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Promoting Entrepreneurship and Innovation in China: Enhancing Research and Transforming University Curriculum

Abstract In the last three decades or so, China has managed to become the second largest economy in the world, especially after engaging in economic reforms since the late 1970s. Despite being a “world factory” and playing a very significant role in manufacturing products and exporting to different parts of the globe, the Chinese government has realized that depending upon this production mode cannot sustain the country’s long term economic growth and development. Hence, the Chinese government has tried to invest more in advancing technology, research and innovation, knowledge transfer, and promoting entrepreneurship education. This article sets out to critically examine the major strategies and policies that the Chinese government has adopted in promoting entrepreneurship and innovation against the wider policies outlined above, with a focused reflection given to the major challenges facing Chinese universities during the process of promoting entrepreneurship and innovation, and entrepreneurship education.

Keywords entrepreneurship education, promotion of innovation, higher education, China

Introduction

Even with the rise of optimism about Asia’s prospects, Asian countries are nonetheless latecomers in the innovation and research and development (R&D) endeavor compared to the developed economies of OECD countries. The fact is that many Asian economies were colonies of some kind during the twentieth

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century war periods and it was only after the Second World War or even in the late 1960s and early 1970s that many of them began to develop their economies in a relatively peaceful context. In the 1950s, Japan was still in the recovery process having been heavily defeated in the Second World War. Chinese Taiwan was in constant confrontation with the Chinese Mainland after the loss of the civil war between the Nationalist Party and the Communist Party. South Korea was fighting a civil war with communist North Korea. Singapore was seeking independence from Britain, and Hong Kong was a British colony where the living conditions of the public were in an unfortunate plight. But since the late 1960s and 1970s these Asian economies began to kick off industrialization that lifted their countries to a higher economic development level, creating the so-called East Asian Miracle.

Since the 1960s, vibrant economies in East Asia like Japan and the “four little dragons” have experienced significant economic growth. From 1960 to 1997, well before the Asian financial crisis, the dragons achieved annual GDP per capita growth rate of 6% or higher. The more economically developed Japan also had a GDP growth rate of 4.7%, which was among the top in Asia in that period. Underpinning the economic miracle was the successful execution of the export-led industrialization strategy under which Japan and the dragons performed well in manufacturing goods that were traded to more developed Western countries to earn export surpluses. Table 1 shows the average GDP per capita growth rate for selected economies in East Asia.

Table 1 Average GDP Per Capita Growth Rate for Selected Economies in East Asia

Economies	Period			
	1960–1973	1973–1985	1985–1997	1960–1997
Japan	8.5	2.7	2.6	4.7
Singapore	8.4	5.1	6.2	6.6
Hong Kong	7.5	5.2	5.3	6.0
Chinese Taiwan	6.7	5.4	6.6	6.2
South Korea	6.6	6.1	7.7	6.8
Indonesia	2.1	5.9	4.3	4.0
Malaysia	4.6	4.1	5.3	4.7
Thailand	4.4	3.4	6.1	4.6
Chinese Mainland	2.1	4.5	5.5	4.0
India	0.2	2.4	3.6	2.0
Sri Lanka	0.0	4.2	2.2	2.0

Source. G. C. Rodrigo. (2001). *Technology, Economic Growth and Crises in East Asia*. Northampton, MA: Edward Elgar, p. 5.

In face of significant economic growth in East Asia in the last few decades, the notion of the “East Asian Miracle” has gained more currency since the World Bank’s 1993 publication of its seminal report with this exact title. The research leading to the report was sponsored and heavily advocated by the Japanese government to showcase the success of its unique state-steered developmental path, as compared to the Washington consensus’s liberal free-market model spearheaded by the US. However, as East Asian economies began to slow since the 1990s, a number of researchers started to question the so-called Japanese-led East Asian developmental model that posited that its success in driving industrialization over the past few decades had relied largely upon an increase in capital investment, improved educational levels and more labor participation, rather than on the advance of technological developments, innovation and economic productivity (see for example, Baer, Miles, & Moran, 1999; Krugman, 1994; Stiglitz, 1996; Stiglitz & Yusuf, 2001; Vogel, 1991; Wade, 2004; Young, 1995).

However, realizing the fact that East Asia has not been adept at technological innovation does not suggest that the countries in the region did not attain any technological developments. Past research has indicated that in the process of industrialization, East Asian firms have mainly enhanced their entrepreneurial capabilities by absorbing knowledge and acquiring technologies from the more industrialized and developed economies (see for example Hobday, 1995a, 1995b; Kim & Nelson, 2000). For instance, in his 1990s study on how latecomer electronics firms in East Asia built up their technological capabilities, Michael Hobday (1995a, p. 1188) concluded that, “the competitive advantage of East Asia’s latecomers is low-cost, high-quality production engineering, rather than software or R&D.” He analyzed the fact that firms in East Asia, in the face of obstacles such as technologically weak universities and poorly equipped technical institutions, have overcome these barriers to acquire complex technologies and thus enter the market through several mechanisms, such as foreign direct investment, joint ventures, licensing, sub-contracting, informal means (overseas training, hiring, returnees), overseas acquisitions/equity investments, strategic partnerships for technology, etc. (p. 1177).

