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Caroline Yeoh

Singapore Management University, carolineyeoh@smu.edu.sg

Wilfred Pow Ngee HOW

Singapore Management University, wilfred.how.2003@business.smu.edu.sg

Di Kun GOH

Singapore Management University, dikun.goh.2004@economics.smu.edu.sg

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Re-engineering Economic Space: The Case of Singapore's Transborder Industrialization 'Experiments' in Asia

Caroline Yeoh, Singapore Management University, Singapore
Wilfred How, Singapore Management University, Singapore
Goh Di Kun, Singapore Management University, Singapore

The exportability of Singapore's industrial development model to other Asian environments has, together with its traditional state-led, market-driven intervention, been a hallmark of the city-state's regionalization program. The paper presents an empirical analysis on the portability of this transborder industrialization strategy, and contributes new insights to the discourse on state-enterprise networks promulgating transnational entrepreneurial ventures. Empirical evidence from on-site surveys/interviews in Indonesia, China, Vietnam and India will be presented. Our study concludes that, while efforts have been remarkable, this attempt at re-engineering economic space has not fully accounted for the intricacies of economic and socio-political realities in host environments.

Often perceived as an archetypal interventionist state, Singapore's strategy to remain economically competitive in the global economy can be interpreted as the building of platforms for national growth through the management of strategic alliances and cooperation. Through selective interventions, the island-state attempts to reallocate key economic resources via the 'developmental state model'; whereby economic restructuring, industrial transformation and rapid economic growth are achieved through 'collaborations' with private or semi-private enterprises on national economic projects.

The Singapore government's strategic intentions were translated into concrete policies and programs, and encapsulated in the policy document, Singapore Unlimited (Singapore Economic Development Board (SEDB), 1995a). *Singapore Unlimited* can be conceptualized as a deliberate effort by strategic actors in the city-state to extend their influence and relations, amidst the limitations of a resource-constrained domestic environment. Regionalization 21 (R21), a strategic component of Singapore Unlimited, positioned the government's strategic intent to create an external economy, by participating in the dynamic growth opportunities of Asia-Pacific economies. Through the R21 initiatives, Singapore's role in the global economy expands from being an attractive location for investment inflows to becoming an origin of these flows to participate in the regional (and global) economy.

The structure of the rest of this paper is as follows. Further background on the impetus behind R21 is presented, in the next section, to highlight the Singapore government's strong interventionist style, extended to the regionalization policy. The origins and progress of the industrial-township projects in Indonesia, China, Vietnam and India are briefly described in section three. Empirical evidence drawn from our on-site surveys and interviews will be discussed in section four. Finally, implications garnered from these experiences, as they relate to the government's role in Singapore's regionalization program, will be presented in the concluding section.

Singapore's Regionalization Strategem

The Singapore government's initial intention in its regional investments in Indonesia, Vietnam, China, and India was to play a dominant role as a stakeholder, a facilitator and a partner to domestic enterprises seeking investments abroad (SEDB, 1995a); that it has, indeed, succeeded in the latter two is evident from the creation of familiar Singapore-havens in the form of the industrial parks, and in the restructuring of taxation policies. The state also embarks on fostering trusted regional networks identical to those within its domestic market, whereby interlocking interests, the intimate sharing of ideas and commonality of values, crystallize a macroscopic system of cooperative competition (Yeoh et al., 2004a). This is especially relevant for Singapore, which, by reason of its small size, operates through interlocking directorships in government-linked companies; this has facilitated the implementation of strategic initiatives, at a national level, with minimal conflict of interests.

The dominance it envisioned in the role of stakeholder, however, has been shown to be highly conditional, reliant to a great degree on the realities of the host environment. Implicit in the regionalization strategy was the Singapore government's intention to draw on its effective state enterprise network (or, in local parlance, Singapore Inc), and extend this network to facilitate business ventures in the region; it was felt that, given ostensibly analogous cultures, understanding through racial networks, and relatively strong governmental

directions, such an extra-territorial network had potential for success. Theoretically, the 'vested interests' within the interlinked collaborative system would serve to expedite processes, garner exclusive incentives, and negate inept bureaucracy; some of which was sometimes the case, as in BIP, and some of which proved to be emphatically not, at least not in its initial form, as in CS-SIP.

