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**Singapore's Regionalization Blueprint:
The Empirics of the Case for Selective Intervention**



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**SINGAPORE'S REGIONALIZATION BLUEPRINT:
THE EMPIRICS OF THE CASE FOR SELECTIVE INTERVENTION**

ABSTRACT

Strategic management for economic development has been the hallmark of the Singapore 'success story'. State-led, market-driven intervention has underscored the city-state's development strategies. This paper revisits this development blueprint in the context of Singapore's efforts at regionalization. The paper takes a closer look at Singapore's regionalization imperative, and the 'portability' of the strategy – in the framework of Regionalization 21 – beyond the city-state. Evidence from Singapore's industrial-township projects in Indonesia, Vietnam and India are presented. We conclude that the calculated, schematized efforts, though remarkable, have been overly optimistic and have failed to engender equally compelling results, more often than not frustrated by the intricacies of socio-political realities in the host economies.

Key words: Regionalization - Industrial Parks - Singapore - Indonesia - Vietnam - India

INTRODUCTION

Singapore's leaders had candidly acknowledged the country as an artificial establishment with an objective and a finite life span, should development stagnate. Against this prognosis, it has been an ongoing imperative for the city-state to formulate strategies to engender its continued growth. Often perceived as an archetypal interventionist state (Castells, 1988; Rodan, 1989; Regnier, 1991; Ng, et al., 1992; Huff, 1995; Yeung, 1998; Blomqvist, 2001), 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. In this sense, the selective investments are attempts to reallocate key economic resources (Schneider and Maxfield, 1997) via the 'developmental state model' (Evans, 1995, Woo-Cumings, 1999) whereby economic restructuring, industrial transformation and rapid economic growth are achieved through 'collaborations' with private or semi-private enterprises on national economic projects (Evans, 1995). Aid and incentives include liberal financial subsidies or co-investments. State intervention is also apparent from the foreign direct investment (FDI) orientation of the policies, whereby factors of production are adjusted to enhance the country's attractiveness to foreign investors. In short, the country has to be understood as an investor in business or society, or both (Pereira, 2001).

In the early 1990s, the Singapore government's broad strategic intentions were translated into concrete policies and programs (Singapore Ministry of Trade and Industry (SMTI), 1991). Manufacturing 2000, International Business Hub 2000, Regionalization 2000 (R2000), Tourism 2000, IT 2000 Vision and National Information Infrastructure (NII) Initiatives, and Local Enterprises 2000 were all part of the blueprint to ensure Singapore's continued relevance in the global marketplace, amidst the limitations of a resource-constrained domestic environment (Singapore Economic Development Board (SEDB), 1995a). This paper takes up the deliberations on Regionalization 2000 (R2000), a strategic initiative to create an external economy, by participating in the dynamic growth opportunities of Asia-Pacific economies (SEDB, 1993a, 1995b). The paper's main focus will be on Singapore's overseas industrial-township projects.

Further background of the impetus behind the regionalization initiative is first presented to highlight the Singapore government's strong interventionist style, extended to the regionalization policy. This is followed by an account of the origins and progress of the industrial-township projects in Indonesia, Vietnam and India. Discussion then shifts towards reflections on the Parks' contributions to Singapore's regionalization strategy, substantiated by empirical findings. 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 GAMBIT

The dearth of natural resources has driven Singapore, a small city-state, to hone its ability to leverage global resources for economic growth. Singapore's long-established stratagem of economic development through foreign direct investments (FDI) is well documented (Chia, 1986; Pang, 1987; Yeung, 2001). By the early 1980s, rising business costs necessitated a shift from labor-intensive activities towards higher value-added ones. Building and strengthening the city-state's 'external economy', through outward direct investments, was perceived to be an imperative (Aggarwal, 1985; Pang and Komaran, 1985; Lim and Teoh, 1986). Singapore's economic planners sought to expand the island's investment horizons through an overseas direct investment program launched in 1988¹. This initiative sought to accelerate access to new technology², or foreign markets, by supporting Singapore companies to form joint ventures with overseas companies in North America and Western Europe (Caplen and Ng, 1990; Wong and Ng, 1991; Murray and Pereira, 1995). Most of these investments proved unsuccessful, resulting in enormous losses by the early 1990s (Balakrishnan, 1991; Kanai, 1993; Regnier, 1993). A new phase in the internationalization strategy re-focused on expansion within Asia. The change from internationalization to

¹ The main ideas were set out in the policy document, *Gearing Up for an Enhanced Role in the Global Economy* (SEDB, 1988). The 1990 Global Strategies Conference added new dimensions to these deliberations (SEDB, 1990).

² For a more analytical approach, see Dunning & Narula (1996), and Dunning, van Hoesel & Narula (1998).

regionalization was rationalized by the liberalization of foreign investment controls occurring, at the time, in countries like China, Vietnam and Indonesia, and the high growth rates these economies were achieving (Kwok, 1995; Pang, 1995; Kraar, 1996; Okposin, 1999). Outward direct investments expanded strongly, as Singapore-based firms, both local and foreign, increase their investments into the region, to take advantage of growing market opportunities in the region. Singapore's direct investment abroad rose from S\$7.5 billion in 1990 to S\$91.0 billion in 2000³. In recent years, Singapore's outward FDI is comparable to its inward FDI. About 60 percent of the outward FDI still goes to Asia, but the relative share of ASEAN has declined with the increased importance of China (Kaiser, et al., 1996). As with inward FDI, outward FDI have been influenced by government policy initiatives and incentives.

