Asian cities and innovation policy in the global knowledge economy

Kris Hartley[1], Woo Jun Jie[2], Sun Kyo Chung[3]

The Four Asian Tigers are a palimpsest of statist developmentalism. The influence of industrial planning is deeply embedded in their institutions, but globalization and economic liberalization are now rewarding the capacity for innovation and structural adaptability. While the old developmentalism focused on infrastructure and industrial policy, softer strategies such as attracting educated millennials through urban amenities and creative clustering mimic the post-industrial West. Does this trend represent the end of developmentalism, or is top-down industrial policy simply being rebranded under the guise of creativity and reform? This paper examines this topic at the urban scale, comparing policies used by two Asian cities to encourage innovation, start-ups, and entrepreneurship. The paper seeks to understand whether the old East Asian developmental model is retaining its integral state and whether its replacement – in whole or in part – generates a globally competitive platform for innovative and start-up entrepreneurship in Asian cities. Government documents from Seoul and Singapore are examined and findings compared using a framework that evaluates adherence to old developmentalism and the degree to which inter-sectoral flexibility and adaptability have replaced it. As such, this paper contributes to literature about post-industrial economic restructuring by examining cases with strong statist legacies embodied by the capital-intensive production that the developmental apparatus was once configured to support. The paper concludes by calling for a more extended research agenda, based on comparative case studies and other methods, to understand whether the lingering vestiges of developmentalism should be reformed or eliminated to encourage innovative flexibility and opportunism.

Introduction and background

The legacy of industrial planning is deeply embedded in both government institutions and corporate structures, but globalization and economic liberalization are testing these legacies – particularly as innovation processes and structural adaptability become new competitive platforms at firm and national levels. In particular, an increasing variety of innovation models is emerging, including open innovation, learning organizations, and first-to-market competitive dynamics (Christopherson, Kitson, and Michie 2008). This trend is particularly salient in the types of knowledge and creative economies that have emerged in post-industrial Western cities, and are rapidly emerging in many Asian cities. While the "old" Asian-style developmentalism (Huff 1995, Low 2001) focused on hard infrastructure, facilitation of capital intensive production, and industrial policy targeting champion industries, a new generation of growth strategies is fertilizing creative and knowledge industries by attracting educated professionals through amenities and creative clustering. This emerging approach recognizes a new crowded, highly competitive market structure where innovation is no longer concentrated only within large government-backed corporations, but is diffused across a bustling array of start-ups and entrepreneurial individuals.

[1] Cornell University, USA
[2] Nanyang Technological University, Singapore
[3] Cornell University, USA

The decentralized nature of modern innovation is increasingly incompatible with legacy 20th century corporate structures, particularly those structures that characterized government-backed conglomerates in developmentalist Asia. This new innovative setting occurs most frequently in cities, where network and clustering effects are strongest; this phenomenon has been conceptualized by scholars as "entrepreneurial ecologies" (EEs). This paper examines urban-level policies that support the growth of start-ups and entrepreneurship, through a study of Singapore and Seoul. The objective is to understand the possible impetus behind new developmentalism, and to explore a theoretical basis from which to conduct further research about similar policy initiatives and reforms across other Asian cities.

It remains unclear whether the disruptive restructuring of global competitive dynamics by emerging models of innovation and entrepreneurship portends the end of "old" developmentalism (even as industrial planning is rebranded under the guise of creativity and reform) or signals a "new" developmentalism emphasizing the need to negotiate dynamic markets, technological change, and other disruptive forces. This economic transition, whatever the origin, comes at a time when many local governments enjoy greater power to design and implement development policies. Decentralization and devolution across Asia, including China, the Philippines, Indonesia, and Vietnam, have intensified competitive dynamics among cities and sub-national jurisdictions, both within and across countries. For this reason, it is revealing to study development policy at the city level. The local and urban scale is appropriate also because cities are capturing an increasing share of economic activity, with urbanization poised to accompany economic growth in Southeast Asia for the foreseeable future.

This article's empirical study focuses on two cases, Singapore and Seoul. Singapore is a global leader in many of the types of knowledge and creative economies that are replacing hard industry. It is well acknowledged that Singapore, as a coterminous city-state, is an imperfect case comparison for other national-level studies. However, this research focuses on urban rather than national scale, enhancing the validity of Singapore as a comparator for cities that have increased autonomy to adopt development policies. Furthermore, the instrumental role of the Singaporean government in the country's historically unprecedented rate of industrialization and national income growth offers an exemplary paradigm from which to compare other city-cases. This study also examines Seoul, whose unique position in the economic history and current competitiveness of South Korea (hereafter "Korea"), in addition to its status as a center for enterprise and innovation, justifies its inclusion in a paper focusing on exemplary cases.

This paper seeks to contribute both to practice and to theory. Regarding theory, the paper seeks to understand whether the old (East) Asian developmental model is retaining its integral form and whether the replacement – in whole or in part – generates a globally competitive platform for innovation-based start-up entrepreneurship. In this way, this project contributes to literature about post-industrial economic restructuring by examining how strong statist legacies, as embodied by capital-intensive production that the developmental apparatus was once configured to support, are evolving to accommodate the needs and competitive dynamics of new industries. These dynamics include a market structure that was once defined by the power of a relatively small number of industrial conglomerates, but is now defined by the collective activity of numerous smaller-scale enterprises that concurrently compete and collaborate. This new structure is reminiscent of the "third Italy" model (Murray 1987) that received scholarly attention in the 1980s; this model has

new relevance in knowledge industries and tests the versatility of a lingering "old" developmentalism built around legacy industries. Finally, this paper extends the concept of EEs, which has been explored primarily at the firm level within the management literature, to economic development and urban planning – where it currently has underdeveloped coverage as a cross-over theme. The implications have relevance both at the policy level and at the firm level, as entrepreneurs and cities seek to match with one another.

