

Facilitating and Promoting Innovative Entrepreneurship in Hong Kong: Theory and Practice

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Abstract

This paper analyzes recent policy initiatives designed to stimulate innovative entrepreneurship in Hong Kong. I construct a conceptual framework informed by the theory of market failure and posit five key obstacles to innovative entrepreneurship in order to examine Hong Kong's efforts through public policy to strengthen innovative entrepreneurship and to offer broad policy prescriptions. Aligning the initiatives undertaken in Hong Kong with the barriers that inform the conceptual framework contributes to scholarship in the area of innovative entrepreneurship, lays the foundation for future research to match policy measures with outcomes in Hong Kong, and aids cross-cultural research to determine whether aspects of the framing are specific or generalizable. Copyright © 2011 ASAC. Published by John Wiley & Sons, Ltd.

JEL Classifications: O31, O38, L26

Keywords: innovative entrepreneurship, culture, Hong Kong, government intervention, laissez-faire

Résumé

Cet article analyse les initiatives politiques récentes prises pour stimuler l'entrepreneuriat novateur à Hong Kong. Pour examiner les efforts déployés par Hong Kong pour renforcer l'entrepreneuriat inventif et proposer des orientations politiques générales, je construis un cadre conceptuel qui repose sur la théorie de la déficience du marché et je postule qu'il existe cinq obstacles principaux à l'entrepreneuriat inventif. L'alignement des initiatives entreprises à Hong Kong avec les barrières sur lesquelles repose le cadre conceptuel contribue à l'avancement des connaissances dans le domaine de l'entrepreneuriat novateur, jette les bases des recherches futures destinées à établir une adéquation entre les mesures politiques et les résultats à Hong Kong et aide la recherche transculturelle à déterminer si les aspects du cadre conceptuel sont spécifiques ou généralisables.

Mots-clés : entrepreneuriat novateur, culture, Hong Kong, intervention gouvernementale, laissez-faire

In any dynamic innovation system, entrepreneurship plays a vital role and therefore deserves study (cf. Bhide, 2000). According to the Global Entrepreneurship Monitor, entrepreneurs account for two-thirds of all innovations, acting as change agents, translating new discoveries and inventions into new products and services, seeking new possibilities, and creating new combinations of resources and products. They drive economic change. Promoting

innovative entrepreneurship—defined as the willingness and ability of an entrepreneur (within a firm) to provide or marshal the resources required to create marketable opportunities for the commercialization of new technological and nontechnological products or processes—is an important concern of policymakers worldwide.

With Hong Kong as its setting, this paper aims to address the following questions: What can governments do to facilitate and promote innovative entrepreneurship effectively? How do governmental measures overcome obstacles to innovative entrepreneurship? Broadly speaking, policymakers can choose from a broad spectrum of approaches ranging from active, top-down government intervention, such as cutting taxes or injecting capital directly into private ventures, to long-term cultivation of a culture of entrepreneurship at ground level, such as encouraging and ultimately fostering bottom-up activity on

The author gratefully acknowledges funding support provided by Research Project Competition (RPC) grant from The Hong Kong University of Science and Technology (HKUST), Project No.: RPC11HSS02.

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the part of new market entrants. In this spectrum, governments can initiate specific measures to overcome certain obstacles that inhibit private investment in innovative entrepreneurship.

As Feldman's (2005) empirical findings demonstrate, to a considerable extent the interventionist policy framework that economists identify as promoting entrepreneurship appears to lag rather than lead the behaviour of entrepreneurs, insofar as innovative entrepreneurship seems relatively unresponsive to direct stimulus but thrives when certain conditions or key institutions are in place. This raises questions about our understanding of the dynamics of regional change and associated policy prescriptions.

In this paper I construct a conceptual framework for understanding the dynamics of private investments in innovative entrepreneurship in the face of five obstacles to innovation investment. I apply this framework to Hong Kong, a globally significant setting with its history of *laissez faire* free market capitalism, its formative relationship with Mainland China, and the transformative steps it has taken to harness innovation and technology through unprecedented government policy intervention following its return of sovereignty to Mainland China as the Hong Kong Special Administrative Region (HKSAR—hereafter referred to simply as "Hong Kong").

This paper offers three general lessons for other emerging national or regional innovation systems (such as Hong Kong's) across the globe whose governments grapple with the immediacy of promoting innovative entrepreneurship as a means of combining and harnessing both innovation and entrepreneurship in the pursuit of employment, competitiveness, and economic growth. First, directed efforts to overcome specific obstacles to innovative entrepreneurship must be synonymous with broader measures to transform the prevailing culture in society. While Feldman and Francis (2004) and Feldman (2005) have previously articulated this point, this paper contextualizes their discussion within the regional economy of Hong Kong. The second emphasizes the importance of patience. Either in attempting to overcome specific obstacles to innovative entrepreneurship, or in attempting to transform the prevailing societal and organizational culture, sufficient time is a necessary ingredient. For the former, I have already mentioned that Feldman's (2005) empirical findings demonstrate that interventionist policy lags behind the behaviour of entrepreneurs. For the latter, it is well known that meaningful cultural changes can only realistically occur over a period of years, decades, and even generations. For this reason, in attempting to modify innovative entrepreneurship, long-time horizons are necessary, especially when attempting to match outcomes of government measures to specific policy prescriptions already in place, the time of which is likely to be lengthy. Finally, and related to the aforementioned second point, is the need for tolerance of failure. The various measures the Hong Kong government has introduced have had limited success, although some of the initiatives have failed. In

dealing with innovation, policymakers must recognize that not only are many innovative entrepreneurs likely to fail, but that some entirely well-intentioned policy initiatives may also be met with suboptimal success. Therefore, a culture of "policy-learning" needs to be adopted whereby the policy-learning process is considered as important as the ultimate desired outcomes (increased innovative entrepreneurial activity).

In the second section of the paper I introduce the conceptual framework of the study, five obstacles to innovative entrepreneurship that government policy should address, and lay out the theoretical basis in the literature for this framework. The third section surveys policy initiatives that have been undertaken in Hong Kong since the handover and analyzes their capacity to assist innovative entrepreneurs in overcoming the obstacles to investment. The final section discusses the results of the analysis, the study's contributions and limitations, and draws conclusions about the direction of Hong Kong's innovation policy going forward.

Conceptual Framework and Theoretical Justification of Government Support of Innovative Entrepreneurship

The conceptual framework within which this paper analyzes the role of government support for innovative entrepreneurship consists essentially of five institutional (property rights) and sectoral (high risk, high costs, time lag between R&D and commercialization, complementary nature of technologies) obstacles that discourage entrepreneurs from leveraging innovation to achieve competitive advantage in a given market. I introduce this framework believing that the analysis undertaken here has its basis in the theory of market failure. For the purposes of this paper, I assume that market failure exists when conditions within a given market discourage private firms from making investments that would be beneficial to society. In this case, I argue that Hong Kong would benefit from robust private investment in innovation and R&D just as innovating firms would enjoy a strong competitive advantage in global markets and in the further integration into the Mainland Chinese economy. That is, Hong Kong firms tend to innovate to a lesser degree than is socially desirable from the standpoint of Hong Kong's long-term competitive positioning in global markets. With respect to the role of government in supporting innovation, Link and Siegel (2007, p. 151) noted that:

the explicit application of market failure to justify government's role in fostering innovative entrepreneurship is a relatively recent phenomenon within public policy whereby governments are seen to have a responsibility for improving the institutional framework of knowledge exchange among and between market and non-market organizations in addition to correcting market failures (e.g., by providing public goods, intellectual property rights, subsidizing R&D).

