Innovation Fund for Technology Small and Medium Enterprises; - high-tech Zones, Science Parks and technology business incubators 	offer a better mechanism for resource co-ordination, information gathering and contract enforcement	Technology-oriented entrepreneurs	<ul style="list-style-type: none"> - high-educated entrepreneurs including foreign educated Chinese returning to China to start own business - IT sector - more attention is attributed to network with business partners in order to increase competitive capability 	private enterprises are given more direct support in the comparison to supporting through legitimization in the time period of pre-1999; By 2006, 6000 industrial parks and 58 national level science parks	

3. Theory and Hypothesis

As addressed in the second section, China is developing in the economic transition stage where entrepreneurial activities are highly encouraged. According to the argument of Peng (2003) that economic transition economies experience two transitional stages (relationship-based and rule-based) and the study of Acs (2006) that the type of entrepreneurship (necessity and opportunity) differs in different level of income countries, we firstly provide an primary quantitative overview of China's entrepreneurial activities associating with each stage of economic transition in China.

We collected data from the National Bureau of Statistic China in the time period from 1996 to 2008³ and calculated the ratio of the number private enterprises to the whole number of all various registration forms of enterprises (Table 2 and figure 1). This indicator is suitable to the social and economic background in the transition stage in China from the year of 1992⁴. The number of private enterprises that we collected includes both the individual-owned firms and the spin-offs from former state-owned firms and management employee buy-outs (MEBOs) because entrepreneurial activities in the transitional economic stage does not only include the establishment of a new enterprise, but also includes leaders who take over state-owned enterprises and employ new combinations of resources (Estrin et.al., 2006, p.697). Figure 1 shows that private enterprises in the proportion of the whole number of firms grow quite fast, from 1.5 percent in 1996 to over 57 percent in 2008. The rapid growth rate of private enterprises within one decade reflects China's successful economic transition and entrepreneurship policies.

Table 2. The number of private enterprises at national level

Year	Whole Number	The number of private enterprises	Percentage of private enterprises
1996	506445	7760	1.53224931
1997	468506	12522	2.67275126
1998	165080	10667	6.46171553
1999	162033	14601	9.01112736
2000	162885	22128	13.5850447
2001	171256	36218	21.1484561
2002	181557	49176	27.0857086
2003	196222	67607	34.4543425

³ The data being collected in the time range from 1996 to 2008 is based on two reasons: 1) China's economic transitional development was started from the early 1980s, however it was from the mid of 1990s that entrepreneurial activities were really respected to develop. Therefore, analysis from 1996 could echo two transitional stages. 2) the most completed database on China's economic activities is National Bureau of Statistics of China as well-acknowledged, however, from this database, the consistent data could only be tracked since 1996, therefore, collecting data since 1996, from statistical point of view, is rational.

⁴ This stage, initially proposed by Deng Xiaoping's South Tour Speech in January 1992 and remarked the start of the Chinese characteristic socialism-based market-oriented society, was actually the start point of second boom of entrepreneurship development.

2004	276474	119357	43.1711481
2005	271835	123820	45.5496901
2006	301961	149736	49.5878607
2007	336768	177080	52.5821931
2008	426113	245850	57.6959633

