SECTION I

Introduction and Industry Overview

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INTRODUCTION

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For many senior managers in multinational corporations, visits to Malaysia, the Philippines, or China do not involve lengthy stays in Kuala Lumpur, Manila, or Beijing. Rather, they involve site visits to facilities in rather more distant regions, such as Johor, Cebu, or Chengdu — states or provinces that are far-removed from the national seat of power.

These sub-national regions have created environments that seem different — and slightly separate — from the rest of the country. This might be due to a particularly vibrant business community, a strongly-rooted outward orientation, a tradition of effective public administration, or an unusually deep pool of skilled workers. In these areas, investors do not liaise with the central government, but rather provincial or state government agencies for permits, licences or tax incentives. And, they source components, equipment, or design work from a variety of dynamic firms nearby. Finished goods and services are sold to neighbouring firms, or dispatched from the local air- or sea-port to international markets.

In the most successful up-and-coming regions, firm clusters attain technological capabilities far ahead of those in more established centres of industry. And, some of these states and provinces have managed to spawn activities in new sectors, even within national-level policy environments that are not conducive to innovation and higher value-added activities.

Over the past decades, Asia's geography of production has undergone a number of important changes. Technological change, growing numbers of multinational corporations, and the liberalization of trade and investment regimes are allowing production processes to be broken down and

relocated to diverse locations in the pursuit of specific capabilities and cost differentials (Dicken 2003).

These changes signal heightened competition, but also increased opportunities for economies formerly on the periphery. More finely-dissected production processes, and a more hospitable policy environment have led to the development of regional production networks, which have enabled the proliferation of manufacturing activities across Asia. This "flying geese" phenomenon has seen lead countries climb the value chain, delegating less technologically-sophisticated activities to other countries in the region (Hamaguchi 2009).

On one level, this has made incursions into manufacturing easier, as countries or regions can begin producing specific components as opposed to entire finished goods (Joseph, this volume). On the other, while manufacturing activity has proliferated across Asia, over the past two decades it has also become more concentrated, tending to cluster in specific locations (Huang and Bocchi 2009).

In some cases, traditional centres of industry have benefited. However, in others, centres in relatively remote states or provinces have come to the fore. Thus, as subsequent chapters in this book will show, Cebu in the Philippines, Tamil Nadu in India, and Chengdu in China have emerged as important new centres for sophisticated manufacturing activities, negotiating their own entry into global production networks.

Uneven patterns of growth within countries are likely to be more prevalent in the future. Those regions that are more linked to the global economy through better "hard" and "soft" infrastructure, and are able to create and maintain an enabling environment for business will benefit. In national contexts where these assets constitute an exception, these regions may become "enclaves", with better international than local connections (Hill 2008).

This dynamic is further accentuated by measures undertaken by national governments. The pursuit of free trade and national competitiveness has been accompanied by moves to reduce regulatory obstacles to the movement of goods and services, capital, technology and workers. In addition, there is an emerging consensus that larger urban centres are important catalysts for growth. Thus, national governments are moving away from striving to minimize intra-regional inequalities towards seeking to capitalize on agglomeration economies and emerging centres of excellence (Williams et al. 2005; Merk, this volume).

Furthermore, the "Silent Revolution" of decentralization has seen the wide-spread devolution of responsibilities and revenue sources to lower levels

of government. This has been a particularly important development for Asia, where many countries opted for strong central governments and top-down planning in the early post-independence period. In some cases, as in the cases of the Philippines and Indonesia, specific decentralization measures have been implemented. In others, national-level policies to deregulate have allowed sub-national governments to move in. India's liberalization measures and the subsequent revitalization of its state governments is a case in point.

These developments, then, entail a new set of challenges for sub-national governments. On the economic front, economic globalization offers greater opportunities for aspiring regions to break into production networks. However, this same flexibility entails less secure "tenure" for those states or provinces that have managed to break into these same networks, and in many cases, the most intense competition now comes from neighbouring regions (Tendler 2002). In addition, greater decentralization as well as fewer commitments from national level governments to "balanced" growth entails greater autonomy and stakes in this new policy environment.

However, while these developments do imply a heightened role for sub-national governments, relatively little has been written about what aspiring state and provincial governments can do to create and maintain a sustainable competitive advantage. Disciplines such as economics and political science have traditionally focused on national-level issues and imperatives (Montero 2002; Paul 2002).

That said, sub-national governments are not mere replicas of their national equivalents. They are embedded in a specific hierarchical position vis-à-vis their national counterparts, and need to reconcile national and local priorities. In addition, they have a reduced range of policy instruments at their disposal. Macroeconomic and trade policy is always the preserve of national governments, which may extend to encompass many aspects of infrastructure, education, and technology policy. Budgets are smaller, and sub-national governments may also be subject to hard budget constraints imposed by central governments.

However, sub-national governments also have important attributes that lend themselves to effective policy-making. State and provincial governments are often entrusted with unglamorous, but critical responsibilities for businesses such as land management, local infrastructure, and basic services. In addition, although budgets are smaller in an absolute sense, sub-national governments do have some financial wherewithal to make strategic investments in new sectors or to support promising emerging ones. Sub-national governments can also capitalize on their greater proximity to

firms, businesses, and supporting infrastructure such as universities to steer collective efforts as well as mould the institutional environment in a way that supports economic activity in general and innovation in particular.

