"Developmental" States and Economic Growth at the Sub-National Level: The Case of Penang

Francis Edward Hutchinson

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Introduction

When electronics manufacturers go to Malaysia, they do not stop in the national capital, Kuala Lumpur, but fly directly to production sites in a distant province, Penang. This small state, near Thailand, with a population of some 1.5 million, has established a reputation as a dynamic hub for technology-intensive goods such as semiconductors and hard disk drives.

Penang has created an environment that seems different — and slightly separate — from the rest of the country. Investors here do not liaise with the federal government, but rather state government agencies for incentives, permits, and licences. They source components, design work, or labour from a variety of dynamic firms nearby, and send their products via local airports or the Internet.

Penang is a "different" state for a variety of reasons. It hosts a long tradition of political activity and is the home of personalities such as the Prime Minister, Abdullah Badawi, and Opposition leader, Anwar Ibrahim. Penang is also the only state with a Chinese majority and Chief Minister and has been governed by a small, regionally-based multi-ethnic party since 1969.

Traditionally a centre for shipping, finance, and trade, Penang overhauled its economic model in the 1970s, following a deep recession. Since then, the state has received several waves of strategic foreign investment and reaped

FRANCIS EDWARD HUTCHINSON is a consultant specializing in governance and decentralization in South and Southeast Asia.

the benefits. Whereas Penang had a per capita income 12 per cent below the national average in 1971, it now enjoys a per capita income almost 50 per cent above average.[1]

The "motor" of the Penang's industrial sector is electronics, which accounts for approximately half of all employment in the manufacturing sector. In 2005, this comprised some 200 multinational electronics firms employing 110,000 workers, in addition to some 350 firms and 25,000 workers in downstream sectors as well as an unknown number of firms in the informal sector.[2]

Penang is not the only centre for electronics manufacturing in Malaysia, as the Klang Valley and Johor Bahru also house sizeable numbers of firms. However, what distinguishes Penang is not the size of its electronics industry, but the quality of its operations. Penang has specialized in the semiconductor and hard disk drive sectors. In contrast, the Klang Valley and Johor Bahru have specialized in less technologically intensive sectors. In addition, more than the other two states, multinational corporations (MNCs) have relocated more value-added tasks to their Penang affiliates such as research and development, supply chain management, and customer care. In particular, Penang has acquired a reputation for expertise in areas such as semiconductor design.[3]

The theory of comparative advantage argues that patterns of industry location are driven by the geographical distribution of factors of production. Yet, following this logic, Penang's initial endowments of scarce capital and greater supplies of land and labour, would have restricted it to labour-intensive activities. Thus, it is pertinent to ask how it altered its comparative advantage away from hosting simple labour-intensive tasks towards more complex, capital-intensive ones.

Research carried out on countries that have successfully "upgraded" their comparative advantage, such as Japan, Korea, and Taiwan, suggests that part of their success lies in their institutional contexts. In particular, "developmental" state agencies fostered the transformation of their economies through effective proactive policy-making and close ties with the private sector.

In general, the Developmental State literature emphasizes three institutional characteristics necessary for promoting economic transformation. These characteristics, which this article will use as an operational definition, are: a comparatively autonomous and capable bureaucracy; an over-riding commitment to economic growth; and a high degree of public-private cooperation.[4]

However, firms in Malaysia have not benefited from this institutional configuration or the same enabling policy-making. Some classify the national state as "intermediate" as opposed to "developmental", as while it has been quite successful at fostering economic growth, it has been less effective at engineering meaningful economic transformation.[5] This is attributed to commitments to the inter-ethnic distribution of wealth above economic transformation as well as pervasive rent-seeking.[6]

That said, Malaysia has a multi-level governmental structure, with a central government and state counterparts.[7] While state governments have a smaller range of responsibilities than their federal counterpart, they have the crucial authority to tax and spend.[8] It is therefore worth asking whether Penang's local political and institutional context aided its industries to develop more quickly and, in particular, whether its state government was an active participant in this endeavour.

To date, the Developmental State literature has largely retained its focus on the national level. While this framework is useful for establishing whether and how national-level institutions fostered a specific industry, it is less useful for understanding why an industry developed in one part of a country and not another. However, by applying the Development State framework at the sub-national level — in particular concepts such as state capacity, autonomy, and communication with the private sector — much insight can be gained as to how and whether local-level institutions and policies influence economic activity.

Thus, this chapter will analyse the case of Penang, paying particular attention to its economic trajectory on one hand and its political, institutional, and policy environment on the other. To this end, the next three sections will each look at a specific period of Penang's history, seeking to examine how the Penang State Government, through its constituent institutions and policy choices, influenced the development of its electronics sector. The fourth and final section will set out the theoretical and policy implications gained from the case study.

The Genesis of Penang's "Developmental State" (1969–80)

In the first and arguably most important phase of Penang's history, a change in the province's political context had far-reaching effects on its institutional framework, policy framework, and economic structure.

The Political and Institutional Context

The roots of Penang's economic success can be found in the events of 1969, as state-level elections marked a turnaround in its political and economic fortunes. That year, after a decade-long recession and rising unemployment, Penang's citizens voted out the local representative of the ruling Alliance coalition.