Source: National Bureau of Statistic China (1996-2008) and collected by author

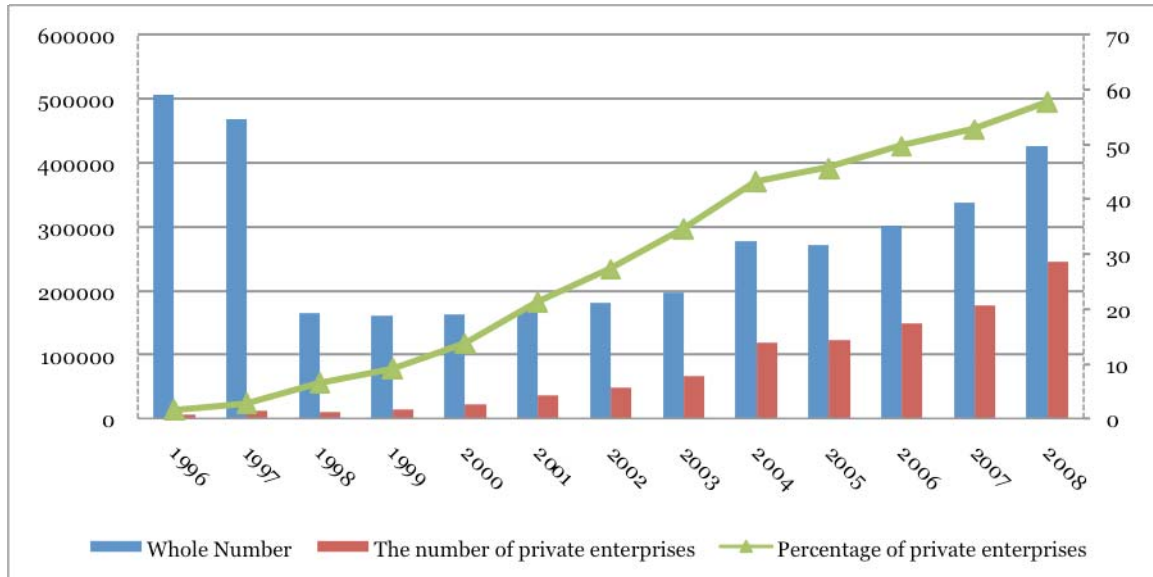


Figure 1 the trend of number of private enterprises development

In order to show the general association between entrepreneurial activities and economic development, we applied data of self-employed household registered in each year and GDP per capita (1996- 2008) in figure 2. The scatter graph shows a ν -shaped evolutionary path of their associations. *At the first stage* by 1999, entrepreneurial activities went through an up-slope path, which means that with the rapid economic development, the number of Chinese entrepreneurial activities was increasing. *The second stage* lasts 5 years from 2000 to 2004 and the rapid increased economic development is accompanied by decreased number of entrepreneurial activities. *In the third stage* from 2005 onwards, there is a positive relationship between economic growth and entrepreneurship activities.

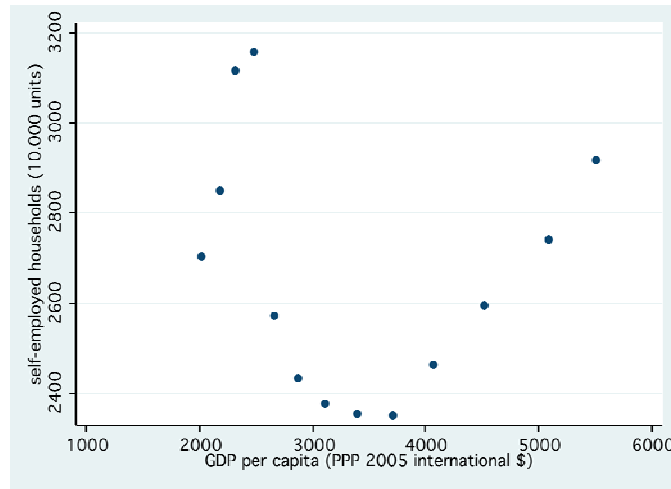


Figure 2. the relationship between Entrepreneurship activities (measured by self-employment) and Economic Development (1996-2008)

Source: National Bureau of Statistic China (1996-2008) and collected by author

These three associations shown in figure 2 are consistent with Acs et al.(1994)'s claim that entrepreneurship development is associated with the stage of economic development. According to Porter (1990) and Porter et al. (2002), economic development can be classified into several stages based on a country's competitiveness: the factor-driven stage; the efficiency-driven stage; the innovation-driven stage, and two transitions between these stages. In the factor-driven stage, competitiveness reflects low-cost efficiencies in the production of commodities or low value-added products. In the efficiency-driven stage, competitiveness requires increased productive practices on large markets that allow companies to exploit economies of scale and educate a workforce that is able to adapt in the subsequent technological development phase. In the innovation-driven stage, competitiveness requires an economy to be knowledge-based and reach the technological frontier and favors innovations.

According to the regulation of distinguishing three stages by GDP per capita (GEM Report, 2008), *China can be classified as a factor-driven economy by 1999 (GDP per capita less than 3000 US \$), as an efficiency-driven economy from 2000 till 2004, and specifically as a transitional economy from efficiency-driven to innovation-driven countries from 2004 onwards (GDP per capita larger than 4000 US \$).*

There are several reasons to explain the decreasing number of entrepreneurial activities in the efficiency-driven stage. The first explanation is found in capital-labor substitution. As an economy becomes wealthier and capital and labor are substitutes, the average size of firms is increasing and the capital stock return is larger from working than the return from managing. People

therefore decide to be wage-employed rather than to be self-employed. The alternative explanation can be the advantage of large firms over small firms in the improved infrastructure environment where large firms are able to operate cheaper by providing cheaper goods and better service than small firms that must shoulder higher cost due to limited economies of scale.