It is well understood among scholars of innovation studies that relying solely on a market system will result in firm-level underinvestment in innovation-related activities relative to the socially desirable level. This is due to a variety of factors such as the external benefits of the production of knowledge, limited appropriability of innovations or new technologies, and financial market failure (Martin & Scott 2000, p. 438). The key is the perceived risk of R&D and innovation. When private firms forecast incomplete appropriation of the social returns of innovation in the context of technical and market risk, they view such risk as unacceptably high. This creates a *prima facie* case in favour of government intervention to promote innovative activity by targeting innovation inputs, such as R&D, venture capital, and knowledge capacity, and innovation outputs such as patents.

Private firms are typically dissuaded from investing in innovation and technology development because of perceived obstacles (which are not always mutually exclusive) to market entry and success. It is to help them overcome such obstacles that government intervention can be an appropriate policy response (Link & Siegel, 2007). Additionally, a sufficiently strong entrepreneurial culture should help overcome these obstacles. A weak culture, however, may mean that these obstacles—individually or jointly— inhibit increased private investment in innovative entrepreneurship. This conceptual framework for understanding the dynamics of private investment in innovative entrepreneurship in terms of obstacles to innovation helps to identify the policy measures that Hong Kong has undertaken in terms of the framework's generalizable principles even as it illuminates those policies' specific aims and objectives.

As noted, identification of five key obstacles to innovative entrepreneurship guided my analysis of Hong Kong's policy response. Although these obstacles are typically closely interrelated, it is conceivable that any one of them might prevent a firm from investing in innovation:

- *High technical risk associated with underlying R&D (high risk)*: New technologies are risky because they have not yet found a market and so the return on investment is highly uncertain. Here even if a technology is likely to benefit society, if the present value of expected returns from the firm perspective is less than the investment cost, the innovation will not be pursued.
- *High capital costs to undertake the underlying R&D (high cost)*: Imitation or competing substitutes can lead the marketplace to reject a technically sound innovation when the requisite R&D to produce the innovation is highly intensive. In such a case, an innovation project may require too much capital for any one firm or any one entrepreneur to feel comfortable making the outlay. In such a case, a firm will not make the investment because the project does not appear to be profitable from the firm's private perspective.
- *Long time from initial R&D to commercialization of the resulting technology (time-to-market)*: As with most

innovation-related projects, the time needed to complete R&D and then bring the resulting product to market is long, deferring the realization of cash flow from the R&D investment into the distant future. This leads to underinvestment in R&D, which increases as time-to-market increases.

- *Market success of a technology depends on technologies in other industries (poor integration of complementary industries)*: The complementary nature of technologies (Rosenberg, 1982) often requires investments in combinations of technologies that involve several industries. When such industries are not integrated, which is often the case with new technologies, firms will shy away from making such investments, especially when integration with other industries transcends the R&D strategy of individual firms or innovative entrepreneurs.
- *Property rights cannot be assigned to the underlying R&D, especially when it spills over to multiple markets (inappropriate property rights)*: The knowledge developed by firms that invest in technological innovation may spillover to other firms during the R&D phase or after the new technology is introduced to the market. If such information creates value for firms that benefit from the spillovers (especially firms in multiple markets), then, all else being equal, innovating firms may underinvest in innovation because they are unable to appropriate that knowledge within the boundaries of their market strategies. At the application stage, intense competition can result because of competing substitute goods, whether patented or not. When the cost of imitation is low, an individual firm will anticipate such competition and may therefore not anticipate returns sufficient to cover its R&D investment costs.

These interrelated and overlapping obstacles underlie what Arrow (1962) identified as the nonexclusivity and public good characteristics of investments in the creation of knowledge. In theory, they can be overcome not only through targeted policy measures, but also when there is a sufficiently strong culture of innovative entrepreneurship. These obstacles lead to private underinvestment in R&D, creating a need for governments to promote innovative technology development. While most modern governments understand the importance of innovative entrepreneurship, there is little consensus over how best to support it. Governments can, for example, employ innovation policy to generate new knowledge, make government investment in innovation more effective, enhance the diffusion of knowledge and technology, and, most importantly, establish the correct incentives for stimulating commercially successful private-sector innovation. This study takes its cue from research by Feldman and Francis (2004), which downplays the importance of reducing factor costs while supporting the targeted and vigorous development of institutions that help foster an entrepreneurial culture that produces

innovative entrepreneurs who can overcome obstacles to investment in innovation. With a strong enough entrepreneurial culture, the institutional and sectoral barriers to innovative entrepreneurship previously identified can be overcome. And while a climate in which a weak entrepreneurial culture prevails, the institutional and sectoral barriers to innovative entrepreneurship are unlikely to be triumphed over.

While economists associate both entrepreneurship and innovation with economic growth, it is possible to distinguish innovative entrepreneurship from entrepreneurship *per se*. Even though entrepreneurship is a key focus of industrial policy, entrepreneurship is not the likeliest of magic bullets for economic development. The vast majority of new firms produce very limited economic impact since they are generally neither innovative nor growth-oriented. Furthermore, as Nelson (1998) has pointed out, institutional context plays an important role in determining which emerging technologies become successfully commercialized. Similarly, Saxenian (1994) has described at length the importance of the relationship between entrepreneurs and local environments in fostering innovative entrepreneurship. Finally, we must be careful to avoid too narrow a focus on institutional factors lest we neglect the important task of evaluating the contributions of individual agents of change (those who pursue innovative activities) in driving economic growth (see Appold, 2000 for a review).

As early as 1934, Joseph Schumpeter recognized the value of entrepreneurship's "creative destruction." Schumpeter saw the entrepreneur as an agent of instability and creative transformation who founds new enterprises and disrupts established markets with radically new products or concepts. "The entrepreneur," he noted, "is the innovator who implements change within markets through the carrying out of new combinations" (Schumpeter, 1934). I characterized entrepreneurship in terms of the capacity and drive to recognize and create new economic opportunities, bring resulting new products or processes to the marketplace, and accept the risk involved when competing in that marketplace (cf. Wennekers, Thurik, & Buis, 1997, p. 5). Entrepreneurs need not own their own enterprises; they may be individuals who produce creative ideas within larger organizations. Moreover, entrepreneurship involves more than merely creating economic opportunities. Successful entrepreneurs leverage such opportunities in competitive marketplaces. An entrepreneur must be both creative and market-oriented.