Research on selected cases in China, Russia, India, and Brazil has documented how, by selectively implementing national decrees, establishing links with the local private sector, and — where necessary — innovating, sub-national governments can foster the emergence and subsequent growth of promising economic activities (Segal and Thun 2001; Remick 2002; Sinha 2005; Tendler 2002). For example, based on their work on the municipal governments of Beijing and Shanghai, Segal and Thun make the following statement (to which the name of this book is due):

> Local governments do not simply try to reproduce and catch-up with development efforts initiated by the central government, but are often the actual architects of growth, designing and implementing development policies that are conducive to local institutional frameworks and specific development needs (2001, p. 558).

However, the path towards this goal is not straight-forward. National-level priorities have to be reconciled with local aspirations, social capital has to be built, and policies have to be formulated effectively. In particular, policy-makers at the sub-national level need to avoid a "race to the bottom", where promising sectors are solicited on the basis of incentives and infrastructure, rather than a genuine competitive advantage (Gray and Dunning 2002). Indeed, the challenge is to construct an enduring competitive advantage that is not easily replicated.

Drawing on cases largely — but not exclusively — from Asia, *Architects of Growth?* seeks to compare and contrast the experiences of ten up-and-coming sub-national regions that have sought or are seeking entry into the electronics sector. In exploring the issues of agency and effective policy approaches at the sub-national level, this book aims to shed light on a vital, but overlooked topic.

The sections ahead set out in greater detail the conceptual framework and research goals that guide this book and its constituent chapters.

ECONOMIC ACTIVITY AND LOCATION

Mapping out a nation's economy reveals that its industries are not evenly spread throughout its territory, but rather concentrated in a small number of locations. For example, Chicago and Detroit were synonymous with manufacturing in the past, and Silicon Valley in California and Route

128 in Massachusetts are currently known for their IT industries. Regions in Northern Italy are reputed centres for high quality fashion-wear; and Tokyo, London, and Hong Kong are centres for international finance. Specific areas or regions seem to be good at producing large numbers of new firms in certain sectors as well as attracting others from elsewhere.

What, then, is known about economic activity and location?

The theory of comparative advantage argues that "patterns of location, specialization, and trade will be driven by the geographical distribution of factors of production" (Storper 2002, p. 242). However, this framework is static and does not explain how regions with scarce endowments of capital and labour come to host new, more complex types of production such as manufacturing and services.

Indeed, until recently, many regions in Asia were characterized by scarce capital, and relatively abundant land and labour. It is thus pertinent to ask what enabled these regions to alter their comparative advantage, moving away from hosting simple, labour-intensive tasks towards more complex, capital-intensive ones.

There are well-known reasons why firms tend to agglomerate or cluster together.[1] Marshall contended that they seek to benefit from externalities or spillover effects, which benefit all firms in a given group. These externalities arise due to "traded" and "untraded" interdependencies. Traded interdependencies refer to direct transactions between firms, and mean that firms in an established cluster are more likely to benefit from a wider range of specialized suppliers. This, through better quality inputs, quicker delivery times, and more competitive prices, is held to increase the performance of all firms in the cluster. Clusters can also offer "thicker" labour markets which have more workers with required technical competencies. Untraded interdependencies are less tangible, and include benefits such as more opportunities for the interchange of ideas, techniques, technology, and business opportunities that arise from proximity between firms (Marshall 1890).

Further work has built on this foundation in a number of ways. For example, externalities can be "generalized", meaning that they are the inevitable spillovers that result when firms cluster together, regardless of their activities. Greater aggregate demand enables the emergence of a variety of infrastructural, economic, and social services that would not exist if demand were more dispersed. This occurs in large urban centres. However, externalities can also be "specialized", which entail benefits for firms that operate in the same or similar industries. These can occur in large urban centres or, indeed, smaller centres that reach a critical mass of firms engaged in compatible activities (Dicken 2003). It must be noted, however,

agglomerations can also generate negative externalities such as pollution, increasing rent, labour poaching, or intellectual property theft.

Research by the Endogenous Growth school supports much of this argumentation. Romer (1986; 1990) and Lucas (1988) argue that, in addition to labour and capital, technology and knowledge are also factors of production. Technology and the knowledge required for its successful deployment for production are taken to be "endogenous" to a firm, as they are sought based on the conscious decisions made by firm owners and subsequently internalized, rather than something that occurs exogenously permeating all aspects of a given economy.[2] Investment in acquiring technology and human capital is also cumulative, as it builds on previous episodes of learning. Indeed, seeing as most of the benefits of learning are retained by the investing firm, it can acquire a competitive edge over its rivals, which can result in an oligopolistic market.

The successful acquisition of technology and its accompanying skills is therefore something that is highly location-specific, occurring in individual firms. Clustering can boost this phenomenon because the positive effects accruing from knowledge-creation and R&D can spill-over, benefiting other firms. Following this logic, the bigger the cluster of firms, the more spill-overs can be generated, and the better for the group as a whole. In addition, this approach raises the possibility of path-dependence, as small initial differences in the characteristics of different locations may prove determinant in the long-run. Once a given location begins to pull ahead, the cumulative effect of firm-specific learning and the ensuing spill-overs will enable it to pull ahead of its competitors.

However, both neo-classical and endogenous growth approaches perceive firms solely as competitors, uniquely engaging with each other through business transactions, with externalities occurring automatically. However, work from a variety of development economists and economic geographers places more emphasis on: the agency of firms and their ability to cooperate as well as compete; and the role that local traditions or customs can play in facilitating or hindering collaborative enterprises.

