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Fostering entrepreneurship: Changing role of government and higher education governance in Hong Kong

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Abstract

The rise of the knowledge economy has generated new global infrastructures with information technology playing an increasingly important role in the global economy. The popularity and prominence of information technology not only changes the nature of knowledge but also restructures higher education, research and learning. It is in such a wider policy context that an increasing number of institutions of higher learning are being established with new missions and innovative configurations of training, serving populations that previously had little access to higher education. Apart from accommodating a larger number of students, higher education institutions are required to improve their administrative efficiency and accountability in response to the demands of different stakeholders like government, business, industry, and labour organizations, as well as students and parents. The present article sets out in this wider context to examine how and what strategies universities in Hong Kong have adopted to promote entrepreneurial spirit and practices by encouraging academic staff to venture in industrial, business and commercial fields. In addition, this article examines how universities in Hong Kong reform their curricula to make students more creative, innovative and international. More specifically, this article reflects upon the role of the Government of the Hong Kong Special Administrative Region (HKSAR, hereafter) in promoting entrepreneurship, with particular reference to the interactions between the government, the private sector and the tertiary education sector in promoting a vibrant and dynamic economy.

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Keywords: Changing state-education-industry relations; State role in research policy; Changing governance in education; Entrepreneurship

1. Introduction

The major objective of this article is to examine the changing relationships between the HKSAR and the business, industrial and the university sectors, especially discussing the role of the HKSAR in promoting

research and development (R&D) and entrepreneurial activities in the city-state. Particular attention will be given to how universities in Hong Kong have expanded the university mission from teaching and research to entrepreneurial activities. The emergence of the entrepreneurial academic model should not be simply understood as a pure higher education reform but rather a fundamental change in the relationships between the state, the university sector and the industrial and busi-

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ness fields. The first part of the article focuses on how universities in Hong Kong have begun to shift their missions and paradigms towards academic entrepreneurship and entrepreneurial university by strengthening their relationships with industrial, business and commercial sectors. The second section compares and discusses the changing roles of the HKSAR with the governments in Taiwan and Singapore, especially discussing whether and how these Asian governments have changed their strategies in promoting R&D and other entrepreneurial activities. The final part will reflect upon how these Asian governments have changed their governance strategies in coping with the growing impacts of globalization.

2. Globalization challenges, new governance and education restructuring

2.1. Globalization and searching for new governance

In the 1990s, globalization has become the leading social science mantra and is adopted to conceptualize and account for changes in the economy, developments in technology, culture and value, politics and governance, and political unification of the world (Giddens, 1999; Pierre and Peters, 2000; Sklair, 1999; Waters, 2001). Interpretations of globalization impacts on contemporary societies are diverse, strong globalists put forth the convergence thesis, painting a bleak and depressing picture of the future of the nation state and the options for autonomous domestic policy choice (Boyer and Drache, 1996; Fukuyama, 1992; Mosses, 1994); while sceptics and transformationists have questioned the actual extent of globalization and actual changes caused by globalization processes (Held et al., 1999; Hirst and Thompson, 1999).

When examining the capacity of modern states in the context of globalization, different scholars may have diverse interpretations (Hirst and Thompson, 1999). Some scholars argue that the state is being killed off during the globalization processes. Considering social, economic and political issues are becoming far more complicated that modern states may not have the capacity to tackle, there has been a phenomenon of state denial and modern states are seen to be declining. State denial theses range from the “collapse of the welfare

state”, the “death of industrial policy” to the “end of national diversity” and the “demise of the nation-state” (Weiss, 1998, p. 3). Opposing to the view that modern states are weakened in the context of globalization, others argue quite contrarily that modern states may become more proactive and activist states by adopting adjustment strategies and changing governance modes in response to the changing socio-economic and socio-political environments (Weiss, 1998; Held, 2000; Hinnfors and Pierre, 1998; Rodrik, 1997; Dale and Robertson, 2002; Mok, 2003).

To cope with intensified globalization pressures, it is even argued that modern states have changed their governance strategies from “positive coordination” to “negative coordination”, thereby the architecture of modern states has transformed. For “positive coordination”, it refers to an “attempt to maximize the overall effectiveness and efficiency of government policy by exploring and utilizing joint strategy of options of several ministerial portfolios”; while for “negative coordination” is designed to “ensure that any new policy initiative designed by a specialized sub-unit within the ministerial organization will not interfere with the established policies and interests of other ministerial units” (Scharpf, 1994, pp. 38–39). The change in the coordination mode has prevented modern states from being over-burdened by welfare and social/public policy commitments (Jayasuriya, 2001; Scharpf, 1994). Likewise, the institutionalized state–society linkages (i.e. the mobilization of non-state sources and actors to engage in social/public policy provision and financing) may generate additional resources for the state to finance and provide social services and public policies. In this regard, globalization could be conducive to reconfiguring modern states, driving modern states to restructure their governance models and reform the ways that the public sector is managed (Pierre, 2000; Pierre and Peters, 2000). These changes could also be seen as productive forces for modern states to change their roles and reform their institutions in order to accommodate to, and not just adapt to, the demands and pressures generated from the external environments.

Theories of “new governance” propose that modern governments are adapting to radical changes in their environments by turning to new forms of governance which are “more society-centred” and focus on “co-ordination and self-governance” (Pierre, 2000, pp. 2–6). Peters (1995) highlights four governance mod-

els as alternatives to the traditional system, namely, the market model, the participatory state model, the flexible government model and deregulated government model. Central to these governance models is to involve sectors other than the state like the market, the society and other non-state sectors in governing the public domain. Networks and partnerships supplant hierarchical command and control (Rhodes, 1997, 2002); in the delivery of services, public authority is shared between governments and with non-government actors—what (Solomon, 2002, p. 2) calls “third party government”; services are decentralized and in some cases privatized; and the role of governments in managing the economy is more sharply delineated and circumscribed by new arm’s length (from government) market-supporting instruments, in some cases relying on self-regulation (Gamble, 2000, pp. 130–131; Jayasuriya, 2001). Many possible causes have been highlighted: ideological changes such as the discrediting of “statist” models; fiscal and bureaucratic “overload” problems; the growth in supranational bodies that undermine a government’s control; and economic globalization eroding state “steering capacities”.

In recent years, pressures for broad governance changes have been strong, especially coming to a head in the financial crisis of 1997. A feature of these pressures is the presence of influential international agencies such as the IMF and World Bank. Their preferred models of governance reflect many of the same tendencies noted above: a less interventionist and arbitrary state; a strengthening of “juridical” forms of regulation (often associated with fundamental legal reform); more disaggregated and decentralized forms of government, including partnerships and a stronger “co-production” role for civil society groups; and a preference for market-like mechanisms over bureaucratic methods of service delivery. Hence, it is not surprising that strategies, measures and policy instruments along the line of marketization, corporatization, commodification and managerialization are becoming popular practices in public policy and public management (Lane and Ersson, 2002; Minogue, 1998; Mok and Welch, 2003).