Entrepreneurship properly harnessed can enhance an economy's capacity to innovate, and innovation is increasingly recognized as key to economic growth and development (Mokyr, 1990). Entrepreneurship and new-firm formation are central to current thinking about economic growth (Audretsch, Keilbach, & Lehmann, 2006; Feldman, 2005). As Audretsch (1995) pointed out, start-up firms embody innovation, especially for radical new technologies or services not easily absorbed into existing firms. Yet innovation is by no means essential to entrepreneurial activity; understanding the

relationship between innovation and entrepreneurship is important. The latter is often equated with risk-taking and self-employment, but these traits tell us little about innovation.

For its part, innovation is often equated with technological progress, but innovative entrepreneurship ranges well beyond entrepreneurship in the technology sector. According to Nelson (1993, p. 4), innovation encompasses "the processes by which firms master and get into practice product designs and manufacturing processes that are new to them." Such a broad understanding of innovation is particularly meaningful within the context of innovative entrepreneurship insofar as upgrading technology or improving skills may lead to more efficient uses of resources or higher-quality outputs, but not necessarily to new products or patents. Lundvall (2007) emphasized that it is important to avoid a high-tech bias when thinking about innovation. This is especially true when considering entrepreneurial activities. Apart from new technology-oriented products, entrepreneurs can also develop new services or entirely new business concepts such as delivering experiences to customers. Innovation may also apply to the development of new business methods or new organizational models. Innovative entrepreneurs are typically recognized as agents of change who not only initiate an "entrepreneurship event"—the decision to form a company (Shapiro, 1984)—but who translate discoveries and inventions into new products and services, seeking new possibilities and making new combinations and thereby driving change and improving an economy's productivity.

My analysis of Hong Kong's capacity to generate innovative entrepreneurship—defined as the willingness and ability to provide or marshal the resources required to create marketable opportunities for the commercialization of new products or processes—suggests that specific measures targeting key obstacles to innovative entrepreneurship often considered essential to entrepreneurial activity are themselves products of more fundamental cultural conditions out of which entrepreneurial activity arises naturally (cf. Feldman, 2005; Feldman & Francis, 2004). Governments can, to be sure, encourage the emergence of these elemental conditions with policies that support or transform the institutional resources that entrepreneurs employ to enter the market. Yet governments are perhaps better suited to apply more targeted policies directed at specific obstacles. Should a government successfully encourage the emergence of a sufficiently strong culture, then that culture can help overcome specific, market-related obstacles to innovative entrepreneurship. Accordingly, Hong Kong seems to be orienting its attempts to positively affect innovative entrepreneurship, not with active and highly interventionist measures to directly influence the behaviour of potentially innovative entrepreneurs, but by effecting institutional changes conducive to fostering a healthy culture of entrepreneurship and aiming certain policies at overcoming some of the more specific obstacles to increased private investment in innovative entrepreneurship (Sharif & Baark, 2009).

The target of government’s initiatives is the entrepreneurially innovative entrepreneur working within a firm. Given that the majority of Hong Kong firms are nonmanufacturing entities that employ fewer than 50 people, efforts to alter culture are primarily directed at the individual, secondarily at the organization, and lastly at society. In this way, innovative entrepreneurship in Hong Kong can be understood first and foremost as the entrepreneurial behaviour of individuals within firms. Decisions to be entrepreneurial (or not) are made by individuals and they are, therefore, the most important and effective targets of government policies. Conceptually, then, the framing of this paper incorporates both societal and organizational culture in addition to the culture of innovative entrepreneurs. Societal culture is taken to refer to norms, beliefs, values, and social expectations of members of society at large. Societal culture forms part of the store of cultural knowledge available to organizational members for use in their interactions with others. Societal culture differs from organizational culture, which is defined here as a patterned system of perceptions, meanings, and beliefs about an organization that facilitates sense-making among a group of people sharing common experiences and guides individual behaviour at work (Bloor & Dawson, 1994). This definition emphasizes the interplay of individual behaviour with the sharedness of meanings and cognition at the group level.

It is important to strike the right balance between direct interventions designed to overcome obstacles and efforts to cultivate such a culture from the bottom up. There is evidence that Hong Kong is approaching this balance by encouraging innovation among small- and medium-sized enterprises (SMEs), funding incubation facilities, and offering more options for financing entrepreneurial activity (as a means of overcoming specific market-related obstacles), thereby helping to create conditions in which innovative entrepreneurs emerge and thrive. This new direction is in line with the conclusions of Feldman and Francis (2004) that the most important factor in promoting innovative entrepreneurship is a robust entrepreneurial culture. In such an environment, bottom-up activity generated by innovative entrepreneurs—activity that embodies the entrepreneurial esprit de corps—will create more opportunities for top-down policy intervention targeted toward specific obstacles to yield positive results. Perhaps, as I suggest here, external, top-down factors that support innovative entrepreneurship may work best when correlated with a focus on specific institutional and sectoral obstacles impeding innovative entrepreneurship, as developed in the conceptual framework.

Government Policies Promoting Innovative Entrepreneurship in Hong Kong

Until very recently, the Hong Kong government has maintained a fairly strict laissez-faire approach to governance, featuring free trade, no import or currency

restrictions, low taxes and small government, negligible state borrowing, regular budget surpluses, minimal interference with market forces, no long-term state planning, and no development subsidies or investment incentives (Goodstadt, 2005). In other words, the overarching economic policy framework—once dubbed “positive non-interventionism” but more recently labelled “small government, big market”—has not favoured centralized economic policymaking initiatives. Under British rule, laissez-faire economics went hand-in-hand with a deep reluctance among officials to become involved in social development combined with a marked preference for letting Hong Kong manage its own affairs (Sharif, 2006). Key business and professional actors created an environment in which innovative entrepreneurship from the bottom up has guided policy formulations (Berger & Lester, 1997). In many ways, this remains a feature of Hong Kong’s current economic and innovation policymaking apparatus, even if there have been recent moves toward adopting a new strategy for innovation and technology policy-making using an “innovation systems” approach (Sharif, 2010).

Hong Kong features a traditional business model in which Chinese SMEs (mostly family businesses) have flourished in Hong Kong while controlling a large manufacturing base in Guangdong province (cf. Huang & Sharif, 2009). This model superimposes a paternalistic management structure onto a network of social and economic relationships connecting firms of many sizes (Redding, 1990). Thus, efforts to encourage innovation as a business driver must contend with an environment in which Hong Kong firms exploit their traditional strategies of imitation and “followership” while emphasizing the development of organizational know-how rather than formal R&D for new product development.

Table 1
Hong Kong’s Early Stage Entrepreneurial Prevalence Rates: 2002–2004 Compared to 2007

Year	Activity by nascent entrepreneurs	Activity by new business owners
2002	1.7	1.7
2003	1.7	1.6
2004	1.5	1.6
2007	5.7	4.3

Definitions: *Nascent entrepreneur* denotes an individual who currently owns and manages a new business that has committed resources but has paid wages, profits, or payments in kind for less than three months.