Gerakan, a newly-formed social democratic and multi-racial party, won sixteen out of twenty-four seats. Drawing its cadres from academic and professional circles, the party promised a more independent stance vis-à-vis the national government, whose import substitution policies had been detrimental to Penang's free trade economic model.

The key figure in Gerakan was its Chairman and Chief Minister of Penang, Lim Chong Eu. A member of the first generation of Malaysian politicians, he had been President of the Malaysian Chinese Association (MCA) up until 1959. Lim thus enjoyed extensive contacts at the national level as well as considerable legitimacy among the Chinese community for his efforts while at the helm of the MCA.

Lim Chong Eu's formidable political acumen served the state well. In the wake of the country's racially motivated riots of 1969, he foresaw that Penang's prospects would suffer if it were an opposition-led state in the new climate of heightened Malay nationalism. Thus, Lim negotiated Gerakan's incorporation into the ruling coalition — albeit at the cost of some sections of his party. Instead of being the Chief Minister of a marginalized state, Lim became head of the Penang branch of the ruling coalition and used this position to retain an important modicum of independence.[9]

Lim moved quickly to bolster this tacit room for manoeuvre with practical means to implement his policies. He appropriated a statutory body charged with overseeing economic development in the state, the Penang Development Corporation (PDC), as his implementing arm. The PDC's status as a statutory authority meant that, at least initially, the Penang state government had considerable autonomy from the federal government in establishing its strategic direction and appointing staff.

This was done to great effect, as Lim personally chose a core of staff members, many from outside Penang. Despite earning lower salaries than in the private sector, PDC employees enjoyed considerable prestige, as the Corporation was the premier institution of the state government. During the 1970s, the PDC remained relatively small, with some 70 professionals out of a total of 300 staff. With an average tenure of seventeen years, it had a very low attrition rate and was able to accumulate various layers of experienced personnel.[10]

This institutional capability was backed up by considerable operational freedom and good strategic direction. Lim chose the PDC's board members with care, seeking to gather input and support from key party and federal government officials as well as generate an operational vision for the state. In addition, informal information sessions with technical experts were regularly held to discuss innovative ways of tackling problems.

Policies

The Federal Government had commissioned an in-depth study of Penang's economic situation in the 1960s. Citing the state's dearth of natural resources, the Nathan Report recommended that Penang foster manufacturing and tourism to diversify the economy and reduce unemployment. Lim and the PDC took this report as their blueprint for action.

However, Malaysia's high degree of centralization and formula for allocating revenue to state governments meant that the Penang State Government had a limited resource base. Thus, the PDC resorted to unorthodox means to raise funds. The corporation capitalized on state government control over land to create a property bank through acquisitions and strategic purchases. After converting the land into industrial sites, it then sold them at near-market rates. The PDC was also active in residential development and used the profits to subsidize investments elsewhere.

Second, the PDC marketed Penang aggressively to overseas investors, in particular targeting electronics firms due to their labour-intensive nature as well as possibilities for subsequent higher value-added activities. Thus, the PDC regularly embarked on overseas trade missions, specifically targeting U.S.-based semiconductor manufacturers. In spite of limited real power, the PDC was able to make the investment process quicker and more agile, relying on a well-nurtured relationship with bureaucrats in the federal Malaysian Industrial Development Authority.[11]

Third, the PDC moved to provide infrastructure for investors, including industrial parks, land, trained workers, and nearby low-cost housing for the rapidly growing workforce. Thus, the PDC pioneered the building of free trade zones in Malaysia, setting up the first in 1972 and managing four free trade zones and four industrial parks by 1980.[12]

Fourth, the PDC invested substantial capital in a variety of start-ups. By 1980, this totalled some US$6.4 million in seventeen firms. These investments encompassed ship-building, mushroom farming with upstream operations in food-processing and marketing, real estate, furniture, textiles, electronics, and high-quality glass fabrication.[13] While many of the firms did not turn out to be profitable, these investments served other purposes, such as demonstrating the state government's commitment to a specific sector, reducing risk for local entrepreneurs, and attempting to diversify the economy.

Fifth, the PDC helped reduce information asymmetries through fostering links between international investors and local firms in the metalwork and fabricated metal product sectors. Relations between the federal government and the predominantly

Chinese manufacturing sector had grown tense following the introduction of a raft of ethnically based affirmative action policies. However, the PDC's intermediary role was possible due to the good rapport that Lim had with local businessmen, many of whom he knew through the Chinese Chamber of Commerce. The Chief Minister then began to encourage MNC managers to source components locally, and brokered meetings with local firms.[14]

Sixth, the PDC created mechanisms for targeted skill provision. While the corporation's strategic investment in the electronics sector did not yield profits, it provided a nucleus of skilled labourers, almost all of whom were subsequently recruited by MNCs. This was bolstered by a training centre that trained school leavers in skills needed by the nascent manufacturing sector.

Outcomes

The initial push to attract investment bore fruit as, by 1972, there were seventeen electronics facilities employing 12,000 workers in Penang. This grew to nineteen firms and 18,700 workers in 1978 and, by 1980, Penang had an electronics sector comprised of a core of twenty-five electronics assembly facilities, providing employment for almost 25,000 workers in the PDC's industrial parks.[15] While the first electronics operations were labour-intensive, essentially consisting of semi-conductor assembly, firms began to upgrade their operations in the late 1970s.