For example, the "Collective Efficiency" school argues that firms can actively seek to maximize the positive aspects of clustering. Joint efforts can include: inter-firm collaboration regarding products and processes that can improve knowledge and capabilities; or the creation of intermediary organizations to lower transaction costs between members and facilitate collaborative learning (Humphrey and Schmitz 1996).

Other work has approached firms as entities embedded in particular social contexts that shape their outlooks, actions and decisions and also

affect the potential for collaboration. For example, the Regional Advantage school has looked at the role of the local institutional "environment" such as local customs, traditions, and attitudes, and how they can support economic growth and innovation through fostering collective attitudes regarding issues such as product quality, acceptable business practices, and openness to inter-firm collaboration (Saxenian 1994; Storper and Scott 2003).

This more nuanced, long-term, and social nature of collaboration and the pursuit of technological capabilities is complemented by evolutionary and institutional economists, who argue that the development of new technology is a sequential and path-dependent process that is shaped by the local institutional context. This refers particularly to norms and conventions that shape how knowledge is developed and then subsequently communicated between actors (Amin and Thrift 1992; Amin 1999).

Similarly, the Regional Innovation System school argues that many of the more productive aspects of agglomeration such as collaboration, collective efficiency, and generalized diffusion of knowledge do not occur automatically. A variety of market failures may prevent firms from accessing knowledge and opportunities. Non-excludable public goods such as basic research and development, a skilled workforce, or collective facilities will be under-developed due to the "free-riding" issue. Negative aspects of agglomeration may also stunt the growth of a promising cluster, or the demand for knowledge-enhancing services may be too incipient or dispersed to make private sector involvement rational. And, producers and consumers do not always have the necessary information regarding prices, products, markets or technologies (Cooke 2001; Giuliani and Bell 2008).

Informed by these approaches, Scott and Storper propose a useful framework for understanding the geographic distribution of new industries. They contend that when a given industry first emerges, production is geographically dispersed with few or no predominant centres. This is because sector-specific markets for labour or supporting services are undeveloped. Consequently, there is little incentive for firms to agglomerate. This state of affairs is termed "an open window of locational opportunity" (Storper and Scott 2003, p. 590).

However, over time, the industry in question becomes more concentrated, as those regions with more supplier markets and spillover effects, as well as favourable institutional environments begin to pull ahead. After a while, this "process of cumulatively self-reinforcing development" will mean that only a restricted number of locations will host a specific industry. Following this, the "window of opportunity" will close, as it will be hard for firms in new regions to outcompete those in more established ones.

The above-mentioned work depicts economic activity as something that is fundamentally influenced by the local environment within which it takes place. Positive externalities or, to be more specific, the balance of positive and negative externalities attracts firms to cluster in specific locations. Firms, consortia, and intermediary associations may act in a proactive manner to further bolster the benefits offered by proximity. And, a given region's institutional context also plays a role through collective attitudes to collaboration, business practices, and so forth.

However, some have argued that, regardless of the nature or cause of such externalities, technological advances are threatening to do away with the territorially-rooted nature of economic activity. For example, Friedman (2006) argues that the Internet, workflow software, as well as new forms of organizing production such as off-shoring, out-sourcing, and supply chaining are restructuring the way firms operate and allowing entrepreneurs and professionals from across the globe to produce and sell goods and services on the international market (2006). By enabling people in many sites to collaborate, conceptualize, design, and produce goods and services, location becomes, by and large, irrelevant.

That said, the emergence of high-performing regional economies in developing countries as well as increasing inter-regional disparities within developed countries suggests that there are, as Markusen states "sticky places in slippery space" (1996, p. 293). Indeed, while the barriers of space and time have been drastically reduced, this does not mean that distance is now meaningless. Rather, economic globalization has altered the importance of distance for different types of economic activity.

On the one hand, the perpetual transformation of intricate coordination functions into simple, routine activities that can be carried out at cheaper, but more distant, locations promotes dispersion. On the other, it is highly likely that tasks that rely on "tacit" knowledge and that require large amounts of face-to-face contact will continue to cluster in specific locations. Leamer and Storper argue that while modern telecommunications allow simple routine functions to be carried out at cheaper and more distant locations, a great deal of economic activity involves complex concepts and interactions that cannot be simplified and managed from afar. Certain production processes that rely on familiarity, trust, and large amounts of knowledge that cannot be codified will cluster (Leamer and Storper 2001). Archetypical examples of these activities include the financial services and fashion industries.

Indeed, given the benefits of agglomeration economies, it is also likely that routine, de-territorialized processes will also cluster in new locations. While firms in these industries cater to far-off clients, they are similarly

dependent on a local labour market, specialized infrastructure, and a range of supporting services for competitiveness. This is seen in the concentration of business process outsourcing firms in urban areas such as Manila, Cebu, and Davao in the Philippines; and Bangalore, Chennai, as well as smaller cities such as Pune and Gurgaon in India.

What does this mean for aspiring regions away from capital cities and established centres of industry?

Of course, these regions may still find it hard to compete for government resources and private investment. In addition to the capital's proximity to decision-makers, primary urban centres also have privileged access to high-end infrastructure such as airports, stock exchanges, and financial institutions. Thus, in order to attract investment, aspiring regions and their urban centres must outperform the capital as well as other contending cities (Davis and Henderson 2003).