Therefore, for East Asian latecomer firms to upgrade themselves, Hobday emphasized the need of R&D: “Without stronger product innovation capabilities they will continue to rely on a mixture of catch-up, imitation-based growth and incremental innovation in electronics. Lacking R&D capabilities and a strong capital goods sector in electronics, the technological roots of the four dragons remain shallow” (1995a, p. 1189). In fact, for firms to succeed and to catch up with the market trend, they need to do more than technological learning and technology acquisition. Apart from developing hard infrastructure, the capabilities of harnessing and managing physical and human resources are also at

stake. According to the World Business Environment Survey conducted by the World Bank in 1999 and 2000, in which more than 10,000 firms in 80 countries were interviewed, firms in the three East Asian newly-industrialized countries (China, Singapore, and Malaysia) identified the biggest constraints facing them as being high cost labor, a lack of high quality skilled technicians, a lack of high quality production workers, followed by government regulations and taxes, and a lack of machinery (Batra & Stone, 2004, p. 11). The provision and successful implementation of managerial and business skills training, vocational and technical training and on-the-job training are not just important to firms' technological capability but also to national technological capabilities (Rodrigo, 2001, pp. 99–120). Recognizing its weaknesses in higher education and failure to nurture students and graduates with creativity and innovation, the Chinese government has adopted different strategies to promote entrepreneurship and innovation through the enhancement of research and development, while higher education institutions are increasingly putting entrepreneurship education in a more central role in their curricula in order to encourage students to be more innovative and creative.

Promotion of Entrepreneurship and Innovation in China

Consisting of 28 provinces, four municipalities and two special administrative regions that present considerable discrepancies in resource endowment as well as policy preferences, China can be seen as a large national innovation system (NIS) with an integration of numerous regional innovation systems (RISs). While NIS is important in the context of China's highly centralized authoritarian regime which sets the basic parameters and guidelines for regional diversification, it might be profitable to also take the RISs seriously, since they are comprised of distinguishable private and public actors in the market that interact to create local arrangements and promote indigenous innovations (Hu & Mathews, 2005).

Soon after the establishment of the People's Republic of China in 1949, the Chinese government adopted the Soviet Union's model of science and technology (S&T) development that aims to build a NIS composed of both comprehensive and specialized universities and a pervasive network of public research institutes under the governance of a central agency (1950s–1970s). According to this design, public research institutes were given the duty of scientific research, while universities were designated as responsible for the pedagogical function for S&T with limited involvement in R&D. One of the typical examples concerned is the Chinese Academy of Sciences (CAS). Founded in 1949 in Beijing, it has expanded steadily across the country through establishing directly-controlled institutes and supportive organizations, and has

become the nation's highest academic institution in the natural sciences and high technology.

Since the country's recovery from the Cultural Revolution (1966–1976) and the launch of economic reforms in the late 1970s, the Chinese NIS system has undergone dramatic reforms through a process of decentralization of the central government's power. In line with the orientation of building a strong internal market in the early stage of economic reforms, the government pressured foreign-invested enterprises to conduct technologically advanced research in China, while encouraging domestic enterprises to improve their research capacity through active absorption of the imported technology (Hu & Mathews, 2008). As a latecomer to the international S&T market, China has enjoyed the advantage of cheap costs through S&T imitations and quickly utilized them to boost economic growth. Yet in similarity with most East Asian Tiger economies—Taiwan, South Korea, Singapore, and Malaysia—which adopted the same approach earlier, diminishing benefits from S&T imitation eventually forced China to focus on self-innovation.

The central government thus began to encourage the establishment of horizontal, market-based ties between research institutes/universities and enterprises in various forms. Recognizing the sluggish circulation of innovation in the industrial sector due to a lack of in-house R&D capacity in most industrial enterprises, steps have been taken to strengthen entrepreneurship within the NIS. To begin with, malfunctioning public research institutes were eliminated through mergers with existing industrial or university-affiliated enterprises. Secondly, essential technological and infrastructural support was given to enable enterprises to gradually establish their own in-house R&D facilities. Strategies applied to industrial enterprises, particularly those after the National Technology and Innovation Conference in 1999, have boosted R&D performance and patent acquisition in the sector. The performance of industrial enterprises in national R&D has increased from less than 40% to over 65% in the ten years from the mid-1990s to the mid-2000s.

Moreover, through encouraging research institutes to engage in launching commercial spin-offs based on applicable research outputs, such enterprises have increased rapidly in number and now contribute considerably to the funding of research institutes. Meanwhile, in order to frame a nationally unified Intellectual Patent system, the Chinese Patent Office was set up in 1980, and patent and copyright laws were enacted in 1985 and 1990 respectively. In 1999, the State Council gave approval to the “Several Provisions on Promoting the Transformation of Scientific and Technological Achievements,” introducing a generous reward mechanism for commercially useful discoveries, and allowing research personnel to enjoy greater mobility between their research and industrial careers.

In parallel with its effort to catalyze collaboration between industries and universities/research institutes (URIs), the government collectively held a series of national-scale research programs at the beginning of the 1980s (MOST, 2009). The largest S&T program in China in the 20th century is the Key Technologies R&D Program launched in 1982. Given the orientation towards national economic reconstruction, the main purpose of this program is to solve key and comprehensive problems encountered during the Chinese social and economic reform era. Almost three decades after its launch, this program has covered a wide range of S&T fields, such as agriculture, electronic information, energy resources and transportation, and has attracted tens of thousands of personnel from over 1,000 research institutes nationwide. In March 1986, after reviewing a thorough study conducted by several hundreds of Chinese scientists from the S&T sector, Deng Xiaoping approved and initiated another program called the National Hi-tech R&D Program, or the 863 Program, for high-end technological exploration such as biotech, space flight, information, laser etc., a total of 20 themes. Unlike the Key Technologies R&D Program, state intervention in the operation of this program is considerably less, except for the sake of macro-management or the provision of necessary legal and administrative services.