The creative and knowledge economies now driving economic growth include not only the FIRE (finance, insurance, and real estate) industries, but also business services, marketing, consumer product innovation, precision manufacturing, "application" technologies, bio-chemicals, and other high-value-added products. Economies peripheral to these include research, entertainment, art, and culture. In many but not all of these industries, corporate conglomerates hold no monopoly on innovation, so the policies that targeted conglomerate growth have less relevance. It is this fundamental economic reorientation, and the role of urban policy within it, that is the primary focus of this research, and EEs are the theoretical frame within which it is explored.

This paper is organized into three parts. First, the literature review explores the concept of clustering for creative industries and innovation, and situates it within studies about EEs in Singapore and Seoul. Second, the case study section describes the study methodology and presents the results of research into urban-level innovation policies in Singapore and Seoul. The conclusion proposes how the findings can be incorporated into urban policies and outlines the associated benefits and challenges, closing with a proposal for an extended research agenda.

Literature review

This literature review addresses clustering in creative industries, with a focus on the role of public policy in encouraging EEs in Asia. Agglomeration economies and economic clustering have a deep scholarly history, and as the literature matures both concepts have been applied to increasingly detailed contexts, including the spillover effects of collocation in particular sectors and network dynamics within knowledge economies. There is further scope for theoretical development at the conceptual intersection of Asian developmentalism and EEs. In particular, efforts by Asian governments to replicate the EEs of the West (e.g. Silicon Valley) provide insight into the degree to which policy intervention creates circumstances for serendipitous exchanges that strengthen EEs and by extension economic development. This is the literature within which this study makes a contribution.

Clustering and innovation

With the growth of the United States' technology sector in the past thirty years, and the emergence of tech clusters in cities and near universities, scholars have re-tread agglomeration theory to examine new case types across geographic, industrial, and conceptual settings. Studies often focus on innovation as a driver of firm competitiveness, and on the facilitation of innovative activity by government policies, corporate culture, and physical settings. A popular case context is the comparison of Route 128 in Massachusetts and California's Silicon Valley (Saxenian 1985, 1989, 1994, 1996; Weiss and Delbecq 1987; Florida and Kenney 1990; Herbig and Golden 1993;

Hulsink, Manuel, and Bouwman 2007; Kenney and Von Burg 1999; Bania, Eberts, and Fogarty 1993; Fogarty and Sinha 1999; Torero 1998).

Other Unites States-based studies of innovation and tech clustering have explored similar firm-level dynamics in North Carolina's Research Triangle (Aldrich, Elam, and Reese 1997; Aldrich and Reese 1994; Gilbert, Audretsch, and McDougall 2004; Leyden and Link 2013) and the variously labelled Texas conurbation (Smilor, Kozmetsky, and Gibson 1987; Glickman and Wilson 1985; Florida and Kenney 1988; Lyons and Luker Jr 1998; Gibson and Butler 2013). Common themes throughout this literature include the proximity of universities and other research institutions, the facilitative power of networks and knowledge spillovers, and the contribution of government policies – both direct (e.g. sector-specific subsidies) and indirect (e.g. connective infrastructure).

While the contribution of emerging industry innovation to economic growth has prompted research about factors such as the social, interpersonal, and collaborative dimensions of innovation, studies of entrepreneurial activity are no longer focused exclusively on firm culture but have been re-scaled to national-level competitive dynamics and policies, and to both formal and informal social space. According to Spilling (1996), an entrepreneurial system consists of "a complexity and diversity of actors, roles, and environmental factors that interact to determine the entrepreneurial performance of a region or locality" (p. 91).

Spilling's seminal work on the concept of EEs focused on the impact of mega-events such as the Olympics, and later work focused on EEs as a process occurring naturally in the course of economic growth. For example, Mason and Brown (2014) similarly define EEs in terms of interconnectedness among actors, organizations, institutions, and processes, and their tendency to "coalesce" in both formal and informal settings (p. 6). The authors identify the need for bottom-up growth as one of the two major EE-related policy implications, the other being the fallacy of targeting only a rise in the number of business start-ups. Likewise, Neck et al. (2004) argue in a case study of Boulder, Colorado that the unique relationship between culture, infrastructure, and networks promotes endogenous entrepreneurial activity.

Other literature has focused on particular types of actors within EEs. Exploring the longer-term implications of entrepreneurship, Nylund and Cohen (2016) argue that "collision density" – the frequency of interactions that fosters "matchups" among investors, producers, and others – theoretically increases the number, diversity, and extinction (failure and creative destruction) of startups. Disaggregating the analysis to network types, Lehmann and Seitz (2016) examine the role of cultures and subcultures in EEs, including "pioneering" groups sharing particular values that set them apart from the "mainstream" as "creative destructors." These EEs are found to have measurable impact on start-ups (for technology industries). According to the authors, this dynamic is embodied in underground arts and culture that are untargeted by the typical investments in global-style high and mainstream cultural institutions (e.g. opera houses and fine arts museums). This type of cultural investment is often done in Asia, with Singapore, Changsha, Hong Kong, and others as examples.