Singapore's Overseas Industrial Parks

The regional industrial parks program was a critical component of R21, premised on the combined attraction of Singapore-styled management, and location-specific advantages present in said economies; all of this while, as envisioned by transborder industrialization strategies, generating additional economic space for Singapore-based companies, both indigenous and foreign, to redistribute resource-dependent operations to lower-cost production sites, while upgrading their Singapore-operations to higher-end activities which require the city-state's unique set of competencies (SEDB, 1995a; Perry and Yeoh, 2000)

Batamindo Industrial Park (BIP) The prototype for Singapore's overseas industrial-parks program, Batamindo Industrial Park (BIP) is located on the Riau island of Batam. BIP was launched in 1992. Designed to be a self-sufficient, self-contained environment with communication and business linkages running through Singapore, thus bypassing Indonesia's bureaucracy, BIP's prototype structure includes internally-managed power generators, a water treatment plant and sewerage system, telecommunications facilities, and commercial centres. BIP has its own shipping and warehouse provider, offering freight transportation to and from Singapore. The strategic intent was to create a manufacturing enclave that mirrors conditions in Singapore, providing the premium 'Singapore' development standards in a low income economy. Labor is mainly recruited from Java and Sumatra.

BIP's first tenants were mainly subsidiaries of American, European, and Japanese multinationals already operating in Singapore. Cumulative investments and export value in BIP topped US\$1 billion and US\$2 billion in 2004 respectively, and the number of confirmed tenants increased from 17 in 1991 to 85 in 2004. Of these, 39 were Japanese companies with Singapore-owned companies the next largest concentration at 25. American and European investors accounts for less than 20 percent of the total client base. There is a concentration of electronics operations, mainly various component assembly processes, and supporting activities to the electronics sector such as plastic molding and packaging. Out of total employment of 65,000, over 85% are female, most aged from 18-22.

China-Singapore Suzhou Industrial Park (CS-SIP)
The physical design of the first industrial township in

Suzhou was identical to that of the BIP-prototype; the strategic context in which they were developed, however, were, in many ways, diametric opposites. Singapore's primary concern with the Indonesian investments had been to promote the restructuring of the Singapore economy, and exploit the resource complementarities of contiguous economies (Ho, 1994); too, the Indonesian experience had been vastly simplified by endorsements from senior politicians, which guaranteed a degree of administrative certainty, strengthened by the political patronage of the main commercial partner. China, in contrast, proved a dizzyingly complex administrative and regulatory environment; the projects had to contend with multiple tiers of government administration, as well as the competition (or more precisely, the 'fiscal politics') between these tiers at a time of rapid economic and political change. In terms of agenda, too, the Suzhou project proved a different kind of beast; rather than seeking to exploit economic advantages, the China investment sought, instead, to showcase the Singapore development model and – more importantly – its transferability to other Asian environments.

CS-SIP was Singapore's most ambitious, and controversial, overseas township project. Initially estimated to cost US\$20 billion, the 70 km² project was conceived as a balanced community with a full range of urban facilities for its projected population of 360,000. CS-SIP was slated to be the new commercial centre of Suzhou and the surrounding areas. The Singapore model, as applied to CS-SIP, envisaged a large-scale project to facilitate institutional innovation, with autonomy from aspects of local government control and investment in administrative practices or 'software development' (SIPAC, 1999). This project encompassed high-quality infrastructure, pollution control, 'one-stop' and corruption-free operating and decision-making processes, minimal entry /performance regulations, transparent financial charges, and the delivery of social and welfare services to support an efficient and co-operative workforce and a work-oriented community. CS-SIP was officially launched on May 12, 1994.

Business-wise, the project was a joint venture between a consortium of Chinese and Singapore-based investors; the Chinese consortia's 35 percent stake was shared amongst 12 organizations, mainly national state-owned enterprises and investment companies of the Suzhou city and Jiangsu province, while the Singapore consortium's 65 percent stake was distributed amongst 24 organizations, mainly Singapore GLCs, and the Salim Group' subsidiary, KMP China Investments. The two consortia retained separate identities and responsibilities, taking up projects according to their agreed roles (SIPAC, 1999).

The synergy that was envisioned at the onset of the project was, however, not to materialize (Pereira, 2004).

The slow progress resulted in financial losses for the Singapore-led consortium, which funded the land development and infrastructure, and also for Singaporean investors involved in peripheral projects. Official estimates placed Singapore's investment in CS-SIP at only US\$147 million. In June 1999, it was announced that Singapore would reduce its involvement in the project and transfer majority ownership of CSSD to the Chinese consortium in 2001.

Significantly, investments began to pour in almost immediately afterwards; by June 2001, 193 investment projects worth over US\$5.1 billion were recorded. To-date, CS-SIP has attracted over 1300 foreign companies and 6500 domestic companies, accounting for a cumulative contractual foreign investment of US\$15 billion, and cumulative contractual domestic investment of RMB 30 billion. Its tenant-profile includes a significant proportion of American and European investors (including 50 Fortune 500 companies), with some 73 percent of the investments directed into electronics, information technology and other high-tech segments. The third phase of CS-SIP's International Science Park was launched in April 2003, and is scheduled to be completed in June 2005.