The Singapore government has a dominant role as a stakeholder, a facilitator and a partner to domestic enterprises seeking investments abroad (SEDB, 1995a, 1995b; Perry and Yeoh, 2000; Goh et al., 2001; Blomqvist, 2002). The role as a facilitator and partner is evident from the creation of familiar Singapore-havens via industrial parks in neighboring countries and the restructuring of taxation policies⁴. The state also embarks on fostering trusted regional networks⁵ 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 (Dunning, 1997a; 1997b; Zutshi and Gibbons, 1998). This is especially relevant for Singapore, which, by reason of its small size, operates through interlocking directorships in government-linked companies (GLCs); this has facilitated the implementation of strategic initiatives, at a national level, with minimal conflict of interests.

Implicit in the regionalization strategy is the Singapore government's intention to draw on its effective state enterprise network⁶ (or, in local parlance, Singapore Inc.), and extend this network to facilitate business ventures in the region (SEDB, 1995a, 1995b). As well, given analogous cultures and understanding through racial networks, and relatively strong governmental directions, such an extra-territorial network had the potential for success. Theoretically, the 'vested interests' within the interlinked collaborative system serve to expedite processes, garner exclusive incentives, and negate inept bureaucracy.

The strategy, itself, featured a genre of selective state intervention. Involvement in the township development is threefold: firstly, senior politicians are enlisted to negotiate the projects' institutional framework (usually pertaining to exclusive investment privileges), and to secure endorsement from host-country governments, to give the projects political patronage and protection⁷. Secondly, 'government-selected' consortia, typically comprising Singapore government agencies and GLCs, take on the role of primary investors in infrastructure development. This is premised on the reluctance of private-sector firms to take on investments of such scale and long pay-back period. As well, the high risks involved in venturing into a relatively undeveloped and unfamiliar locale, where political, social and environmental conditions are suspect, compounded with uncertainty of investor interest, renders it inherently unattractive to private enterprises (SEDB, 1993c). Thirdly, the state actively markets and promotes the flagship

³ Source: Singapore Department of Statistics.

⁴ By 1993, Singapore had concluded 28 double taxation treaties to encourage companies to use Singapore as a base to enter the fast-growing economies of East Asia. An overview of Singapore's initial incentive schemes to support the regionalization initiative is set out in *Singapore Investment News, Regionalization Supplement* (SEDB, 1993b).

⁵ The stress on exploiting personal ties accords with business practices preferred by the linked communities of 'overseas Chinese' (Redding, 1990; Yeung, 1997, Brown, 1998; Lehman, 1998), which Singapore made use of in its industrial parks in Indonesia and China.

⁶ The principles of government involvement are rationalized in the Report of the Committee to Promote Enterprise Overseas (Singapore Ministry of Finance, 1993).

⁷ Mechanisms include familiarization tours, formal and informal contacts amongst government officials, the constitution of ad-hoc problem-solving committees, and visits by ministerial delegations that emphasize the establishment of interpersonal relationships (Kumar and Siddique, 1994).

projects to Singapore-based MNCs, on top of the internationalization of Singapore companies. With a proven track record, SEDB's presence adds significant weight, as 'business architect' and 'knowledge arbitrageur', to the promotional efforts (SEDB 1995a, 1995b).

From the strong interventionist style, Singapore appears to have embraced the 'new trade theory' which suggests that incisive and well-planned government support reaps the potential benefit of enhancing the likelihood of domestic companies becoming first-movers in newly emerging countries, even to the extent of replacing the original first-movers. The establishment of Singapore's industrial townships in the region, fashioned to create a 'Singapore-styled' business environment in emerging economies, illustrates this. The trans-border industrialization strategy envisioned that, what follows, would be the generation of economic space for Singapore-based companies, both indigenous and foreign, to redistribute resource-dependent operations to lower-cost production sites and upgrade their Singapore-operations to higher-end activities which require the city-state's unique set of competencies.

The following case studies of the industrial parks in Indonesia, Vietnam and India serve to illustrate the prevalence of the Singapore government's role in developing, managing and marketing these gargantuan overseas investments. As well, this strategic initiative can also take on an uncharted perspective of being an end in itself, that of exporting Singapore's expertise in industrial infrastructural development across the region (Perry, 1995; Tan, 1995; Perry and Yeoh, 2000).

SINGAPORE'S TRANS-BORDER INDUSTRIALIZATION

The Indonesian Parks

The first of Singapore's overseas industrial parks, Batamindo Industrial Park (BIP) and Bintan Industrial Estate (BIE), are located on the neighboring Riau islands of Batam and Bintan. BIP and BIE began operations in 1992 and 1994 respectively. The projects were joint ventures between Singapore GLCs and Indonesia's largest business conglomerate at that time, the Salim Group. Singapore's main industrial infrastructure builder, Jurong Town Corporation, and Singapore Technologies Industrial Corporation (now SembCorp Industries), led the design, physical development and management of the estate. Salim, with its close links to senior Indonesian politicians and privileged access to major investment projects in the Riau islands (Perry, 1991; Yeoh et al., 1992, Sato, 1993; Hill, 1996), provided a guarantee of priority with respect to regulatory controls and government permissions. The division of responsibilities assured Singapore of priority placing on regulatory issues in the host environment, and enabled the strategist city-state to leverage on its reputation for transparency, reliability and efficiency, to foreign investors.