2.2. Educational restructuring and entrepreneurial university

Against an increasingly competitive global context, schools and universities in different parts of the

globe have been under tremendous pressures from government and the general public to restructure or reinvent the way that they are managed in order to adapt to the ever-changing socio-economic and socio-political environments and maintain individual nation-states’ global competitiveness. As Martin Carnoy has pointed out, “globalization enters the education sector on an ideological horse, and its effects in education are largely a product of that financially driven, free-market ideology, not a clear conception for improving education” (Carnoy, 2000, p. 50). Education reforms, under the context of globalization, could be characterized by a finance-driven reform emphasizing decentralization, privatization and better performance (Carnoy, 2000; Mok and Welch, 2003).

With heavy weight being attached to the principle of “efficiency and quality” in education, schools, universities, and other learning institutions now encounter far more challenges, and are being subjected to an unprecedented level of external scrutiny. The growing concern for “value for money” and “public accountability” has also altered people’s value expectations. All providers of education today inhabit a more competitive world, where resources are becoming scarcer; but at the same time, providers have to accommodate increasing demands from the local community as well as changing expectations from parents and employers (Currie and Newson, 1998; Mok and Currie, 2002). Attaching far more weight to entrepreneurial efficiency and effectiveness, contemporary universities are under immense pressures to transform their roles to adapt to rapid socio-economic and socio-political changes. It is particularly true when modern governments have encountered reduced financial capacity to continue financing growing demands for higher education.

It is against the socio-economic context discussed above that the processes of academic capitalization in general and the pursuit of academic entrepreneurship in particular has become increasingly popular in shaping the relationship between government, university, business and industry. Therefore, new “university–academic–productive sector relations” have emerged (Sutz, 1997); notions such as “corporate academic convergence” (Currie and Newson, 1998), “entrepreneurial universities” (Marginson, 2000), “campus inc.” (White and Hauck, 2000), “capitalization of knowledge”, “strong executive control” and “corporate characters” are used to conceptu-

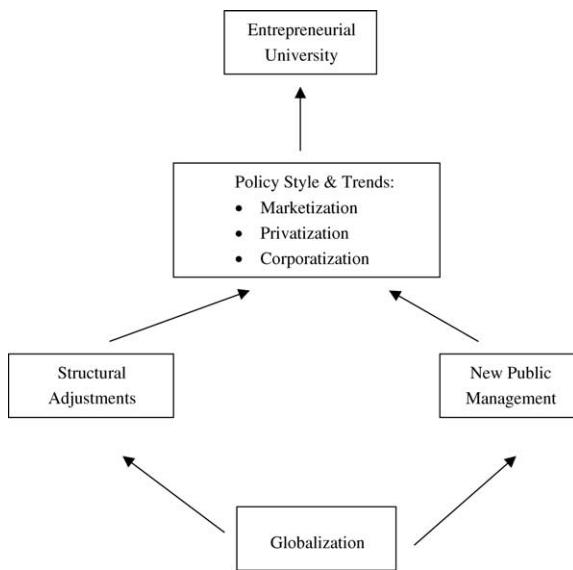


Fig. 1. Globalization, new policy trends and entrepreneurial university.

alize current changes in contemporary universities (Etzkowitz and Leydesdorff, 1997). In the context of reduced financial support from the state, higher education systems across different parts of the globe have attempted to generate incomes through entrepreneurial activities (see, for example, De Zilwa (in press), Mok (2003, 2004a) and Marginson and Considine (2000)). It is, therefore, not surprising that “the language of human capital dominates official policy recommendations dealing with growing economic and social problems” (Spring, 1998, 163).

Fig. 1 shows how globalization accelerates higher education restructuring along the line of “marketization”, “corporatization” and “privatization”, universities going entrepreneurial is becoming an increasingly popular restructuring strategy for promoting efficiency, effectiveness, economy and competition in the higher

education sector (Mok, 2002a; Tai, 2002). Universities in Hong Kong, like their counterparts in Australia, the USA and the UK, have begun to shift their paradigms from purely upholding the mission of research and teaching to the third mission of promoting economic and social development. The pursuit of academic entrepreneurship and the transformation towards the ‘entrepreneurial university’ have started in Hong Kong (see Table 1).

2.3. Strategies in fostering entrepreneurship

When examining the promotion of entrepreneurship in Hong Kong, we need to consider the Triple Helix network system of interactive spirals between the government, the university sector and the industry and business sector to promote economic development and academic entrepreneurship (Leydesdorff and Etzkowitz, 2001). According to Mansfield (1991) and Lissenburgh and Harding (2000), the growing role of the university in the new economy is well beyond providing industry and the state apparatus with trained personnel and engaging in research that provides a knowledge base for industry to draw upon. Instead, modern universities have to engage in the second academic revolution by promoting the third university mission, i.e. developing the institution into an entrepreneurial university by promoting economic and social development through the commercialization of research results. Situated in a far more competitive global marketplace, modern universities have to expand their commercial and business arms to reach out to the private sector for generating additional funding (see Table 1).

As Leydesdorff and Etzkowitz (2001) suggested, the Triple Helix network system “opens a window on a universe of discourse that generates a set of coordinates transcending the points of reference of discourses that previously took place within separate institutional

Table 1
Academic revolutions and changing university missions

Expansion of University Mission		
Teaching	Research	Entrepreneurial
Preserving and disseminating knowledge	First academic revolution	Second academic revolution
New missions generate conflict of interest controversies	Two missions: teaching and research	Third mission: economic and social development; old missions continued

Modified and adopted from Etzkowitz (2003, p. 110).

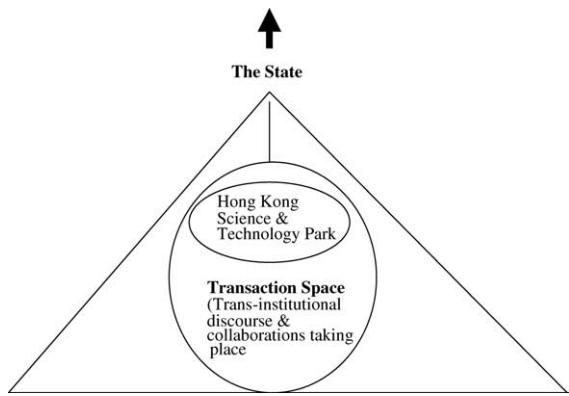


Fig. 2. Triple Helix government–university–industry/business network system in fostering entrepreneurship.

spheres” (p. 4). Such a network system creates a “transaction space” for different actors including users, producers, entrepreneurs and policy-makers to explore possibilities for economic and social development. With this Triple Helix network system in place, “industry itself is now increasingly present within academia, potentially co-constitutive of the knowledge production process . . . in an asymmetrical way, the university through these institutional innovations is also co-constitutive of its industrial environment” (Leydesdorff and Etzkowitz, 2001, p. 7) (see Fig. 2).