Vietnam-Singapore Industrial Park (VSIP) VSIP is Singapore's flagship investment in Vietnam. Launched in 1996, the 500-hectare park is strategically located in Binh Duong Province, 17 km north of Ho Chi Minh City, and is within a 40-minute drive from the international airport and seaports. A self-contained, self-sufficient industrial park with prepared land plots, and ready-built factories, bolstered by Singapore-style management expertise and infrastructure support, VSIP offers investors 'hassle-free' one-stop service, ready-built factories, and Singapore-styled management expertise and infrastructure support. A 300,000-strong working population within a 15-km radius from VSIP provides a ready pool of low-cost, skilled labor.

In VSIP, Singapore applied lessons learned from its China experience, and made deliberate efforts to foster strong collaboration with local authorities. A management board was set up, chaired by the Vice Chairman of the Binh Duong Province People's Committee, which preempted the perception that VSIP was a partnership forced upon by the central government. The Board, with representatives from the Ministries of Trade, Finance and Interior, as well as the General Customs Department, oversees the issue of investment licenses, import/export permits, and construction permits. VSIP is jointly developed by a Singapore consortium led by SembCorp Industries and Becamex, a Vietnamese state-owned enterprise in Binh Duong Province.

SEDB's role in promoting VSIP is evident. The difficult environment post-1997 notwithstanding, cumulative investment commitments in VSIP exceeded

US\$400 million within the first 5 years from its launch. However, unlike BIP, where the focus on electronics and other light industries complements the restructuring of Singapore's manufacturing sector, VSIP is less selective in its tenant profile; the tenant-mix reflects the overwhelming importance of Asian MNEs (85%), while the sector mix ranges from textiles, to electronics and pharmaceuticals. Singaporean and non-Asian companies are represented in a mix of industries, while the Japanese companies are largely concentrated in electronics. VSIP's major tenants include Konica, Nitto Denko, Kimberly-Clark, Diethelm and Roche.

VSIP is already in phase 3 of development. Investment commitments are currently valued in excess of US\$840 million, in a broad swathe of industries - food, electrical and electronics, pharmaceuticals and healthcare, specialty materials, consumer goods and light industries. VSIP has 138 committed tenants from 21 countries, of which 80 are already operational. 33,000 jobs have been created, with the number expected to rise to 40,000 when the remaining tenants commence operations. VSIP posted its first profits in 2002.

International Technology Park Limited (ITPL)

ITPL, located 18 km away from Bangalore in India's Silicon Valley, was positioned as a forerunner for a new generation of Singapore-developed IT parks in India. Construction commenced in September 1994, and the park was officially inaugurated in 2000. The partners in this project are a Singapore consortium led by Ascendas International, India's Tata Group and the Karnataka state government in a 40-40-20 arrangement. The state government has since reduced its stake to 6 percent, while the Singapore consortium and the Tata Group have increased their respective stakes to 47 percent each.

From the outset, ITPL was to be an existence quite distinct from its sister parks, with a primarily IT and high-tech industry focus; it was, however, marketed much the same as the other industrial parks, as an environment that "cuts through the red tape and bottlenecks that are a part of India's infrastructure and operating environment". ITPL's futuristic design comes complete with amenities and support services, and includes residential apartments and penthouses. More distinctively, ITPL guarantees uninterrupted power supply and telecommunication facilities, immediate-occupancy business incubator space, and the formulaic 'one-stop' service; features designed to boost the park's attractiveness to potential tenants in the targeted IT and high-tech industries.

The first 39 tenants of ITPL began operations in 1999, creating some 2,000 jobs. Today, ITPL is already in Phase 1C of development, and houses 106 companies employing around 12,000 people. More than half these tenants are represented by wholly foreign-owned firms, including several major global players, among them AOL Member Services, IBM Global Services, and Infineon

Technologies. More than 70 percent of tenants are involved in software development, integrated circuit design, research and development and precision technology. ITPL, it seems, is now quite firmly ensconced in the IT scene.