BIP has been successfully developed, with 82 companies employing 65,000 workers anchored in the Park. Investment commitment is in excess of US\$1 billion, with a strong presence of Japanese firms in the Park. In marked contrast, BIE's performance remains modest with only 35 tenants and 13,000 workers (against the initial projection of 130,000). Only 110 hectares of the 4000-hectare project has been developed, at a cost of US\$113 million. BIE's investor profile is largely Singaporean, engaged in relatively low value-added, light industries. The project has since been downsized to a 500-hectare development. The Parks' operational statistics are presented in Table 1. New investment commitments in BIP have, however, plummeted, and investments in BIE have trickled to a halt in the wake of the October 2002 Bali bomb blasts.

Vietnam-Singapore Industrial Park (VSIP)

VSIP is Singapore's flagship investment in Vietnam. The plan was first mooted in March 1994 by the then Vietnamese Prime Minister, Vo Van Kiet, and Singapore's Prime Minister, Goh Chok Tong. The Singapore-styled industrial-park environment was replicated. VSIP offers investors a 'hassle-free', self-contained, one-stop service with prepared land plots and ready-built factories, Singapore-style management expertise and infrastructure support. A 200,000 working population within a 15-km radius from VSIP provides a ready pool of low-cost, skilled labor.

The physical design of VSIP is identical to the BIP-prototype. The strategic context, however, differed. Singapore's primary concern with the Indonesian investment had been to promote the restructuring of the Singapore economy, and to exploit the complementarity of neighboring economies (Liew, 1990; Lee,

1991; Perry, 1991; Parsonage, 1992; Yeoh et al., 1992; Toh and Low, 1993; Ho, 1994; Kumar and Siddique, 1994; Reza, 1994; Peachey, et al., 1998; Grundy-Warr, et al., 1999). As well, the Indonesian experience was less complex to begin with; endorsements from senior politicians guaranteed a degree of administrative certainty, strengthened by the political patronage of the main commercial partner. Vietnam, in contrast, had a more complex administrative and regulatory environment, and the projects had to contend with multiple tiers of government administration, and the competition (or more precisely, the 'fiscal politics') between these tiers at a time of rapid economic and political changes. As well, the VSIP project was based on the perception that Singapore agencies have a competitive edge in infrastructure development, and had a pseudo-political agenda to showcase the Singapore development model and its transferability to other Asian environments (Asian Review, 1996; Yeung, 1998).

In VSIP, Singapore applied lessons learned from its China experience⁸, and made deliberate efforts to foster strong collaboration with local authorities. A Management Board⁹ was set up, chaired by the Vice Chairman of the Binh Duong Province People's Committee, which pre-empted the perception that VSIP was a partnership forced upon by the central government. VSIP is jointly developed by a Singapore consortium led by SembCorp Industries¹⁰ and Becamex, a state-owned enterprise.

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 in 1995. Investment commitments in VSIP are currently valued at over US\$500 million from 64 tenants, 53 of which are in operation (Table 1). Most of the tenants are from Singapore, Japan and Taiwan, reflecting the importance of Asian multinationals in the Park's tenant mix, while the sector mix ranges from textiles, to electronics and pharmaceuticals. VSIP has a list of 'priority' industries, which adheres closely to the official list of preferred industries¹¹ but given current economic realities, the tenant-profile suggests that VSIP does not target specific industries. VSIP has yet to post a profit.

International Technology Park Limited (ITPL)

ITPL, located 18 km away from Bangalore in India's Silicon Valley¹², was launched in 1994, as a forerunner for a new generation of Singapore-developed industrial parks in India. The idea was mooted by Singapore's Prime Minister Goh Chok Tong and India's Premier, P.V. Narasimha Rao, in 1992. Construction commenced in September 1994, and the park was officially inaugurated in 2000. The partners in the ITPL project are a Singapore consortium of companies¹³ led by Ascendas International, India's Tata Group and the Karnataka state government in a 40-40-20 arrangement¹⁴.

⁸ There is now an extensive literature on the problems encountered in the China-Singapore Suzhou Industrial Park project (e.g. Cartier, 1995; Law, 1996; Perry and Yeoh, 2000); various news reports, for example, *The Economist* (January 3, 1998), *The Straits Times* (June 30, 1999); and a recently completed (confidential) report commissioned by the Singapore Government.

⁹ 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.

¹⁰ Other members of the consortium include Temasek Holdings, JTC International, UOL Overseas Investments, Salim's KMP Group, LKN Construction, and MC Development Asia.

¹¹ Details are given in Circular No. 8, List of Encouraged, Limited and Prohibited Industries in Export Processing Zones and High-Technology Industrial Zones, issued on July 29, 1997.

¹² Indian universities reportedly graduate about 20,000 to 30,000 software engineers every year, and Bangalore has been a hunting ground for Singapore companies and Singapore-based MNCs seeking low-cost IT specialists.

¹³ The Singapore consortium includes RSP Architects, Planners and Engineers, L&M Properties, Sembawang Industrial, Technology Parks (a Jurong Town Corporation subsidiary) and Parameswara Holdings (the investment arm of the Singapore Indian Chamber of Commerce).