The state's economy was thus transformed. In 1971, the state's GDP per capita was 12 per cent below the national average, the most important activity was trading, and manufacturing accounted for only 21 per cent of GDP. In 1980, per capita GDP was 28 per cent above the national average and manufacturing was the state's prime economic activity, employing 56,000 workers and accounting for 37 per cent of GDP.[16]

Thus, the PDC's small size, targeted recruiting, constant access to high-quality information, and political backing enabled it to build considerable institutional capacity. In a relatively short time, the PDC came to approximate the ideal of a "developmental" pilot agency, possessing high levels of bureaucratic capacity and autonomy, in addition to beginning a dialogue with the local private sector. The PDC's drive, vision, and communication with the local and international private sector thus enabled the "birth" of an entirely new sector.

Maturity and Consolidation (1980–90)

The PDC's role as a "developmental" agency and its success at spurring investment and economic growth came to maturity during the 1980s. The Penang State

Government continued with its industrialization drive and quest for investment with considerable success. However, it began to confront the limits of its constitutional responsibilities and trends at the federal level were not in its favour.

The Political and Institutional Context

The autonomy the Penang State Government had in pursuing its industrialization drive was considerably curtailed by Mahathir's rise to power — as his administration was characterized by the centralization of power and decision-making in the Prime Minister's Office.[17] However, the Penang State Government was able to preserve a degree of autonomy due to Lim's status as an elder statesman, Gerakan's continued electoral success, and the obvious benefits of the industrialization drive.

However, while these factors preserved a degree of political autonomy, at the institutional level the PDC's margin of manoeuvre decreased markedly after 1980. While the corporation retained its high level of capacity due to good leadership and low staff turnover, federal policies entailed less autonomy. New legislation meant that all borrowing and investment decisions by state development corporations had to be approved and finances audited by the federal Ministry of Finance. Authority over creation and grading of posts was withdrawn and also placed under federal control. In addition, the federal government began to directly appoint representatives on the PDC Board, which in turn came to have more emphasis on political representation than technical expertise.[18]

Furthermore, the number of federal government agencies present in Penang increased tremendously, coming to outnumber state government agencies by a margin of three to one by 1991. Responsibilities were often overlapping and contested, including the PDC's much-prized ability to requisition land for real estate development.

Policies

The policy "package" set out the previous decade was retained. Thus, the PDC continued its marketing drive by undertaking trips to East Asia, North America, and Europe, seeking to capitalize on the state's plentiful and comparatively well-educated labour force. This continued to attract firms engaged in semiconductor testing and assembly, but the PDC also succeeded in attracting firms in more technologically sophisticated sectors such as hard disk drives.[19]

The state government also constructed more housing for workers, special facilities for small and medium enterprises (SMEs), and tried to create synergies by grouping local supplier firms together. However, the supply of available land to be converted to industrial use began to run out. As such, the PDC embarked on an ambitious project to reclaim land from the sea.[20]

The corporation also continued to encourage "self-discovery", coming to own an investment portfolio of some twenty-four firms worth US$8.9 million by 1989. That said, the portfolio's composition changed somewhat, moving away from testing the feasibility of new activities towards more speculative sectors such as real estate development and leisure facility management. Due to the increased emphasis on real estate development, the PDC began to make a profit after the mid-1980s.

Despite this, the PDC still made some strategic investments. The unprofitable electronics firms set up during the 1970s were phased out and replaced by more technologically intensive operations, including a precision engineering and a biotechnology company. In addition, in an effort to overcome credit constraints, an existing PDC company was tasked with providing venture capital opportunities for local companies.[21]

In addition to seeking to attract investment, the PDC implemented a variety of policies to overcome information and coordination failures, building on its incipient intermediation efforts of the 1970s. These tentative, low-cost efforts were particularly helpful for local firms affected by the federal government's policy bias towards large firms. In some cases, the corporation was able to play a productive role, but in others it was clearly constrained by the federal government's industrial policy framework.

After the mid-1980s, Penang-based MNCs began to automate their operations, opting to subcontract simple operations to local firms. This was facilitated by established links between local entrepreneurs, PDC officials, and MNC managers. One notable example of these matchmaking efforts was the establishment of Intel's supplier network, where the PDC played a key supportive role through convincing local firms to take on more sophisticated tasks from MNCs. After the first takers successfully upgraded their operations, subcontracting ties were then expanded to other firms.[22]

The PDC also carried out crucial intermediary functions between local entrepreneurs and the federal government, lobbying the Ministry of International Trade and Industry to extend duty-free privileges to local firms and accord them a measure of protection from foreign supplier firms who were crowding them out.[23]

In 1985, the PDC set up a Small-Scale Industries Unit to cater to small firms. Although it largely ceased to function after two years, it was the first institution with the express remit to cater to small companies, and helped reduce information asymmetries for investors through compiling a directory of local supporting firms in Penang.[24]

However, while communication between local firms and the PDC was effective, it is important to note that it was not institutionalized. The Unit for small firms disappeared after several years, and most of the match-making between firms and multinationals depended on personal connections and did not utilize existing business organizations.