Two years later, the Chinese Ministry of Science and Technology initiated a nationwide innovation program, the Torch Program, to further develop its high-tech capability in the fields of new material, biotechnology, electronic information, integrative mechanical-electrical technology, and advanced energy-saving technology. This program indeed plays a most important role in bringing into full play the potential and strengths of China's S&T capacity. It reduces the burden of excessive regulation on S&T development and provides physical support for infrastructure to attract foreign high-tech companies and private investors, as well as promoting commercialization, industrialization and internationalization of the national S&T market. By the end of 2008, 54 national S&T industrial parks have been built in close proximity to URIs. These zones have experienced rapid growth, but there are critics who state that much of this growth is in product assembly that does not meet the Western standard of high technology. Nevertheless, the balance of China's national import and export of high-tech products began to reverse in 2004 (see Fig. 1).

In 2006, the State Council promulgated *The National Medium and Long-Term Plan for Science and Technology Development (2006–2020)*. Among the strategies introduced are the promotion of S&T development in selected key fields and the enhancement of indigenous innovation capacity. Considering enterprises as the major players in technological innovation, fiscal and tax policies were put under review to create a favorable climate for entrepreneurial innovation. Moreover, integration among universities, research institutes and

enterprises was also encouraged. A total of 11 fields, 68 topics, 16 special programs, 27 frontier technologies, 18 basic science questions, and four research plans were identified, forming the country’s research priority for the next fifteen years (State Council of the People’s Republic of China, 2006).

Fig. 1 National Import & Export of High-Tech Products, China (1996–2010)
(unit: US\$ 100 million)

Note. Adapted from MOST, (2009) National High-Tech R&D Program (863 Program), Retrieved February 22, 2013, from <http://www.most.gov.cn/eng/programmnie1/index.htm>; National Bureau of Statistics of China (2007–2011), 中国统计年鉴 [China Statistical Yearbook (2007–2011)]. 北京, 中国: 中国统计出版社 [Beijing, China: China Statistics Press].

Finally, over the last decade, a steady growing trend in terms of both the gross expenditure on R&D (as a percentage of annual GDP, Fig. 2) and the patenting activities (Fig. 3) has emerged. Through doubling the percentage of R&D expenditure from 1.23% in 2004 to 2.5% in 2020 and increasing innovative patents for the next 15 years, the objective is to make China an “innovation-oriented country” by 2020 and a global leader in S&T by the mid-21st century.

Fig. 2 Gross R&D Expenditure as a Percentage of GDP, China (1997–2010)

Note. Adapted from MOST, (2009) National High-Tech R&D Program (863 Program), Retrieved February 22, 2013, from <http://www.most.gov.cn/eng/programmnie1/index.htm>; National Bureau of Statistics of China (2007–2011), 中国统计年鉴 [China Statistical Yearbook (2007–2011)]. 北京, 中国: 中国统计出版社 [Beijing, China: China Statistics Press].

Fig. 3 Patent Application and Patent Granted by State Intellectual Property Office of the People's Republic of China

Note. Adapted from National Bureau of Statistics of China. (2007–2011). 中国统计年鉴 [China Statistical Yearbook]. 北京, 中国: 中国统计出版社 [Beijing, China: China Statistics Press].

Reforming University Curriculum to Promote Entrepreneurship Education

Realizing the importance of enhancing university graduates' life competencies in meeting the changing labor market and global market needs, it appears that entrepreneurship education and training is the driving force behind the phenomenon of entrepreneurship and small business development in China and it generates the relevant entrepreneurial attitudes, competences and skills. Aspiring to transform an economy heavily reliant upon the manufacturing sector to become a knowledge-based and innovation-led sector, the Ministry of Education (MOE) has called for curriculum reform by introducing more management, business, and entrepreneurial elements, which are central to the notion of entrepreneurship education in the Chinese Mainland. Initially, entrepreneurship education derived its modest beginning from management education and selective MBA modules. More recently, the main entrepreneurship education activities have incorporated student business plan competitions and work-related internships and different forms of business activities to foster a culture of entrepreneurship among students. In addition to the reason briefly discussed above, there are other factors contributing to the drive of entrepreneurship education in China. One of the reasons is closely related to the rapid expansion of higher education in the last two decades, especially as China is now experiencing the massification of higher education.

Massification of Higher Education and Graduate Unemployment

Entrepreneurship education is increasingly in demand in China, especially when the country is becoming very keen to transform itself from a “economic superpower” to a “powerhouse of human capital.” Experiencing a great

expansion since 1998, the gross enrollment rate (GER) of higher education in China has rocketed from 9.8% to 26.5%, which has resulted in China becoming the largest higher education system in the world. Currently, Chinese higher education produces six million university graduates annually. This rapid expansion has produced unintended consequences. Among those, employment is a crucial one. According to official statistics, in recent years the initial employment rate for university graduates fluctuates between 70% and 75%, a trend confirmed in 2011 by Yin Weimin, Minister of Human Resources and Social Security (Yin, 2011). It is against this context that millions of university graduates cannot find jobs upon graduation each year (see Fig. 4).