The following discussion focuses on how the relationship between academy and industry and business and one of the “least interventionist” government of Hong Kong has changed, with particular reference to examine how universities in Hong Kong have expanded their university mission to become more entrepreneurial. Thereafter, we will compare and contrast the recent transformations taken place in the university sector of Hong Kong with her counterparts in Singapore and Taiwan, attempting to draw comparative insights about the changing roles of the state and changing higher education governance in these Asian societies.

3. The government role in fostering entrepreneurship: The Hong Kong case

When comparing and contrasting the role of the government or state intervention in the economy of

Hong Kong with other Asian societies like Taiwan, South Korea and Japan, the government of Hong Kong is believed to be the least interventionist in the world (Haggard and Cheng, 1987; Partick, 1991). Hong Kong’s success, in the eyes of a neo-classical economist, is mainly attributed to an “automatic corrective mechanism . . . alters internal costs and prices to bring [the economy] quickly into line with costs and prices in the rest of the world” (Rabushka, 1979, p. 2). During the colonial period, particularly under the regime of Sir Hadde-Cave, the ex-Financial Secretary in the 1970s, the key architects of the Hong Kong economic miracle was closely related to the government’s philosophy of positive non-interventionism. According to Sir Hadde-Cave, the colonial government had a few obligations such as controlling the foreign exchange market and banking system, forming industrial and economic advisory boards, and providing essential services such as social welfare, education, medical services, etc. (Chung, 1992). Apart from creating a favourable business environment, the government very much depends upon individual firms’ initiatives to promote entrepreneurial activities.

Believing that Hong Kong’s entrepreneurs have always, and still are, noted for their considerable business acumen and ability to “strike a good deal”, the HKSAR has attempted to protect its entrepreneurial environment and the major role of the government is to create a conducive business environment for fostering entrepreneurial activities. According to Hau (2001), much of the entrepreneurial spirit in Hong Kong comes from Hong Kong’s strong belief of the following four “frees”, namely, first, free flow of information; second, free movement of people; third, free and efficient flow of funds; and fourth, free port with free flow of goods (p. 5). It is to Hong Kong’s credit that its free-market philosophy has earned her a reputation being a world trade and financial centre. Openly recognizing the success of Hong Kong rests very much upon its low and simple tax system, a sound regulatory framework and the rule of law upheld by an independent judiciary, an ideal geographical location where the city-state situates also takes the HKSAR further miles for development (Chua, 2003), the HKSAR firmly acknowledges the significance role of small and medium enterprises in its economy. Its numerous initiatives and programs are based on a manifesto of creating:

“A favourable business environment, including a stable macro economy, a simple and clear tax regime with low tax rate, good infrastructure, ample supply of human resources, a culture which encourages application of technologies, as well as a sound legal system to protect individual rights and intellectual properties. With a favourable business environment and minimum necessary regulation, small and medium enterprises will be able to operate freely and realize their full potential . . . The aim is to strike a balance between maximum support and minimum intervention” (Hong Kong Government, 2001, cited in Chua, 2003, p. 11).

Honouring the principle of “positive non-interventionism”, the government sees its role as facilitator, coordinator and enabler instead of intervening in the market. Assuming the role as “coordinator” and “facilitator”, the HKSAR provides a very efficient public administration to enable people to start up business in Hong Kong in a simple way. Simplified procedures and responsive government administration has been identified by Global Entrepreneurship Monitor (GEM) project (a project develops an annual measurement of entrepreneurial activity by examining its link with economic growth and the factors that contribute to an entrepreneurial climate) as one of the strengths that promotes entrepreneurship in the city-state (Chua, 2003). With the establishment of Invest Hong Kong, a government office responsible for supplying latest information on Hong Kong’s business environment; delivering government information on funding and other support, taxation, import/export regulations, employment legislation and immigration requirements; identifying and matching potential investors with business partners; assisting investors in dealing with government departments on setting up business in the city-state, such initiatives show the HKSAR’s attempts to create a favourable environment for entrepreneurial activities (<http://www.investhk.gov.hk>).

In addition, the HKSAR takes the lead in providing a physical infrastructure for business and industry development. The strengths of the physical infrastructure in Hong Kong include excellent telecommunications, efficient and international airport, and good transport and road systems, one of the largest containers terminals in the world and free port status. The setting up of the Hong Kong Science and Technology Park in 2001 further provides a “one-stop” infrastruc-

ture support services for technology-based companies (<http://www.atip.org>). In order to facilitate small and medium enterprises to set up business in Hong Kong, the HKSAR also offers business advisory services such as trade consulting, offering accounting, marketing, management and legal advisory services through the Hong Kong Applied Science and Technology Research Institute Company, Ltd., the Hong Kong Productivity Council, the Trade Development Council, and the Vocational Training Council (Chua, 2003). After discussing some general principles that the HKSAR has adhered to promote entrepreneurial spirit and practice, let us now examine how the HKSAR shapes industry policy, funding policy in technology and innovation advancement, and education policy to make the policy environment more conducive to fostering entrepreneurship.

3.1.1. Industry Policy

Openly acknowledging the importance of developing a value-adding high-tech plank to the economy, Tung made his position clear in his 1998 policy address *From Adversity to Opportunities* clear that “innovation and technology are important drivers of economic growth. In a technology-based global economy, they are essential in adding value, increasing productivity and empowering our overall competition” (<http://www.policyaddress.gov.hk.1998>). In order to foster the development of technology and entrepreneurship in Hong Kong, the government set up of Innovation and Technology Commission to advise the government long term strategies in technology development and established a science park as a vehicle to foster further technology development in the city-state (<http://www.atip.org/public/atip.reports.98>). In the first policy address of his second term as Chief Executive of the HKSAR in January 2003, Mr. Tung highlighted three major measures to revitalize the local economy, including promoting economic restructuring, forging closer economic cooperation with the mainland, and eliminating the fiscal deficit. According to Tung, “the knowledge and wisdom of Hong Kong people, their innovative entrepreneurial spirit and agility combine to form a sound foundation for the development of creative industries” (<http://www.policyaddress.gov.hk>). Treasuring the entrepreneurial spirit and wisdom of Hong Kong citizens,

the HKSAR Government adheres to its long-standing economic philosophy of providing maximum support to industry and minimum intervention in the market. According to the Trade and Industry Bureau of the HKSAR, Hong Kong's success relies very much on its dynamic private sector. Hong Kong firms are renowned for their entrepreneurial dynamism and their international character. With a productive and adaptable workforce, together with the continual investment in higher education turning out high quality and capable graduates, Hong Kong has developed itself one of the major business centres in Asia. Capitalizing the robust research culture in its universities and the vibrant and well-developed capital market, the HKSAR has played the role as "promoter" by signaling to industry and the community at large the relevance and importance of innovation and technology to Hong Kong. The Trade and Industry Bureau makes it clear that the government should play the role of a facilitator and supporter in promotion of entrepreneurship by the following strategies:

- Making essential investments in the physical, human and technological infrastructure.
- Creating a business environment conducive to innovation and technology development, commercialization and use.
- Providing policy encouragement and incentives.
- Coordinating industrial and business efforts.
- Providing financial support where appropriate (<http://www.info.gov.hk/tib/roles/first/chap4>).