The transitional stage from efficiency-driven to innovation-driven is marked by a positive relationship between entrepreneurship and economic growth. It can be explained by the *dynamic industrialization structure* that China has. As more entrepreneurial opportunities are offered by the service sector than the manufacturing sector due to its smaller firm size and less investment cost, the average firm size may decline and the number of entrepreneurial activities may increase. Moreover, because of technological changes more entrepreneurial opportunities are perceived and grasped. As stated above the relationship between opportunity entrepreneurship and economic development is mostly negative in low-income countries, while mostly positive in high-income countries, Acs (2006) introduced an index opportunity-to-necessity entrepreneurship ratio⁵ (ONER) to compare cross-country entrepreneurship activities. According to the data recorded by the GEM APS Master dataset (2005), China's opportunity entrepreneurship over-weighted its necessity entrepreneurship by reaching the opportunity-to-necessity entrepreneurship ratio of 5, which has already caught up Italy (ratio at 4), Canada (ratio at 4), and Brazil (ratio at 4), Singapore (ratio at 3) and Thailand (Ratio at 3), Ireland (ratio at 2), United States (ratio at 1.5) and Russia (ratio at 1). By 2006, China has been recognized as an opportunity-oriented entrepreneurial country, with one opportunity-oriented TEA (prevalence rate of early-stage of entrepreneurship activity) index at 9.6, equal to 60.4% of respondents were doing opportunity-oriented entrepreneurial activities (necessity-oriented accounting 39.6%), ranking 10th as an opportunity-oriented economy in the world.

The GEM data shows that China has been an opportunity-oriented society with an increasing number of opportunity-oriented activities. However, in the transitional stage from 2005 to 2008, an increasing number shown in the third stage in the figure 2 include both necessity-oriented and opportunity-oriented entrepreneurial activities. Since China's GDP per capita has not reached the same level as that of those innovation-driven economies, we can boldly conjecture that even though the entrepreneurial activities are in the increasing trend, its increasing rate might not be as fast as the increasing rate of its precedent period because of the decreasing rate of necessity-oriented activities would be larger than the increasing rate of opportunity-oriented activities. Therefore, we hypothesize that

⁵ As ONER is a short hand to describe the importance of the opportunity entrepreneurship relative to the necessity-induced entrepreneurship, it has been argued to be a key indicator of economic development (Acs, 2006).

Hypothesis 1: Economic Growth has a curvilinearly reverted U-shaped relationship with entrepreneurial activities in the transitional stage from efficiency-driven economy to innovation-driven economy in China.

In the case of transitional economic development, opportunity-oriented entrepreneurial activities are much more associated with entrepreneurs' background and prior experiences. According to the study of Shane and Venkatarman (2000), the factors that impact the discovery of entrepreneurial opportunities are not only the possession of prior information but also associated with the cognitive property that entrepreneurs have already possessed to value existing opportunities. Chen, Greene, and Crick (1988) and McClelland (1961) argue that people who have more self-efficacy and more internal control as well as a high need for achievement have more willingness to exploit entrepreneurial opportunity. Kaish and Giland (1987) address that those who are better in identifying new opportunities are found to have complementary prior information to the new information embedded in the new opportunity. Those who are specialized in certain information can recognize opportunities better because specialized information is more useful than general information for most activities (Becker and Murphy, 1992). Since entrepreneurship is characterized by introducing and exploiting new innovations in the third stage of economic development (Porter, 1990), in which entrepreneurs tending to start high-potential ventures⁶ have relatively well education (Autio, E. 2003), we argue that people who have higher level of education in certain specialization have higher possibility to exploit entrepreneurial opportunities and thus a country's investment in education resource reflects possibilities that a country's potential to exploit entrepreneurial opportunities. Therefore we hypothesize that

Hypothesis 2: Education resource is positively related to entrepreneurship activities in China.

The relationship between entrepreneurship and unemployment in current China is another point in this study to investigate; however, as Thurik et al. (2008) claimed, this relationship has posed a complex puzzle to scholars. The reasons lie in two views that this relationship can be either positive or negative with the cause of either the *refugee effect* (also named as unemployment push that increasing unemployment leads to increasing start-up activity because the opportunity cost of starting a firm has decreased (Blau, 1987)) or *entrepreneurial effect* (unemployment pull that high unemployment rates implies lower levels of personal wealth which reduce the likelihood of becoming self-employed (Johansson, 2000)). The refugee effect indicating that high increased unemployment rates causes more people to become entrepreneurs has the same consequence as necessity-oriented entrepreneurial activities, while the entrepreneurial effect indicating

⁶ According to GEM's survey design (2002-2009), high-potential entrepreneurship is defined as a new or start-up company which was designed having growth intentions, innovativeness, international distinctiveness etc.

entrepreneurs' activities will reduce the subsequent unemployment rate at macro-economic level has the same consequence as opportunity-oriented entrepreneurial activities. Since GEM (2008) reports China has been as an opportunity-oriented society with high level of ONER index by 2006, we are here boldly hypothesizing that there is an entrepreneurial effect dominating the relationship between unemployment and entrepreneurship.