Fig. 4 The Expansion of Higher Education and the Pressure of Graduates Employment in China (unit: 10 thousand)

Note. The data for adult higher educational institutions is not included in this figure. Adapted from MOE. (1998, 2001, 2004, 2007, 2010). Bulletin of Education Development Statistics. Retrieved June 12, 2012, from http://www.moe.gov.cn/publicfiles/business/htmlfiles/moe_335/index.html; MOE. (2002, 2005, 2008). China Education Yearbook. Retrieved June 12, 2012, from http://www.moe.gov.cn/publicfiles/business/htmlfiles/moe/moe_364/index.html

In order to enhance the employability of university graduates, the promotion of entrepreneurship education by international communities has indeed paved the way for the introduction and development of ideas and practices of entrepreneurship education in Chinese higher education as a solution to the challenges resulting from the massification of higher education. Given that massive graduate unemployment would cause social and political instability; entrepreneurship education has been identified as one of the top political agendas by the central government in devising public policies appropriate for addressing the complexity of the issues (Mok, Yu, & Ku, in press).

National Call for Soft and Culturally Strong Power

The second reason accounting for the rise of entrepreneurship education in China is the national call for enhancing soft power to make the country a culturally strong power at a global level. More specifically, the Chinese government has embarked on a process of advancing entrepreneurship education as one of the key drivers to achieve sustainable and inclusive social development through restructuring the economy to become more innovation-driven and knowledge-intensive and increasing the employability of university graduates in recent years. In the first policy document titled *Action Scheme for Invigorating Education towards the 21st Century* being released in 1999, the State Council of China stressed the strengthening of entrepreneurship education for teachers and undergraduates in universities and encouraged them to set-up hi-tech enterprises. In 2007, the Chinese government enacted the *Employment Promotion Law*, advocating the improvement of employability and entrepreneurial skills and encouraging graduates to start a self-employment career. In May 2010, the MOE issued the *Guidelines on the Promotion of Creative and Entrepreneurship Education in Higher Education Institutions (HEIs) and Self-employment Activities of University Graduates*. As the first and only specialized policy, this document provided a new impetus for the further development of entrepreneurship education in this country through highlighting its significance and putting forward integrated approaches and measures to implement entrepreneurship education in universities. In the same year, entrepreneurship education was written into *The National Medium and Long-Term Plan for Education Reform and Development (2010–2020)* formulated by the State Council of the People's Republic of China (2010), with the stipulation of promoting entrepreneurship education and employment services through the new mechanism of collaboration between HEIs, R&D institutions, industry and enterprises.

More recently, the Chinese government also openly calls for establishing the country as a power with a strong cultural capacity, making attempts to engage the Chinese population in enhancing creative industries and other innovation measures to diversify the Chinese economy. Knowing that simply relying on manufacturing would not sustain China's further economic growth, the government has begun to look for ways to diversify its economic pillars, putting particularly serious effort into internationalizing its industries and upgrading its service sectors. Openly realizing that China is now experiencing a major transition from an economy primarily relying upon the manufacturing sector to a more diversified economic mode which is closely related to the knowledge-based economy, the Chinese government has issued policies and adopted various measures to enhance its human capital. In recent years, the government has

launched different types of reform in promoting knowledge transfer by the incentivization of research and introduction of more entrepreneurial ideas/practices into the university curriculum (Ramesh, 2012). With these efforts, the Chinese government aspires to become a major soft power in the global context (Li, 2008). We have briefly outlined the policy context for the promotion of entrepreneurship education in the Chinese Mainland; the following part focuses on strategies that the Chinese government in particular and universities in general have adopted in promoting innovation and an entrepreneurial spirit.

Responding to International Calls for Promoting Entrepreneurship Education

Socioeconomic transformation needs a variety of personalities, imaginations, talents, and skills to deal with new challenges. Entrepreneurship is increasingly regarded as a key competence and an engine fuelling innovation, employment generation and economic growth. According to Matlay (2001), it is becoming fashionable to view entrepreneurship and entrepreneurship education as the panacea for stagnating economic activity in both developed and developing countries. Although the theory of entrepreneurship education was initiated by Myles Mace of Harvard Business School and David Birch of Massachusetts Institute of Technology (MIT) more than half century ago, as an international practice and trend, entrepreneurship education has mainly been promoted by important international organizations in recent years.

With a strong commitment to establishing a laboratory of ideas and being a catalyst for international cooperation, the United Nations Educational, Scientific and Cultural Organization (UNESCO) is a very active advocator of entrepreneurship education. In the *World Declaration on Higher Education for the Twenty-First Century: Vision and Action* adopted in World Conference on Higher Education (WCHE) 1998, UNESCO told its member states that “developing entrepreneurial skills and initiative should become major concerns of higher education, in order to facilitate employability of graduates who will increasingly be called upon to be not only job seekers but also and above all to become job creators” (UNESCO, 1998). Since then, UNESCO reiterated in the Communiqué of 2009 World Conference on Higher Education that, “the training offered by institutions of higher education should both respond to and anticipate societal needs. This includes promoting research for the development and use of new technologies and ensuring the provision of technical and vocational training, entrepreneurship education and programmes for lifelong learning” (UNESCO, 2009, p. 4). The International Labor Organization (ILO), another important international organization, also recommended that its members should look into

pursuing the development of entrepreneurial attitudes, through the system and programs of education, entrepreneurship and training linked to job needs and the attainment of economic growth and development (ILO, 1998). The World Economic Forum (WEF), an independent international organization committed to economic and industrial issues, has begun to consider entrepreneurship education as well. In a report titled on *Educating the Next Wave of Entrepreneurs*, WEF highlighted entrepreneurship and education as two such extraordinary opportunities that need to be leveraged and interconnected if we are to develop the human capital required for building the societies of the future (WEF, 2009).