¹⁴ 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.

ITPL was marketed as an environment that “cuts through the red tape and bottlenecks that are a part of India’s infrastructure and operating environment”¹⁵. The Park’s development consists of 2 phases. Phase 1, which includes the Discoverer, Creator and Innovator blocks, with built-up office, production and retail space, adopts the Singapore-styled, integrated ‘work, live and play’ concept. ITPL’s futuristic design comes complete with numerous amenities, facilities 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. Phase 2, comprising the Explorer building, an exact replica of the Innovator, Built-To-Suit (BTS) facilities, is due for completion in early 2004.

ITPL’s first development phase is fully committed. The earliest clients included SAP Labs, First Ring and 24/7. The first 39 tenants started their operations in 1999, and created some 2000 jobs. To-date, there are 100 confirmed tenants, of which 93 are operational with 8500 employees (Table 1). The tenant profile is fairly balanced, with more than two-thirds of the tenants represented by wholly or partially foreign-owned firms and more than 70 percent are in software development, integrated circuit design, research and development and precision technology. ITPL’s tenants include global players like AT&T, IBM, Motorola, Sony, Texas Instruments, Citicorp and Thomas Cook. Operating profits have been registered, and ITPL is projected to break even within the next 3 years.

SURVEY RESULTS

Prior studies on Singapore’s industrial-township projects have relied primarily on secondary data from official publications, press reports, fact sheets, etc. To add empirical rigor to this paper, we conducted on-site questionnaire surveys and in-depth interviews to test the differential impact of various factors in influencing the decisions of companies to set up their operations in BIP, VSIP and ITPL, and the differential impact of different types of constraints on their operations in the three sites. The survey design and methodology was adapted from Yeoh, et al (2000). The first set of questions sought to determine the profile of the respondents: type of ownership, nature of operations and size of establishment; and, the second set was structured to gather information on the push/pull factors influencing the respondents’ decision to set up their manufacturing operations in the industrial-townships, and the various constraints on their site operations. The respondents’ views on the broader environment in the host locations were culled from the open-ended questions. SembCorp Industries and Ascendas International provided the tenants’ lists and facilitated the on-site interviews.

Profile of the Respondents

A total of 83 responses were collected. Of these, 27 respondents were located in BIP, 23 in VSIP, and the remaining 33, in ITPL.

Of the 27 respondents in the BIP survey, 7 were wholly Singapore-owned, 5 were Singaporean joint ventures, and 15 were wholly foreign-owned. The majority of respondents were mainly involved in the manufacture of intermediate products. 7 of the respondents were involved in the manufacture of consumer products, and another 5 were providers of industrial services. 14 of the BIP tenants employed more than 500 workers. There were 7 respondents with sales turnovers of less than US\$5 million, 14 respondents with turnovers between US\$5 million and US\$50 million, and the remaining had turnovers exceeding US\$50 million.

Of the 23 respondents from VSIP, 6 were wholly Singapore-owned, 1 was a joint venture and 16 were wholly foreign-owned. As for the nature of operations, 8 manufactured consumer products, 3 manufactured intermediate products, and 2 were involved in industrial services. None of the companies surveyed were manufacturers of capital goods. 15 respondents employed less than 100 workers, 5

¹⁵ The Straits Times, August 8, 1999.

employed between 100 and 500 workers, and the rest employed more than 500 workers. 12 respondents had a sales turnover of less than US\$5 million, 7 had turnovers between US\$5 million and US\$50 million, while the rest had turnovers larger than US\$50 million.

Of the 33 respondents from ITPL, 4 were wholly Singapore-owned, 6 were joint venture and 23 were wholly foreign-owned. As for the nature of operations, 16 of the respondents were involved in software development, 4 were involved in support services and 2 in research and development. 23 respondents employed less than 50 workers, and only 5 employed between 100 and 500 workers. No respondent employed more than 500 workers. 15 respondents had a sales turnover less than US\$5 million and 4 respondents had sales between US\$5 million and US\$50 million.

Statistical Treatment of Survey Results

For push/pull factors, the logit model, estimated by the maximum likelihood, takes the following form:

$$P_i = \exp(Z_i) / [1 + \exp(Z_i)]$$

Where: P_i is the probability of firm being located in the particular park

\exp refers to the exponentiation operator, and

Z_i is a linear function of the push/pull factors¹⁶ defined as

$$Z_i = \alpha_0 + \sum_{i=1}^{i=6} \alpha_i F_i$$

Where: $F_1 = 1$ if 'Political commitment from the Singapore government' is selected, 0 otherwise

$F_2 = 1$ if 'Political commitment from the host country government' is selected, 0 otherwise

$F_3 = 1$ if 'Investment incentives' is selected, 0 otherwise

$F_4 = 1$ if 'Competitive labor costs' is selected, 0 otherwise

$F_5 = 1$ if 'Reliable infrastructure facilities' is selected, 0 otherwise

$F_6 = 1$ if 'Availability of skilled/educated labor' is selected, 0 otherwise

α_0 = constant term

α_i = coefficient of independent (explanatory) variable

The "forced entry" method of regression was used.