Perhaps the best-known PDC initiative was the establishment of the Penang Skills Development Corporation (PSDC). As the electronics sector grew and labour shortages emerged, the PDC requested the local university and private colleges to provide training for technical personnel. However, the Penang State Government's authority in this area was limited due to education's classification as a federal and not a state responsibility.

Thus, the PDC, after extensive consultation with MNC managers, set up the PSDC as an informal "training" institute (which was outside federal control), with a mandate to provide technical training to high school graduates and retrain workers in the electronics industry. Twenty-six "founder" companies, employing some 44,000 workers, had input into the eventual structure of the centre.[25]

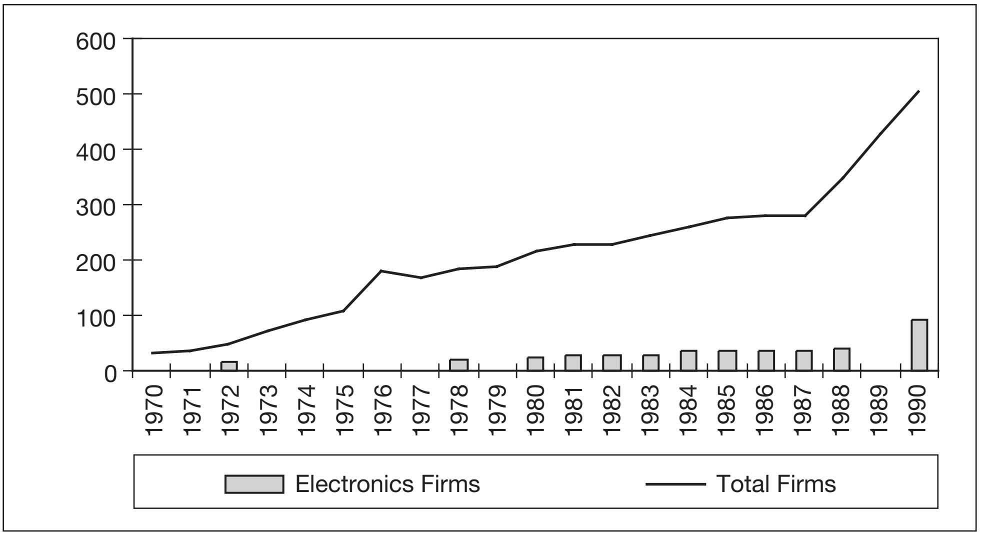
As a result, the PSDC is largely industry-driven and client companies pool their resources, including equipment, and provide training on industry-specific issues. The PSDC thus acts to reduce information asymmetries by providing a forum for identifying training needs for the manufacturing sector as a whole. Originally providing the PSDC with land and a start-up grant, the PDC also lobbied the federal government to provide a tax deduction for contributing companies.

Despite its evident success, this initiative was confined to training technical personnel and was not sufficient to offset imbalances in the federal government's education policy. Despite the centrality of the electronics industry to Penang's economy, enrolments at the local university were biased towards arts and humanities at the expense of technical subjects, and it did not have an engineering faculty until 1987. Thus, skilled workers were in short supply, and linkages between the electronics industry and the university were minimal.

Outcomes

As during the 1970s, Penang's manufacturing sector grew quickly, weathering downturns in the global electronics industry. As Figure 1 shows, the number of firms in PDC industrial areas increased at a steady pace during the 1970s and early 1980s, before growing rapidly after 1987. While electronics firms comprised

FIGURE 1
Firms in PDC Industrial Areas (1970–90)



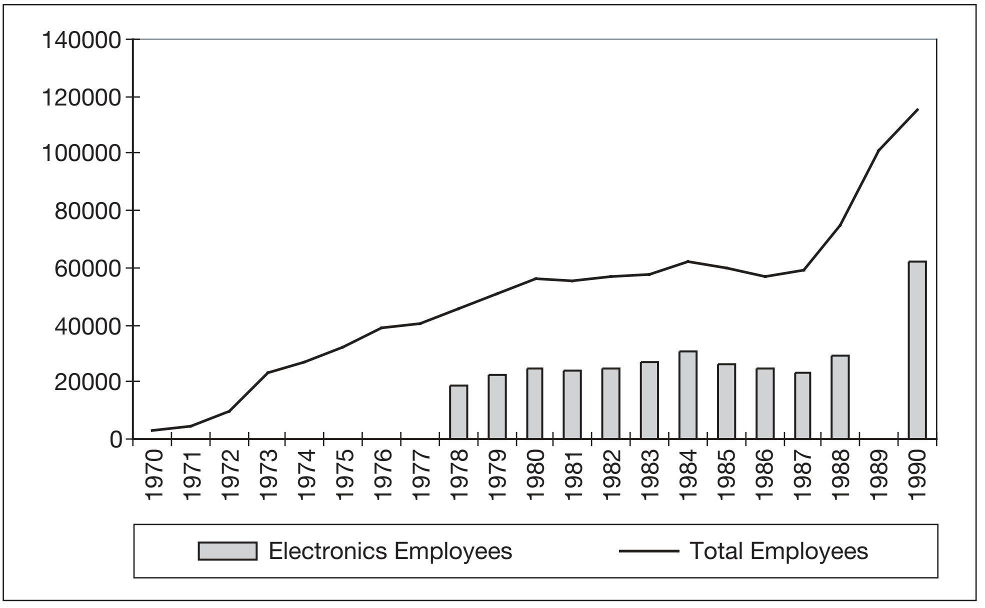
Sources: ISIS/PDC, *Penang Strategic Development Plan* (Penang: Penang Development Corporation, 1991) p. 7–21; R. Rasiah, "Technological Change and the Electronics Industry: The Impact on Penang in the 1980s", in *Changing Dimensions of the Electronics Industry in Malaysia: The 1980s and Beyond*, edited by S. Narayanan et al., pp. 51–80 (Penang and Kuala Lumpur: Malaysian Economic Association and Malaysian Institute of Economic Research, 1989), p. 68.