Hypothesis 3: Unemployment rate is negatively related to entrepreneurship activities in China.

Economic openness is overwhelmingly discussed in economic development field. Openness has been considered as one of most important determinants of economic growth for transitional countries. Many latecomer countries' successful catching up has proved that economic openness process can affect economy's output level and eventually the rate of economic growth. From an industrial organization approach, economic openness characterized by permitting multinational enterprises' entry into other countries has positive effect in the country where imperfectly competitive conditions prevail in goods and factor markets (Chudnovsky, D, 1993). The impact of multinational companies in host countries' companies performance are various including forcing domestic companies to update technologies, displacing host countries' companies that are not able to resist the competitive pressure of their foreign rivals, and increasing the number of business opportunities for domestic entrepreneurs through forward and backward linkages. With the same argument of national economic openness's impact on entrepreneurial activities we argue that the more open a region is, the more entrepreneurial activities can be triggered out over there

Hypothesis 4: Regional economic openness is positively related to entrepreneurship activities

China is a country advocating family-based entrepreneurship. The history of family-centered entrepreneurial activities can be traced back to the early 1900s when family-based entrepreneurship became the major contribution to economic growth. Over one hundred years, the main source of start-up capital is family saving and personal incomes (i.e. the survey made by Autio, 2003). As shown by Davis's work in 2000 and Pistrui et al. (2001), Chinese entrepreneurs were said to rely much on family resources and individual income instead of formal institutions such as banks and government assistant etc. One of interesting global observations derived from GEM 2002 indicates that individuals with higher household incomes are more likely to start high-potential ventures; and low-wealth potential entrepreneurs may be unable to start business (Evans and Jovanovic, 1989). Therefore, we hypothesize that

Hypothesis 5: Initial income per capita has positive effect on entrepreneurial activities in China.

In addition to the five main hypotheses we proposed above, our study also aims to figure out the interactive effects of education resource, unemployment, and regional economic openness respectively. This proposition is initiated based on the argument of economic development's function in providing more entrepreneurial opportunities and the argument that numerous entrepreneurial opportunities are requested to throw up from 'low-level' to 'high-level' in the economic transition from factor-driven to efficiency-driven and innovation-driven stage (e.g. Kirzner, 1983).

The development of education and enlargement of education resources could enable education institutes to train more specialized graduates and provide more excellent human capital to the economic development. More ideas can be therefore incubated by high-level education institutes and more entrepreneurial opportunities can be identified by trained specialists. Moreover, since economic development is argued having a positive impact on entrepreneurship development due to more opportunities it can offer, the increased unemployment that might indicate an economic recession or economic crisis would eliminate the positive relationship between economic growth and entrepreneurial activities. Finally, the positive interactive effect of regional economic openness can be proposed based on arguing that more international trade and inter-corporate collaborations would promote local economic development so as to provide local potential entrepreneurs who are about to start new business with more opportunities. As an example of foreign investment's effect, we can see that once foreign investors start business in China, the Chinese government aiming to use FDI to facilitate China's economic development will recommend foreign investors to procure needed materials or manufacturing parts in China. This does not only accord to foreign investors' intention to search for cheap supplies in China and look for manufacturing partners locally but also lead many potential entrepreneurs to discover entrepreneurial opportunities and thereafter execute exploitation actions. Therefore, we hypothesize that the more open a region economy is, the stronger a positive impact of the economic growth in this region will execute upon entrepreneurial activities.

Hypothesis 6a: Larger education resource strengthen the positive relationship between economic growth and entrepreneurial activities in China.

Hypothesis 6b: Higher unemployment eliminates the positive relationship between economic growth and entrepreneurial activities in China.

Hypothesis 6c: The more open a regional economy is, the stronger positive relationship between economic growth and entrepreneurial activities in China.

4. Data and Method

Sample

The data used in this study was taken from the National Bureau of Statistics China (NBSC) from 2006 till 2009. This database has been publicly announced on the web since 1996 and established to collect data in P.R. China related to public populations, economy, and society at national and regional level. It includes yearly data, quarterly data, and monthly data for 31 provinces in 23 categories (in national accounts, population, financial, industry, agriculture, trade, education, health and welfare etc.) and has been verified by a large number of studies both in China and outside.