EEs in the urban context

Urban EEs have received comparatively less attention than have regional or national EEs (Nylund and Cohen 2016). This omission is problematic considering the role cities and local governance play in EEs. Florida et al. (2017) argue that entrepreneurial systems require cities rather than simply take place within them, justifying the diversion of scholarly attention from firm- or national-level dynamics to cities. Nylund and Cohen (2016) argue that the research on EEs has focused on particular geographic contexts such as "suburban tech parks" and regional-scale economies. While the United States notion of "suburban" is not perfectly analogous that of Asia, the idea of the tech park, as originated in American suburbs, has been embraced by Asian governments as a development driver, with many having emerged in cities and near universities in the past two decades (O'Shea et al. 2014). Examples include Thailand Science Park near Thammasat University in suburban Bangkok, Saigon High-Tech Park near Vietnam National University in Ho Chi Minh City, and Biopolis near National University of Singapore (the latter has been a popular topic of recent research; see Reyes and Reyes 2016; Krishna and Sha 2015).

Similarly, EEs are receiving scholarly attention in the context of smart city programs, which are emerging across Asia as information and communications technology (ICT) enjoys deeper penetration (Carvalho 2017; Harrington 2017, 2017; Ratten 2017; Kraus et al. 2015). As tech innovation parks and smart cities emerge across Asia, there are more opportunities for scholars to study how Asian governments develop and implement related policies. The value of studying Asia stems from potential differences with EE policies in the developed West. As EE policies are re-interpreted by Asian countries with deeper histories of statist developmentalism, new models for state intervention may be used to refine policy in the West. However, policy transfer, in either direction, is alluring but problematic. For example, Isenberg (2010) argues that Asian governments should not simply attempt to replicate the model or characteristics of Silicon Valley or "over-engineer" clusters.

Most recently, the popularity of sequestered tech parks has been superseded by that of tech neighborhoods as urban districts. According to Mulas et al. (2016), the recent shift in innovation activities away from suburban tech parks to center cities underscores the relevance of demographic dynamics like density, proximity, diversity. This is reminiscent of Florida's creative class argument, which views urban space as a setting for social connections and amenity provision as a development strategy. The Mulas study cites examples of policy interventions in New York City: collaborator spaces for mentor networking and incubation, development of entrepreneurship funds, attracting educational institutions to offer specialized training, open access for "hardware tools" in public spaces, and competitions and challenges to "energize the community" through the use of open data. The authors view innovative ecosystems not as a geographic area but as communities with social connections the operative unit of analysis. This overlaps with the attributes of EEs observed by Spigel (2015) in Canadian case studies: cultural (community support, history of entrepreneurship), social (talent, capital, networks, mentors) and material (policy and governance, universities, support services, physical infrastructure, open markets). However, Mulas et al. also argue that there is no scholarly consensus on how innovation ecosystems develop.

Asian cases

The study of EEs in Asian cities has scope for further development. The emergence of EEs in Asia is predictably rooted in the region's unique development history and offers a fertile context for understanding how government intervention can either cultivate or obstruct entrepreneurship.

According to Yun et al. (2017), models describing enterprise dispersion after the breakup of centralized large manufacturing in developed countries from the 1980s onwards were based on a core-periphery argument, with the standard supply chain model eventually morphing into a network model linking production in developing countries to their capital and market bases in developed countries. Innovation emerged as much in producer environments as in capital base environments, underscoring the relevance of considering the roots of innovation in production processes. Yun et al. argue that process innovation in technology, led by the 4 Asian Tigers, in part drove clustering in Asian countries and emphasizes the social aspects of enterprise.

By extension, the mechanisms through which innovation spreads outside production facilities and firms has also received attention. Examining start-up ecosystems in Tokyo, Seoul, Suzhou, and Chongqing, Hemmert et al. (2016) find that entrepreneurial networks can be weak and segregated, even amidst high population levels and innovative activity. According to the authors, the history of Asian start-up hubs differs from that of the West in that the Asian start-up environment operates in the presence of a larger number of external facilitative organizations (e.g. research institutions and government agencies), resulting (unexpectedly) in weaker entrepreneurial network ties. The authors argue that government intervention in Asia tends to be higher than in the West but relatively less effective in targeting successful start-ups and supporting their internationalization. Cultural factors have also been found to influence the entrepreneurial ecosystem in Korea, as the pressure to work for *chaebols* discourages break-out innovation and individual risk-taking (Haines 2015).

Finally, directly anti-facilitative policies have also hamstringed the emergence of EEs. For example, Kshetri (2014) argues in an examination of EEs in Korea that institutional reforms are needed at both the national and private sector levels, including on immigration policy. One example of a facilitative institution is Korea's Centre for Creative Economy & Innovation (CCEI), a government-sponsored effort to support start-ups that focuses on facilitating partnerships with larger corporations; CCEI has 18 regional centers across the country. In a study of CCEI, Jung et al. (2017) examine stakeholder collaborations and Korea's balance between state-led and market-led efforts to foster entrepreneurship. However, the authors also identify problems with CCEIs, including bureaucratic and regulatory barriers, and lack of political durability across political cycles.