a relatively small portion of the total number of companies, their presence was key for a significant number of enterprises in the metal product, plastics, and packaging sectors. However, in terms of the workforce in the state's industrial parks, the electronics sector accounted for almost half of the total.

In spite of a big market downturn halfway through the decade, the 1980s were to prove the most fertile period for the establishment of successful domestic enterprises. By 1985, some thirty-five firms employing 24,000 people provided supporting services to the electronics sector (see Figure 2). This encompassed operations such as precision engineering, metal stamping, plastic moulds, manufacture of automation systems, and chemical products. By the end of the decade, the cluster had grown to forty-five firms.[26]

However, while Penang continued to attract FDI and multinationals with the ensuing job creation and economic growth, the structural limits of the MNC-led industrialization model began to emerge. While the state's manufacturing sector grew very quickly, it also narrowed substantially and exposed the state to the instability of the international market.

FIGURE 2
Employment in PDC Industrial Areas (1970–90)



Sources: ISIS/PDC, *Penang Strategic Development Plan* (Penang: Penang Development Corporation, 1991), pp. 7–21. R. Rasiah, “Technological Change and the Electronics Industry: The Impact on Penang in the 1980s”, in *Changing Dimensions of the Electronics Industry in Malaysia: The 1980s and Beyond*, edited by S. Narayanan, pp. 51–80 (Penang and Kuala Lumpur: Malaysian Economic Association and Malaysian Institute of Economic Research, 1989), p. 68.

The industrial structure of the electronics sector was also unbalanced. While a group of local electronics firms had emerged, the electronics sector still consisted of a large group of big multinationals and a set of smaller domestic firms that relied exclusively on them for business. In addition, due to the onerous technological and capital requirements of the electronics industry, it also remained largely segregated from the local economy.

After some twenty years in power under Gerakan, the Penang State Government’s drive to attract investment in, and nurture the development of, the electronics sector had brought many benefits. In 1990, the state enjoyed a per capita income some 20 per cent above the national average. Its manufacturing sector accounted for 46 per cent of GDP, and the state’s industrial parks housed some 500 firms, which employed almost 120,000 people.[27]

Despite its successes, the Penang State Government began to confront the limits of what it could do during this period. Crucial decisions, particularly regarding investment incentives, university education, and university-industry linkages lay outside the scope of its constitutionally-mandated powers.

The Eclipse of the Developmental State? (1990–present)

Penang entered the most recent period of its history with essentially the same policy framework. However, political and institutional developments in the state and Malaysia as a whole, as well as structural changes in the electronics industry, meant that the "developmental" role played by the state government began to fade.

The Political and Institutional Context

While Penang's development over the previous two decades had been prodigious, Lim Chong Eu's twenty-one-year tenure came to an end in 1990, with the loss of his seat to the opposition Democratic Action Party (DAP). However, Gerakan and the national ruling coalition, Barisan Nasional (BN), retained control of the state. As national head of BN, Prime Minister Mahathir Mohamad chose Lim's Political Secretary, Koh Tsu Koon, as his successor.

While Gerakan remained in power, this change in leadership had important structural implications. Rather than negotiating terms of entry into a coalition as Lim had, Koh was appointed by the Prime Minister and could, in theory, be replaced. This different power relation was reinforced by Koh's relative youth, lesser political stature, and less "personal" relationship with Mahathir.

This subordinate position has been reinforced by factional infighting within Gerakan, as well as increasing competition for votes from the MCA and the DAP. Gerakan has only been able to retain the Chief Minister's seat due to support from the largest party in the national coalition, the United Malays National Organisation (UMNO). This has come at a price and, in 1992, the post of Deputy Chief Minister was created and given to an UMNO official.[28]

However, this decreasing room for manoeuvre has been compounded by other developments at the national level. During the 1990s and up until Badawi's accession to power in 2003, Penang was not a priority for federal government initiatives. Under the Mahathir administration, Kuala Lumpur received copious federal funds to upgrade its seaport, airport, and public transport system in addition to strategic investments in the automobile, electronics, and IT industries. This is not to mention prestige projects like the Petronas Towers and the Multimedia Super Corridor.