In addition to the strategies outlined above, the HKSAR Government has set up various kinds of funding schemes to encourage entrepreneurship, including:

- Special Finance Scheme for Small and Medium Enterprises (SMEs);
- Applied Research Fund;
- Innovation and Technology Fund.

In addition, there are a few more programmes set up recently by the Innovation and Technology Commission in fostering innovation and technology development and promoting entrepreneurship. **Appendix A** provides the details of these schemes in promoting entrepreneurial activities in Hong Kong. When putting all these financial support schemes or programmes together, we may well argue that the HKSAR has performed the role as "facilitator" by offering research grant or financial support to promote technological ad-

vancement and entrepreneurial activities in the city-state. With such these policies related to innovation and technology development in place, the government intends to create a conductive environment for private firms and the industrial sector to directly engage in the development of technology. Instead of actively intervening in the sector, the HKSAR has chosen a facilitator or an enabler role in promoting entrepreneurship.

3.1.2. Education policy

When reflecting upon the role of the HKSAR in higher education, we must examine the policy directions recommended by the University Grants Committee (UGC), a statutory body responsible for advising government on higher education policy and development. In 1996, the UGC conducted a comprehensive review of the higher education system in Hong Kong, clearly specifying the objectives for research in post-1998. The first is to ensure that academics and students in Hong Kong's higher education institutions (HEIs) are participants in the global endeavour to extend human understanding by engaging in pure research. The research findings can be communicated to the international academic communities and be published in internationally recognized journals. The second objective for research, according to UGC, is to "increase the proportion work which is linked with the interests of the community and carry out more of it with local partners, both active and passive". With the recent introduction by the HKSAR of funding for applied research and collaborative projects between universities and industry, the UGC strongly encourages all HEIs to develop closer collaborations with the industrial sector and local communities. Believing that the symbiosis between the HEIs and the community should not be confined only to industry and commerce, the UGC considers such a closer relationship is applied also to government at all levels and social and other services (<http://www.ugc.hk/hervw/chapter28>, p. 2).

Intending to make its universities more competitive in the global marketplace, the HKSAR appointed an overseas consultant to conduct another comprehensive review of the higher education system and the review report was published in March 2002. Attempting to position Hong Kong's university sector in a higher position in the international academic community, the UGC again urges the HEIs to establish closer links with the

local industry and community. Applied research and commercialization of research products are highly encouraged. The UGC believes it will be in very rare cases that an area of excellence will be externally generated. Instead, an area of excellence will gradually develop and emerge when government or a private sponsor recognizes a teaching or research need of pressing importance to Hong Kong and therefore the UGC keeps on encouraging the HEIs to explore funding other than the UGC research grants. Strengthening the relationships between the HEIs and the government and local industry will certainly extend the pool of research money (<http://www.ugc.edu.hk/hervw/chapter29>, p. 2; UGC, 2002, p. 36). Hence, the UGC recommends setting up a working group with representatives from the government, the private sector, the HEIs, the UGC and the Research Grants Council (RGC) to review the existing policies in R&D investment policies in Hong Kong. Throughout his first term of appointment as Chief Executive, Mr. Tung Chee-hwa, repeatedly emphasized the importance being attached to cultivate talents and his administration in the previous years had put education and human resource investment on top of its political agenda. It clearly shows the HKSAR's strong commitment in human resource investment, believing the nurturing of high quality people as fundamental to the future success of Hong Kong.

3.2. The role of the university sector in fostering entrepreneurship

3.2.1. Universities engaging in commercialization of research results

In order to adapt to the changing environment as discussed above, universities in Hong Kong have begun to reflect upon their roles in the newly emerging knowledge economy. Realizing the changing policy environment and encountering globalization challenges, universities have begun to change the way that they are managed and some of the UGC funded universities in Hong Kong have begun to adopt a proactive approach in promoting entrepreneurial spirit and practice. The Hong Kong University of Science and Technology (HKUST) Faculty Entrepreneurship Program was introduced to assist faculty, staff and students in establishing technology-based start-up companies. The major objective of the FEP is to fulfil one of the missions of the HKUST to promote entrepreneurial activi-

ties for the benefit of the Hong Kong economy and society. Intending to promote academic entrepreneurship, the HKUST has taken a few measures, including setting a Technology Transfer Center to serve as a bridge between the university and the business community; the foundation of Engineering Industrial Consortium to establish industrial contacts and cooperation, organize professional development and training programs, build collaborative research activities and promote technology diffusion. A few more units were set up by the HKUST to strengthen its research and development (R&D) and promote commercialization of research results, services and technology development, including Applied Technology Center and Entrepreneurship Center. Another unit, HKUST R&D Corporation Limited was set up in 1993 as a commercial entity within the university to provide full exploitation of the commercial opportunities arising from research conducted not only at HKUST but worldwide in fields vital to Hong Kong's economic prosperity. The aim of the corporation is to nurture a true entrepreneurial spirit by forging partnership between the business and academic communities (HKUST website).

Similarly, City University of Hong Kong (CityU) has set up a Technology Transfer Office (TTO) as the technology-marketing arm of the university to reach out the industrial and business communities. Intending to transfer the advanced technologies and know-how of CityU into commercial products in order to enhance the competitiveness and development of local industries in Hong Kong, the TTO set up a CityU Business & Industrial Club to strengthen the links between the university and the industrial and business sectors in Hong Kong. In addition, CityU also set up its commercial arm CityU Enterprises to commercialize its research results. In recent years, CityU has also successfully developed and marketed the 'TeleEye Long Distance Monitoring System' and the trading of Tele-Eye shares marks a significant milestone in the development of CityU, the first HEI in Hong Kong to successfully nurture a technology company from start-up to public listing. Moreover, commercialization of research results has attracted investors to support Bon-Vision Technology (HK) Ltd., e.Energy Technology Ltd. and Warren Health Technologies Ltd., three subsidiary companies under CityU Enterprises. According to H.Y. Wong, Director of CityU's TTO, technology transfer and product development certainly en-

ables academics to convert their research results into commercial products, the transformation of which has brought additional incomes for the university (TTO, City University of Hong Kong website). In order to extend its research and development arm to mainland China, CityU established its Applied R&D centres in Shenzhen and Zhuhai, capturing opportunities to transfer its applied research results into business and commercialized products (CityU website).