Case study: Singapore and Seoul

As Asian countries embark on a new era of post-industrial growth, knowledge, innovation, and creativity are playing a new role in economic growth. Throughout the 20th century, the economic "miracle" experienced by some Asian countries – including the Four Asian Tigers (Korea, Singapore, Taiwan, and Hong Kong) – has been characterized by government support of industry, spawning large firms that used facilitative government policies, internal innovative capacities, and reliable access to capital to establish a global market presence. The stability of these firms, in aggregate, became the foundation for a stable middle class and helped foster an international image of Asia as a manufacturing and innovation powerhouse. The gradual shift of production from assembly to precision manufacturing to design, occurring at variable pace across Asian countries, has elevated the role of innovation as a competitive dimension. However, the environment in which high-tech innovation now occurs does not resemble that of previous industrial epochs; in particular, innovation is more diffuse and entrepreneurial than it was in the 20th century.

The implications of this transformation are requiring governments to revisit legacy models of development that favor government intervention in markets and in the establishment and survival of large domestic firms. In particular, the decentralized nature of innovation and the mechanisms by which innovation is diffused makes relevant a new type of clustering. Innovation, rather than "spilling over" among large firms, now resembles a type of currency traded among entrepreneurial individuals. Scholars have attempted to understand this phenomenon by studying EEs as environments in which entrepreneurs operate, innovate, and collaborate. The concept represents an attempt at developing a coherent unit of analysis and is the topic of a growing body of literature.

One theme within the literature is the importance of networks, which is analogous in the public policy literature to "subsystems" and in the public administration literature to "network governance," both of which have a well-developed body of research (Yifen 2007; Provan and Kenis 2008). In extending the focus on subsystems as actors to the architecture and process of policymaking, the concept of collaborative governance has additional relevance, which itself has a mature literature in public administration and urban planning (Innes and Booher 2003). The literature has also looked at the spatial aspects of EEs, including well-cited literature on agglomeration economies, creative cities, and human capital. This case section focuses on government interventions that address entrepreneurship through the lens of subsystems.

Singapore

From its independence in 1965, Singapore has established itself as one of the world's most competitive economies. It is ranked second on the World Economic Forum's Global Competitiveness Index, trailing only Switzerland and ahead of third-ranked United States (Schwab 2017). Similarly, IMD's World Competitiveness Yearbook ranks Singapore third among the world's most competitive economies (IMD 2017) while the World Bank considers Singapore the second easiest place to do business in the world (World Bank Group 2017). Its GDP per capita of current US $52,888 also places it among the world's most affluent countries (World Bank 2016).

Underlying Singapore's historically rapid economic growth is a diligent effort by the state to stimulate economic growth through its industrial and economic policies, in a model that became known as developmentalism. Singapore's recent shift from an export-oriented industrial economy to a knowledge-based economy has given rise to a stronger focus on innovation and entrepreneurship (Wong 2001, Goh 2005, Parayil 2005). This shift has involved a reorientation of Singapore's policy ecosystem and configurations that had historically underpinned the country's industrialization strategy.

The notion that economic development and industrial policy in Singapore are driven by a select group of policy actors is not new. For example, economic policy has been seen as driven by a "governing elite" comprising state and industry actors operating in tandem to achieve national economic goals (Hamilton-Hart 2000, 2002, Tan 2008). Others readings of economic policy delineate internal dynamics among governing elites, in the process often taking a policy subsystem or policy network approach to understand groupings of development-oriented policy elites (Woo 2015, 2016, Woo and Howlett 2015).

These developmental elements, along with their accompanying socio-political configurations, have persisted with Singapore's transition to a knowledge-based economy. The state has asserted itself through science agencies such as ASTAR, directing the formation and development of creative clusters (Gwee 2009, Lee and Tee 2009, Wong *et al.* 2010). Aside from the adaptation of existing developmental-style policy instruments such as directing state resources and funding to firms or investing in R&D (Lee and Tee 2009), this shift in focus towards creative clusters and innovation has also given rise to new configurations of policy subsystems.

For example, while Singapore's development policy subsystems have traditionally included representatives from industry firms (Hamilton-Hart 2002, Woo 2016), the growing significance of innovation and technology has led to the inclusion of research institutions and actors such as academics and technologists in Singapore's economic governing milieu (Parayil 2005, Smart Nation Programme Office 2017). Despite this growing inclusion of researchers and technologists, Singapore's approach to economic development and industrial policy remains primarily state-driven and rooted in the developmental model across functional areas and agencies. This is particularly evident where urban planning complements industrial development; the Urban Renewal Authority (URA) establishes creative clusters and technological test beds across the city. As a consequence, the process of creating and siting these clusters is highly top-down and centrally planned.

The newly-established Punggol Creative Cluster and Learning Corridor was planned around a newly-formed university (Singapore Institute of Technology) and designed with an emphasis on urban liveability (Urban Redevelopment Authority 2016). Similarly, Blk71, a start-up hub and entrepreneur eco-system, was established in conjunction with and close proximity to the National University of Singapore (Blk71 Singapore 2017), the Jurong Innovation District was formed around Nanyang Technological University (Whang 2016), and an innovation centre was established by the Singapore University of Technology and Design (SUTD) and JTC Corporation in Changi Business Park (Singapore University of Technology and Design 2014).