However, large cities, while offering advantages to firms, can also be affected by diseconomies of scale. As a national economy grows, its largest cities begin to suffer from issues such as rising costs for land and labour, over-charged infrastructure, and skill shortages. After a certain point, firms begin to relocate to suburban areas in the same cities in a bid to benefit from the externalities, while minimizing the effect of the diseconomies of scale. As these cities grow even more, firms may then decide to relocate to smaller cities (Henderson 2010).

The critical point at which firms decide to leave depends on whether they benefit from generalized or specialized externalities. Available research suggests that simpler activities benefit from specialized externalities and more complex activities benefit from those that are generalized (UNIDO 2009). Thus, aspiring regions may well be able to provide hospitable contexts for smaller, newer, and less sophisticated activities that benefit from specialized economies.

While not advocating the eclipse of the nation-state, the dynamism of a growing number of sub-national regions has led some to stress the importance of these geo-economic units and the need to understand the evolving relationship between local-level institutional contexts and the drivers of economic globalization (Scott 1998; Storper 1997). The OECD and the European Commission have incorporated regions as a central component in their economic development strategies, and the World Bank and the United Nations Industrial Development Organization are seeking to understand how agglomeration, economies of scale, and urban development can be better harnessed (OECD 2004; European Commission 2006; World Bank 2009; UNIDO 2009).

This work provides an initial point from which to begin analysing the links between economic activity, location, and policies. The next section will look at these issues in the Asian context and the subsequent sections will make more explicit links to policy.

EMERGING REGIONS IN ASIA

Asia has its share of large agglomerations or firm clusters — often in capital cities or the largest urban centres. For example, Taiwan and Korea have large electronics clusters in Taipei and Seoul, respectively. "The Big Four" of Beijing, Shanghai, Shenzhen, and Guangzhou are the established centres of manufacturing in China. In Southeast Asia, Jakarta, Bangkok, Manila, and to a lesser extent, Kuala Lumpur are home to a disproportionate share of their country's economic activity. This reaches extremes in the Philippines and Thailand, where Manila and Bangkok each account for more than half of total gross domestic product (Rimmer and Dick 2009).

There are reasons for this. Unlike Europe and North America, which have a more dispersed economic structure, economic activity in many Asian countries has been concentrated in a limited number of urban areas. In North America and Europe, industrialization was accompanied by the emergence of new and larger urban centres. In contrast, many Asian countries had few urban centres when they began industrializing. The largest urban centres constituted the biggest local markets and tended to have the best available infrastructure and skilled labour (Henderson 2010). Subsequently, economies of scale accompanied by economic nationalism, political centralization, and the establishment of customs procedures and trade barriers accentuated this. For example, due to many of the policies detailed above, by the 1970s influential secondary cities such as Surabaya, Cebu, Chiang Mai, and Penang were shadows of their former selves (Rimmer and Dick 2009).

Available evidence suggests that, despite the persistence of primary urban concentrations, Asian countries are experiencing more internally dispersed patterns of growth — which has repercussions for the internal distribution of manufacturing operations. Recent work by the World Bank shows that medium-sized cities in Asia are big enough to offer firms specialized externalities (Huang and Bocchi 2009). This mirrors findings from the United States and Japan, where smaller cities have emerged as specialized centres of production (Henderson 2010).

There are several drivers for this process. First, Asia looks to continue to enjoy high growth rates. The World Bank estimates that by 2025, Asia's

contribution to global economic growth is likely to be at least 50 per cent, with eight countries — China, India, Japan, South Korea, Taiwan, Indonesia, Malaysia, and Thailand potentially having economies of over US$1 trillion (Gill and Kharas 2007). These countries also currently account for a growing percentage of exports of both manufactures and commercial services (UNIDO 2009; WTO 2009).

Second, countries in Asia are industrializing in a particular way. Trade liberalization, investments in infrastructure and education, as well as regional trade agreements have led to increasing product fragmentation and specialization in the fabrication of specific product components (Huang and Bocchi 2009). This form of industrialization lends itself to a range of smaller urban centres leveraging localization economies.

Third, countries in Asia are urbanizing rapidly. East Asia's 750 million urban inhabitants will be joined by an expected 550 million additional people by 2025 (Gill and Kharas 2007). By this year, China is expected to have a 59 per cent urbanization rate. Rates for Singapore, Korea, and Malaysia will be above 80 per cent and Indonesia and the Philippines will have rates between 50–55 per cent. India's urbanization rate is predicted to rise from 30 per cent in 2010 to 37 per cent in 2025. The country will experience an increase in the number of urban dwellers from 340 million in 2010 to some 590 million by 2030 (UN Population Division 2009; McKinsey Global Institute 2010).

However, this growth will not all be concentrated in capital cities, as secondary urban centres will increase in number and relative wealth. According to the World Bank's *An East Asian Renaissance*, over the period 2005–15, more than half of all growth in urban areas in East Asia will be in cities with less than 500,000 people (Gill and Kharas 2007). Greater incomes and ensuing investment in education and infrastructure means that many of these urban areas have the potential to become production sites (Boston Consulting Group 2010).