Despite the NBSC data was ever criticized by many scholars due to its inconsistency (especially in the areas of productivity growth and industrialization) which needs lots of additional adjustment especially by 2002, the adjustment on data is not needed in this study because of the improvement of statistical database from 2002 onwards and the specific time range we chose. According to the recording regulation that annual data recorded in year t was actually the annual data in year $t-1$, the data recorded from 2006 to 2009 yearbooks is in fact reflecting the situation from 2005 to 2008. This period is the transition stage that we want to investigate from efficiency-driven to innovation-driven era in China.

Dependent Variable

Because we want to predict the effect of economic transition on entrepreneurship, the dependent variable should indicate entrepreneurial activity especially at the early stage. In previous studies, this type of activity was usually used in studying cross-country comparisons in the indicator of Total Entrepreneurial Activity (TEA) (the percentage of adult population (16-64) that is either actively involved in starting new venture or is the owner/manager of a business that is less than 42 months old (Reynolds et al., 2002)). As our study aims to find out the effect of economic growth on entrepreneurship by using panel data of 31 provinces in China within 4 years, a consistent and continuous database which can reflect Chinese regional information was certainly required. This is the main reason that the National Bureau of Statistics China is eventually the best choice for the data source. Working on this database, our first attempt to computerize the dependent variable was to calculate a term that can equal to TEA used by previous studies. However, due to data shortage of the registered new enterprises in different ownerships from 31 provinces, we transferred to the second attempt to apply the number of annual registered self-employment household. Application of this variable is reasonable due to an induced theoretical basis at the macro level that a larger presence of small firms contributes positively to economic performance and self employment rates represent a specific measure of the presence of small and very small firms in an economy (Thruik et al., 2008). In the regression test, the variable of self-employment was computerized in the form of logarithm.

Independent Variables

Economic transition is an open system including many factors to interact. In this study, we derived hypotheses to look at the effects of five factors: economic growth, education resource, unemployment, economic openness, and initial income.

Since *economic growth* is a term used to indicate the increase of per capita gross domestic product or other measure of aggregate income, in this study economic growth of each province in each year was measured by annual GRDP per capita at provincial level. Similar to dependent variable, economic growth and curvilinear economic growth were set in the form of logarithm.

In addition to economic growth, there are other factors affecting entrepreneurial activities. Following our hypotheses, the extent of a region's economic openness and a regional government's attitude on foreign investment could impact the trends of entrepreneurial activities. Therefore, we use a logarithm form of foreign investment inflow to reflect a region's economic openness; in the similar vein, the logarithm of the number of teachers at universities is used to echo the amount of education resource that a region embraced; and unemployment rate to reflect the job market of each province. In order to see whether initial income per capita has an effect on individual entrepreneurship, we set the annual income per capita in 2005 year as an initial level. This variable was also extracted in the form of logarithm.

Also, according to the hypothesis, the interactive effect of unemployment, the interactive effect of high level education, and the interactive effect of economic openness were set in the model in the form of (ln GRDP per capita x Unemployment Rate), (ln GRDP per capita x ln the number of teachers in Universities), and (ln GRDP per capita x ln FDI).

Method

Our dataset is composed of entity data from 31 provinces within four years (2005-2008), therefore panel estimation is favored. In panel data estimation model, the core difference between fixed and random effect models lies in the role of dummy variables where fixed effect model assumes omitted variables differ between cases but are consistent over time while random effect model assumes omitted variables are constant over time but vary between cases. In order to determine the choice between a random- and fixed-effects models, we chose Hausman specification test (1978). Except the baseline model (model 1), all the other models are suggested by Hausman specification test to use Random-Effect GLS Regression.

5. Results

Table 3 exhibits the descriptive statistics and correlation between independent variables. Table 4 presents the results of fixed effect and random effect GLS regression, by using logarithm of number of self-employment as dependent variable. Model 1 exhibits the baseline model, only

including variables *log(initial income per capita)*, *log (education resources)*, *log(FDI)*, and *unemployment rate*. Model 2 includes independent variables that present the effect of economic growth on entrepreneurship activities. Model 3, 4, 5 were regressed based on model 2 by respectively including interactive variable *log (GRDP per capita) x log (education resource)*, interactive variable *log (GRDP per capita) x log (FDI)*, and *log (GRDP per capita) x unemployment rate*.

Hypothesis 1 predicts regional economic growth has a reversed U-shaped relationship with entrepreneurship activities. Model 2, 3, 4, and 5 consistently exhibit that regional economic growth has a *significantly positive effect* on entrepreneurship activities, and with the increases of economic growth, the marginal effect on entrepreneurship is decreasing. Therefore, *hypothesis 1 is supported*.