In these cases, there is a strong focus on ensuring a mix of firms, start-ups, and research expertise within an innovation ecosystem, with clusters or districts formed around universities and distributed spatially across Singapore. The Jurong Innovation District is located on the Western tip of Singapore, Changi Business Park in East, the Punggol Creative Cluster in the North, and Blk71 in the South. This spatial distribution and the establishment of universities as anchor institutions for their respective clusters is evidence of state intervention and top-down planning. This is most evident in Punggol, as the Singapore Institute of Technology was formed in 2009 and the cluster's Northern location confirmed in 2015 (Davie 2015).

The formation of creative clusters and entrepreneurial eco-systems in Singapore is strongly tied to a legacy of interventionist urban planning. Given Singapore's space constraints as an urbanized island, the creation of entrepreneurial ecosystems has often involved a delicate balance of economic and land-use considerations. Further, Singapore's developmental approach to economic governance and urban planning has empowered the state with considerable policy autonomy and resources, enabling any necessary rezoning and redevelopment. The needs of entrepreneurs and start-ups can be realized through greater participation of emerging research and talent constituencies, as they are now already being served through infrastructure and programs.

Seoul

Within the past few decades, Korea has achieved rapid economic development through government intervention and industrial planning. The country has emerged as a leader in the global knowledge economy, transforming from a beneficiary of the United Nations' (U.N.) aid to a major donor to the U.N. Since then, the Korean government has made economic growth a central goal and crafted a program entitled the Creative Economy initiative.[4] The initiative was engineered by President Park Geun-hye's administration with the goal of creating jobs, strengthening global competitiveness, and advancing creativity. Seoul, the country's capital city and hub of a metropolitan region with 25 million residents, has priority within the initiative and serves as its primary driver.

The Seoul Metropolitan Government (SMG) targets entrepreneurship as a means to accelerate economic activity and sustainable development. By fostering EEs, SMG also seeks to alleviate deepening urban issues such as the so-called "baby boomer" generation's rising unemployment rate and a general economic slowdown that has been manifest in a GDP growth rate that is approaching a 50-year low. SMG's policy strategy to support start-ups focuses on engaging younger generations in the city's entrepreneurial landscape, as characterized by human talent, population density, and ICT connectivity. SMG provides a policy framework for start-ups around three main streams: space, education, and financing.

In Seoul's case, start-up spaces to accommodate new entrepreneurial projects and promote interaction and exchange are limited and costly, due in part to the city's high density built environment and to high property values. SMG sponsors across the city co-working offices renovated from factories and markets, firm incubators including Google's first Asian campus, and institutes to match entrepreneurs and companies. For example, the "Digital Media City (디지털 미디아 시티)" that originated in 2015 has hosted over 400 companies in media, entertainment, and IT. The space functions as a one-stop community connecting various facets of research, venture capital firms, and enterprises for digital media industries. SMG also sponsors a program centered on arts incubation, named the Seoul Arts Space program, which has several incubator spaces around the city.

Seoul has a large supply of highly educated young workers, but Korea's youth unemployment has recently been increasing with over 11% of workers aged 15-29 out of work.[5] The high number of overseas educated and college graduates, along with a population of foreign students and graduates residing in Seoul, is arguably helping to generate an entrepreneurial climate around education. SMG has partnered with universities in Seoul to implement mentoring and networking programs between CEOs and students and has also built satellite institutes to offer technical support, certifications, and workshops for ideation and commercialization. For example, Seoul's CCEI, in affiliation with CJ, a Korean industrial conglomerate (*chaebol*), is a resource nurturing local entrepreneurs, accelerating firm and innovative capacity building, and supporting global market

[4] Website: http://policy.creativekorea.or.kr/eng/ (Accessed 6 June 2017)
[5] Website: http://www.index.go.kr/potal/main/EachDtlPageDetail.do?idx_cd=1495 (Accessed 6 June 2017)

penetration. CJ also incubates start-ups' services or products, enabling them to develop businesses directly with firms working with CJ; this often leads to early successes.

SMG has expanded funding opportunities for qualified start-ups and has also lowered financial barriers for loans. For example, the Seoul Entrepreneurship Hub (서울창업허브), opening in June 2017, will aid start-ups financially at their initial and post-launch phases. Selected start-ups less than three years old are awarded up to 10,000,000 Korean Won (approximately US$9,000) per year along with working offices, legal and accounting advice, and investor matching services at no cost. The Hub also provides start-ups between three and seven years old with up to 50,000,000 Korean Won (approximately US$45,000) and offers assistance for expanding their marketing and sales strategies. Additional funding of 100,000,000 Korean Won (approximately US$90,000) is available when these firms enter a foreign market. Such financial vehicles through SMG provide grants or low interest loans for start-ups and foster their growth, empowering the city's long-term goals of sustainable entrepreneurship.

Nevertheless, Seoul's approach to addressing entrepreneurship through direct funding does not appear to acknowledge the need to facilitate the softer dimensions of connection and collaboration. A stronger emphasis on incubator spaces and related programming may help, but must avoid the type of top-down mentality that endures from the developmentalist era. Serving the needs of new actors – those outside the bounds of large Korean conglomerates that have previously dominated innovation – requires a more dialogue-based policy development process. A model for this has been established for the Seoul Arts Space program, and has scope for application to emerging economies in technology and other creative economies.