Thus, clusters of firms in high-technology sectors have appeared in secondary urban centres that are removed from capital cities or traditional sites of industry. In China and India, investing in "second tier" cities is an increasingly common phenomenon (Spire Consulting 2010; Hutchinson and Ilavarasan 2008). Regional dispersion policies enacted in Korea have led to important new clusters starting up in provinces away from the capital. In the Philippines, Cebu has built up a considerable agglomeration of electronics firms. In Malaysia, both Penang and Johor have important electronics clusters as well as important investments in the medical device and petrochemical sectors, respectively.

These developments call for an analysis of the current and potential roles of sub-national governments in seeking to foster and attract new industries.

THE ROLE FOR SUB-NATIONAL GOVERNMENTS

The implications of externalities, collective efficiency, and the institutional environment for long-term competitiveness imply a heightened role for state and provincial governments. Indeed, there are solid theoretical and practical reasons for sub-national governments to be active agents in fostering economic development.

The principle of subsidiarity argues that government institutions that are closer to their constituents are better-placed to deliver specific types of services, particularly those that provide localized benefits. This is because the level of government closest to end-users will have more information on their needs and the optimal combination of services and taxes for that jurisdiction (Oates 1999).

Furthermore, sub-national governments are subject to the disciplines of the market-place to a greater degree than their national counterparts. Tiebout argues that, assuming perfect information, citizens and firms compare the tax burdens and service delivery options of their constituency with others. They will then "vote with their feet" for the optimal combination of services and taxes. This competition between sub-national units will improve distributive efficiency, as they will be subject to quasi-market pressures and public goods and services will be parcelled out according to local needs and preferences (1956). This level of competition may make sub-national governments more responsive to the needs of local-level economic concerns than their national counterparts.

Third, the same proximity to end-users as well as the possibility of leveraging social capital with firms means that sub-national governments are in a better position than their national counterparts to shape and mould the institutional context in a way that supports economic activity. By tackling information asymmetries, negative externalities, and collective action failures, sub-national governments can maximize the potential positive effects of agglomeration (Storper and Scott, 2003; Landabaso et al., 2003).

In a move to catalyze growth and stimulate policy innovation, national governments in Asia are beginning to devolve responsibilities to lower levels of government. In some cases, this has been through the introduction of decentralization measures, as in the case of the Philippines and Indonesia. In others, such as India, it has been through a generalized "rolling back"

of national-level regulatory frameworks that has allowed sub-national governments to move in. In still other cases, such as China, provincial or state-level governments were given financial incentives for achieving higher growth rates in their jurisdictions (Rudolph and Rudolph 2001; Yao 2009).

However, while greater agency at the sub-national level may be a welcome development, there is very little in the way of comparative work that examines quite how and under what conditions sub-national governments can pursue their own industrialization strategies effectively. Work on state-led development (Evans 1995; Kohli 2004), national innovation systems (Freeman 1995; Lundvall 1992; Nelson 1993), and varieties of capitalism (Hall and Soskice 2001) all have theoretical and practical insights but, for the reasons stated above, are not directly applicable to the sub-national level.

A small body of work within comparative politics on sub-national governments and their industrialization strategies offers much insight. Research on state and provincial governments in China, Mexico, Russia, India, and Malaysia shows that, as with their national counterparts, their effectiveness hinges on issues such as bureaucratic capacity and state-business relations. These characteristics are endogenous to the sub-national governments themselves and persist through regime changes at the national level (Segal and Thun 2001; Remick 2002; Sinha 2005; Hutchinson 2008).

In addition, distinct levels of capacity and varying state-society relations across a country's state or provincial governments mean that central priorities will be implemented differently at the local level, resulting in a "mosaic" effect. According to Gills and Philip "even within the same country, i.e., at the sub-national scale, local and regional differentiation can produce differential outcomes of economic policy pursued nationally" (1996, p. 586).

However, while the effectiveness of sub-national governments is also influenced by factors such as state capacity and state-business relations, they differ in a key way from their national counterparts. They are not entirely autonomous and are located in a subordinate position, assuming an intermediary role between the national state and the local population (Tendler 2002).

That said, there is room for agency in pursuing sub-national priorities — regardless of the regime type at the national level. Rather, state and provincial leaders gauge the impact of their decisions on two levels — national and local — the relative weight of which is dependent on the country's political context. Where sub-national leaders are elected, the weight

attached to local priorities will increase. However, in contexts where sub-national leaders are appointed by national-level authorities or party heads, the importance placed on national-level considerations will be augmented correspondingly (Sinha 2005).

Thus, available research on sub-national governments shows that, despite their subordinate position vis-à-vis national governments, they can be agents with influence over their own economic fortunes. National and local priorities must be reconciled, and the degree of autonomy afforded to states and provinces is contingent on the country's political context which changes over time. As with their national counterparts, the ability of sub-national governments to successfully pursue their own economic strategies is influenced by their bureaucratic capacity and relationships with the private sector.

POLICY-MAKING AT THE SUB-NATIONAL LEVEL

In many cases, this new agency at the sub-national level has sparked competition between states and provinces. In the best of cases, attempts to catalyze economic growth have led to investment drives, substantial internal restructuring, and greater responsiveness towards local firms. On the other hand, uncritical attempts to attract new industries can result in duplication of efforts by nearby provinces or a "race to the bottom", where firms are courted exclusively through financial inducements rather than by proposing value-added attributes (Tendler 2002; Gordon and Cheshire 1998).