A *new business owner* denotes an individual who currently owns and manages a business that has paid wages, profits, or payments in kind for more than three months but not more than 42 months.

Source: Thomas et al., 2008, p. 7

Enhancing the Culture of Innovative Entrepreneurship in Hong Kong

According to the Global Entrepreneurship Monitor report of 2007, Hong Kong enjoys relatively high levels of nascent business entrepreneurship, resulting in considerable early-stage entrepreneurial activity. Among the high-income economies of the world, only Iceland’s appears more entrepreneurial than those of Hong Kong (Thomas et al. 2008, p. 4). As shown in Table 1, the percentage of Hong Kong’s population that has started new businesses between December 2003 and May 2007 has risen dramatically.

Even as levels of entrepreneurship have risen in Hong Kong, the type of entrepreneur that the Global Entrepreneurship Monitor finds to be prevalent there befits Hong Kong’s status as a service-oriented economy. Seventy-seven percent of Hong Kong’s current early-stage entrepreneurs are service-oriented. Within the service sector, consumer services dominate. Thus, while there are plenty of entrepreneurs, relatively few innovate (Fuller, 2010).

Hampered by a weak R&D culture, the private sector in Hong Kong has not traditionally played the role *via-à-vis* R&D that is typical of advanced economies. As Table 2 shows, over the period of 1995–2001, investment by private businesses comprised only about one quarter of the total

R&D expenditures in Hong Kong. One reason is that 98% of Hong Kong firms are SMEs and such firms typically lack substantial innovation-related resources. Innovative entrepreneurial firms require skilled labour services and proximity to sources of knowledge and expertise, not just reduced factor costs (Feldman & Francis, 2004, p. 128). Innovative start-ups create new markets where no competition exists and demand is not sensitive to production costs. Innovative entrepreneurs gain a competitive advantage in being first to market or by offering a higher quality product. From 2002–2003 and onwards, however, the contribution of business R&D expenditure (BERD) grew rapidly, with the BERD percentage exceeding the higher education R&D (HERD) percentage in 2005 and 2006 (before falling in recent years, partially in response to the global financial crisis). It is too early to conclude that this is the result of government technology and innovation-related initiatives, but the trend is promising.

A 2004 study of entrepreneurship in Hong Kong indicates that new firms prefer leveraging existing technology to assuming the risk involved in technology innovation (Global Entrepreneurship Monitor, 2004). Other studies have shown that Hong Kong firms emphasize entrepreneurial learning and imitative strategies, seeking to exploit new market opportunities through flexible and rapid re-

Table 2
*R&D Expenditure by Performing Sector, as a Percentage of GDP: 1995–2009**

Year/Sector	1995	1996	1997	1998	1999	2000	2001	
BERD	0.11% ^(a)	0.13% ^(a)	0.10% ^(a)	0.12% ^(a)	0.11% ^(a)	0.08% ^(a)	0.16% ^(a)	
HERD	0.24% ^(a)	0.25% ^(a)	0.27% ^(a)	0.30% ^(a)	0.34% ^(a)	0.38% ^(a)	0.37% ^(a)	
GOVERD	0.01% ^(b)	0.01% ^(b)	0.01% ^(b)	0.01% ^(a)	0.01% ^(a)	0.01% ^(a)	0.01% ^(a)	
Total (GERD)	0.36%	0.39%	0.38%	0.43% ^(a)	0.46% ^(a)	0.47% ^(a)	0.54% ^(a)	
Year/Sector	2002	2003	2004	2005	2006	2007	2008	2009
BERD	0.20% ^(a)	0.29% ^(a)	0.36% ^(c)	0.41% ^(c)	0.43% ^(c)	0.37% ^(c)	0.31% ^(c)	0.34% ^(c)
HERD	0.38% ^(a)	0.39% ^(a)	0.36% ^(c)	0.37% ^(c)	0.37% ^(c)	0.38% ^(c)	0.40% ^(c)	0.42% ^(c)
GOVERD	0.02% ^(a)	0.02% ^(a)	0.02% ^(c)	0.03% ^(c)				
Total (GERD)	0.60% ^(a)	0.70% ^(a)	0.74% ^(c)	0.80% ^(c)	0.82% ^(c)	0.77% ^(c)	0.73% ^(c)	0.79% ^(c)

*As of September 25, 2011, the latest year for which R&D expenditure statistics/figures were available was 2009.

BERD:

Business Expenditure on Research and Development

HERD:

Higher Education Expenditure on Research and Development

GOVERD:

Government Expenditure on Research and Development

GERD:

Gross Domestic Expenditure on Research and Development

Sources:

^aFigures in respect of BERD (from 1995 to 2003), HERD (from 1995 to 2003) and GOVERD (from 1998 to 2003) are extracted from the publication *Hong Kong as a Knowledge-based Economy: A Statistical Perspective, 2005 Edition*, C&SD, HKSAR.

^bFigures in respect of GOVERD from 1995 to 1997 are estimates based on 1998 and later figures.

^cFigures in respect of BERD, HERD and GOVERD for 2004 to 2009 are extracted from Table 1 of the feature article on ‘Statistics on Innovation Activities in Hong Kong, 2004 to 2009’ in the March 2011 issue of the *Hong Kong Monthly Digest of Statistics* published by C&SD, HKSAR.

engineering of production networks rather than innovating through R&D-intensive products or processes (Sharif & Baark, 2005; Yu, 2004). The Hong Kong government has begun addressing this situation by actively inculcating an innovative mindset among Hong Kong's future entrepreneurs, mainly by means of both formal and informal education. For instance, the Innovation and Technology Commission (ITC) organizes an annual innovation festival comprising a series of road shows, technology and design workshops, exhibitions, and invention competitions to arouse the interest of the general public in innovative entrepreneurship. The ITC has also established the Hong Kong Youth Innovation Club to foster a culture of innovation blended with a notion of entrepreneurship to develop the potential of Hong Kong's younger talent. These early initiatives may indeed test Feldman and Francis's (2004) hypothesis that the general culture may be the most important underlying factor in establishing a region's "preparedness" to take advantage of opportunities for innovative entrepreneurship. Feldman and Francis stressed what they saw as the importance of a "sound infrastructure and business climate to support industrial development, especially in building shared resources that augment individual company innovative capacity" (Feldman & Francis, 2003, p. 785). Although government-instituted reforms targeting culture operate over long timeframes, they invariably yield a concomitantly longer-lasting impact.

In terms of formal education—also considered part of the long-term elemental conditions or culture—currently the Hong Kong education system emphasizes the appropriation of existing knowledge rather than the exploratory and creative search for new knowledge. Yet if the government is to earn credibility for promoting innovative entrepreneurship, it must address the reorientation of the higher education system. This is in line with the recommendations of the Commission on Innovation and Technology's (CIT) second report in which it recommended that "Hong Kong pay special attention to creativity" and "vigorously *promote a culture of lifelong learning* among the workforce" so as to "inspire interest in science and technology among young people" (italics added; Hong Kong SAR, 1999, p. 5). Here again we see Hong Kong policymakers focusing on a culture that values acquiring new skills, knowledge, and competencies.