Conceiving there are three streams of research, namely, “upstream” research refers to curiosity-driven, experimental or theoretical work aimed at advancing the frontiers of human knowledge, “midstream” and “downstream” refer to research projects linked to further technological development and commercialization purposes, the *University of Hong Kong*, the oldest university in the territory, is now committed to broadening the scope of its research to encompass applied research and developmental work through working in close partnership with industry to bring about direct benefit to the society of Hong Kong (HKU website). When we put the entrepreneurial activities of these universities discussed above into perspective, we may well argue that a culture of academic entrepreneurship is emerging among Hong Kong’s universities, indicating that

universities in Hong Kong are experiencing a second academic revolution.

Analyzing the emerging entrepreneurial activities in Hong Kong’s university sector in the light of the expanded mission of contemporary universities as indicated in Table 1 in the previous part, universities in Hong Kong have gradually expanded their mission from purely research and teaching to the third mission of making universities more entrepreneurial to promote economic and social development. Capitalizing the opportunities for additional research and development grants offered by the HKSAR, more collaboration has been forged between the local industry, business sector and the community. Charts 1 and 2 indicate the amount of innovation and technology fund offered to various parties, showing the Triple Helix relationship between the government, the university and the industry-business sector has become increasingly popular in the promotion of entrepreneurship and academic entrepreneurialism in Hong Kong. In particular, with the formation of the Hong Kong Science and Technology Park, together with the Hong Kong Productivity Council and Hong Kong Technology Transfer Corporatization, such a collaboration relationship has been strengthened particularly when the Hong Kong

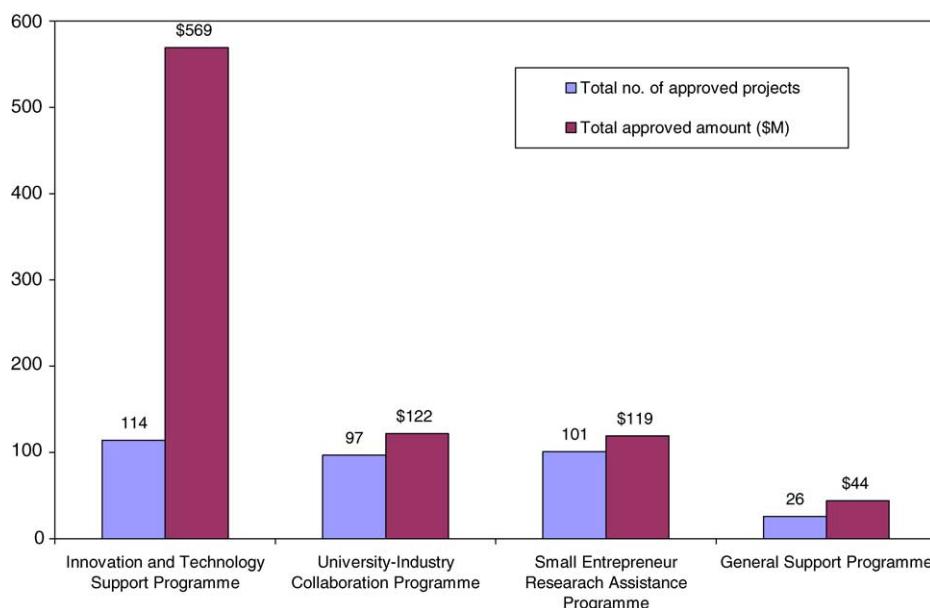


Plate 1. Number of approved projects and funding under individual programmes (position as at December 31, 2002; source: adopted from Innovation & Technology Fund Annual Report 2002, p. 14; ITC, 2002).

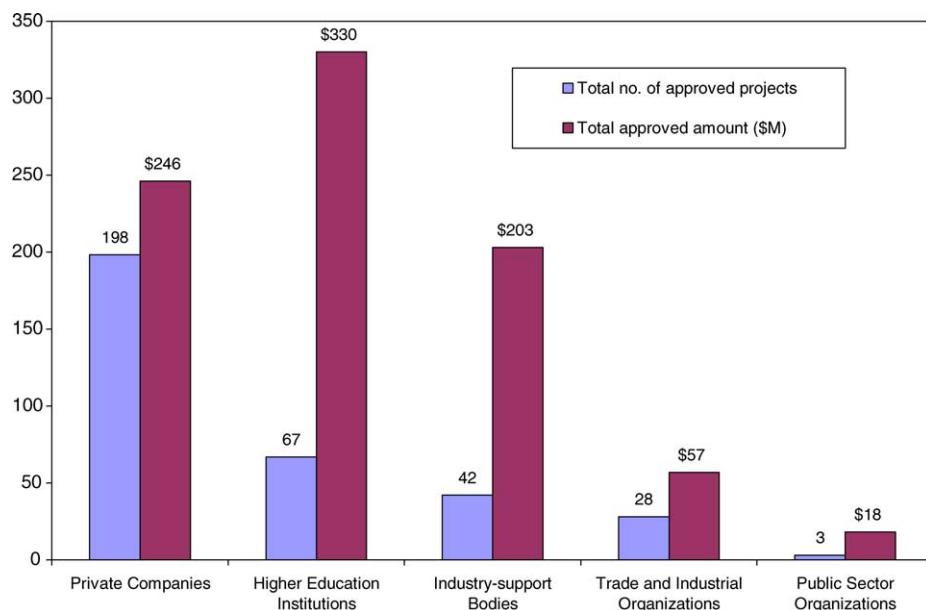


Plate 2. Breakdown of the approved projects and funding by nature of the recipient organizations (position as at December 31, 2002; source: adopted from Innovation & Technology Fund Annual Report 2002, p. 15; ITC, 2002).

Science and Technology Park now offers good venues as “transaction space” to foster collaborations and cooperation between the universities and the industry and commercial sector (see Charts 1 and 2).

3.2.2. Universities reforming curricula in fostering entrepreneurship

In addition to the entrepreneurial activities conducting in the field of research and commercializing research results into business opportunities, universities in Hong Kong have also started to reform their curricula design by making students more market sensitive. One of the most fundamental principles that HKSAR has long adhered to is to guarantee academic freedom and therefore universities are given flexibility and autonomy in designing their curricula. In order to create more room for university students to have a broad-based curriculum, the HKSAR is actively considering how to convert the existing 3-year university education into a 4-year system (Ming Pao, 2003). Believing nurturing students with innovation and creativity as very important elements of improving Hong Kong university graduates' global competence, universities in Hong Kong have introduced various types of curriculum reforms, including offering gen-

eral education or out-of-discipline courses to broaden students' academic horizon, promoting international student exchange programmes and organizing cross-cultural learning scheme or tours to enrich students' experiential learning. Project work and team work has become increasingly popular when university teachers well recognize the importance of working in teams and working independent. In recent years, students have been given more choices in courses and they can develop their own study plan by choosing electives, minors and majors. Double majors programmes are made possible in some of the universities such as the University of Hong Kong and the Hong Kong University of Science and Technology.¹

Intending to make Hong Kong students more cosmopolitan and international, the UGC designates additional resources for promoting international student exchange programmes between local and overseas uni-