Hypothesis 2 predicts education resource has a positive impact on entrepreneurship activities in China. By applying logarithm of the number of teachers and staff in universities into model, model 1, 2, 4, and 5 *support hypothesis 2* by showing that entrepreneurial activities are significantly impacted by the high-level of education resource. The results additionally indicate

Table 3. Descriptive Statistics and Correlation Matrix

Variable	Mean	S.D.	ln GRDP per capita	ln Initial Annual Income per capita	ln Education Resources	ln FDI	Unemployment Rate
ln GRDP per capita	9.785	0.55423	1				
ln Initial Annual Income per capita	8.796	0.27332	0.8513***	1			
ln Education Resources	10.83	0.79663	0.4131**	0.4201**	1		
ln FDI	5.536	1.41425	0.724***	0.7368***	0.7458***	1	
Unemployment Rate	3.808	0.59091	-0.4077***	-0.4601***	-0.2124*	-0.3029**	1
Notes:	***p<0.001	**p<0.01	*p<0.05	N=124			

Table 4. Results of Random-Effects GLS Panel Estimation

ln (self-employment)	(1)	(2)	(3)	(4)	(5)
	F-R	R-GLS	R-GLS	R-GLS	R-GLS
Constant	4.40 *	- 46.613****	-40.779*	-46.704***	-46.810***
	(2.470)	(12.275)	(12.048)	(12.039)	(12.214)
ln (Initial Annual Income per capita)	- 1.110 ***	0.985 ***	0.979***	0.953***	0.970***
	(0.27)	(0.338)	(0.332)	(0.338)	(0.338)
ln (Education Resource)	0.856***	0.830 ***		0.836***	0.828**
	(0.068)	(0.058)		(0.057)	(0.058)
ln (FDI)	0.127**	0.097 *	0.092*		0.099*
	(0.057)	(0.052)	(0.051)		(0.052)
Unemployment Rate	-0.14	-0.074	-0.055	-0.075	
	(0.078)	(0.065)	(0.064)	(0.065)	
ln (GRDP per capita)		7.643***	7.337***	7.779***	7.686***
		(2.155)	(2.120)	(2.108)	(2.150)
ln ^2 (GRDP per capita)		-0.436***	-0.468***	-0.446***	-0.437***
		(0.111)	(0.109)	(0.108)	(0.111)
ln (GRDP per capita) x ln (Education Resources)			0.087***		
			(0.006)		
ln (GRDP per capita)x ln (FDI)				0.011**	
				(0.005)	
ln (GRDP per capita) x Unemployment Rate					-0.008
					(0.06)
R-Square	0.7009	0.8071	0.8134	0.8082	0.8077
Wald Chi2	272.36***	472.82***	492.54***	476.18***	474.57***

a. F-R=Fixed-effect Regression R-GLS= Random-effect GLS Regression b. Significant level: *** p<0.01, ** p<0.05, *p<0.10

c. N=124 d. Year dummy was included but not shown in the table

that once education resources at universities are enlarged by 1 percent, the number of entrepreneurship activities could be afterwards increased by averagely 0.83 percent.

Hypothesis 3 predicts that unemployment in job market has a negative effect on entrepreneurial activities in China. The specific independent variable reflecting unemployment was unemployment rate. In spite that model 1, 2, 3, 4 show negative coefficients, these results are not significant. On the one hand, it means that *hypothesis 3 is not significantly supported*; on the other hand, these insignificant and small magnitude of negative coefficients imply that *China is now at a transitional stage which is more closer to innovation-driven polar*. This result is somehow (because the negative coefficient is not significant) consistent with the descriptive statistic result of GEM report in 2008 that China has been an opportunity-oriented economy, but due to the small magnitude of negative coefficients, it can be shown that China is now exactly transiting in the progress between efficiency-oriented to innovation-oriented economy but has not reached the innovation-oriented polar.

Hypothesis 4 predicts that regional economic openness is positively related to entrepreneurship in China. Economic openness generally considered as trade liberalization is not only processed by trade but also by FDI flows. Logarithm of FDI inflow into each region was used to echo the regional economic openness. Model 1, 2, 3, and 5 consistently prove that regional economic openness has a positive effect on entrepreneurship and this effect is significant. Therefore, *hypothesis 4 is completely supported*. However, from the results we can see that the magnitude of these positive coefficients is quite small, reflecting those entrepreneurial activities were not strongly affected by regional economic openness. This bias might be caused by certain major provinces such as Zhejiang that has large percentage of entrepreneurial activities but embraces a relatively low level of FDI inflow (the major FDI inflow went to its neighbor province Jiangsu which however has a smaller amount of family-based enterprises).