Estimated coefficients in the logit model, if statistically significant (as indicated by the p-values), would suggest that the firm choosing that particular push/pull factor is more likely to be from that particular park than other similar industrial parks. For example, where BIP is the dependent variable, if the coefficient of F_1 is *positive* and *significant*, this would suggest that, after taking into account the effects of other push/pull factors, a firm choosing 'Political commitment from the Singapore government' has a higher probability of being a firm located in BIP compared to a firm which did not select this choice as one of their reasons for re-locating, i.e. political commitment from the Singapore government is a significant

¹⁶ These attributes are indicator (dummy) variables that take the value 1 if they are chosen and value 0 if they are not.

pulling factor for the BIP tenants. Tables 2A and 2B present the popular rankings and logit estimations of the push/pull factors.

A similar logit model was applied to the constraints faced by the parks' tenants:

$$P_i = \exp(Z_i) / [1 + \exp(Z_i)]$$

Where: P_i is the probability of firm being located in the particular park
exp refers to the exponentiation operator, and
 Z_i is a linear function of the constraints¹ defined as

$$Z_i = \beta_0 + \sum_{i=1}^{i=n} \beta_i C_i$$

Where: C_i (1 to n, depending on the type of constraint) = 1 if constraint i is selected, 0 otherwise

β_0 = constant term

β_i = coefficient of independent (explanatory) variable

In this case, estimated coefficients in the logit model, if statistically significant, would suggest that the firm choosing that particular constraint is more likely to be from that particular park than other similar industrial parks. For example, where BIP is the dependent variable, if the coefficient of C_1 is *positive* and *significant*, this would suggest that, after taking into account the effects of other labor constraints, a firm choosing 'Shortage of semi-skilled and skilled labor' has a higher probability of being a firm located in BIP compared to a firm which did not select this choice as one of the constraints they face, i.e. shortage of semi-skilled and skilled labor is a significant constraint faced by BIP tenants. Tables 3A and 3B present the popular rankings and logit estimations of the different constraints.

Empirical Findings

Factors Influencing Respondents' Investment Decisions

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 many bilateral agreements between the GLCs and host governments or politically-linked business conglomerates. Furthermore, there is a host of investment incentives that entice multinationals to locate their lower value-added activities in these self-contained enclaves.

Not unexpectedly, the reliable and efficient Singapore-styled infrastructure was the Parks' main draw, with 85%, 70% and 82% of the BIP, VSIP and ITPL tenants surveyed citing it as a pull factor for them to locate in the Park respectively. Singapore appears to have succeeded in exporting its 'expertise' in infrastructure development and creating a location-advantage which is clearly in demand by companies in the South East Asian region.

Political commitment from the Singapore and the Indonesian governments is a major concern for BIP tenants, as indicated by the positive and statistically significant α_1 (=1.727) and α_2 (=2.184) for BIP. Since Suharto's demise, shifts in the presidential position have resulted in reshuffling of the cabinet and power jockeying among the parties, ministries, legislature, central bank and other institutions. Amidst this unstable political climate, both countries' political commitment to the progress of the Park becomes imperative for investors seeking secure investments. In comparison, VSIP firms value the reliable Singapore-styled infrastructure over the Singapore government's commitment to the success of the Park,

as indicated by a negative and significant α_1 ($=-1.602$). Furthermore, only 3 respondents cited the latter as an affirmative pull factor. This can be attributed to the Vietnamese government's tight control over the economy and nature of FDI, creating an arguably stabler environment.

Another pull factor for BIP is "Competitive labor costs", with 81% of the tenants indicating so, and as indicated by the positive and statistically significant α_4 ($=2.055$). This is expected since BIP serves as a low-cost investment enclave, and a large proportion (81%) of the tenants in BIP engage in manufacturing activities. Manufacturing being labor intensive inherently requires much low-cost labor. The cheaper cost of labor is an added bonus to companies which locate in ITPL, but is not a deciding factor as indicated by the negative and highly significant α_4 ($=-3.620$) for ITPL.

Major Constraints on the Respondents' Operations

BIP, VSIP and ITPL are now established industrial estate developments, but our study alludes to some emerging constraints which have undermined the attractiveness of the Parks. These constraints are categorized into three broad groups, namely, those relating to labor, those relating to organization and technology, and those relating to the economic "environment", such as government policies and regulations.

Labor constraints

The "cheap" labor resources which drew companies to Indonesia proved to be mere perception rather than a reality in BIP, as "rising labor costs" is the main constraint faced by the majority (78%) of the BIP tenants surveyed. The logit coefficient, at β_3 ($=3.433$) is also positive and significant. Low labor productivity exacerbated the difficulties faced by the tenants, which perform predominantly labor-intensive activities in BIP. This is further documented by constant lamentations of industrial relations problems during our interviews with the tenants, and which are substantiated statistically by 63% of the BIP tenants and the positive and significant β_4 ($=4.194$). Many VSIP tenants, on the other hand, did not face a problem of rising labor costs, as indicated by the negative and significant β_3 ($=-3.658$). Instead, many VSIP tenants surveyed (74%) cited shortage of professionals and managers as a labor constraint, further substantiated by our logistic regression model where β_2 ($=2.462$) is positive and significant. ITPL tenants, on the other hand, do not face such a problem, as indicated by the negative and significant β_1 ($=-1.538$) and β_2 ($=-1.618$). This could be explained by the fact that the city of Bangalore abounds with excellent schools and universities. This coupled with the high standard of education, serves as a continuous source of English-speaking skilled employment and managerial talent for tenants located in the park.