Reflections It is a fact that many special privileges were secured by Singapore's flagship projects; many of them unprecedented, and unique, to the Parks. For instance, all the Parks were allowed to build and operate their own power and water treatment plants, and telecommunication facilities, which in Indonesia and Vietnam, was an exclusive concession granted to the Singapore partners. As a result, the Parks enjoy the reputation of possessing reliable infrastructural facilities in areas where such facilities are, to say the least, not the norm. As well, the management boards of the parks typically include local government officials, an arrangement which facilitates the parks' privileged access to investment approvals, construction activities, import/export permits and immigration matters. The net result of all of this being that the self-sufficient, self-contained environment of the Parks presents investors with the formulaic and well-advertised one-stop service which filters out many of the administrative uncertainties associated with emerging economies, and is able to capitalize on (and further expand) Singapore's positive reputation with multinational corporations for its stable, corrupt-free investment environment. This association lends credibility to both the parks and their tenants; ITPL, for one, is being used by many tenants to establish a positive, almost Singapore-styled, brand image.

Nonetheless, as openly admitted by the Singapore government, neither the strategically-engineered inter-government endorsement of the flagship projects, nor the enormous resources mobilized through the strategic partnerships, have proven able to shield the parks from a gamut of problems, running from issues pertaining to BIP's resemblance to a Japanese investment enclave and vulnerability to a withdrawal of Japanese investments, the limited impact of the Indonesia parks on the transfer of low-value operations from Singapore and the associated upgrading of linked activities in Singapore (Yeoh, et al. 2004b), to the above-noted and extensively documented 'Suzhou-Wuxi' experience. Our studies point to the possibility of similar problems plaguing or beginning to plague the lesser-known parks in Vietnam and India.

Empirical Findings

All four case-study Parks have been in operation for at least seven years, and have catalyzed the development of similar industrial parks in their vicinity. To ascertain the situation on the ground, we applied the questionnaire developed in Yeoh, Perry and Lim (2000) to the tenants in these four regional industrial parks to assess the

differential impact of various pull factors on the tenant-firms' investment decisions, along with the differential impact of different constraints on their current operations.

Designed as a comparative study to investigate the various factors influencing firms' investment decisions, the survey was conducted in the respective countries from December 2002 to August 2004. A total of 160 responses were collected from tenant-firms: of these, 25 were located in BIP, 47 were located in VSIP, 33 in ITPL, and the remaining 53 in CS-SIP. The surveys were conducted through face-to-face interviews in the case-study parks. Apart from analyzing the descriptive statistics and popular rankings on the responses relating to factors and constraints, a logit analysis was applied to compare the abovementioned constraints and push/pull factors.

Factors Influencing the Respondents' Decision to Locate in the Parks

Singapore leverages on its infrastructure-development expertise and the low-cost labor available in the host environments to market its industrial parks. It supplements these purported advantages with its political commitment to the Parks, as demonstrated by the plethora of bilateral agreements between Singapore's GLCs and host governments and politically-linked business conglomerates. Surprisingly (or not), though, 'political commitment from the Singapore government' was not frequently cited by tenants from any parks other than BIP (68%); with 13%, 18% and 13% for VSIP, ITPL and CS-SIP respectively; likely due to continuing concerns over the instability of Indonesia's political environment. This was also indicated by the positive and statistically significant $\alpha_1 (= 3.002)$, which shows that firms choosing 'political commitment from the Singapore government' as a pull factor for them to locate in the specific park were more likely to be from BIP, as well as by historical evidence; the post-Soeharto era saw many firms pulling out of BIP in response to growing political unrest, and the post 9-11 era saw inflow of new investment commitments into BIP trickling to a halt. The situation has been further exacerbated by the frequent changes in political leadership, with five presidents in the past six years; and frequent reshuffling of key economic positions. All these have served to complicate investors' assessment of Indonesia's political outlook, making it imperative for the Singapore authorities to signal its political commitment to the progress of the Park. It is somewhat surprising, then, that political commitment from the host government, while not statistically significant compared to the other factors cited by respondents from BIP, was nonetheless cited by 84% of respondents. The fact that political commitment from the Singapore government was not a concern for the VSIP, ITPL and CS-SIP firms, perhaps, is more surprising and significant; it would seem to signal either that the additional 'political' capital Singapore has

to offer is of limited significance to the tenant-firms in these Singapore-styled projects.

‘Political commitment from the host country government’ was frequently cited by the respondents from VSIP and CS-SIP, making it the top-ranked strength for both parks, with the positive and statistical α_2 (=1.237) indicating that firms choosing this as a pull factor were

Table 1: Factors Influencing Decision to Invest (Logit)