¹ For details regarding curriculum changes and reform in university curricula, please refer to various websites of UGC funded universities in Hong Kong. For example, for the University of Hong Kong, please visit <http://www.hku.edu.hk/>; City University of Hong Kong at <http://www.cityu.edu.hk/>; Hong Kong University of Science and Technology (<http://www.ust.hk/>), the Chinese University of Hong Kong (<http://www.cuhk.edu.hk/>), etc.

versity. Bringing students to the real world is also another dimension that universities in Hong Kong have been working for taking students to professional attachment schemes, summer internship programmes, study tours, industrial attachment projects, etc. in order to prepare them for the real world/work environments. Intending to move beyond the “teacher-oriented” to a “learner-oriented” paradigm, some universities in Hong Kong have begun to organize “whole-person development scheme” to fully maximize students’ potential and train them as future leaders in the local community.² Like Singapore, the UGC has started to review in university admissions systems and new changes have already been introduced to recruiting not only students with high public examination scores but also students of different talents (UGC, 2002). All in all, the teaching and learning strategies discussed above have clearly shown that universities in Hong Kong have already taken a proactive approach in coping with the globalization challenges by making their students more sensitive to changes, preparing them for becoming more innovative and creative, and engaging them in fostering for entrepreneurship (see Mok (2004b)).

3.2.3. Other market-driven activities

Realizing depending alone upon the state funding alone can never be sufficient to establish all universities in Hong Kong as world class universities, the University Grants Committee (UGC) has adopted the principles of “selectivity” to identify a few institutions and areas of excellence for providing them with additional funding for further development. Performance-based assessment is becoming increasingly prominent in funding methodology. The UGC makes its position very clear that “all education in all countries is expensive and occupies a substantial part of national budgets. But higher education is particularly costly”. The policy of raising fees has been adopted by the UGC while the Hong Kong government has set the minimum fee level in subvented universities to recover 18% of costs from 1997 onwards. In addition to the increase in tuition fees, another noticeable change is the reform in the grants/loans system. Under the new scheme, more loans will be given to students instead of committing a huge amount of government funds on student grants.

In recent years, the UGC has begun to cut back its subsidies to all UGC-funded universities; self-financing programmes and courses are launched in Hong Kong. For instance, the UGC has decided to gradually withdraw its funding to nearly all taught master programmes, students who are interested in post-graduate taught programmes have to pay full fees now. In order to “balance the book”, universities in Hong Kong have to venture themselves in the education market by developing sources which can appeal to the public, market forces are certainly shaping the design of curricula and the academic plans in the university sector in Hong Kong. Distance courses, conversion courses co-run by local and overseas universities and continuing education programmes such as Master of Business Administration and Law courses are being offered by local institutions on a self-financing basis. In addition, continuing education is considered one of the major sources of additional incomes, all universities in Hong Kong have set up their community colleges or continuing education units to offer programmes to cater for the market needs (Mok and Tan, 2004).

In addition, the Hong Kong government has set up a “matching grant scheme” for rewarding universities who manage to raise additional funds from other non-state sources. Every dollar that universities raise will be matched with the same amount of funds from the UGC to encourage universities to diversify funding sources. Nowadays, every UGC-funded university in Hong Kong has established a “Committee of Donation” to raise funds. Many of the universities’ campus facilities are financially supported by the third sector. For instance, the new student hostels in CityU are fully sponsored by the Hong Kong Jockey Club and Hong Kong Shanghai Banking Corporation. For traditional universities in Hong Kong such as the University of Hong Kong, the oldest university and the Chinese University of Hong Kong, the second oldest university in Hong Kong, their networks with the industry, business and the commercial fields should have enabled them to secure additional funds to attract additional funds from the newly established “matching grants”; while the newly established universities such as City University of Hong Kong and Hong Kong Baptist University would encounter difficulties in fund raising.

All in all, the strategies and measures adopted by the universities in Hong Kong to strengthen their

² For details, see the above note.

financial position has indicated how prominent the use of market principles and market strategies to run higher education. By encouraging universities to become entrepreneurial universities and establishing and strengthening their relationships with other non-state actors, universities in Hong Kong now become more engage with the business and industrial sectors. Notions of “public–private partnership”, “academic capitalism”, “entrepreneurial universities” are becoming more common in the Hong Kong higher education sector (Mok, 2003).

4. Changing state roles in promoting entrepreneurship: Taiwan and Singapore

The above Hong Kong case has indicated the HKSAR has played a facilitator role in promoting entrepreneurialism. Instead of high levels of government intervention, the HKSAR has intended to act as a “market-facilitating state” to set out a conductive policy framework in bridging the various sectors, including the university sector, the business and the industry, together for exploring and developing entrepreneurial opportunities. In recent years, similar developments have been found in Taiwan and Singapore when these Asian governments have attempted to partially retreat from directing and intervening industrial and business developments. Conventional wisdom suggests that the postwar East Asian economic miracle was directed by highly interventionist states. Entrepreneurial activities in general and industrial and R&D policies in particular were directed by the state. In Taiwan, for instance, the government used to play a significant role in co-ordinating R&D collaboration. According to Gregory Noble, research and development consortia in Taiwan “were actually forms of direct provisions of technological services by the government and its quasi-public research institutes” (Noble, 1998, p. 146). Similarly, Meaney argues that “state intervention took the form of focused R&D”, by “choosing technology, acquiring technology [and] developing domestic R&D capability” in Taiwan (Meaney, 1994, p. 173). Like Noble and Meaney, Robert Wade argues in the same vein that the postwar developmental state in Taiwan strategically intervened in the market. Government hands were highly visible, especially when competition was mediated by purposive public policies. Through the use of “incentives, controls and mechanisms to spread risk,” these sorts of public policies “enabled the government to guide—or govern—market processes of resource allocation” (Wade, 1990, p. 26). Therefore, the market in Taiwan was “organized” in order to maximize productive or innovative efficiency. Judging the significant role that the government had played in industrial and entrepreneurial activities, we may well argue that Taiwan government was actually a market constructing state.

Nonetheless, such a conventional wisdom has been challenged, recent studies focusing on organizing technovation and technological dynamism in Taiwan suggest that there has been a fundamental change of the state role in R&D policies. Changing from acting as a “market constructing state” to a “market facilitator state”, the Taiwan government now encourages collaboration and competition among various actors. The government policy makers, being one of the actors in promoting R&D and entrepreneurial activities, now interact more with other actors from the scientific community and the market in order to pull them together to conceive and develop projects in promoting entrepreneurialism. Instead of heavily involved in directing R&D and other entrepreneurial activities, the Taiwan government entrusts other public organizations such as the National Science Council (NSC), one of the government organizations in Taiwan, to oversee biotech development on the island state. Working closely with the Science and Technology Advisory Group and the Biotechnology Strategic Review Board, the NSC is responsible for implementing key national science and technology projects; while many more of the biotech projects have been directly run by commercial firms.