In 2002, a pilot program on entrepreneurship education was launched in nine universities under the supervision of the MOE, which marked a new stage of development of entrepreneurship education in China. Since then, both governments and universities made consistent efforts to explore various strategies to benchmark their program with international practices and experiences.

Organizational Strategy

The organizational changes at governmental and university level are very remarkable when promoting entrepreneurship education in universities. In order to follow-up the national development strategy of “improving the capacity of independent innovation and constructing the innovation-oriented country” and “creating new businesses to stimulate employment,” the MOE established a Steering Committee on Entrepreneurship Education in Higher Education Institutions (MOE-SCEE) in 2010. The committee is composed of 41 members from universities and 14 invited members from related ministries, NGOs, and renowned enterprises with a mission to provide research, guidance, and consulting services in entrepreneurship education. In the past two years, the committee played a special role in promoting curriculum and instruction reforms, establishing the exchange platform, mobilizing various resources and conducting surveys of status in quo throughout the country.

In recent years, a number of schools/colleges of entrepreneurship education have emerged in Chinese universities. These institutions tend to provide different training programs ranging from specialized courses and professional practices to innovative activities, aiming to develop an entrepreneurial spirit, improve entrepreneurial skills and foster entrepreneurial talents. Several modes could be found for this institutional innovation. The first is the integration mode represented by Shanghai Jiao Tong University. The university provides both general programs for all students and special programs for students with strong entrepreneurial intentions through its new established School of Entrepreneurship and Innovation. The second mode is that some universities may promote their

entrepreneurship education by two different tracks. For example, in Zhejiang University, the general programs including business plan competitions, entrepreneurship salons and lectures are coordinated by the College of Dandelion Entrepreneurship jointly founded with Hangzhou Yuhang District Government. For its special program, it is offered by the Intensive Training Program of Innovation and Entrepreneurship in Chu Kochen Honors College. As for the third mode, such schools basically have the single function of cultivating talent specializing in entrepreneurship. The example is the Academy of Entrepreneurship established by the Business School of Sun Yat-sen University. Among these different modes, one common feature shared by almost all universities are special programs usually following an “elite” mode with a rather high threshold and a very small enrollment (normally from 30 to 60 students). And their teaching groups are also combined with professionals from universities, enterprises and well-known corporations. Table 2 below shows different modes of operation when universities have made attempts to promote entrepreneurship in the Chinese Mainland.

Table 2 The Modes of School/College of Entrepreneurship

	University	College/School	Types of Program	Activities/Courses
Model 1: Integration	Shanghai Jiao Tong University	School of Entrepreneurship & Innovation	General program	Forum of Entrepreneurship & Innovation, Entrepreneurship Salon, Elevator Pitch, Business Plan Competition
			Special program	5 Modules: Core Curriculum, Featured Course, Seminar, Practice, Setting-up a Firm
Model 2: Separated Tracks	Zhejiang University	College of Dandelion Entrepreneurship	General program	Business Plan Competition, Entrepreneurship Salon, Entrepreneurship Lecture, Entrepreneurship Training
		Chu Kochen Honors College	Intensive program	Modules
Model 3: Specialization	Sun Yat-sen University	Academy of Entrepreneurship		6 Modules: Environment, Operation, Finance, Leadership, Practice, Internship

In addition, the student services center is another strategy to achieve organizational change. For instance, Beijing Institute of Technology (BIT) in

collaboration with the China Talent Group (CTG) jointly established the BIT-CTG Entrepreneurship Center. According to its four functions of training, counseling, research and exchange, the center played its role in disseminating knowledge, improving capacity and strengthening guidance in entrepreneurship, especially in providing various student services in entrepreneurship training, career planning, and employment guidance.

The third organizational strategy is to create an open research platform. In this regard, the successful case is the joint laboratory established by Tencent, the largest internet service provider in China, and CAS, Tsinghua University, Harbin Institute of Technology (HIT) and Huazhong University of Science and Technology (HUST) since 2008. As a follow-up, Tencent and six top universities launched a new University-Enterprise Cooperation Open Platform in 2011. Tencent planned to invest 300 million yuan in the early stage construction (Tencent, 2011). Both the joint laboratory and the new open platform serve as channels to close the links between university and industry to develop students' capacity of innovation and entrepreneurial skill through conducting creative frontier research and development.

University-Industry Partnership Strategy

In order to foster a conducive environment for university and industry or enterprise cooperation, the Chinese government has offered multi-dimensional supports in funds, sites, experiences, and practices to college students who have the willingness to set up their own businesses.

Considering work experience as an important component and a facilitating factor to build entrepreneurial capacities, The China-UK Graduate Work Experience Program, a joint initiative launched by MOE, China, and Department of Education and Skills (DfES), UK in 2006, aimed at strengthening university and business links between the two countries. According to the agreement, the program provides 12 to 50 weeks' work experience with UK employers for up to 200 of the most promising final-year and postgraduate students in China. From 2006 to 2010, seven intakes over 1,000 Chinese students have been placed with employers in UK including Accenture, Standard Chartered Bank, EC Harris, JP Morgan, Tesco and Somerset County Council.