Conversely, long-standing calls for similar measures in Penang went unheeded. In 1996, a high-tech park, partially funded by the federal government, was set up in the neighbouring state of Kedah. Possessing a high-end wafer fabrication facility, it has succeeded in persuading some firms to relocate there from Penang. In 1997, the federal government almost succeeded in down-grading Penang's airport and re-routing all international flights to Kedah. And, despite the electronics industry's need for cutting-edge telecommunications and access to skilled workers, Penang's industrial parks were only granted Multimedia Super Corridor status in 2005. It is only with the Northern Corridor Economic Region (NCER) launched in 2007, with its plans to reduce regional inequality and revitalize the economy in Malaysia's northern states that Penang stands to obtain much-needed investment in infrastructure.

At the institutional level, the high degree of capacity established under Lim Chong Eu's tenure has been maintained to a degree. Under Koh's leadership, the PDC has retained its image as a technocratic, professional institution. It has been rated first among state governments for the quality of its development projects, and received commendations for good project implementation.[29]

However, it would seem that the same innovative potential seen in prior decades is waning. Most of the original staff, including the corporation's first General Manager, retired during the 1990s. Lapses have begun to emerge in areas where the PDC once excelled. The long time to obtain permits, intermittent follow-up with international investors, and spotty maintenance of infrastructure are some of the complaints that have been aired. And, perhaps most critically, calls to do more for local entrepreneurs have been constant.[30]

During this period, the Penang State Government began to set up new institutions in an attempt to revitalize its economy. In 1997, it established the Socioeconomic and Environmental Research Institute to contribute technical and policy information and bolster planning capacity at the state level. In 2003, the Collaborative Research and Resource Centre (CRRC) was established to address issues facing local entrepreneurs, in particular helping small firms access research and development facilities and tap overseas markets.

In late 2004, the Penang State Government implemented a large-scale restructuring. An entirely new agency, InvestPenang, was created. Absorbing the CRRC, InvestPenang became the peak agency charged with facilitating investment and fostering industrial development in the state. In contrast, the PDC has been left to focus on tourism and real estate development.

Policies

The Penang State Government, under Koh Tsu Koon, has been proactive in trying to formulate a strategic vision for the state. Following the tradition set by the

Nathan Report, the state government commissioned two strategic plans to provide a blueprint for development. The first Penang Strategic Development Plan (PSDP) came out in 1991, to be followed by the Second Penang Strategic Development Plan (PSDP2) in 2001.

The Plans set out broad-ranging strategic frameworks for the state in the economic, social, environmental, and governance areas. However, attempts to ensure that their recommendations are followed up have been less successful, as the Penang State Government's relative importance vis-à-vis the federal government has waned. After 1990, state branches of federal government agencies concerned with economic development were set up in Penang. However, these agencies follow federal and not state-level priorities, reporting back to Kuala Lumpur for strategic direction. In comparison, during 1999–2003, the Penang State Government's budget amounted to only 16 per cent of the federal government's budget for projects in the state.[31]

During this time, the PDC's investment portfolio continued to expand, coming to encompass fifty-nine companies in 2002. This included forty-eight wholly-owned, subsidiary, or associate firms, in addition to investments in eleven publicly listed companies, at a value above US$70 million.[32] The overall performance of these firms has been mixed, as seventeen companies were either dormant or being liquidated in early 2005. There have, however, been some successes. Schott Glass, a PDC joint-venture established in 1974, has become a profitable industry leader.[33]

Continuing the trend established in the 1990s, the portfolio's composition moved away from manufacturing towards more lucrative operations in real estate, hotel and leisure amenities, and construction. That said, there were a few projects in manufacturing as well as investments in industrial parks in Bangalore and Medan. But, the biggest new area for investment was in supporting industries for the manufacturing sector such as warehousing, air cargo handling, and information technology. In addition, the PDC also made strategic investments in hospitals and private colleges to diversify the state's economy and make it a regional centre of excellence for health and education.

The PDC, and now InvestPenang, have continued Lim Chong Eu's attempts to establish a dialogue with the private sector through several means. First, consultative councils such as the Penang Economic Council, Penang Industrial Council, and Penang Competitiveness Committee were meant to enable communication with the private sector by consulting industry "leaders". Second, sector-specific "clusters" such as the Software Consortium of Penang, the Penang Automation Cluster, and the Radio-Frequency Cluster, were meant to bring local firms together to foster collaboration and provide a single point of contact for international investors.

In addition, the PDC pushed for firms in the state to join Rosettanet, a consortium seeking to establish global standards for manufacturing related e-business, and worked with the federal Ministry of Trade and Industry to set up the organization's headquarters in Penang. This may prove to be an important strategic decision as, through their adoption of these standards, Penang's SMEs will be in a position to cater to MNCs regardless of their location.[34]

However, while these initiatives are useful, they draw their membership from the larger, more established local firms — many of whom have been working with the state government since the 1980s. Many of these groupings are also rather short-lived, often closing down due to a lack of interest. Furthermore, these groups' utility is limited by their sector-specific nature, as there is no vision or "road-map" for the sector as a whole. Collaboration between local firms is limited as there are worries about intellectual property theft, and the most visible cases of upgrading are still the result of the effort of individual firms rather than any industry grouping.[35]