Conclusion

Efforts by urban governments to facilitate the emergence and growth of entrepreneurial economies are shaped by the histories of social and economic development and have served the broader interests of the state in complementing developmentalist-inspired growth policy. As such, tension arises when new industries emerge around entrepreneurial interests and behaviors that disrupt the old market structures around which developmentalism built its vision and tactical interventions. Supporting development is now not simply a matter of providing hard infrastructure, tax incentives, and government capital; the knowledge and creative economies are not only different in products and markets, but also in how businesses operate, interact, compete, and innovate. Capturing growth in these industries requires a different type of policy intervention, one that considers the unique diversity and plurality of actors and subsystems in designing facilitative institutions and planning for space. This would be most effectively achieved through a more robust feedback system that takes a collaborative approach to policymaking and planning. The cases of Seoul and Singapore illustrate how governments have made progress, and have progress to make, in such policy adaptations.

The Asian cases used in this paper usefully illustrate the topic of innovation policy. It is useful to consider local policy separate from national, as devolution and decentralization gather pace, as local policies also include planning and land use (in relation to creative clusters where entrepreneurial ecosystems emerge), as cities are the primary setting for entrepreneurial ecosystems in technology and other high-growth industries, and as the legacy of statist

developmentalism continues to inform policymaking both directly and indirectly. Generating creative clusters is an elusive task for planners and policymakers; therefore, understanding the needs of firms in regards to personnel, infrastructure, and operational matters is crucial. The new generation of innovation will come not necessarily from large conglomerates with which governments are familiar and even embedded, but from the smaller firms, start-ups, and entrepreneurs that have no formal histories with developmentalism and its government agents. Entrepreneurs and their linkages through networks and other subsystems should therefore be the focus of facilitative policies, not to merely generate networks but to enhance opportunities for emerging and endogenously occurring networks to communicate, collaborate, and function. Examples include the sponsorship of networking events, provision of listing services, and regulatory apparatus to facilitate new ventures. Future research should examine the needs of these entrepreneurs.

Through two Asian cases, this paper has addressed the debate between top-down and bottom-up economic development by illustrating that even in cases of rapid growth, there can a balance of both. The implication is that the ideological purism of committing to only one is neither practical nor theoretically revealing. The longer-term aim of this work is to generate a research agenda around comparative studies of start-up policy across Asian cities. Additional studies can draw from a case selection methodology that classifies cities into three types: Type I cities (mature post-industrial economies: Hong Kong, Taipei, Seoul, and Tokyo), Type II (emerging post-industrial cities in-transition: Beijing and Shanghai), and Type III ("hard" industrial centers that may eventually face post-industrialization within several decades: Ho Chi Minh City, Bangkok, Jakarta, and others). Type I cities can be examined for the effectiveness and design of new developmentalist strategies targeting EEs; Type II and III cities can be examined for their anticipation of or preparation for competitive pressures in post-industrial economies, including institutional initiatives and reforms that acknowledge the importance of a more "footloose" entrepreneurial knowledge industry and associated decentralized market structure.

Bibliography

Aldrich, Howard E., Amanda Brickman Elam, and Pat Ray Reese. 1997. “Strong Ties, Weak Ties, and Strangers.” Entrepreneurship in a Global Context, 1–25.

Aldrich, Howard E., and Pat Ray Reese. 1994. “Does Networking Pay off? A Panel Study of Entrepreneurs in the Research Triangle.” Frontiers of Entrepreneurship Research, 325–39.

Bania, Neil, Randall W. Eberts, and Michael S. Fogarty. 1993. “Universities and the Startup of New Companies: Can We Generalize from Route 128 and Silicon Valley?” The Review of Economics and Statistics, 761–66.

Blk71 Singapore. 2017. “History.” http://www.blk71.com/about-us/history.

Carvalho, Luísa Cagica. 2017. “Entrepreneurial Ecosystems: Lisbon As.” Handbook of Research on Entrepreneurial Development and Innovation Within Smart Cities, 1.

Christopherson, Susan, Michael Kitson, and Jonathan Michie. 2008. Innovation, Networks and Knowledge Exchange. Oxford University Press.

Davie. 2015. “New Punggol Campus for SIT.” Straits Times, August 24. http://www.straitstimes.com/singapore/education/new-punggol-campus-for-sit.

Florida, Richard, Patrick Adler, and Charlotta Mellander. 2017. “The City as Innovation Machine.” Regional Studies 51 (1): 86–96.

Florida, Richard, and Martin Kenney. 1988. “Venture Capital and High Technology Entrepreneurship.” Journal of Business Venturing 3 (4): 301–19.

———. 1990. “Silicon Valley and Route 128 Won’t Save Us.” California Management Review 33 (1): 68–88.

Fogarty, Michael S., and Amit K. Sinha. 1999. “Why Older Regions Can’t Generalize from Route 128 and Silicon Valley: University Industry Relationships and Regional Innovation Systems.” Industrializing Knowledge: University-Industry Linkages in Japan and the United States, 473–509.

Gibson, David V., and John Sibley Butler. 2013. “Sustaining The Technopolis: High-Technology Development in Austin, Texas 1988-2012.”

Gilbert, Brett Anitra, David B. Audretsch, and Patricia P. McDougall. 2004. “The Emergence of Entrepreneurship Policy.” Small Business Economics 22 (3): 313–23.

Glickman, Norman, and Robert H. Wilson. 1985. “The Emerging Economic Base and Local Development Policy Issues in the Austin-San Antonio Corridor, PRP 71.” LBJ School of Public Affairs.

Goh, Andrew L.S. 2005. “Evolution of Industrial Policy-Making in Support of Innovation: The Case of Singapore.” International Journal of Innovation and Learning 3 (1): 110–25. doi:10.1504/IJIL.2006.008183.