At the most aggregate level, the "industrial policy model" is characterized by measures aimed at achieving an overall macroeconomic environment conducive to structural transformation, accompanied by targeted policies to support specific sectors — albeit through direct state action or via encouraging the private sector. That said, while sub-national governments may have acquired new visibility and additional responsibilities, they usually do not have a wide range of tools or a large quantity of resources at their disposal.

However, while the scope of the responsibilities of state or provincial governments may differ in each country and their actions may be constrained by national-level institutions and initiatives, the key attribute is the authority to raise revenue — through taxation and other means — and spend on initiatives that fall within their mandated responsibilities (Gray and Dunning 2002).

The first area where sub-national governments can be proactive is prioritizing the efficient and effective delivery of services that are specified in their mandate. Land zoning and development including industrial parks,

provision of utilities such as water and electricity, provision and maintenance of basic infrastructure, and processing of permits and licences to set up businesses are often competencies for sub-national governments.

While often overlooked, effective provision of these services can be a key component of a locationally-rooted competitive advantage. For example, a mapping exercise of state-level competitiveness in India showed the total number of permits required to start a business ranged from three in Chhattisgarh to 20 in Orissa (Oxford Analytica 2009). For this reason, Mexico, India, Indonesia, Vietnam, and the Philippines have begun yearly ranking exercises of the business environment in municipalities and states or provinces.[3]

However, beyond providing a conducive local environment for business, there are many other policies that sub-national governments can implement to attract investment, stimulate inter-firm collaboration, foster the acquisition of technological capabilities, and maximize the potentials of agglomeration. A survey of the Regional Advantage, Collective Efficiency, Regional Innovation Systems, and Clusters frameworks allows a basic typology of policies to be constructed (Scott and Storper 2003; Humphrey and Schmitz 1996; European Commission 2006; Andersson et al. 2003).

The first type can be termed "broker" policies, which encourage value-enhancing dialogue and collaboration among firms and supporting organizations. This includes: platforms for planning and exchange to encourage firm linkages through initiatives such as competence mapping or technology roadmaps; encouraging interactions between firms and generators of industry-relevant knowledge such as universities and research institutes; and collating statistics on local firms, national-level grants and loans, as well as international market trends. These activities can be restricted to facilitation processes, but can also be complemented with targeted investments in areas such as industrial parks and business incubators (Andersson et al. 2003). Broker policies can also be helpful in addressing negative externalities such as low levels of trust, labour poaching, or excessive competition on price as opposed to quality (Scott and Storper 2003).

The second is "demand-side" policies. Public procurement policies can be, and frequently have been, a source of demand for a new or fledgling industry. In addition, through encouraging "self-discovery", government action can reduce the risk and/or initial cost of new production technology or attempting to produce a new good for the market (Rodrik 2004). However, while public sector support through such policies has contributed to the emergence of many high-tech industries, this needs to be exercised

with caution. First, there is potential for excessive intervention, leading to sub-optimal and overly-dependent new industries, as well as public influence on parameters such as budget, timing, and phase-out. Second, the public sector may not be the most demanding of clients, with technical requirements lagging behind those on the open market (Andersson et al. 2003).

The third type consists of tackling market failures in key areas. The standard is industry-relevant training, in which small and medium enterprises are notoriously unwilling to invest. Other related activities involve: providing public research facilities; investing in basic research; facilitating access to capital; encouraging the development and provision of technology-related services particularly in new sectors; and marketing the region national and internationally (Storper and Scott 2003; European Commission 2006).

These policy options are far from negligible, and when combined with greater proximity to, and social capital with, the private sector can be harnessed to considerable effect. In fact, it can be argued that these attributes make sub-national governments better placed to foster certain types of industrial activities than their national counterparts.

According to Weiss, successful economic transformation is defined as one of two outcomes: engineering a transition from an economy based on agriculture to one based on industries or services, termed *structural transformation*; or creating new production activities, speeding up technological learning, and disseminating innovative practices within a specific sector, termed *sectoral* or *industrial-technological transformation* (Weiss 1998, p. 66).

Doner (2007) argues that these two types of transformation are, in practice, very different, requiring substantially different levels of institutional capacity as well as policies. Structural transformation is understood to mean fostering the development of a more diverse industrial sector. In contrast, sectoral transformation is understood to mean the long-term process of indigenous technological learning. According to Doner, this is comprised of the following three aspects:

(a) Moving from lower value-added to higher value-added activities regarding processes, functions, products, or sub-sectors.
(b) Increasing the quantity and technological complexity of inputs from local firms.
(c) Satisfying the requirements of global value chains insofar as price, quality, and delivery are concerned.

He argues that policies have different degrees of complexity, which are determined by: the number of actors involved in taking decisions; the level of technical knowledge required for implementation; and the size and influence of potential "losers" in any allocation of resources. More complex policies require specific organizational attributes to be carried out effectively. These include the abilities to: maintain constant communication with private sector operators; construct and sustain relationships of trust; and monitor commitments made by the actors involved in the upgrading enterprise (2007, pp. 70–73).

Using this metric, Doner argues that policies aimed at encouraging structural transformation are less complex than those aimed at fostering upgrading. Thus measures such as enforcing property rights, ensuring macroeconomic stability, and directing credit are not overly onerous in terms of technical knowledge or working with large numbers of actors. Even more sophisticated policies such as those associated with trade liberalization can draw on policy measures implemented elsewhere.