Variables	BIP	VSIP	ITPL	SIP
Political commitment (S'pore) (α_1)	3.002	-0.895	-0.767	-0.224
P ₁	(0.004)~	(0.132)	(0.281)	(0.729)
Political commitment (host c'try) (α_2)	0.604	1.237	-3.224	0.764
P ₂	(0.538)	(0.012)+	(0.0001)~	(0.139)
Availability of skilled/educated labor (α_3)	2.354	-0.773	1.362	-1.187
P ₃	(0.014)+	(0.100)	(0.023)+	(0.025)+
Competitive labor costs (α_4)	1.800	2.415	-2.171	-21.545
P ₄	(0.072)*	(0.0001)~	(0.068)*	(0.997)
Competitive overheads (α_5)	3.249	-1.538	-19.475	0.715
P ₅	(0.001)~	(0.062)*	(0.997)	(0.375)
Presence of major buyers (α_6)	0.806	0.756	0.896	-4.655
P ₆	(0.579)	(0.200)	(0.200)	(0.004)~
Presence of major suppliers (α_7)	0.058	-2.267	-2.739	3.572
P ₇	(0.968)	(0.001)~	(0.004)~	(0.001)~
Constant (α_0)	-6.929	-1.342	0.451	-0.550
P ₀	(0.0001)~	(0.003)~	(0.373)	(0.270)

~ Significant at 1% level

+ Significant at 5% level

* Significant at 10% level

more likely to locate in these parks. This is, most probably, a reflection of the respondents’ concerns over the degree of control and impact on the political-economic environment held by host governments. For CS-SIP, this also goes a long way towards explaining the turnaround in the park’s performance after it was handed over to the Chinese partner, given the corresponding increase in the level of political commitment from China. Interestingly enough, the implication that this factor is not likely to be chosen by firms from ITPL, further verified by the highly negative and statistically significant α_2 (= -3.224), might signify a perception of lack of sufficient political support from the host government, or a lack of

concern as to the influence of the host government of the Park’s operations.

Besides the above, political commitment from host-country government, competitive labor costs or presence of major suppliers were also relatively less important to firms in ITPL, as indicated by the negative and statistically significant α_2 (= -3.224), α_4 (= -2.171) and α_7 (= -2.739); firms in ITPL, instead, focus mainly on the availability of skilled and educated labour, indicated by both the statistical results (positive and statistically significant at α_3 (= 1.362), and the popular results (cited by 48% of the respondents from ITPL), making it the top-ranked strength considered to the Park’s tenants. The high-tech and IT focus of ITPL, arguably, accounts partially for this almost-exclusive focus; the location and internal market advantages afforded by the highly-educated and well-trained engineers produced by universities in India are unmistakably the critical factor for ITPL.

Respondents in BIP, on the other hand, cited *most* frequently ‘competitive labor costs’ as a pull factor, with 88% of the tenants indicating so, and as indicated by the positive and statistically significant α_4 (=1.800). This is not unexpected considering that BIP serves as a low-cost investment enclave, and a large proportion of the tenants in BIP engage in labor-intensive manufacturing activities. Similarly, competitive labor costs proved to be a deciding factor for firms locating in VSIP, as indicated by the positive and highly significant α_4 (= 2.415). Most contrarily, however, none of the CS-SIP respondents even mentioned this factor! The ‘cheap and plentiful labor’, frequently stated to be the bane of labor-intensive manufacturing firms elsewhere, was most definitely not in evidence here. Much the opposite, in fact; anecdotal evidence from our on-site interviews pointed to a tight labor market in Suzhou, which was further proven by the negative and statistically significant α_4 (= -1.187) for the pull factor ‘availability of skilled/educated labor’ for CS-SIP; CS-SIP companies, it seems, have had to pay a premium for workers with the requisite skills, far from the minimum wage some sectors of the world associate with China. In a similar but opposite vein, the costs of doing business in Indonesia would seem to be not quite as high as some would expect, at least in BIP, as indicated by 88% of the BIP respondents highlighting ‘competitive overhead costs’ as a pull factor, and a positive and statistically significant α_5 (= 3.249). These results, however, differentiated the BIP respondents quite markedly from those in the other three parks; significantly, none of the respondents in ITPL cited ‘competitive overhead costs’ as a pull factor, and in terms of popular rankings, this factor ranked fifth in both VSIP and CS-SIP.

Concerning other factors, the presence of major suppliers was a major consideration of CS-SIP tenants, as

indicated by the positive and statistically significant α_7 (= 3.572), and in sharp contrast to the negative and statistically significant α_7 (= -2.267) and α_7 (= -2.739) for VSIP and ITPL respectively. This result can be explained, in part, by the tenant profile in CS-SIP. Of the 53 SIP tenants interviewed, only 8 were wholly China-owned corporations; the remaining firms were majority-owned by foreign owners, from Singapore and elsewhere. It is plausible that the foreign firms situate in CS-SIP for the availability of ‘cheap’ raw materials; as such, the presence of major suppliers is essential to their operations and the building of their value chains. In contrast, a negative, significant α_6 (= -6.452) suggests that the presence of major buyers within the Park was not critical to operations. This again can be explained partly by the tenant profile, as many foreign firms re-export manufactured products to their domestic markets instead of selling in China itself.