In contrast, there has been less systematic communication with smaller and newer firms, in particular those operating on the edge of the formal economy and in most need of help.[36] The PSG created the Small and Medium Industry Centre in 1992 to broker contacts between MNCs and local companies as well as provide information on government initiatives. At its height, it had two full-time staff and 180 member companies in the metals, electric, and plastics sectors. However, it experienced a series of managerial problems, including staff shortages, and is now defunct.[37]

Thus, attempts to reach out to small local firms are limited. There still appears to be an information gap between InvestPenang and smaller, local firms. In a rare public display of discontent, in 2006 a prominent member of the local business community took InvestPenang and the state government to task for its lack of responsiveness in dealing with local firms.[38]

This "communication gap" has had an effect. Recent stock-takes of the electronics sector have found that there is a need for institutional support to help companies upgrade. A Japanese government-sponsored study found that: local entrepreneurs did not adequately understand the aims of various initiatives; there was an overlap between federal and state government programmes; and initiatives were too oriented to high-technology ventures such as IT and biotechnology as opposed to dealing with basic technical production issues.[39]

This has been echoed in the findings of a recent Penang State Government–sponsored study. An in-depth survey found that the capabilities of local firms were curtailed by a lack of basic amenities such as: a library with engineering resources; common facilities for basic research; access to elementary market intelligence; readily available loans and venture capital; and technical help in writing grant applications.[40]

Outcomes

So where does the electronics sector stand now?

For the Penang-based electronics industry, the first part of the 1990s was characterized by a continuation of the growth experienced at the end of the 1980s. The basic combination of infrastructure and overseas marketing proved sufficient to attract more investment from electronics MNCs.

In addition, Penang benefited from agglomeration economies, as its existing base of supplier firms and trained workers attracted additional investments. Thus, Japanese firms set up facilities to manufacture consumer electronics items, and Penang became an important offshore centre for American disk drive and computer manufacturers. The disk drive sector expanded quickly, and by 1997 accounted for one-third of employment in the sector.[41]

However, after 1996, the electronics industry changed considerably, as the sector's technological requirements escalated dramatically. MNCs began to focus more on their core competencies, outsourcing sophisticated manufacturing and logistics tasks to the most dynamic of their supplier firms. In addition, new competitors for labour-intensive tasks emerged, such as China and Vietnam.

These changing requirements exposed the structural shortcomings of Penang's policy framework and base of supporting industries. Thus, faced by locations with more sophisticated supplier firms and available skilled labour on one hand, and lower-cost locations for labour-intensive operations on the other, MNC investments have slowed.

As Table 1 shows, the number of firms on PDC land expanded from 500 in 1990 to some 740 in 1996, falling below 700 in 2000, and then climbing subsequently to reach 1,170 in 2005. Looking at electronics in particular, the cluster of firms rose from 91 in 1990 to 150 in 2000 and 164 in 2002. From 2002 to 2005, the sector experienced modest growth to reach 188 firms, below the dynamism seen by the manufacturing sector as a whole.

Table 2 tracks employment levels in the manufacturing and electronics sectors. For manufacturing, the figure roughly doubles over the 1990–2005 period, climbing from 110,000 to 210,000, with a plateau during 1996–2000. For the electronics sector, the picture is somewhat different. Employment levels doubled from 1990 to 1996, jumping from about 60,000 to almost 120,000. From there,

TABLE 1
Firms in PDC Industrial Parks (1990–2005)

	1990	*1992*	*1996*	*2000*	*2001*	*2002*	*2005*
All firms	503	629	736	691	746	731	1,171
Electronics firms	91	129	148	150	164	164	188

Sources: DCT, *Annual Survey of Manufacturing Industries in PDC Industrial Areas* (Penang: DCT Consulting, 2000–02); SERI, "Performance of the Penang Industrial Sector", *Penang Economic Monthly*, No. 6, 2006, p. 4.

TABLE 2
Employment in PDC Industrial Parks (1990–2005)

	1990	*1992*	*1996*	*2000*	*2001*	*2002*	*2005*
All firms	115,389	146,382	196,774	195,844	172,596	150,080	210,097
Electronics firms	62,310	79,046	118,064	118,515	98,606	84,642	113,090

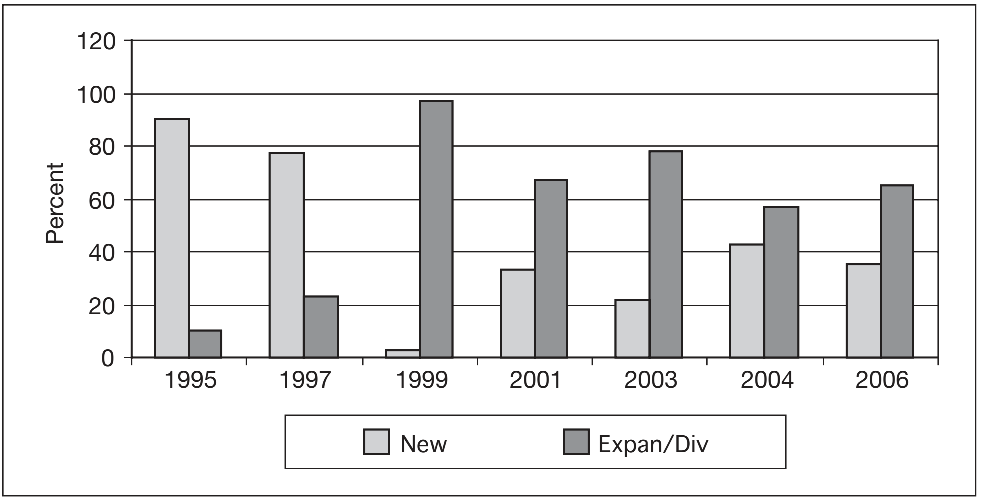
Sources: DCT, *Annual Survey of Manufacturing Industries in PDC Industrial Areas* (Penang: DCT Consulting, 2000–02); SERI, "Performance of the Penang Industrial Sector", *Penang Economic Monthly*, No. 6, 2006, p. 4.