At the secondary school level, rote learning prepares students to perform well in exams at the expense of such imparting intangible assets as knowledge application, problem solving, and spontaneity. As a result, students find it difficult to cultivate creative skills or to develop understanding that crosses disciplines. Nevertheless, Hong Kong's education system produces students with outstanding capability in mathematics and science—foundational subjects for advanced development of scientific and engineering knowledge.

In an attempt to grow a culture of creativity among local students, the Hong Kong government's Education

Commission responded in 2000 with education reform proposals that promote the development of critical and exploratory thinking, innovating and adapting to change, self-confidence, team spirit, social interaction, and moral and civic values and behaviours (Hong Kong SAR Education Commission, 2000, 2001, 2002–4). In conjunction with this initiative, changes have been proposed for the secondary and tertiary education sectors to help students acquire skills applicable to the development of innovative entrepreneurship. Such reforms have the potential over the long term to further develop and enhance an entrepreneurial culture, and as such, a culture is critical not only in stimulating innovative entrepreneurship but also in overcoming specific market-related obstacles to innovative entrepreneurship; these reforms should in turn help drive such activity in Hong Kong.

Career incentives offered by major universities in Hong Kong can also influence the processes through which innovative entrepreneurs find their way to industry, but the three predominantly research-oriented universities—the University of Hong Kong (HKU), the Chinese University of Hong Kong (CUHK), and the Hong Kong University of Science and Technology (HKUST)—promote faculty primarily on the basis of publication of scientific papers together with teaching evaluations. While this helps to ensure that the most talented and eminent scientists are recruited and promoted, faculty members have little incentive to undertake the risks necessary to become innovative entrepreneurs.

Obstacles to Private Investment in Innovative Entrepreneurship in Hong Kong

Governments can institute specific measures in order to overcome obstacles to private investment in innovative entrepreneurship such as the five I identified in the previous section. Combined with a sufficiently strong innovative culture, effectively targeted policy measures are likely to lead to increased investment in innovative entrepreneurship. Hong Kong has generally eschewed highly interventionist government policies that lower factor input prices or reduce costs to influence firm location decisions, favouring measures aimed at overcoming specific market-related obstacles.

Government support for SMEs. Although large enterprises constitute only a small proportion of all companies in Hong Kong (2.77% in 2009), they are far more likely to innovate than SMEs: Large firms account for the bulk of the innovation expenditures (in dollar terms) and innovate more as compared with expenditures made by SMEs. For instance, in 2009, 26.3% of large firms in Hong Kong undertook technological innovation activities, representing 34.0% of the total expenditure on technological innovation. Key statistics on the innovation activities of small, medium, and large firms for 2001 and 2009 are provided in Table 3.

Table 3
Key Statistics on Technological Innovation Activities in the Business Sector, 2001 and 2009

Size of establishment	Year	Total number of establishments (as % of total)	Number of establishments having undertaken technological innovation activities	Technological innovation expenditure (HK\$ million) ²
Large	2001	5,781 (2.1%)	771 (13.3%)	3,602.8 (53.4%)
	2009	7,492 (2.77%)	1,969 (26.3%)	4,771 (34.0%)
Medium	2001	32,591 (12.0%)	2,647 (8.1%)	1,987.2 (29.5%)
	2009	30,191 (11.17%)	2,537 (8.4%)	5,274.3 (37.6%)
Small	2001	234,315 (85.9%)	7,448 (3.2%)	1,156.4 (17.1%)
	2009	232,673 (86.06%)	4,439 (1.9%)	3,994.2 (28.4%)
Total	2001	272,688 (100%)	10,866 (4.0%)	6,746.4 (100.0%)
	2009	270,356 (100%)	8,945 (3.3%)	14,039.6 (100%)

¹Technological innovation activities include any of: technological product innovation, technological process innovation, ongoing technological innovation activities and abandoned technological innovation activities. Figures in brackets represent the percentages to total no. of establishments. It should, however, be noted that firms may also undertake nontechnological innovation activities (e.g., significant changes in business practices in such areas as organization, management, marketing and aesthetic appearance of products) to enhance competitiveness and performance.

²Figures in brackets represent the percentages to total technological innovation expenditure.

Source: Table 1.2 of the *Report on 2002 Annual Survey of Innovation Activities in the Business Sector*, and Table 2.1 of the *Report on 2009 Annual Survey of Innovation Activities in the Business Sector*, published by C&SD, HKSAR.

In June 2001, the Small and Medium Enterprises Committee submitted a report to the Chief Executive on SME support. The report studied long-unsolved social and economic problems that have hampered the competitiveness of SMEs and proposed various remedies. In particular, the report helped establish four SME funding schemes designed to achieve the following objectives: to provide SMEs with more financing options, to raise the human capital skill levels available to SMEs, to expand SMEs' markets while promoting technology use, and to promote and maintain a business-friendly environment.

SMEs, (including technology and innovation-related start-ups), rely heavily on personal savings in lieu of readily available business loans. Government efforts to raise awareness of the importance of innovation among all Hong Kong firms has helped increase the percentage of SMEs (broken down into small and medium firms) undertaking innovative activities (small firms: 3.2% in 2001 and 1.9% in 2009; medium firms: 8.1% in 2001 and 8.4% in 2009; Hong Kong SAR, 2002, 2009).

A funding scheme dedicated to promoting innovative entrepreneurship is the Small Entrepreneur Research Assistance Program (SERAP), based loosely on the US Small Business Administration model to provide funding to small companies for innovative projects. Under SERAP, the government provides unsecured, noninterest-bearing loans of up to HK\$2 million, which companies must match either in kind or in cash. As of July 31, 2011, there were 345 projects approved under SERAP totalling HK\$378.7 million. Table 4 below provides further details of approved projects under SERAP.

Table 5 shows that most of the SERAP projects were in the areas of information technology and electronics, which suggests that technology-based entrepreneurs have been the major recipients of this source of funding. It is possible that this program has had some impact on the growth of BERD as shown in Table 2, but because large firms continue to undertake the lion's share of R&D in Hong Kong, SERAP funding is likely to have had only a moderate effect on the numbers reported in the table.

These five funding schemes, particularly SERAP, should help firms overcome at least two of the obstacles to innovative entrepreneurship I have mentioned. First, such measures help reduce the high cost of R&D. In cases where an innovation project requires too much capital for any one firm to feel comfortable making the outlay, the government provides financial support in order to make the project appear more profitable from the firm's perspective. Second, these measures also address the time-to-market barrier by providing sufficient cash flow while the sometimes-lengthy process of transforming an innovation into a marketable product unfolds.