The financial support is indispensable for the new startups to get their ideas off the ground. Therefore, in view of this, more and more local governments began to set up entrepreneurship foundation called Angel Foundations for college graduates. Shanghai Technology Entrepreneurship Foundation for Graduates (STEF) was the first non-profit public fund for entrepreneurial activities for graduates in China, which was initiated by Shanghai Municipal Education Commission (SMEC) and the Science and Technology Commission of Shanghai

Municipality (STCSM) and funded by Shanghai Municipal Government in 2006 (STCSM, 2005). From 2006 to 2010, the Shanghai Government has invested the total amount of 500 million yuan in this foundation. STEFG works mainly through the two sub-schemes. One is the Eyas Scheme to provide seed funds of no more than 100,000 yuan to projects that could achieve a balance of profit and loss with low investment. The other is the Eagle Scheme to provide venture capital of no more than 300,000 yuan to projects with hi-tech quality or market prospects. By the end of 2012, STEFG had received 2,550 applications and funded 589 projects (STEFG, 2012a). Statistics show that the survival rates for funded enterprises within three years reached 30% and the revenue of 10% of the funded enterprises exceeded ten million yuan (Zhang, 2011, August 27). Similar cases are the Zhejiang Foundation for Youth Entrepreneurship and Employment (ZFYEE) founded by the Zhejiang Provincial Government together with 11 private enterprises in 2007 with a total amount of 110 million yuan and the Shandong Entrepreneurship Foundation for Graduates (SEFG) founded by Shandong Provincial Government and China Unicom Shandong in 2009 with an amount of 35 million yuan. Table 3 outlines two different schemes which are aimed at promoting entrepreneurship among university students.

Table 3 The Operation of STEGF

	Eyas Scheme	Eagle Scheme
Type	The project could achieve balance of profit and loss with small investment	The project with hi-tech quality or good market prospects
Amount	No more than 100,000 yuan	No more than 300, 000 yuan
Target Group	Within two years of graduation	Within five years of graduation
Duration	Two years	Three years
Form	Interest free non-mortgage loan	Corporation share transfer
Withdraw	Half loan is matching the monthly repayment of principal and the other will be repaid as the expiration	Within the duration, the share of fund in the corporation will not receive bonus; enterprisers can repurchase most of share as the previous price after the expiration

Note. Adapted from STEFG (2012b). 天使基金介绍 [The introduction of Angel Fund]. Retrieved June 12, 2012, from <http://fund.stefg.org/about.html>

In China, against the background of innovation and entrepreneurship, University Science Parks have been given a new mission, that is, to promote the development of entrepreneurship education in HEIs and foster high-level innovative and entrepreneurial talents. Since 15 pilot University National Science Parks (UNSP) were approved by MOE and Ministry of Science and Technology (MOST) in December of 1999, 86 UNSPs have been established in 24 provinces

and 134 HEIs (MOST & MOE, 2011). The UNSP created a unique mode of cultivating entrepreneurial talent through its strong atmosphere of entrepreneurship, the close interaction between university and enterprises, and plentiful opportunities for practice and internships for the students. Taking Zhejiang University National Science Park (ZUNSP) as example, student entrepreneurs not only can be supported by rent subsidy for 50 m² office for two years and a 20,000 to 200,000 yuan Entrepreneurship Fund, but also can be provided various services including weekly Entrepreneurship Salons and entrepreneurial training and instruction (ZUNSP, 2012). So far, 41 UNSPs have been identified as Practice Bases of Technology Entrepreneurship for College Students. It can be expected that the total number of UNSPs will reach 100 by 2015. Based on these UNSPs, the Chinese government plans to develop 3000 hi-tech enterprises set up by university students, transfer 10,000 scientific and technological achievements, and cultivate 100,000 innovative and entrepreneurial talents in the coming five years (MOST & MOE, 2011).

Enhancing Student Learning Strategy

Another approach to enhancing entrepreneurship among university students is to engage them in extracurricular or co-curricula activities ranging from training programs, business plan competitions to entrepreneurship clubs that play an indispensable role in fostering a campus culture of entrepreneurship and expanding students' involvement. As for training programs, Know About Business (KAB), Generate Your Business (GYB), Start and Improve Your Business (SIYB) and Expand Your Business (EYB) developed by ILO constitute a well-integrated training system in entrepreneurship. Among them, KAB is a more popular training program to promote youth's entrepreneurial consciousness and capacities carried out widely in over 30 countries in the world. In order to learn from this successful international experience and explore a path fit for China's practice, the All China Youth Federation (ACYF) and The Central Committee of the Communist Young League (CCYL) in collaboration with the ILO introduced the KAB Program in universities in 2005. Since then, the four systems of the KAB Program including curriculum construction, teacher training, quality control, and exchange and promotion have been increasingly developed. KAB courses are provided as public optional courses in Chinese universities. Students can get academic credits by choosing and completing the program. As a supplement, students can also attend some extracurricular activities such as KAB Clubs, Summer Camps and Classrooms. The KAB Program obtained a very rapid development in China. Up to February 2011, the training course in KAB Entrepreneurship Education was provided in 600 universities, KAB Clubs were established in 100 universities, and 2,931 teachers and 200,000 students in 850

universities have been involved in the related KAB activities (KAB (China) Promotion Office, 2012).