Organizational/Technological 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 74% of respondents cited it as a constraint they faced, and to some extent less so in ITPL where the corresponding percentage is 48%. The positive and highly significant β_5 ($=2.497$) for BIP supports our rankings analysis. Other organizational/technological constraints faced by BIP tenants (and less so by ITPL tenants) include difficulty in introducing new technology and techniques ($\beta_2 = 1.970$ for BIP; $\beta_2 = -1.454$ for ITPL) and the lack of good supporting services ($\beta_3 = 2.214$ for BIP; $\beta_3 = -1.289$ for ITPL).

Environmental constraints

"Impact of host government regulations" and "competition from overseas industry competitors" are constraints faced by both BIP and VSIP tenants. However, whereas 89% and 78% of BIP tenants cited the above two constraints respectively, only about half of the VSIP tenants and less than a third of ITPL tenants indicated likewise. This accounts for the positive and significant β_1 ($=2.291$) and β_2 ($=2.163$) for BIP and the negative and significant β_1 ($=-1.353$) and β_2 ($=-2.137$) for ITPL. The government's control over the operating environment and the economic landscape shaped by overseas industry competitors has proven more stifling to the operations of the tenants in BIP than to those in VSIP and ITPL.

ISSUES AND CHALLENGES

In Asia's rapidly growing economies, infrastructure can be unreliable and administration subject to corruption (Hatch and Yamamura, 1996). Foreign investment is invariably drawn to investment enclaves that provide privileged access to international trade, principally export processing zones, as well as in and around centers of international infrastructure which generally means capital cities. Singapore's overseas parks are configured to exploit these emerging production networks. This context provides opportunity for Singapore-developed parks through the provision of superior infrastructure and the ability to negotiate investment concessions.

The special privileges secured by Singapore's flagship projects share a common trait: many of the privileges obtained were 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 reliable infrastructural facilities in areas where these facilities are an anomaly. 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. Together, the self-sufficient, self-contained environment of the Parks presents investors with a formulaic one-stop service which filters out administrative uncertainties associated with emerging economies. Significantly, Singapore's positive reputation with multinational corporations for its stable, corrupt-free investment environment lends credibility, such that it seems privileged to be located in the Parks. For example, ITPL is being used by many tenants to establish their brand-image, as there is prestige associated with being located in the Singapore-styled Park¹⁷.

Influence can also be exerted through inter-governmental interaction and, where existing, through the links to influential ethnic business groups in the investment location who often rely on state patronage for their access to infrastructure development projects. The key Singapore partners involved in these projects were GLCs (notably SembCorp Industries, Keppel Corp and JTC's Ascendas), and Temasek Holdings (the Singapore government's main investment holding company). For the Indonesian parks, the main local partner was the Salim Group, which, albeit private, is nevertheless well known for its close links to senior Indonesian politicians and privileged access to major investment projects. For VSIP, Singapore's GLCs work in partnership with government agencies, national state-owned enterprises and investment companies of local/municipal authorities. The most recent venture, ITPL in India, also shares the characteristic of strong government involvement, with the Indian counterparts being the Karnataka state government and the Tata group, which, though private, is nonetheless well connected with local authorities. The strategic alliances between Singapore's own state-owned enterprise networks, and its counterparts in the regional sites, were instrumental in mobilizing the financial resources to complete these multi-million projects and, in most cases, within a comparatively short time-frame of 18 to 24 months.

Nonetheless, as most openly admitted, the strategically 'engineered', inter-government endorsement of the flagship projects, and the enormous resources mobilized through the strategic partnerships, have 'failed' to shield the Parks from a gamut of problems, which were highlighted in our empirical study findings. Issues pertaining to the scale and character of development of BIP, viz, its resemblance to a Japanese investment enclave and vulnerability to a withdrawal of Japanese investments, as well as 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, have been discussed in Peachey et al. (1998), Grundy-Warr et al. (1999) and Perry and Yeoh (2000). Peachey et al. (1998) have drawn attention to the influx of immigrants to the islands and, concomitantly, to the social problems of squatter settlements which threaten to overwhelm the investment value of the Indonesian parks. The following observations update, and offer new insights, on recent developments in the industrial-township projects.

¹⁷ This was a constant refrain throughout our on-site interviews in ITPL in December 2002.

Heightened competition

Singapore's overseas industrial parks are increasingly facing strong mounting competition from competing parks within their vicinity. Competitor parks, some of which are backed by prominent Indonesian politicians, have mushroomed around BIP. Panbil Industrial Park, one of the largest of these parks, is located opposite BIP. VSIP's attractiveness has been similarly eroded by competition from newer, albeit smaller, industrial parks developed by experienced and street-savvy developers from Japan, Korea and Taiwan. These competitor parks' market themselves aggressively on price, charging significantly lower rentals for "no frills" land space. For ITPL, its success apparently hinges on the "Singapore-styled design and management" reputation, and its capacity to provide stable electricity is the only differentiating factor from the other IT parks like the Software Tech Park and Electronics City. There is a possibility that the Park's attractiveness may be eroded, in time, as more IT parks and companies are set up in the vicinity to capitalize on the area's repute, while offering lower rentals with equally reliable energy, as the state develops. The economics of heightened competition have called into question the premium attached to the 'superior infrastructure' in Singapore's industrial-investment enclaves.