Hypothesis 5 predicts that high initial income per capita in China is associated with large number of entrepreneurial activities. We set income per capita in 2005 of each province as an initial level for respective province. Except the baseline model 1, *hypothesis 5 is supported* by the results. This supported hypothesis also indicates that Chinese entrepreneurship is more likely to be family-centered and the entrepreneurial funding is mainly from individual or family.

Hypothesis 6a, 6b, and 6c predicts an interactive effect of education resource, unemployment, and regional economic openness. Model 3 uses logarithm of GRDP per capita multiple with the logarithm of education resource as one of independent variables, showing that education resource has a significant positive effect on the impact of economic growth upon entrepreneurship activities, therefore *hypothesis 6a is strongly supported*. This result provides an insight that the larger the education resource a region possesses, the stronger positive impact that regional

economic growth in this region will execute on its entrepreneurial activities. The underscored argument can be in line with the theory of entrepreneurship education that specialization education within universities could offer potential entrepreneurs a necessary prior knowledge and information property for subsequent entrepreneurial opportunity discovery and opportunity exploitation.

Model 4, by using interactive variable of logarithm of GRDP per capita multiple with logarithm of FDI inflow, exhibits that there is a significant positive interactive effect coming from economic openness and executing on the impact of economic growth towards entrepreneurial activities, therefore, *hypothesis 6b is supported*. Even though this positive coefficient is very small (only 0.011), it gives the government political confidence that economic openness could promote the development of local enterprises.

Model 5 used interactive variable of logarithm of GRDP per capita multiple with unemployment rate. The result presents insignificant and weak negative interactive effect that unemployment executes. In spite that *hypothesis 6c is not significantly supported*. This result implies the fact that China is now on the path of economic transition where opportunity entrepreneurship and necessity entrepreneurship are coexisted.

Table 5 lists the conclusive results, pointing out the final estimation of each hypothesis.

Table 5 the conclusive results of hypothesis estimation

No.	Hypothesis Content	Estimation
1	<i>Economic Growth is curvilinearly (reverted U-shaped) related to entrepreneurship in China</i>	Significantly Support
2	<i>Education resource is positively related to entrepreneurship in China</i>	Significantly Support
3	<i>Unemployment is negatively related to entrepreneurship in China</i>	Insufficiently Support
4	<i>Regional economic openness is positively related to entrepreneurship in China</i>	Significantly Support
5	<i>Initial income per capita has positive effect on entrepreneurship in China</i>	Significantly Support
6a	<i>Education resource has positive interactive effect on the relationship between economic growth and entrepreneurship in China</i>	Significantly Support
6b	<i>Unemployment has negative interactive effect on the relationship economic growth and entrepreneurship in China</i>	Significantly Support
6c	<i>Regional openness has positive interactive effect on the relationship between economic growth and entrepreneurship in China</i>	Insufficiently Support

6. Discussion and Conclusion

This paper is designed to identify the role of economic transition on entrepreneurship development in China. In order to give an overview of China's economic transition and entrepreneurship development since the end of 1970s, we addressed the evolutionary path of economic transition with three generations of entrepreneurial activities in section 2. Over the whole study, we have mentioned three versions of development stages in transitional countries ((1) central planning to market oriented; (2) relationship-based to rule-based; (3) factor-driven to efficiency-driven to innovation-driven) and one version of entrepreneurship development (necessity-oriented to opportunity-oriented). We applied the Chinese case into each version by explaining the characteristic of China's entrepreneurship development in each transitional stage. In the empirical test, we thereafter focused on the transitional development stage from 2005 to 2008 to investigate the relationship between economic development and entrepreneurial activities.

In the empirical estimation part, five different panel models were successively regressed. The regression results show that China's recent economic development in the transitional stage (2005-2008) has a significant reversed U-shaped effect on the development of family-based entrepreneurial activities. Meanwhile, other factors in the transitional stage such as education resource, initial income per capita, and regional economic openness were also shown to have a significant positive effect. Unemployment rate has an *insignificant* negative effect based on an *unemployment pull effect* that is larger than the effect of unemployment push in this period, indicating that China's current development stage is approaching to the innovation-oriented polar. The results of positive effect of economic growth and negative effect of unemployment matter significantly because policy makers can be notified that China's entrepreneurship is now developing to opportunity-oriented polar, and therefore to promote entrepreneurial activities to reduce unemployment rate by enhancing economic growth.