Conversely, upgrading involves working with firms to: acquire indigenous technological capabilities; foster inter-firm linkages; and improve internal processes to meet the requirements of global production networks. This involves implementing measures to: establish linkages with foreign firms; secure access to new markets; absorb new technology; work with other firms to create value chains; and pursue constant upgrading of the work-force. In turn, these measures require: working with greater numbers of actors; acquiring a deep reservoir of technological knowledge; and accepting longer-term diffuse benefits for participants.

While many of the policies required to pursue structural transformation lie out of the realm of sub-national governments, much of what the pursuit of sectoral transformation entails lies within the purview of many sub-national governments. Given the importance of local knowledge, proximity, and social capital for fostering sectoral upgrading, sub-national governments may be able to more closely approximate the institutional conditions necessary for upgrading. And, tackling information externalities, collective action dilemmas, and providing industry- or location-specific public goods such as technical training and collective facilities may well be feasible for sub-national states.

Having argued that sub-national governments can and do have agency in fostering the development of industry, and having laid out some of the types of policies that can be implemented to this effect, the next section will set out this book's key aims, sector of interest, and choice of cases.

RESEARCH DESIGN

This book aims to deepen our understanding of how and whether sub-national governments can play a significant role in promoting industrial transformation. In order to do this, it will compare and contrast ten cases of emerging regions largely, but not exclusively, from Asia.

In this book, sub-national government is taken to mean a territorial sub-division of a national government,[4] specifically a meso-level unit such as a state or province. It is taken to be synonymous with region, which is defined as "a meso-level political unit set between the national or federal and local levels of government that might have some cultural or historical homogeneity but which at least ha[s] some statutory powers to intervene and support economic development, particularly innovation" (Cooke 2001, p. 953).

Given the variance in governance structures across nations, this exercise will compare state, provincial, and municipal governments in countries with varying: income levels; technological capabilities; and separation of powers between national and sub-national governments.

The analytical focus of the project will be strengthened by focusing on one sector, enabling the different regions' progress to be compared along the same metric. Thus, cases will be subjected to the same market cycles, industry trends, technological requirements, and production standards. In this case, the focus industry will be the electronics sector, which is taken to comprise the sub-groups of: electronics components; industrial equipment; and consumer electronics (Dicken 2003, p. 400).

Using Weiss' definition of economic transformation, regions will be assessed according to their efforts to foster *structural* and, more particularly, *sectoral* transformation.

The choice of electronics as the sector of interest has two main advantages. First, given its potential for structural change and foreign exchange-earning potential, the electronics sector has traditionally been seen as an attractive export-oriented industry. Consequently, it is quite wide-spread in the region, and offers a range of potential industry centres and policy approaches for study. Second, the electronics sector has traditionally been concentrated in the United States, Europe, and Japan. As a result, all of the cases proposed below are late entrants to this sector, which turns the attention to policy and constructed competitive advantage, as opposed to pre-existing institutional contexts.

This book has a strong comparative policy focus, with an aim to draw out lessons learned for decision-makers at the national and sub-national

levels. In order to facilitate effective comparison and contrast, the chapters ahead are centred on the themes and questions that follow.

(a) The electronics industry
This involves analysing the growth and dynamism of the given region's electronics sector. Key aspects include: number of firms/employees; composition by sub-sector; ownership structure; skill and capital-intensity of tasks undertaken by firms; the extent and nature of linkages of firms within locally-present clusters; and evidence of product/process innovation.[5]

(b) Overall national context
This involves examining the overall national economic and policy context within which each sub-national case operates. Central questions include: the relations between the state/provincial and national authorities regarding economic policy and industrial development; the formal and informal responsibilities that state/provincial authorities possess regarding industrial policy and economic development; the revenue sources available to sub-national governments; and whether there is an explicit regional policy in place.

(c) The sub-national context
This requires establishing: how the given state/provincial governments sought to promote the emergence and subsequent development of the electronic sector; what initiatives were pursued to this effect (improving the local business environment, broker policies, demand-side policies, and tackling market failures); what role the private sector played in pursuing collective efficiency; and the relationship between the sub-national state and the local private sector.

In order to explore these questions, this book is grouped into five parts.

In the first part, this introduction is followed by an overview of key trends in the electronics sector and the challenges inherent in negotiating entry into global production and innovation networks for sub-national regions in Asia.

The second, third, and fourth parts group the ten cases so as to first facilitate comparison within regions and, subsequently, between them.

The second part brings together four cases from industrializing countries in Southeast Asia. The province of Cebu, Philippines, and the state of Johor, Malaysia stand out as cases of locally-based economies that have been shaped by considerable sub-national state initiative, emerging as centres of electronics production in their own right. The chapters on Da Nang, Vietnam, and Thailand provide useful cases of municipal and provincial governments

in countries with a strong tradition of centralized administration. Da Nang provides an interesting example of a geographically remote industrializing region that capitalized on greater amounts of autonomy to dramatically improve its regulatory framework and infrastructure. The chapter on Thailand puts forward the dynamics between the country's elected provincial representatives and centrally-appointed provincial governors and what this means for sub-national agency.

The third part consists of chapters on Chengdu, People's Republic of China, and Tamil Nadu, India. The PRC has enacted important decentralization measures and has also seen the rise of a number of dynamic regions that are seeking to capture the excess demand from primary centres of industry. Chengdu is one such case, as the city has emerged as a key inland manufacturing centre. Tamil Nadu, for its part, has rapidly emerged as the pre-eminent centre of export-oriented electronics manufacture. Enabled by the 1991 liberalization measures and spurred on by competition from its neighbouring territories, the state government has moved to improve the local business climate, upgrade its skill base, and attract and retain foreign direct investment.