Since being initiated by American universities in 1980s, the Business Plan Competition (BPC) has been applicable all over the world. It gained increasing attention and was brought into China as well. In 1998, the first pilot BPC in China was organized by Tsinghua University. Then it spread rapidly into a national event held every two years and supported by the MOE, the China Association of Science and Technology (CAST) and the ACYF. Since 1999, seven “Challenge Cup” National BPCs have been hosted in different universities. At present, the competition systems of three-level (institutional, provincial and national competition) and three-round (preliminary, semi-final and final competition) have also been well established and developed. This event has aroused college students’ great enthusiasm for innovation and entrepreneurship. With the support of government and enterprises, many business plans were adopted and applied in practical operations, which promoted the further combination of technology, capital and market. Practice has demonstrates that the BPC is an effective approach to improving entrepreneurial consciousness and competence for college students. Table 4 below shows the development of the “Challenge Cup,” a way to promote competition among university students striving for entrepreneurship.

Table 4 The Development of “Challenge Cup” National Business Plan Competition

No.	Year	Hosted by	Universities Involved	Projects Submitted	Sponsored by
1	1999	Tsinghua University	120	400	hexun.com
2	2000	Shanghai Jiao Tong University	137	455	Wanwei Investment
3	2002	Zhejiang University	244	542	TTGG Investment
4	2004	Xiamen University	276	603	Bank of China
5	2006	Shandong University	300	605	Philips
6	2008	Sichuan University	356	600	Wengfu Group
7	2010	Jilin University	374	640	First Automobile Works (FAW)

Note. Adapted from Organizing Committee of National “Challenge Cup” Business Plan Competition. (2012). “挑战杯” 中国大学生创业计划竞赛历届回顾 [An overview of successive National “Challenge Cup” Business Plan competitions.” Retrieved June 12, 2012, from <http://www.tiaozhanbei.net/review2>

Promotion of Entrepreneurialism in China: Challenges and Issues

In Asia, countries with higher degrees of market openness (marked by exports and foreign direct investment) and technological innovation have a greater

demand for skilled labor. While low-income economies and low technology clusters (such as Vietnam, Cambodia, and Lao PDR) are still specialized in producing low-skill intensive goods, firms in middle-income countries have already become more skills-biased, not to mention those in high-income countries such as Japan and the Four Little Dragons (Almeida, 2010; World Bank, 2012a; see Fig. 5). Therefore, education, especially higher education, has never been more crucial. The present article sets out in the wider socioeconomic context discussed above to examine how China has engaged in transforming the country by promoting entrepreneurship and innovation in higher education in order to strengthen its national competitiveness in a competitive global environment.

Fig. 5 Typology of East Asian Economies and their Technological Development Levels
Source. World Bank. (2012). *Putting higher education to work: Skills and research for growth in East Asia*. Washington, D.C.: World Bank. p. 8.

It is against the wider policy context that even in face of budget crises, there has been a stronger calling for an increased governmental role in OECD countries in promoting R&D, especially in advancing the demand-side factors “such as smart regulations, standards, pricing, consumer education, taxation and public procurement that can affect innovation” (OECD, 2010, p. 2). Apart from OECD, the World Bank, which is more concerned about developing countries than the OECD, also had a number of publications about the relationships between higher education, innovation and economic growth in the past decade, such as *Constructing Knowledge Economies: New Challenges for Tertiary Education* (World Bank, 2002b), *Building Knowledge Societies: Opportunities and Challenges for EU Accession Countries* (World Bank, 2002a), *How Universities Promote Economic Growth* (Yusuf & Nabeshima, 2007),

Accelerating Catch-Up: Tertiary Education for Growth in Sub-saharan Africa (World Bank, 2009), and *Putting Higher Education to Work: Skills and Research for Growth in East Asia* (World Bank, 2012). Besides, the Asian Development Bank also highlighted in its 2008 report entitled *Education and Skills: Strategies for Accelerated Development in Asia and the Pacific* the argument that the advancement of working skills of the populace has become an imperative for developing Asian countries to achieve economic growth (Asian Development Bank, 2008).

Analyzing the recent initiatives employed by China in promoting an entrepreneurial spirit and entrepreneurial practice in higher education, the authors have noted that the increasing interconnections between the global economy and societies pose common problems for higher educational systems around the world. Among those, how to increase the creativity and employability of graduates and the social relevance of higher education in an era of massification of higher education are undoubtedly the crucial ones. This is the reason why entrepreneurship has become synonymous with and a catchword for students, HEIs and even for national success (OECD, 1998). And in an increasingly globalizing setting, the intensification of worldwide social relations links distant localities in such a way that local happenings are shaped by events occurring many miles away (Held, 1991, p. 9). Not surprisingly, the realistic challenge along with the existing international ideas and experiences facilitates entrepreneurship education being “borrowed” and introduced into Chinese higher education. Our present case studies have vividly reflected what was noted by Mok and Lee (2003, p. 15) that governments around the globe, particularly in East Asia, have tried to make use of the globalization discourse to address and justify local policy or political agendas. However, instead of simply a process of globalization, the formulation of national policies is the result of the complicated and dynamic processes of “glocalization” (Mok, 2003, p. 126). The above discussions have clearly suggested that the Chinese government could creatively adopt different strategies and measures when making responses appropriate to the challenges and pressures for a globalizing trend of entrepreneurship in higher education.