employment levelled off, staying at about the same level during the 1996–2000 period, before falling by approximately one-third in 2001–2002. Employment levels since then have recovered significantly, climbing above 110,000, but not reaching the numbers attained in 1996.

A decline in employment levels is not necessarily bad, as it could signal a transition to higher value-added industries. However, while employment levels have fallen in labour-intensive industries, they have also been accompanied by falling job levels in skill-intensive industries, such as the hard disk drive industry, electronic component, and software sectors.[42] And, as seen in Figure 3, the composition of investment has also changed, away from new investments to re-investment in existing facilities.

Thus, Penang's electronics sector faces real challenges in dealing with the heightened levels of competition that characterize the industry today. Its electronics sector was able to house large amounts of investment that required a lower-level trained workforce and basic infrastructure. However, while it has begun to host more value-added tasks such as design and marketing, it has been unable to move past a reliance on low-cost labour as the anchor of its competitive advantage. Thus,

FIGURE 3
Foreign Direct Investment in Penang's Electronics Sector



Note: 2006 figure for January to September only.
Sources: DCT, *Annual Survey of Manufacturing Industries in PDC Industrial Areas* (Penang: DCT Consulting, 2000–02); SERI "Performance of the Penang Industrial Sector", *Penang Economic Monthly*, No. 6, 2006, p. 4.

despite single-handedly engineering the birth of its electronics industry, the Penang State Government has not been wholly successful at fostering its upgrading.

Conclusion

This case study has argued that the Penang State Government closely resembled the Developmental State ideal during the 1970s and 1980s. The state government, through the PDC, had a pilot agency that was capable, autonomous, established close links with the local private sector, and pursued economic growth and transformation relentlessly.

However, over time, the PDC came to lose some of its institutional capacity and, particularly, autonomy vis-à-vis the federal government. In addition, with the exception of a small group of established firms, communication with local entrepreneurs was limited. Thus, while the electronics sector had continued to grow, real innovative potential had been limited to a handful of firms rather than the sector as a whole. This has been compounded by rapidly increasing competitive levels in the global electronics industry.

In uncovering a sub-national developmental state, this chapter has shown that there is room for agency at the local level, given certain conditions. Despite an unsupportive national context for its ambitions, the Penang State Government acted as a catalyst for an entirely new industry and revitalized its ailing economy. This, however, was not a permanent state of affairs, and subsequent developments had mitigated its transformative potential.

What, then, can be said about the relationship between sub-national institutions and policies and economic development?

First, while national governments have a wider range of responsibilities and sources of revenue than their sub-national counterparts, there is room for manoeuvre at the sub-national level. More than established responsibilities or budgets, institutional configurations and, within that, specific institutions can play a role in fostering new industries. As seen in Penang, the State Government was, even with limited responsibilities and funds, able to innovate, generate its own resources, and move into areas that were not part of its constitutionally-mandated purview.

Second, more than harmonious relations between national and sub-national governments, what is key for successful policy innovation is autonomy. The most creative period of Penang's recent history, in policy terms, were the 1970s, when the state government had greater control over staffing of its agencies and their strategic direction. As federal control over sub-national developments expanded, policy innovation decreased.

Third, the ability to access know-how and resources from the international economy is a key enabling agent for sub-national economies. While resources are facilitating in and of themselves, the point is that provincial governments often have fewer resources to invest in "lumpy" high-end infrastructure and research facilities that are vital for maintaining competitiveness. As such, tie-ups with foreign firms may be the only way to acquire them. Thus, in contexts where other domestic regions are recipients of federal largesse, being able to access outside investment and know-how is vital.

Fourth, there may be technical limits to effective state action at the national and sub-national levels. It is clear that basic policies aimed at starting a new industry can work. Marketing trips, targeted infrastructure, training workers, tax breaks, and low labour costs can attract investment. But, as labour costs rise, can government policy successfully foster greater value-added activities to compensate?

Creating an "innovative environment" where firms are able to effectively collaborate and interchange ideas — thus increasing the performance of the sector as a whole — requires patient, long-term, and tailored efforts that may surpass the capacity of even the most determined of public servants. This is perhaps best encapsulated in the words of a former PDC senior official, who stated "Getting firms to come — that is easy. Getting them to stay or grow — that is the difficult part".

Notes

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