The significant results of interactive effect from education resource and economic openness *once again* stress that China's entrepreneurship development is based on a *network system* where institutional factors such as high-level education as well as diffused effect of foreign direct investment are collaboratively executing effect on entrepreneurial activities. This so-called *Chinese Characteristic Networking Entrepreneurial System embedded by guanxi in education system and governments* in China's transition economic stage can be emphasized as a special capability of Chinese entrepreneurs to self-help in the case of China's market uncertainty and immature institutional environment. The most reputable networking platform in China is mostly incubated in the university-based education. MBA and EMBA (executive MBA) programs operated in every Chinese university are extremely welcomed by existing and potential entrepreneurs due to its effective function to establish personal business *guanxi* and network

either with business partners or with governmental officials. Entrepreneurs are trained at a high-level education not only for accumulating required knowledge in their field but more importantly for building up a system of entrepreneurs' social capital. This system has been strongly recognized to have an effect on enhancing future entrepreneurial performance for entrepreneurs. In addition to many other strategies that entrepreneurs in transitioned economies are using as a means of capital accumulation and hedging against risks such as engagement in trade and diversification of activities (Smallbone and Welter, 2001), networks in transition economies such as China (Peng and Heath, 1996; Batjargal and Liu, 2004) should be highly emphasized. The argument behind this consequence runs on the theory of transaction cost. Swaan (1997) addressed that it is underdeveloped formal institution economies that cause extensive market failures due to information asymmetries, lack of contract enforcement, high search and negotiation costs, and various other effects. Therefore, if and only if entrepreneurs build their own networks and relationships, long-term benefits from collaboration might outweigh all the other short-term cost and failures. This is consistent with the observation of McMillan and Woodruff (1999) in Vietnam that business network in transition economies is natured based on reputation and any behavior to cheat on reputation within a business network would ruin reputation which outweighs the short-term benefits of cheating. To summarize, reliance on informal network system in China is a consequence of not only the distinguished Chinese Collective Culture but also China's underdeveloped formal institutional framework. Developing with a formal institutional framework in transition economies, China's case has proved that informal network *guanxi* together with formal institutional framework, different from Russia that has a negative effect from network *blat* (Ledeneva, 1998; Johnson et al., 2000), has a higher positive effect in China (i.e. Peng, 2001; Batjargal and Liu, 2003).

Amongst the results, the interactive effect of education resource attracts our attention. This point initiates the interests in finding out its underwritten argument. If looking at the evolution of China's entrepreneurship development in recent thirty years, it can be seen that the time for the government to favor technology-based entrepreneurship is exactly the time that Chinese universities started to build technology-based incubators and university-based science parks. These linked actions are also associated with China's intellectual property reforms. In the late 1990s, in order to adapt to the updated intellectual property rights for joining the World Trade Organization (WTO), the Ministry of Education announced a Chinese version of the Bayh-Dole Act that allows universities to own patents of inventions supported by government funding (Ministry of Education, 1999). In an according way, the national innovation system was developed from a Soviet Union-formed PRI-centered System to a firm-centered system. Merging universities and expanding enrolment, privatization, decentralization, diversification, and attempting to establish world-class as well as international universities become the major objective for each university in China. These changes lead to a consequence that universities are

purposely operated to take responsibility on training more specialists and entrepreneurs by incubating more technology-based enterprises.

Departing from previous studies on entrepreneurship, this study contributed to the exploration of an inversed impact of economic development on entrepreneurship and helped to complete the virtuous development circle between entrepreneurship and economic growth. Even though all the related research in this area has confirmed entrepreneurship's indispensable role in economic development, the feedback role of economic growth in the development of entrepreneurship was under studied. With regard to economic transitional countries which are working on the way to catch up, this specific topic matters significantly since a sustainable development circle involving healthy entrepreneurship development and economic growth would offer policy makers a reliable theoretical basis to promote entrepreneurial activities and national competitiveness.

7. Limitations and future research

Limitation in this study relies on the restricted investigation period (2005-2008). Even though we have addressed the reasons for choosing this time period, longer time term, better since the end of 1970s, would be definitely better to give more credits for this study. Due to the questionable consistency of Chinese regional data before 2002, putting focus on one of the transitional stage from efficiency-oriented to innovation-oriented is reasonable. Future studies could be enlarged with the improvement of database in this area by choosing a number of regions which have a complete set of database to fulfill the relationship of economic transition and entrepreneurship development at different stages.

Also, factors embedded in economic transition and even the economic transition system could be expanded and completed in the future studies. Since our study aims to figure out the impact of certain aspects of economic transition on entrepreneurship development, emphasizing the whole economic transition system in one study with limited data is not possible. Future studies are suggested to investigate the effect of a completed set of economic transition system with three pillars in different institution transitional economies.

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