Major Constraints on Respondents’ Operations

BIP, VSIP, ITPL and CS-SIP are now established industrial-estate developments, but our study alludes to some emerging constraints which have undermined the attractiveness of the Parks. These constraints can be categorized into three broad groups, namely, those relating to labor, those relating to organization and technology, and those relating to the economic ‘environment’ (e.g. issues relating to government policies and regulations).

Labor-related Constraints Our results suggest that many of the purported labor advantages failed to materialize. The ‘cheap’ labor resources which drew companies to Indonesia, for instance, proved to be mere perception rather than reality in BIP; ‘rising labor costs’ was the main constraint stated by the majority (84%) of the BIP tenants. Moreover, a number of problems with industrial relations (as indicated by 68% of the respondents) exacerbated the difficulties faced by BIP’s tenants, which perform predominantly labor-intensive activities; this is further documented by lamentations of low labor productivity during our interviews with the tenants, an example of the multitude of hidden costs faced by tenants in BIP.

Over in the other low-cost manufacturing enclave, though, many VSIP tenants, on the other hand, did not appear to be facing problems of rising labor costs, as indicated by the negative and significant β_3 (= -1.979), or difficulties over low labour productivity, as suggested by the statistically significant β_4 (= -0.856). Instead, many VSIP respondents (72%) cited shortage of professionals and managers as the critical bottleneck; another perhaps unexpected complication to the envisioned synergy of low-cost labor and low-skill requirements. ITPL

respondents, on the other hand, frequently cited both ‘shortage of professionals and managers’ and ‘rising labor

Table 2: Major Constraints on Operations (Logit)

Variables	BIP	VSIP	ITPL	SIP
Labor-related constraints				
Shortage of semi-skilled and skilled labor (β_1)	1.192	0.868	-1.434	-0.838
(p_1)	(0.063)*	(0.040)+	(0.040)+	(0.065)*
Shortage of professionals and managers (β_2)	-0.235	1.141	-1.785	0.708
(p_2)	(0.729)	(0.009)~	(0.001)~	(0.103)
Rising labor costs (β_3)	3.066	-1.979	-0.856	0.878
(p_3)	(0.0001)~	(0.0001)~	(0.119)	(0.038)+
Low labor productivity (β_4)	1.431	-0.856	-20.576	1.826
(p_4)	(0.045)+	(0.065)*	(0.997)	(0.0001)~
Industrial relation problems (β_5)	3.426	0.409	-0.769	-3.397
(p_5)	(0.0001)~	(0.486)	(0.306)	(0.002)~
Constant (β_0)	-5.126	-1.220	0.624	-1.361
(p_0)	(0.0001)~	(0.001)~	(0.078)*	(0.0001)~
Organizational constraints				
Difficulty in introducing new technology (β_6)	1.477	-0.345	-1.026	-0.022
(p_6)	(0.005)!	(0.455)	(0.116)	(0.960)
Lack of good supporting services (β_7)	1.209	0.462	-1.232	-0.397
(p_7)	(0.017)+	(0.232)	(0.032)+	(0.320)
High and/or rising overhead costs (β_8)	2.092	-0.468	0.287	-0.712
(p_8)	(0.001)~	(0.194)	(0.480)	(0.043)+
Constant (β_0)	-3.941	-0.719	-1.039	-0.258
(p_0)	(0.0001)~	(0.006)~	(0.0001)~	(0.298)
‘Environmental’ constraints				
Impact of host government regulations (β_9)	3.093	0.346	-0.722	-3.161
(p_9)	(0.0001)~	(0.375)	(0.145)	(0.0001)~
Competition (overseas IPs) (β_{10})	0.719	0.152	-2.020	1.144
(p_{10})	(0.164)	(0.697)	(0.0001)~	(0.023)+
Competition (domestic IPs) (β_{11})	-0.680	-1.364	-1.942	3.271
(p_{11})	(0.223)	(0.004)~	(0.003)~	(0.0001)~
Constant (β_0)	-3.574	-0.817	0.024	-1.770
(p_0)	(0.0001)~	(0.006)~	(0.936)	(0.0001)~

~ Significant at 1% level

+ Significant at 5% level

* Significant at 10% level

costs’ as serious constraints, though the concern with ‘shortage of professionals and managers’ was less serious as compared to the other three parks, indicated by the negative and statistically significant β_2 (= -1.785). Significantly, though, none of the respondents cited ‘low labor productivity’ as a constraint of the part, indicating the high standard of the labor in ITPL; similarly,