Changes in Political 'Allegiances'

For the projects in Indonesia, but less obvious in Vietnam and India, the reliance on personal ties rather than transparent contracts has had advantages and disadvantages. In the Indonesian projects, the reliance on the Salim Group has been necessary in the context of the Indonesian system of 'crony capitalism' fostered by then President Suharto. The end of the Suharto era, and pressure from the IMF and western governments for financial transparency, has diminished Salim's political and commercial influence. Ownership changes at BIP and BIE have brought about uncertainties¹⁸, as the Parks' privileged access to senior politicians and policy-makers in Jakarta has proved more difficult. Compounding these uncertainties, inter-governmental endorsements, post-Suharto, no longer suffice to secure commitments at the lower tiers of government¹⁹. Anecdotal evidence, from our interviews with the BIP tenants, points to a more complex regulatory environment for foreign companies, as they have to deal more intensively with the provincial and sub-provincial (district) governments. The Parks' reputation as investment enclaves has also not been left unscathed by political developments in the aftermath of the Asian financial crisis, the September 11 attacks in the United States, and more recently, the Bali bomb blasts. In addition, negative press reports on active terrorist cells within the region serve little to quell the innate risk-aversion of potential investors. Indonesia's state investment agency recently reported a 35 percent slump in foreign investment approvals, from US\$ 15.1 billion in 2001 to just US\$9.7 billion in 2002²⁰. The Parks could do without these added sentiments in its larger environment.

In Vietnam, the projects were expected to benefit from the ability of Singapore's GLCs to obtain a special concessions but, in reality, inter-government endorsement (in the spirit of ASEAN economic co-operation) has proved insufficient to secure similar commitment in the lower tiers of government. In VSIP, the influence of local administrators, and their interests in competing developments, has diminished the significance of inter-governmental endorsement of the project. The 'special' support from the local authorities has proved to be less significant than initially thought. Improvements on infrastructural projects have translated into a plethora of miscellaneous fees, and added to operating costs. Our on-site interviews, conducted in August 2002, further point to negative undercurrents over Singapore's control and management of VSIP. Anecdotal evidence suggests that, while there is an interest in learning from Singapore, tensions have arisen over Singapore-styled management practices, and these have translated into perception differences, protracted conflicts and project delays. Local sentiments towards the

¹⁸ The Indonesian Bank Restructuring Agency has reportedly offered to sell the Salim Group's stakes in all the Riau projects – estimated to be worth S\$500 million – in a packaged deal (The Business Times, August 28, 2001). Further restructuring have taken place, with the three main stakeholders now being SCI, Ascendas and the Indonesian government.

¹⁹ Law No. 22/199 allows provincial, district and municipal governments to write provincial laws, some of which contradict national laws, or test the boundaries of their power. The Megawati administration is now proposing a revision of laws on regional autonomy, but the direction remains unclear. For a discussion on the problems with regional autonomy and their impact on business, see Van Zorge, Heffernan & Associates (April 2002).

²⁰ The Straits Times, January 9, 2003.

Singapore partners were not unlike those expressed in the Suzhou-Wuxi experience (in China), albeit to a lesser degree. It is not inconceivable that the ownership-management structure of VSIP may, in time, be restructured to reflect a “better alignment of interests”.

In India, varying degrees of commitment and support by different state governments towards the country’s development can affect ITPL’s competitive advantage. The lack of good supporting infrastructure in the surrounding environment, and the disparity in local state-government supporting different cities, serve as a deterrent to investors, even as cities like Hyderabad, Mumbai and Chennai continue to advance technologically. On a broader front, corruption remains endemic, and bureaucratic red-tape is difficult to circumvent. These considerations are, by themselves, deterrence to potential investors, even with Singapore’s presence and involvement. To hedge Singapore’s strategic interests in India, Ascendas is reportedly collaborating with India’s largest engineering and construction conglomerate, Larsen and Toubro, to build Cyber Pearl in the third phase of Hyderabad’s Hitec City, while plans are in place to develop another IT park in Chennai. Negotiations to develop similar IT parks in other Indian states, on a turnkey basis, have already started.

CONCLUSION

The progress of Singapore’s overseas parks over a comparatively short period of time indicates the ability of the Singapore’s state enterprise network to mobilize economic and political resources to create economic space for the city-state. Through the three industrial-township projects, Singapore has developed an area equivalent to 10 percent of the industrial land area managed by the state’s industrial land developer within the city-state. The projects have obtained special investment conditions within their overseas localities, and government endorsements which further underlines the significance of the projects. On the other hand, Singapore’s overseas parks exist as investment enclaves within a disjointed economic and policy environment.

In Indonesia, BIP 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. 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. The BIE project has been struggling to gain investment momentum, arising both from the increased competition for foreign investment and the restricted appeal of its operating conditions. Over the longer term, the political uncertainties and policy nuances that radiate from Jakarta are unlikely to add to investor confidence.

In Vietnam, Singapore’s investment in VSIP takes on an added 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 or BIE. All the same, underlying vested interests to secure the city-state’s economic interests can be associated with the act of camaraderie. Notwithstanding the explicit or implicit objectives, intense market competition, and the inherent problems of corruption work in tandem to test this strategic initiative.