However, a close scrutiny of what has been introduced to Chinese higher education in terms of entrepreneurship education has not touched upon the core academic structure, which is the most essential part when promoting creativity and innovation in learning. As Mok and Chan argued elsewhere (2012), the Chinese government is at a crossroads in its further development of higher education. On the one hand, the growing prominence of transnational higher education has posed potential problems related to quality assurance and management of the increase in number of these programs. On the other hand, an international review of higher education governance conducted by the OECD has

suggested that the Chinese higher education system is over-regulated and centralized, but not well planned. According to the OECD review, there is a growing role for the non-public sector, including the private (*minban*) higher education institutions. But the review recommends “inculcating civilising values among students, ones which emphasize rational inquiry, tolerance and respect, the pursuit of truth and respect for human rights within a sense of global citizenship” (Gallagher et al., 2009, p. 50). In short, the OECD review identifies one major weakness of the Chinese higher education system, which is the lack of “critical democratic thinking.”

In view of the national strategy to transform the country from a strong economic power, relying heavily on manufacturing, to a world force with strong brain power, the Chinese government has no choice but to review the conventional higher education governance system, which has been characterized by the “University President’s leadership under the guidance of the CCP.” Nonetheless, without a fundamental change in the relationship between the party and academic administration, academics in the Chinese Mainland have found it problematic to push further reforms, since academic decisions have long suffered from “interference” by administrative and political leaders under the unique co-leadership of universities by the Party and academic community (Mok, 2009). In order to emancipate human minds and inculcate a spirit of innovation and creativity among university academics and students, the Chinese government has to rethink how the higher education system is to be governed, by exploring the possibility of a structural reform which will not only touch upon the administrative structure, but will also touch upon the Party’s role in steering academic development. In 2010, the then President Hu Jintao and Premier Wen Jiabao openly declared the importance of deepening political reforms in order to drive the Chinese economic development to a new level, during the celebration of the 30th Anniversary of the Shenzhen Economic Zone, one of the zones for testing new ideas of reforms in the Mainland (Mingpao, 2010, September 7). Central to their messages is the need to create a proper platform to nurture future generations with creative minds and innovative skills. Without structural reforms in the higher education systems it would be difficult to achieve the goals of enabling the country to scale new heights as a world power with a great civilization, strong human capital and considerable soft power.

Conclusion

This article has made an attempt to review major policies and measures adopted by the Chinese government in general and universities in particular in the promotion of entrepreneurship and innovation. Recognizing the country has

confronted significant challenges during the transition from a manufacturing-based economy to a knowledge-based economy, the Chinese government has made serious efforts to promote innovation and entrepreneurialism in higher education through the engagement of faculty members and students to work closely between the university sector and industries/enterprises. The success in promoting innovation and entrepreneurship in higher education is not only related to how the curriculum is designed but also has to do with the academic structure and university management. Without serious review and critical reflection upon the current university governance structure with strong political influences from the party in university governance, it would be difficult to see significant changes being introduced to Chinese higher education.

Although China has succeeded in achieving a global outlook adapted to local conditions, the further development of entrepreneurship education in higher education is still restricted by some problems. For instance, the government dominates and actively promotes entrepreneurship education with the clear intention of employment generation, but enterprises lack dynamics with limited interest in offering support, and most universities are isolated from the business world and passively carry out such cooperation. As the way forward in the future, China could follow the action recommended by WEF (2009) to build an entrepreneurial ecosystem in which multiple stakeholders including government, universities and enterprises could interact with each other and work together.

As for the government, legislation should be adopted and funding mechanisms should be created to support relations between private enterprises and universities in developing action learning programs, leading to new entrepreneurial skills. In the meantime, networks and programs should be developed to bring together different universities and the enterprises in a common strategy, sharing information, good practices and experiences. Different departments of the government could set up a coordinated program to underpin the above legislation and add a financial budget to it. With long sight, enterprises should actively get involved in activities related to entrepreneurship within universities, in providing back-up infrastructure (venture capital, incubators and support units) that can improve entrepreneurial skill, as well as to take an active role in organizing business plan competitions and in providing support for getting winning ideas off the ground. They should also facilitate successful entrepreneurs and business practitioners who are willing to dedicate time and effort to teaching out of a sense of contribution to society, and as part of their social responsibility.

Universities have a critical role as intellectual hubs in the entrepreneurial ecosystem. Universities should establish a framework to support and help their academic entities to develop and expand their entrepreneurship mission and activities, with a vision beyond utilitarianism to focus more on student personal

development for lifelong learning. It is better for universities to identify the key skills and integrate entrepreneurship across different subjects and courses, notably within scientific and technical studies, and they should encourage teaching staff mobility between universities and the business world. At the same time, a background in academia and recent experience in business, such as in consulting for, or initiating, entrepreneurial initiatives will be very helpful for teaching staff.

In conclusion, the present article has shown how the Chinese government has made attempts to identify “good or best practices” overseas to reform its higher education delivery. However, the promotion of innovation and entrepreneurialism in higher education will be doomed to failure without a careful contextualization of best practices adopted elsewhere before they are introduced to the Chinese Mainland. It is against this particular context that we must be critical about policy learning and policy transfer. Without contextualizing good practices to solve local problems, there is bound to be a kind of policy copying instead of effective policy learning. Our current article has clearly demonstrated the importance of sensitization to the policy context when new and excellent practices are introduced to Chinese universities. Perhaps, the Chinese government really needs to consider structural reforms to its higher education sector in order to unleash the energy and dynamism for embracing the change being called for to enhance innovation and entrepreneurship in China.

Acknowledgements The authors want to thank the Research Grant Committee of the HKSAR Government for offering research grant support to the project entitled “Fostering Entrepreneurship and Innovation: A Comparative Study of Changing Roles of Universities in East Asia,” GRF grant funded by RGC [GRF Project HKIEd 750210].

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