Embracing innovative entrepreneurship through incubation facilities. Support of innovative entrepreneurship in Hong Kong has gradually spawned public incubator facilities over the last 10 years. One early example is the Hong Kong Institute of Biotechnology (HKIB), which was formed to foster a successful biotechnology industry in Hong Kong by providing downstream R&D support and an incubator facility for local entrepreneurs. Growth in the biotechnology industry in Hong Kong has been slow, however, and the most successful venture in this field—CK Life Sciences—has no connection to the HKIB. Most companies that have been incubated by the HKIB have

Table 4
Distribution by Technology Area of Approved Projects under SERAP, as of 31 July 2011

Technology area	Number of projects approved	Amount (HK\$ million)
Biotechnology	29	40.5
Chinese medicine	1	0.4
Electrical and electronics	77	90.0
Environmental technology	13	13.9
Information technology	185	189.8
Manufacturing technology	18	18.3
Materials science	12	14.6
Nanotechnology	2	5.3
Others	8	5.9
Total:	345	378.7

Source: <http://www.itf.gov.hk/eng/StatView107.asp> accessed 27 September 2011.

either folded or remained as small units occupying the HKIB building (Baark, 2005). Insofar as the HKIB was designed mainly to reduce the input costs of biotechnology-related companies, the failure of the HKIB can be seen as further proof of Feldman’s premise that the general culture is the most important underlying factor for successful innovative entrepreneurship.

A more important initiative related to the incubation of high-technology business is the Hong Kong Industrial Technology Centre Corporation (HKITCC), established in 1992. This initiative was aimed at promoting technology development primarily through technology-based business incubation and accommodation; the provision of technology transfer services; and the provision of product design, development, and support services. In keeping with its mission to foster a change in the mindset of Hong Kong’s entrepreneurs, the CIT recommended that the HKITCC’s concept be encouraged and further promoted to other universities’ (Hong Kong SAR, 1998, p. 81). The centre has hosted more than 80 new ventures in high-technology areas. In April 2002, the HKITCC was brought together with the new facilities established at the Hong Kong Science and Technology Park to form an enhanced incubation scheme called the Inu-Tech Programme. The history of these incubation facilitation efforts is depicted in Figure 1, which shows the number of firms joining the incubation program since 1992–93 and the cumulative annual number of graduated firms through 2009–10.

Despite these efforts, few high-growth firms have emerged from the incubation program. Thus, as of 2005, among the 201 companies listed on the Hong Kong Growth Enterprise Market (HKGEM; see below), only three are graduates of the incubation program of either the former

HKITCC or the Inu-Tech Programme. In general terms, the HKITCC has experienced slightly greater success than the HKIB mainly because it not only reduces input costs but also addresses the obstacle of poor integration of complementary industries by providing institutional infrastructure across industries.

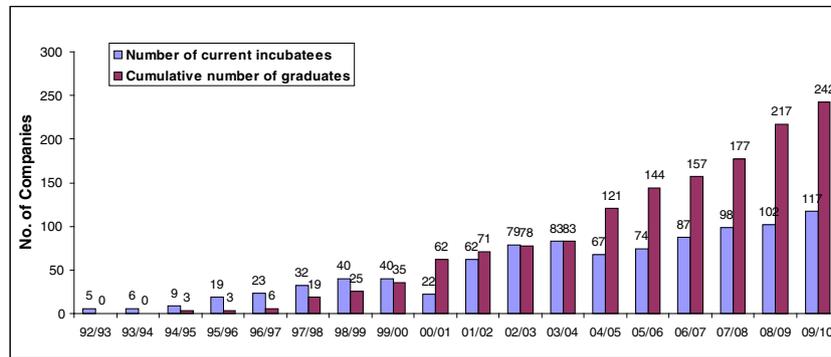
In summary, then, the HKITCC addresses three specific obstacles to innovative entrepreneurship in Hong Kong. First, it addresses high risk, by offering, for instance, business accommodation and incubation facilities. Second, it targets the time-to-market problem by offering cheaper-than-market leases and support services to participating firms. Finally, by funding incubation facilities, it (along with the HKIB) makes it possible to bring together technologies from several poorly integrated industries. By providing technology transfer services as well as product design and development services, such incubation facilities help to integrate markets that are important to the success of a technology-based innovative entrepreneur.

Financing for innovative entrepreneurs. Entrepreneurs frequently cite the difficulty of securing the financing they need as the most serious impediment to entrepreneurship (cf. Ahlstrom et al. 2005, p. 17), and indeed it seems always to be a difficult proposition to obtain requisite financing for innovative entrepreneurs in Hong Kong. Berger and Lester’s (1997, p. 293) observation remains as apt today as it was 14 years ago: “while there is plenty of capital available in Hong Kong, it is striking how little of it is directed into start-up firms or into funding technological upgrades.” In this regard, then, modifying the culture for innovative entrepreneurship requires targeting several elements of Hong Kong’s innovation system.

Banks in Hong Kong do not explicitly differentiate between large and small firms or between innovation-related and non-innovation-related firms when considering requests for start-up financing. Nevertheless, in practice, large firms are typically better able to demonstrate creditworthiness. When judging the creditworthiness of potential customers, banks reference a familiar range of factors that include financial strength, profitability, net worth, track record, management quality, relations and payment records with other banks, business prospects, business risks (such as the degree of concentration of suppliers and customers), and opinions from trade counterparties (Hong Kong Monetary Authority Quarterly Bulletin, August 2000). According to a survey conducted by the Hong Kong Monetary Authority, the availability of collateral was an important factor in determining loan decisions. Clearly, loans are not granted if would-be borrowers do not meet the required financial management standards.

As a result, (family) equity is typically the major source of start-up and early-growth capital for innovative entrepreneurs (Au & Kwan, 2009). Lack of financing is a problem because those who identify entrepreneurial opportunities often lack sufficient capital themselves, and it is difficult

Figure 1.
Number of firms in the business incubation programme and cumulative number of graduates - 1992/93–2009/10



Source: http://www.hkstp.org/HKSTPC/en_html/en_full6_1.jsp accessed 27 September 2011

for outsiders to appreciate the value of such an opportunity or to monitor the investment (Au & White, 2010). Moreover, an entrepreneur may be incorrect in the assessment of the value of a given venture, so it is extremely difficult to distinguish between a lack of financing and the rational decision of capital holders to invest only in profitable enterprises. To help overcome these barriers, the Hong Kong government has, over the last decade, implemented two programs to stimulate innovative entrepreneurship: the Applied Research Fund (ARF) and the establishment of an alternative board on the Hong Kong Stock Exchange—the above-mentioned HKGEM.

In 1993, the government set up its own venture-capital resource with total funding of HK\$750 million. The ARF provided venture capital for technological ventures or R&D activities undertaken by local firms that demonstrated commercial potential. Any company that was able to obtain financing from the ARF was entitled to retain all intellectual property rights arising from its project, making this one of the few policy initiatives surveyed here that addresses the obstacle of inappropriable property rights. Since November 1998, private venture capital firms have engaged in managing the ARF. After a review conducted at the end of 2004, it was concluded that the original objective of the ARF—namely to foster the development of technology-based ventures and R&D projects with commercial potential—could be better spearheaded under the new strategic framework for innovative entrepreneurship development, and that there was little reason to continue making new investments under the ARF model. The Applied Research Council (ARC—a private company set up by the government to control and administer the ARF) has accordingly ceased making new investments since March 2005, but continues to oversee existing investments until their exit (Fuller, 2010).