Despite the fact that the Taiwan government remains important in shaping the rules for the introduction of competition in R&D and entrepreneurial activities, the non-state players like those who work in the scientific community and the market actually determine the way that R&D and entrepreneurial developments in Taiwan (Chen, 1997; Hsu and Chiang, 2001). Since the 1990s, an increasing number of alliances have developed in Taiwan, “bringing together firms, and public sector research institutions, with the added organizational input of trade associations, and catalytic financial assistance from government” (Mathews, 2002, p. 633). Such de-

developments have been confirmed by another study of technological dynamism in Asia “innovation in Taiwan and Hong Kong is a result of domestic individuals and independent firms” (Mahmood and Singh, 2003, p. 1052). Similarly, another study focusing on the development of biotechnology and R&D collaboration in the biotech sector has also argued with evidence that R&D and entrepreneurial activities are becoming increasingly commercially driven, the development of which has been significantly directed by market forces rather than state initiatives.³

Like universities in Hong Kong, universities in Taiwan have also experienced marketization and corporatization processes in the last decade. The Ministry of Education in Taiwan has decided to change the statutory position of state universities into independent judicial entity by adopting principles and practices of corporatization. In order to reduce the state burden in higher education financing, all state universities in Taiwan have to generate additional funds from non-state sectors such as the market and enterprises. Like Hong Kong, university presidents in Taiwan nowadays are busily occupied with fund raising since the Ministry has cut down its financial support to state universities by 20–30%. In order to generate sufficient funds to finance their institutions, various kinds of market driven strategies have been adopted (Lo and Wang, 2005; Mok, 2002b).

Openly recognizing the lack of the spirit of inventiveness and risk thinking, and, at the same time, worrying about the lessening of its competitiveness in the globalizing economy, the Singapore government has begun to launch projects in promoting entrepreneurship. Comparing Singapore to Taiwan and Hong Kong, entrepreneurial activity is relatively low since the Singapore government has long been orchestrating the developments of the city-state. Having been too paternalistic, the Singapore government has put the promotion of entrepreneurship top on its political agenda in recent years (Tan, 2003; Tan and Tan, 2002). According to unofficial estimates, the Singapore government, together with its linked companies, employs more than half a million people in the island nation (Asia Times, 27 November, 2002). Singapore, being regarded as a “government-made city-state” (Low, 2001), the levels of government intervention has been very high

across different social, economic and political aspects. Criticizing the government for over concentration of economic decision-making, control of factors of production (including corporations) and unnecessary influence over pricing and supply of land and savings, the Singapore government has attempted to change its governance strategies by introducing privatization to the Government of Singapore Investment Corporation (GIC) (Institute of Policy Studies, 2003).

In addition, the government designates the Minister of the State to be responsible for promoting a more entrepreneurial Singapore. By setting up Public Service for the 21 Century (PS21 Office), an office directly under the Prime Minister, the government hopes to make the civil servants think more innovatively and creatively. In addition, the Civil Service College of Singapore has been organizing different kinds of exhibitions and symposia in promoting the spirit of entrepreneurship. For instance, I was invited as one of the speakers for the conference of *Fostering Entrepreneurship: The Role of Government* already was held in October 2003 in Singapore; I got the opportunity to share the experience of Hong Kong while the other speakers talked about experiences in Canada and elsewhere. My other visits to the PS21 Office and the Ministry of Education in Singapore repeatedly confirm how important the promotion of entrepreneurship in Singapore. On the public administration front, the Singapore government has started reforms in making its administration more efficient and responsive to changing market needs (PS21 of Singapore, website). Believing education significantly determines the creation of entrepreneurial spirit, the Ministry of Education in Singapore has started a new reform movement called “Enterprise and Innovation”. Students are encouraged to venture in the commercial sector by developing their own small firms or engaging students in selling and buying activities after school (MOE of Singapore, website).⁴

Acknowledging the potential problems that the Singapore economy and sources of innovation have primarily been reliant upon foreign corporations

³ This is based upon a recent paper under review by *Governance*.

⁴ During a field visit to Singapore in March 2004, I visited various schools in Singapore and all of them are actively engaged in promoting the movement of “enterprise and innovation”. Students are encouraged to set up their small firms for practicing business, through which the government intends to inculcate entrepreneurial spirit among students.

and multinational subsidiaries (Mahmood and Singh, 2003), the Singapore government has decided to accelerate the development of local enterprises or small medium enterprises (SMEs). More recently, the government has changed its regulatory framework to facilitate setting up small and medium sized enterprises in the island state. To refine its legal systems to promote entrepreneurship, the government has made amendments to the immigration regulations, bankruptcy and regulations for government tenders, etc. (Tan, 2003). Like Hong Kong and Taiwan, the Singapore government has attempted to withdraw partially from direct management of economic affairs and R&D by empowering the National Science and Technology Board (NSTB) to overseeing and coordinating R&D activities in recent years (Lai, 2003).

Realizing the conventional university governance model (i.e. a state-directed and centralized model) can never drive state universities in Singapore to become entrepreneurial, the Singapore government has set up Singapore Management University (SMU) by adopting an entire new governance model. Intending to make SMU more flexible in governance and more responsive to changing education needs of the business and commercial sectors, the Singapore government deliberately made SMU a publicly funded but privately run university. When SMU was set up, the government provided the set-up fund and an endowment has been established to finance the future development of SMU. According to Prof. Tan Chin Tiong, Provost of SMU, the newly established University has been very successful in developing close relationships with the business and commercial sectors not only in Singapore but also in overseas. In response to the Singapore government's University Matching Grant Scheme, SMU has been able to match the fund raising targets set by the government. By approaching Dr. Lee Ka Shing, a very famous Chinese businessman in Hong Kong, SMU secures a billion to the endowment fund. In addition to fund raising, SMU has maintained a very close relationship with business and commercial sectors (field Interview, February 2005).

When designing the curricula for its business and management students, SMU has reached out to the relevant fields in seeking for advice and ideas in developing courses and programmes catering for the education needs of the changing business and commercial environments (Field Interview, February 2005). Hav-

ing reflected upon the changing university governance models and evaluated the recent experiences of SMU, the Ministry of Education in Singapore has decided to change the governance models of the existing state universities, namely, National University of Singapore and Nanyang Technological University by making them independent legal entity through the process of 'corporatization' (Field Interview, December 2004). By incorporating these state universities, the Singapore government hopes that universities on the island state could become more entrepreneurial.

Comparing Hong Kong with Taiwan and Singapore, we can see that Hong Kong has long been practicing the policy of positive non-interventionism; the government has just acted as a facilitator in creating the infrastructure and providing an environment conducive for entrepreneurial activities. In contrast, Taiwan and Singapore governments have long been heavily involved in directing R&D and entrepreneurial activities. Only in the last decade in Taiwan and the recent years in Singapore have these governments begun to move beyond the conventional "developmental state" to the "market facilitating state". Realizing the government alone cannot meet the competing demands generated from rapid social and economic changes, these Asian states have tried to change their governance strategies in coping with increased globalization pressures.