'shortage of semi-skilled and skilled labor' was not a concern by the tenants in ITPL, indicated by the negative and statistically significant β_1 ($= -1.434$). This echoes our early findings about 'availability of skilled and educated labour' being considered a main strength by the firms in ITPL; one of the perceived synergies that did indeed materialize, and which doubtless serves to offset the shortage of professionals and rising labor costs. Finally, for CS-SIP tenants, 'shortage of professionals and managers' was the top main concern, followed by 'low labor productivity' and substantiated statistically by the positive and significant β_4 ($= 1.826$) and β_5 ($= 1.431$) respectively. Unlike BIP, 'industrial relation problems' was not a concern by tenants in CS-SIP, indicated by the negative and statistically significant β_5 ($= -3.397$).

Organizational and Technological-related Constraints The Singapore-styled infrastructure, though reliable and efficient, also proved to be costly, as facilities such as the power plant, waste-treatment system and water supply are independently managed. This resulted in high overhead costs, especially in BIP where 80% of respondents cited it as a constraint they faced, and to some extent, in VSIP, ITPL and CS-SIP, where the corresponding percentages are 38%, 48% and 34%; making it the top-ranked organizational and technological-related constraint for all of the four parks. Significantly, 'lack of good supporting services' and 'difficulty in introducing new technology and techniques' were highlighted as major operational constraints in all four parks. Comparatively, all of these constraints were more serious in BIP as compared to the other three parks, indicated by the positive and statistically significant β_8 ($= 2.092$), β_7 ($= 1.209$) and β_6 ($= 1.477$) respectively; pointing to these constraints being, in all probability, a fundamental and intrinsic quality of the Singapore-styled system, one even more obvious in the 'prototype' than in the succeeding parks.

'Environmental' Constraints Government regulation was a significant constraint for tenants in BIP, VSIP and ITPL, evident from the fact that 'impact of host government regulation' has been most frequently cited by the respondents from all the three parks. Interestingly, this constraint seemed to be much less of a concern in CS-SIP, further verified by the negative and statistically significant β_9 ($= -3.161$); it would seem that despite numerous incidents which would, to most minds, point to inefficient and corrupt bureaucracy in China, the present environment would seem rather more friendly than one would think. Conversely, though, 'competition from domestic industrial parks' was not a constraint to BIP, VSIP or ITPL, having been ranked last among the environment constraints, using frequency and ranking; a surprising result at least in ITPL's case, which is facing low-cost competition in its vicinity. However, it is the

most serious constraint considered by tenants in CS-SIP, being the top-ranked 'environmental' constraint cited by 75% of the respondents, and further indicated by the positive and statistically significant β_{11} ($= 3.271$). This is not too surprising as the transfer of majority ownership of CS-SIP from the Singapore government to the Chinese partners was in part due to the competition from the Suzhou New District (SND), managed by the provincial government in Suzhou. SND has been upgrading its hard and soft infrastructures, and mounting an aggressive investment promotion blitz in competition with CS-SIP.

Conclusion

In a relatively short period of time, the progress of Singapore's overseas parks has been more than commendable. Not all of the purported advantages of the projects have materialized, however; the projects are far from perfect, and riddled with more than a few problems, not the least of which is a certain disconnect with the economic and policy environments they exist in.

In Indonesia, BIP is now a well-established project, but it has not necessarily achieved all its development goals. It has been a springboard for Singapore-Indonesian co-operation in Riau, but it is not yet clear that Singapore has obtained the resource benefits looked for. BIP may be at risk from the breakdown of the township as a separate enclave, and the larger social tensions existing on Batam; and in the long term, the political uncertainties and policy nuances that radiate from Jakarta are unlikely to add to investor confidence. Additionally, the dual constraints of rising labor costs and problems with industrial relations are unlikely to have a minimal effect on the industrial park; altogether a clear case, perhaps, of the economic environment not quite matching what the planners had in mind.

In China, CS-SIP has attracted a high level of foreign investment, fulfilling the intended niche of accommodating high-value projects from investors that are most at risk from administrative uncertainties, and lending credence to Singapore's positive reputation with the multinationals. Its problems instead have stemmed from the lack of priority obtained from its local development partners, many of whom are involved in competing developments or are seeking to promote Suzhou as a whole, and not just CS-SIP. In retrospect, CS-SIP has experienced greater challenges as the 'model' was subjected to various, often incongruous, objectives thus setting the stage for conflicts of interest and the breeding of discontent, though this has been largely diffused following the handover to the Chinese partners. While all being said and done, tangible and intangible benefits have certainly been obtained, the Suzhou experience has clearly underlined the potential for trouble created by a disconnect with the policy environment.