Gwee, June. 2009. “Innovation and the Creative Industries Cluster: A Case Study of Singapore’s Creative Industries.” Innovation 11 (2): 240–52. doi:10.5172/impp.11.2.240.

Haines, Julia Katherine. 2015. “Accelerating Innovation in Global Contexts.” University of California, Irvine. http://escholarship.org/uc/item/3sv830h5.

Hamilton-Hart, Natasha. 2000. “The Singapore State Revisited.” The Pacific Review 13 (2): 195–216.

———. 2002. Asian States, Asian Bankers: Central Banking in Southeast Asia. New York: Cornell University Press.

Huff, W.G. 1995. “The Developmental State, Government, and Singapore’s Economic Development since 1960.” World Development 23 (8): 1421–38.

Harrington, Ken. 2017. “Smart City Leaders, Champions, and Entrepreneurs—The People Part of Vibrant Smart Cities.” In Smart Economy in Smart Cities, 1005–12. Springer.

Hemmert, Martin, Ying Cheng, Florian Kohlbacher, Masahiro Kotosaka, Chang-Ti Loh, and Franz Waldenberger. 2016. “High-Tech Start-up Ecosystems in East Asian Agglomerations: Are They Different From the West.” Working Paper 16/1, Tokyo: Deutsches Institut für Japanstudien (DIJ).

Herbig, Paul A., and James E. Golden. 1993. “The Rise of Innovative Hot Spots: Silicon Valley and Route 128.” International Marketing Review 10 (3).

Hulsink, Willem, Dick Manuel, and Harry Bouwman. 2007. “Clustering in ICT: From Route 128 to Silicon Valley, from DEC to Google, from Hardware to Content.”

Isenberg, Daniel J. 2010. “How to Start an Entrepreneurial Revolution.” Harvard Business Review, 1–11.

IMD. 2017. “World Competitiveness Yearbook 2017.” Lausanne, Switzerland: IMD.

Innes, J.E. and Booher, D.E., 2003. Collaborative policymaking: governance through dialogue. Deliberative policy analysis: Understanding governance in the network society, pp.33-59.

Jung, Kwangho, Jong-Hwan Eun, and Seung-Hee Lee. 2017. “Exploring Competing Perspectives on Government-Driven Entrepreneurial Ecosystems: Lessons from Centres for Creative Economy and Innovation (CCEI) of South Korea.” European Planning Studies 25 (5): 827–47.

Kenney, Martin, and Urs Von Burg. 1999. “Technology, Entrepreneurship and Path Dependence: Industrial Clustering in Silicon Valley and Route 128.” Industrial and Corporate Change 8 (1): 67–103.

Kraus, Sascha, Chris Richter, Savvas Papagiannidis, and Susanne Durst. 2015. “Innovating and Exploiting Entrepreneurial Opportunities in Smart Cities: Evidence from Germany.” Creativity and Innovation Management 24 (4): 601–16.

Krishna, V. V., and Sohan Prasad Sha. 2015. “Building Science Community by Attracting Global Talents: The Case of Singapore Biopolis.” Science, Technology and Society 20 (3): 389–413.

Kshetri, Nir. 2014. “Developing Successful Entrepreneurial Ecosystems: Lessons from a Comparison of an Asian Tiger and a Baltic Tiger.” Baltic Journal of Management 9 (3): 330–56.

Lee, Yong-Sook, and Ying-Chian Tee. 2009. “Reprising the Role of the Developmental State in Cluster Development: The Biomedical Industry in Singapore.” Singapore Journal of Tropical Geography 30 (1): 86–97. doi:10.1111/j.1467-9493.2008.00359.x.

Lehmann, Erik E., and Nikolaus Seitz. 2016. “Creativity and Entrepreneurship: Culture, Subculture, and New Venture Creation.” SSRN Paper. https://ssrn.com/abstract=2758550.

Leyden, Dennis P., and Albert N. Link. 2013. “Collective Entrepreneurship: The Strategic Management of Research Triangle Park.” Creating Competitiveness: Entrepreneurship and Innovation Policies for Growth, 176–85.

Low, Linda. 2001. “The Singapore Developmental State in the New Economy and Polity.” The Pacific Review 14 (3): 411–41.

Lyons, Donald, and Bill Luker Jr. 1998. “Explaining the Contemporary Spatial Structure of High-Technology Employment in Texas.” Urban Geography 19 (5): 431–58.

Mason, Colin, and Ross Brown. 2014. “Entrepreneurial Ecosystems and Growth Oriented Entrepreneurship.” Final Report to OECD, Paris, 1–38.

Mulas, Victor, Michael Minges, and Hallie Applebaum. 2016. “Boosting Tech Innovation: Ecosystems in Cities: A Framework for Growth and Sustainability of Urban Tech Innovation Ecosystems.” Innovations 11 (1–2): 98–125.

Murray, F., 1987. Flexible specialisation in the ‘Third Italy’. Capital & Class, 11(3), pp.84-95.

Nylund, Petra A., and Boyd Cohen. 2016. “Collision Density: Driving Growth in Urban Entrepreneurial Ecosystems.” International Entrepreneurship and Management Journal, 1–20.