The environment for innovative entrepreneurship in Hong Kong witnessed a major development near the end of 1999 with the establishment of an alternative board on the Hong Kong Stock Exchange—the Hong Kong Growth Enterprise Market (HKGEM). The HKGEM is meant to offer a channel through which innovative and high-growth companies with short histories and little or no proven record of profitability can seek equity funding. Removing traditional entry barriers enables growth enterprises to capitalize on new opportunities by raising expansion capital under a well-established market and regulatory infrastructure. As the HKGEM’s website states, the “GEM complements and supports the HKSAR government’s initiative to promote the development of technology industries in Hong Kong.” As of September 30, 2010, the GEM had enjoyed some significant achievements, with more than HK\$93 billion in equity funds raised, more than 246 new companies listed, and 23 HKGEM companies graduating to the Main Board.

Yet despite the relatively more relaxed listing requirements for the HKGEM as compared with those of the Hong Kong Stock Exchange Main Board, the HKGEM’s problems have often outstripped its achievements. It has been widely criticized for bending listing rules, attracting spin-offs from Hong Kong’s property companies rather than from innovative entrepreneurial start-ups, maintaining low liquidity levels, losing its competitive edge to Mainland exchanges, and causing many shareholders to lose most of their investments. The GEM index return is approximately one-ninth of its value at inception (Au, Baark, Chua, & Hugh, 2006).

Similar to government support for SMEs, financing for innovative entrepreneurs helps overcome two specific obstacles to innovative entrepreneurship. First, the ARF and HKGEM, by providing alternative sources of financial support, help overcome the high cost barrier. When a firm is unable to raise the capital required for an innovation

project, the firm may seek funds from either the ARF or the HKGEM. Second, the ARF and HKGEM help mitigate the high risk barrier associated with underlying R&D by transforming the present value of expected returns to be equal to or greater than the investment costs. As a result, the amount yielding its acceptable return on investment is equal to, or greater than, the present value of expected returns. Moreover, albeit to a slightly lesser extent, financing for innovative entrepreneurs helps alleviate time-to-market cash flow problems associated with R&D investments by offering innovative entrepreneurs means of acquiring cash before their R&D investments yield adequate payoffs.

Discussion

Summary

Since the late 1990s, the government of Hong Kong has sought policy solutions that promote innovative entrepreneurship to drive economic growth. Understanding that innovative entrepreneurs are economic actors with the will and capacity to acquire and utilize resources in successfully marketing new products or processes, this paper analyzes the structure of Hong Kong's policymaking initiatives within a conceptual framework based on five key barriers to innovation, identifying a range of programs designed to promote innovative entrepreneurship.

By aligning practices and policies with the principles of this model, the paper shows that, in spite of its history of laissez-faire governance, Hong Kong is not only mobilizing government resources in a myriad of initiatives that provide financing assistance, incubation assistance, and support for SMEs, but more generally is promoting policies that should help to inculcate a culture of entrepreneurship that, as Feldman (2005) and others have argued, may well supersede the success of more traditional, highly interventionist top-down efforts to spur growth through cost reduction. This broad mobilization of resources has been accompanied by a gradual but noticeable increase in the share of business expenditure or R&D (BERD) over the last decade (Table 2). I have shown that, through this effort, government policies variously address the five key barriers to innovation that make up the conceptual framework of the study: high risk, high cost, time-to-market, and poor integration of complementary industries, and, to a much lesser extent, the problem of inappropriate property rights.

While most modern governments understand the importance of innovative entrepreneurship, there is little consensus over how best to support it. In Hong Kong's case, a refinement of its approach—and crucially, patience—is all that is required, building greater momentum for the initiatives already adopted, and continuing its orientation to innovative entrepreneurship that combines policies, institutions, and infrastructure to foster information flows, as befits a

knowledge-based economy (Sharif, 2010). Moves to foster an entrepreneurial culture will only succeed over the longer term, but specific programs to overcome obstacles to innovative entrepreneurship are underway and the outcomes of these programs should be visible in due course. The one area in which renewed progress is required is in terms of strengthening the intellectual property rights regime so as to ensure that adequate property rights can be properly assigned to the underlying R&D, especially when that R&D, created by Hong Kong firms or entrepreneurs, spills over into the neighbouring Mainland Chinese market.

Ultimately, innovative entrepreneurship depends on disruptions that leave behind winners and losers. Technical disruptions often generate unemployment in the short term (examples of this include automation in manufacturing facilities and the use of inexpensive fiber optics in telecommunications). Governments cannot encourage layoffs among its citizenry. On the whole, governments are, therefore, ill-suited to make the decisions that innovators need to make. It is precisely for this reason that the fundamentals of innovative entrepreneurship are best left to the entrepreneur, who is better positioned to make decisions about the viability of innovative activity and the profitability issuing from entrepreneurship related to that activity. Governments can, however, be more tolerant of failure both in terms of innovative entrepreneurs who may not make it, but also in relation to policy measures (to promote innovative entrepreneurship) that do not live up to their intended goals. Moreover, governments can foster, from the top down, the conditions under which constructive instability and change can take place, allowing innovative entrepreneurship to overcome any obstacles. Here the Hong Kong government has made some measurable progress in its effort to effect change through its targeting of entrepreneurial culture, strengthening it sufficiently to allow private entrepreneurs to triumph over these obstacles. Yet ultimately, government policymaking will be most effective in the context of a broader, multisectoral movement that aligns all of Hong Kong's economic, social, and political resources toward attaining the goal of transforming the economy from one that has traditionally served as an international trading centre into one that generates growth in knowledge-related industries and services.

Contributions to Scholarship

The main finding of this study is that Hong Kong is indeed implementing measures to spawn a culture of entrepreneurship, creating a new field on which to test Feldman's key hypothesis that the capacity of innovative entrepreneurship to fuel economic growth depends on the robustness of such a culture. In addition, Hong Kong has also implemented some measures—support for SMEs, establishment of incubation facilities, and measures to ease financing for innovative entrepreneurs—to

overcome specific, market-related obstacles to innovative entrepreneurship.

The paper's key contribution to the literature lies in its laying the foundation for later studies that will be able to test the Feldman and Francis (2004) hypothesis that top-down policymaking targeted towards specific market-related obstacles cannot effectively stimulate innovative entrepreneurship without a robust culture of entrepreneurship at ground level. It takes a necessary step towards the goal of confirming or rejecting that position. By focusing this question on Hong Kong, the paper also opens a window into a unique juncture in the emergence of the new Asian economic engine—namely the evolving relationship between the former British colony and the awakening economic colossus that is Mainland China. As Hong Kong seeks to preserve and extend its traditional economic success against the backdrop of China's recent embrace of market economics, its capacity to generate innovative entrepreneurship may enable it to assume a new role in the East Asian economic system, perhaps, for example, establishing itself as an R&D center in certain sectors or as a centre for quality and safety standards testing, thus providing China with a vital business partner.