Over in Vietnam, however, Singapore's investment in VSIP takes on the added political dimension of rendering development assistance to an ASEAN partner, overtly to foster greater bilateral ties. It is apparent from the mix of 'targeted' industries and the style of park management and operations that the intention is for the local partners to have a stronger sense of 'ownership' of the project. The focus on specific industries that complement Singapore's economic restructuring is also absent, unlike in BIP. All the same, underlying vested interests to secure the city-state's economic interests can be associated with this act of camaraderie; and notwithstanding the explicit or implicit objectives, intense market competition, and the inherent problems of corruption work in tandem to test this strategic initiative. While not suffering as harshly from either economic or policy disconnect as BIP or CS-SIP respectively – possibly due to the more accommodating stance towards the local partners – VSIP is not completely free from them, either.

In India, ITPL has arguably experienced success in capitalizing on first-mover advantages in a regional economy with immense market potential. More subtly, its apparent success has leveraged various Singapore companies' foray into the Indian IT industry. The apparent success of ITPL should not be overestimated, however; while the specialized IT focus of the park precludes, to a certain extent, anxieties about rising labor costs and high overhead costs, limited support from the local government, as well as the other inherent organizational constraints of the Singapore-styled system, continue to bedevil the development of the park. The project's continued success is, at the current time, at risk from an environment of disparities in local-state support for competing developments; many of which will eventually, in all probability, be creating economic competition for ITPL, in the midst of an ambivalent policy environment.

In summary, the Singapore government's role in developing, managing and operating the overseas industrial parks has been crucial from the start. However, initial assumptions of the advantages engendered by the state enterprise networks, as successfully proven through its GLC network domestically, have proven to be overly optimistic. The unforeseen and combined tensions of differing agendas, sometimes within the same host government, intertwined with the cultural and political complexities of large economies, and the uncontrolled external environment, serve to diminish the efficiency and commercial viability of the parks; and, indeed, the inherent costs of the parks themselves were severely underestimated. In hindsight, the ambition and optimism of developing an 'exportable version' of GLC networks, together with strategic alliances with regional governments, have been quite misplaced; the same

product, after all, takes on very different qualities, and evokes very different reactions, in different environments, and therefore is far from independent of the complexities of the market it is being sold to. The limits to the weaving of state-enterprise networks beyond demarcated national boundaries have, arguably, been made all too obvious in the R21 projects.

References

- Ho, K.C. (1994). Industrial restructuring, the Singapore city-state, and the regional division of labor, *Environment and Planning A*, 26, 33-51
- Perry, M. and Yeoh, C. (2000). Asia's transborder industrialization and Singapore's overseas industrial parks, *Regional Studies*, 4(2), 199-206.
- Pereira, A. (2004). State entrepreneurship and regional development: Singapore's industrial parks in Batam and Suzhou, *Entrepreneurship and Regional Development*, 14, 129-144.
- Regnier, P. (1991). *Singapore: city-state in Southeast Asia*. London: Hurst & Company.
- Rodan, G. (1989). *The political economy of Singapore's industrialization*. London: Macmillan.
- Singapore Economic Development Board. (1995a). *Singapore unlimited*.
- Suzhou Industrial Park Administrative Committee. (1999). *SIP – five years achievements in adapting Singapore's experience*.
- Tan, C.H. (1995). *Venturing overseas: Singapore's external wing*. Singapore: McGraw-Hill.
- Hamilton (Ed.), *Business Networks and Economic Development in East and Southeast Asia* (pp. 201-216). Hong Kong: Centre of Asian Studies, University of Hong Kong.
- Wong, P.K. and Ng, C.Y. (1991). Singapore's internationalization strategy in the 1990s. In *Southeast Asian Affairs 1991* (pp.267-276). Singapore: Institute of Southeast Asian Studies.
- Yeoh, C., Perry, M. and Lim, M.L. (2000). Profile of a low cost manufacturing enclave: the case of Batamindo Industrial Park, Indonesia. In R. Edwards, Nyland, C. and Coulthard, M. (Eds.), *Readings in International Business* (pp. 193-212). New South Wales: Pearson Education Australia.
- Yeoh, C., Cai, J. and Koh, C.S. (2004a). Singapore's regionalization blueprint: a case of strategic management, state enterprise network and selective intervention, *Journal of Transnational Management Development* (forthcoming).
- Yeoh, C., Lim, D. and Kwan, A. (2004b). Regional co-operation and low-cost investment enclaves: an empirical study of Singapore's industrial parks in Riau, Indonesia, *Journal of Asia-Pacific Business*, 5(4), 43-65.