O’Shea, Rory P., Ciara Fitzgerald, Harveen Chugh, and ThomasJ Allen. 2014. “University-Based Entrepreneurship: A Synthesis of the Literature.” Building Technology Transfer within Research Universities: An Entrepreneurial Approach, 33–57.

Parayil, Govindan. 2005. “From ‘Silicon Island’ to ‘Biopolis of Asia’: Innovation Policy And Shifting Competitive Strategy in Singapore.” California Management Review 47 (2): 50–73. doi:10.2307/41166295.

Provan, K.G. and Kenis, P., 2008. Modes of network governance: Structure, management, and effectiveness. Journal of public administration research and theory, 18(2), pp.229-252.

Ratten, Vanessa. 2017. Entrepreneurship, Innovation and Smart Cities. Routledge.

Reyes, Charisse N., and Charisse N. Reyes. 2016. “Framing the Entrepreneurial University: The Case of the National University of Singapore.” Journal of Entrepreneurship in Emerging Economies 8 (2): 134–61.

Saxenian, AnnaLee. 1985. “Silicon Valley and Route 128: Regional Prototypes or Historic Exceptions.” Urban Affairs Annual Reviews 28: 81–105.

———. 1989. “In Search of Power: The Organization of Business Interests in Silicon Valley and Route 128.” Economy and Society 18 (1): 25–70.

———. 1994. “Regional Networks: Industrial Adaptation in Silicon Valley and Route 128.”

———. 1996. “Inside-out: Regional Networks and Industrial Adaptation in Silicon Valley and Route 128.” Cityscape, 41–60.

Singapore University of Technology and Design. 2014. “JTC and SUTD Launch New Research Centre to Drive Industrial Infrastructure Innovation.” Press Release. July 16. https://sutd.edu.sg/About-Us/News-and-Events/Press-Releases/2014/7/JTC-and-SUTD-launch-new-research-centre-to-drive-i.

Smart Nation Programme Office. 2017. “Mobility-on-Demand: Real-Time Demand-Driven Transport through Apps.” http://www.smartnation.sg/initiatives/Mobility/mobility-on-demand--real-time-demand-driven-transport-through-apps.

Smilor, Raymond W., George Kozmetsky, and David V. Gibson. 1987. “The Austin/San Antonio Corridor: The Dynamics of a Developing Technopolis.” IC2 Institute Working Papers.

Spigel, Ben. 2015. “The Relational Organization of Entrepreneurial Ecosystems.” Entrepreneurship Theory and Practice.

Spilling, Olav R. 1996. “The Entrepreneurial System: On Entrepreneurship in the Context of a Mega-Event.” Journal of Business Research 36 (1): 91–103.

Tan, Kenneth Paul. 2008. “Meritocracy and Elitism in a Global City: Ideological Shifts in Singapore.” International Political Science Review / Revue Internationale de Science Politique 29 (1): 7–27.

Torero, Máximo. 1998. “Analyzing the Spillover Mechanism on the Semiconductor Industry in the Silicon Valley and Route 128.” Essays on Diffusion of Technical Change, 6–48.

Urban Redevelopment Authority. 2016. “Punggol Creative Cluster and Learning Corridor.” URA Website. July 28. https://www.ura.gov.sg/uol/master-plan/view-master-plan/master-plan-2014/Growth-Area/Punggol-Creative-Cluster/Punggol-Creative-Cluster.

Weiss, Joseph, and Andre Delbecq. 1987. “High-Technology Cultures and Management Silicon Valley and Route 128.” Group & Organization Management 12 (1): 39–54.

Whang, Rennie. 2016. “Jurong to Be ‘Industrial Park of the Future.’” Straits Times, March 25. http://www.straitstimes.com/business/property/jurong-to-be-industrial-park-of-the-future.

Wong, Poh Kam. 2001. “Leveraging Multinational Corporations, Fostering Technopreneurship: The Changing Role of S&T Policy in Singapore.” International Journal of Technology Management 22 (5–6): 539–67. doi:10.1504/IJTM.2001.002977.

Wong, Poh-Kam, Yuen-Ping Ho, and Annette Singh. 2010. “Industrial Cluster Development and Innovation in Singapore.” In From Agglomeration to Innovation, edited by Akifumi Kuchiki and Masatsugu Tsuji, 50–116. IDE-JETRO Series. Palgrave Macmillan UK. doi:10.1057/9780230251014_3.

Woo, J. J., and M. Howlett. 2015. “Explaining Dynamics without Change: A Critical Subsector Approach to Financial Policy Making.” Journal of Asian Public Policy 8 (3): 312–28. doi:10.1080/17516234.2015.1082689.

Woo, J.J. 2015. “Policy Relations and Policy Subsystems: Financial Policy in Hong Kong and Singapore.” International Journal of Public Administration 38 (8): 553–61.

———. 2016. Business and Politics in Asia’s Key Financial Centres - Hong Kong, Singapore and Shanghai. 1st ed. Singapore: Springer.

World Bank. 2016. “GDP per Capita (Current USS).” World Bank Database. http://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=SG&view=chart.

World Bank Group. 2017. “Doing Business 2017: Equal Opportunity for All.” Washington, D.C.: World Bank.

Yifen, Y., 2007. Network Governance: A New Framework of Public Administration [J]. Journal of Public Management, 1, pp.89-96.

Yun, JinHyo Joseph, Philip Cooke, and JiYoung Park. 2017. “Evolution and Variety in Complex Geographies and Enterprise Policies.” European Planning Studies 25 (5): 729–38.