To these ends, the paper establishes a baseline of data, targeting key indicators of both the extent to which Hong Kong successfully generates a culture of entrepreneurship and the effectiveness with which this translates into measurable economic growth and development. This will make it possible for researchers to monitor incoming data over the next several years with a view to determining more definitively whether the Feldman and Francis (2004) hypothesis can be confirmed in a globally significant market setting.

Applied Implications

Hong Kong policymakers, who should be able to make the best practical use of data pertaining to innovative entrepreneurship in the HKSAR, are approaching the line between support and interventionism despite their *laissez-faire* roots; however, they need not cross that line. As they apply the thread of thinking in the literature that identifies entrepreneurial culture as the chief underlying factor in promoting entrepreneurship and harness that lesson together with their ongoing efforts to drive Hong Kong growth through innovation, they can achieve the balance needed to spur growth without undue, direct government interference. Having undertaken efforts to promote innovation and entrepreneurship since 1997, they have made good progress and can leverage that progress most effectively through policies that inculcate an entrepreneurial culture. That is not to say that other, more targeted measures have not been adopted. As I have shown, targeted measures to overcome specific obstacles to innovative entrepreneurship have also been instituted in Hong Kong.

Notwithstanding these targeted measures, enhancing the culture of innovative entrepreneurship remains most important in promoting private investment in innovative entrepreneurship—with a strong culture able to overcome specific market-related obstacles and a weak culture unable to do so. In other words, a strong culture of innovative entrepreneurship may be able to prevent market failure. In terms of the five barriers that inform the conceptual framework of the study, that of modifying or strengthening the R&D-related property rights regime in Hong Kong to overcome the barrier of inappropriable property rights is most in need of development. This is an area in which Hong Kong's policymakers have not undertaken sufficient measures and toward which policymakers would do well to cast their spotlight if they are to continue promoting innovative entrepreneurship in the territory. In this vein, and in light of the generally cited criticism against government bureaucrats—namely, that they lack the sufficient technical expertise to make suitable and timely judgments with regard to the best policy initiatives that need to be implemented to promote innovative entrepreneurship—one important issue may be to train or hire a cadre of relevant bureaucrats (responsible for formulating policies related to innovative entrepreneurship) with the relevant technical expertise in areas of innovation, technology, and science. As of now, this issue persists and is one that could speed up the implementation of policies discussed in this paper and improve upon the effectiveness of policy measures.

Limitations and Future Research Directions

Perhaps the chief limitation is that there are few available outcome data against which to measure the success of Hong Kong's policymaking initiatives. This is unavoidable because the policies have been in place for a relatively short time and for the most part only since 1997. Most policies aimed at spurring economic growth in Hong Kong have therefore existed for barely a decade, with many in place only recently. It will be several years before analysis of the relevant data and effectiveness of the various policies will be possible. Moreover, some policies are broad enough (for example, initiatives to support SMEs) that it will be difficult to judge their relationship to innovative entrepreneurship even when the data are in.

This paucity of data marks out at least one general direction for future research. As outcome data become available, scholars will have the opportunity to analyze them against the baselines established here for each policy initiative (for example, in education, incubation, or university-industry linkages) and apply the results to the Feldman and Francis (2004) approach amongst others. Given recent interest in innovative entrepreneurship, studies that assess the relative effects of initiatives that contribute to engendering an entrepreneurial culture that can use innovation to drive growth

should be the highest priority. Additional research will then be able to provide a more holistic assessment of the success of the overarching policy direction of the Hong Kong government. A second direction for future research would be for a cross-cultural or cross-national comparison of my framework to be conducted against similar studies in other cultures so as to determine whether there are aspects of my framing that are specific to Hong Kong (or Chinese) culture, and whether there are other aspects that are generalizable across nations and cultures.

Notes

1. Of course, difficulties appropriating returns need not always inhibit R&D investment (Baldwin & Scott, 1987). First-mover advantages associated with customer acceptance and demand, as well as increasing returns as markets are penetrated and production is expanded, can imply that an innovator wins most of the rewards.
2. For an effective examination of the importance of focusing on the actions of individuals as agents of change, see Kay (2000).
3. There are several different types of entrepreneurship, which are sometimes distinguished along two dimensions—one that reflects the life cycle of an enterprise (nascent, start-up/spin-off, young enterprise, growing/shrinking enterprise, exiting, etc.) and one that reflects the characteristics of an entrepreneur (gender, full/part-time, serial starter, etc.).
4. If housing, land policy, and healthcare and education are considered, the claim that Hong Kong is traditionally a *laissez faire* economy is false. Here, the term *laissez faire* applies to industrial policy.
5. Most private-sector R&D expenditure in Hong Kong is devoted to redesigning and improving products as well as making them easier and cheaper to produce. In other words, process innovation has often taken precedence over product innovation in Hong Kong's industries.
6. While substantial disagreement exists over the definition of culture, for the purposes of this paper I consider culture as consisting of patterns of behaviour acquired and transmitted through human societies. Among the important ideas associated with culture are that it is learned (not inherited), shared (by groups of people), affects behaviour, and takes years to cultivate and build (adapted from: Hofstede, 2001).
7. Defined as any manufacturing business employing fewer than 100 people in Hong Kong, or any nonmanufacturing business employing fewer than 50 people in Hong Kong (as of December 2009, there were approximately 282,000 SMEs, representing 98% of all enterprises in Hong Kong). <http://www.gov.hk/en/about/abouthk/factsheets/docs/trade&industry.pdf>, accessed 27 September 2011.
8. Trade and Industry Department, The Government of the HKSAR Website: http://www.tid.gov.hk/english/smes_industry/smes/smes_content.html, accessed 27 April 2008.
9. For instance, according to the Trends in International Mathematics and Science Study (TIMSS) conducted by the US government in 2003, the average score of Hong Kong's fourth and eighth grade students ranked among the top four in the world (Mullis, Martin, Gonzalez, & Chrostowski, 2004).
10. Most innovative companies listed on the HKGEM board in Hong Kong have originated in Mainland China and a few

well-known HKGEM-listed companies are technology-related spin-off companies of large corporations such as CK Life Sciences.

11. These private venture capital firms assessed the technical and commercial viability of proposed technology ventures and determined the terms of the ARF's investment in any given company. Suitable investment proposals were publicly vetted.
12. For a discussion of options for improving the performance of Hong Kong's venture capital system, see Au and White (2010).
13. HKGEM website: http://www.hkgem.com/aboutgem/e_default.htm, accessed 13 May 2008.
14. HKGEM website, 'Market Statistics' section: http://gem.ednews.hk/statistics/e_default.htm?ref=7%3A, accessed 5 October 2010.

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