Facing reductions of state funding in research and development, academics and researchers working in Hong Kong, Taiwan and Singapore are not happy at all. In Hong Kong, for instance, the UGC, the funding body of universities in Hong Kong, has consistently cut its financial support to the universities. Therefore, universities in Hong Kong have to search for additional funding and financial resources by engaging in offering more self-funded teaching programmes, commercializing research products and venturing into the business and commercial sectors. All such activities have been criticized by academics in Hong Kong for making the commercializing and marketizing the university sector. Similarly, academics in Taiwan and Singapore have been complaining the cut in government funding and they are also under pressures to look for additional resources through various kinds of entrepreneurial activities (for details, see, for example, Tai et al. (2002), Mok (2001) and Mok and Tan (2004)).

5. Discussions and conclusion: changing state–university relations

Analyzing the Triple Helix government–university–industry/business network system discussed above in light of the new governance theories, we may find that the role of these Asian governments may not necessarily be weakened. Being part of the network, the government plays a coordinator and facilitator role to engage the university and the business and industry in fostering entrepreneurship. Taking the case of Hong Kong for example, by setting up the Hong Kong Science and Technology Park as the “transaction space” between the government, the university and the business and industry to transfer technology and innovation into commercial opportunities, the Triple Helix government–university–industry/business network system not only can facilitate entrepreneurial activities in the city-state but also strengthen the role of the state in governing the university sector. The reductions of state provision and financing in higher education, coupled with the revitalization and marketization processes taking place in universities, may well enhance instead of weaken the state to steer the university sector at a distance by launching various kinds of management and governance reforms and quality assurance exercises.

More interestingly, globalization challenges may not necessarily weaken the capacity of the Asian governments discussed above in governing higher education. In contrast, our earlier discussion has indicated that the HKSAR has played a significant role in promoting entrepreneurship by extending its network system and involving non-government actors in entrepreneurial activities. As [Pierre \(2000\)](#) argued, globalization processes do create a need for modern states to alter their governance modes and to institute reforms in the public sector to better manage uncertainty and risk. By transforming its governance mode through the revitalization of the university, the business and industry sectors in commercializing R&D, the HKSAR is becoming increasingly one of coordination and steering rather than command. The process of governance change can be interpreted as part of a state strategy for retaining and enhancing policy control instead of weakening the state role in public policy domain. Acting the role as a “market facilitating state”, the HKSAR has somehow resolved its own fiscal deficit problem by accelerating the market and other social forces

to promote entrepreneurial activities. By making use of the market ideas and mechanisms, the HKSAR has engaged the university, the industry and the business sectors to accelerate entrepreneurial spirit and practice. Such a governing through governance process has indeed pulled more resources from different non-state sectors together to not only develop research and development but also promote entrepreneurship. In short, the coalitional relationship between the government, the university and the business and industry may have made the state more proactive and activist rather than reducing the state steering capacities.

Most interesting of all, when comparing the case study of Hong Kong with developments in Taiwan and Singapore, the latter have tried to move beyond the market constructing state model to a market facilitator state model. Embarking on entrepreneurship and promoting entrepreneurial spirit requires a conducive environment for various sectors and diversified actors in interacting and exchanging ideas and pulling resources and capitals together for larger R&D and entrepreneurial activities. Since high levels of government intervention may become counter productive for promoting innovation and creativity, partnerships and alliances among state and non-state sectors are becoming popular. Changing governance strategies adopted by these Asian societies in promoting entrepreneurship has inevitably transformed the relationship between the state and the university and the other non-state sectors and actors in industry, business and commerce. Partnerships, co-production, co-arrangements and more society-oriented approach have emerged as new governance tools in these Asian higher education systems. Seen in this light, globalization has indeed led up to a more proactive and different role of government towards science, technology and innovation. Such developments in these Asian university systems seem to suggest a growing trend of marketization, privatization and corporatization is developing, indicating a fundamental transformation of conventional university mission with focuses on teaching and research being shifted towards entrepreneurial universities by emphasizing applied research and professional teaching. Running higher education with financial constraints, together with the need to address the expansion of higher education opportunities, we would anticipate universities have to work more closely with the industry, business, commerce and other non-state sectors to make modern universi-

ties not only more entrepreneurial but also more applied and professional in keeping pace with rapid social and economic changes. In conclusion, our above analysis of the Hong Kong case and the recent higher education transformations in Taiwan and Singapore has drawn our attention to how state roles are being reconstituted and reconfigured, not on their “inevitable” decline. By changing the university governance models and using the master metaphor of our times, marketization and corporatization, modern states in East Asia remain in charge and steer from a distance.

Acknowledgement

Some of the findings reported in the text are based upon sources generated from different internet materials, for details please visit the websites specified in the manuscript.

Appendix A. Measures in promoting innovation and technology advancement and entrepreneurial activities in Hong Kong

The HKSAR Government has adopted the following measures by setting up either funds or special schemes in promoting entrepreneurship in Hong Kong, including:

- *Special Finance Scheme for Small and Medium Enterprises (SMEs)*: a fund scheme set up to assist SMEs cope with liquidity crunch problem. Under the scheme, the government provides guarantees to facilitate SMEs to secure bank financing from participating lending institutions.
- An *Applied Research Fund* was set up to encourage technology ventures that have commercial potential.
- The other fund is *Innovation and Technology Fund* which supports projects that contribute to innovation and technology upgrading in local industry as well as those that contribute to the upgrading and development of the local industry.
- *Support for Research and Development Programme* is to promote and support applied research and development activities which can contribute to innovation and technology upgrading in industry.

- *University–Industry Collaboration Programme (UICP)* has a principal goal to promote university–industry partnership in R&D projects. It aims to stimulate private sector interest in R&D through leveraging the knowledge and resources of universities.
- *Teaching Company Scheme*, a scheme specially designed to support local companies to take on graduate students pursuing a higher degree in local universities to assist in proprietary R&D work. The participating parties of the Scheme will each bear half of the studentship for the graduate students.
- *Matching Grant for Joint Research* aims to foster university–industry collaboration in R&D projects. The grant will cover half of the cost incurred by the university in the project including manpower, equipment and other direct expenditures relating to the project.
- *Industrial Research Chair Scheme* is developed to support research efforts of universities and industry in technology fields that are not yet developed in Hong Kong but for which there would be good development potential. If such potential research areas are identified, a distinguished researcher in the university will be invited to be the chair-holder to lead the project for finite duration.
- *Promotion of Technological Entrepreneurship Scheme*, which offers financial support to promote technological entrepreneurship and providing essential support to technology-based entrepreneurial activities.
- *General Support Programme* aims to support projects that constitute to fostering an innovation and technology culture.
- *Small Entrepreneur Research Assistance Programme* is to help small, technology-based and entrepreneur driven companies carry out business-oriented research at the pre-venture capital state (Hau, 2001; <http://www.itf.gov.hk>).

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