The fourth part of the book brings together cases from industrialized countries. Singapore is, of course, a city-state. However, while its government remit is more extensive than any sub-national government, the extent to which it leverages on its proximity to firms provides much insight into the more hands-on policies open to state and provincial governments. Gumi, Korea, is a case of both national and sub-national governments working in tandem to decentralize industrial activity. The case of Kaohsiung, Taiwan is an interesting counter-example, as it is the classic "secondary" region that struggles to outcompete the capital region. The final chapter on North Brabant, Netherlands, is from further afield and provides an interesting case of a provincial government with considerable influence, but little formal power.

ADDITION TO KNOWLEDGE

From a disciplinary point of view, this book is aimed at regional studies/economic geography, economics, and comparative politics. Work on analysing political and economic outcomes in multi-levelled systems of governance is just beginning and is, as yet, limited to very few cases. This book aims to form part of this emergent tradition, placing sub-national states at the centre of analysis. Several reasons militate for a sub-national perspective on the relationship between institutions and economic outcomes.

First, in restricting analysis to aggregate data or institutional contexts, much economic and political research suffers from what Rokkan et al. term "whole-nation" bias, which overlooks variations within countries, particularly between "competing economic, political, or cultural centres" (1970, p. 49). However, institutions, taken to mean "humanly devised constraints that shape human interaction", are influenced by local, political, historical, and cultural specificities. Some of these institutional contexts will be more conducive to specific types of economic activity than others, enabling them to grow more successfully (Martin 2000). Studying regions within countries also forces researchers to be more precise in operational and theoretical terms, thus producing "greater gradation in existing concepts" and greater nuance in applying national level concepts and ideas to the sub-national level (Sinha 2012).

Second, a uniquely national perspective obviates the initiative of sub-national actors in shaping their own destinies. An emerging body of research on industrializing countries shows how differences in structure, capacity, and strategy at the sub-national level explain the varying effectiveness of national-level initiatives in different parts of a country. In addition, rather than being mere extensions of national-level governments, sub-national governments have their own interests to advance. In turn, policy approaches are selected based on these, and are affected by local state-society relationships.

Third, a sub-national focus helps address the small "N" problem that has plagued much of the state-led development literature. This is because there are relatively few successful instances of successful government-facilitated industrialization at the national level. However, classifications are influenced, often unduly, by national level aggregates and may hide successful initiatives undertaken by sub-national governments (Snyder 2001). Thus, looking at governments, policy frameworks, and public-private sector interaction at the sub-national level dramatically increases the cases available for study, and may also uncover unexplored dynamics.

However, it must also be stated that the sub-national approach is not without its own methodological challenges. First, the definition of sub-national units such as provinces, states, and municipalities differs across countries and may change over time. Second, states and provinces often do not have "hard" borders. Rather, their boundaries can be "fluid and shifting", with greater or less degrees of permeability and permanence (Moncada 2012). Third, regardless of the degree of decentralization of power, sub-national units are not detached from national governments and are subject to influence from above (Thun 2006).

That said, many of the same issues of impermanence and cross-border influence also affect national governments (Moncada 2012). And, while sub-national governments are undeniably influenced by their national counterparts, influence also flows the other way. Sub-national governments can influence central governments through mechanisms such as lobbying, policy transfer, selective implementation of national-level decrees, and even fiscal behaviour (Sinha 2005; Wibbels 2000).

However, while much research focussed on the national level does not explicitly factor in these issues, it is hoped that a sub-national perspective will be more open to these issues and influences. This perspective will not only deepen our understanding of the interaction between government action and economic outcomes at the sub-national level, but will also shed light on the necessary conditions for effective government agency in general.

Notes

1 A cluster is defined as a "spatial and sectoral concentration of firms". Timothy Bresnahan, Anthony Gambardella, and Annalee Saxenian, "'Old Economy' Inputs for 'New Economy' Outcomes: Cluster Formation in the New Silicon Valleys". *Industrial and Corporate Change*, vol. 10, no. 4 (2001): 836.

2 The Neo-classical model assumes that, apart from an initial investment, acquiring technology has no further costs, constraints, or risks. Thus, technology acquisition is implicit in capital investment and can be acquired by any firm anywhere. Those influenced by the endogenous growth school contend, in contrast, that firms do not dispose of complete information on a particular technology and its alternatives and technical "mastery" of an acquired technology is not effortless and cheap. Rather, effective use of technology has a strong "tacit" element that requires investments in skills, organizational practices, and technical expertise. The process is inherently risky as investments will not necessarily result in increased productivity, and is difficult for firms seeking to enter a new sector, who must learn how to use a particular technology while simultaneously competing against those who have mastered it (Lall 2004).

3 <http://www.doingbusiness.org/reports/subnational-reports> (accessed 24 May 2012).

4 A government is defined as "the formal institutions, offices, processes and personnel through which the day-to-day running of a country, the maintenance of public order and the distribution of resources is managed and maintained" (Axford et al. 2002, p. 330).

5 A useful distinction between types of firm linkages is that of: Marshallian Districts; Hub-and Spoke Districts; Satellite Platforms; and State-Anchored Cities. See Ann R. Markusen 1996, pp. 293–313, pp. 337–40.

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