In India, ITPL can be perceived as a strategic thrust by the Singapore government to capitalize upon first mover advantages in a regional economy with immense market potential. As the first entrant to successfully develop and manage a state-of-the-art technology park, ITPL has arguably enhanced Singapore’s reputation for infrastructure efficiency and corrupt-free administration. 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, as the Park’s infrastructure efficiency is constrained by the limited support from the local government. The project’s infrastructure efficiency is at risk from an environment of disparities in local-state support for competing developments.

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, were overly optimistic. 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. On hindsight, the ambition and optimism of developing an 'exportable version' of state enterprise networks, and strategic alliances with regional governments, have been misplaced. The limits of state enterprise networks, beyond demarcated geographical boundaries, have been exposed in the R21 projects.

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TABLE 1

**Operational Statistics of Singapore's Overseas Industrial Parks
in Indonesia, Vietnam and India**

General Information	Indonesia		Vietnam	India
	BIP (Jun 2003)	BIE (Jun 2003)	VSIP (Aug 2002)	ITPL (Jan 2003)
Year of Operation	1991	1992	1997	1999
Scale of Development (hectares)	500	110	1,000	700
Investment by Developer (US\$ million)	470	113	400	200
Committed Tenants	82	35	64	100
Area Taken Up	320 hectares	110 hectares	n.a.	1.4 million ft ²
Investment by Tenants (US\$ million)	> 1,000	105	n.a.	n.a.
Export Value (US\$ million)	> 2,000	283	n.a.	n.a.
No. of Employees	65,000	13,000	7,000	8,500

Source: SembCorp Parks & Ascendas International

TABLE 2A

**Factors Influencing the Respondents' Decisions to Invest in BIP, VSIP and ITPL
(By Popular Ranking)**

<i>Variables</i>	<i>BIP</i>		<i>VSIP</i>		<i>ITPL</i>	
	Frequency	Rank	Frequency	Rank	Frequency	Rank
Political commitment from the Singapore government	17	4	3	6	6	4
Political commitment from the host country government	21	3	7	4	6	4
Investment incentives	16	5	12	2	14	2
Competitive labor costs	22	2	11	3	1	6
Reliable infrastructure facilities	23	1	16	1	27	1
Availability of skilled/educated labor	16	5	6	5	12	3

Source: Questionnaire survey

TABLE 2B

**Factors Influencing the Respondents' Decisions to Invest in BIP, VSIP and ITPL
(by Maximum Likelihood Estimates - Binary Logit)^{∇, †}**

<i>Variables</i>	<i>BIP</i>	<i>VSIP</i>	<i>ITPL</i>
Political commitment from the Singapore government	1.727 (0.034)**	-1.602 (0.031)**	-0.188 (0.821)
Political commitment from the host country government	2.184 (0.005)***	-0.706 (0.251)	-1.048 (0.126)
Investment incentives	0.929 (0.265)	-0.095 (0.877)	-0.398 (0.558)
Competitive labor costs	2.055 (0.007)***	0.882 (0.147)	-3.620 (0.001)***
Reliable infrastructure facilities	-0.077 (0.935)	-0.309 (0.641)	0.704 (0.357)
Availability of skilled/educated labor	0.865 (0.281)	0.720 (0.233)	-0.091 (0.896)
Constant (α_0)	-3.252 (0.002)***	2.413 (0.002)***	4.178 (0.003)***

Source: Questionnaire survey

Note: [∇] Estimated values were taken from “forced entry” regression.

[†] Values in parentheses are p-values for 2-tailed tests.

- *** Significant at 1% level
- ** Significant at 5% level
- * Significant at 10% level
- n.c. Non-convergence

TABLE 3A

**Major Constraints on the Respondents' Operations in BIP, VSIP and ITPL
(By Popular Ranking)**

<i>Variables</i>	<i>BIP</i>		<i>VSIP</i>		<i>ITPL</i>	
	Frequency	Rank	Frequency	Rank	Frequency	Rank
<u>Labor constraints</u>						
Shortage of semi-skilled and skilled labor	11	3	12	2	3	4
Shortage of professionals and managers	10	4	17	1	4	3
Rising labor costs	21	1	1	4	7	1
Industrial relations problems	17	2	0	5	3	4
Others	4	5	4	3	7	1
<u>Organizational and Technological constraints</u>						
Difficulty in obtaining capital equipment	5	4	6	1	3	5
Difficulty in introducing new technology and techniques	11	3	5	2	3	5
Lack of good supporting services	13	2	5	2	4	3
Difficulty in securing funds for expansion	4	5	2	6	2	2
High and/or rising overhead costs	20	1	5	2	16	1
Others	0	6	5	2	4	3
<u>Environmental constraints</u>						
Impact of host government regulations	24	1	11	1	8	1
Competition from overseas industry competitors	21	2	11	1	4	3
Others	1	3	7	3	6	2

Source: Questionnaire survey

TABLE 3B

**Major Constraints on the Respondents' Operations in BIP, VSIP and ITPL
(by Maximum Likelihood Estimates - Binary Logit)^{∇, ϕ}**

<i>Variables</i>	<i>BIP</i>	<i>VSIP</i>	<i>ITPL</i>
<u>Labor constraints</u>			
Shortage of semi-skilled and skilled labor	2.975 (0.023)**	-0.119 (0.902)	-1.538 (0.055)*
Shortage of professionals and managers	-0.991 (0.330)	2.462 (0.005)***	-1.618 (0.021)**
Rising labor costs	3.433 (0.001)***	-3.658 (0.003)***	-0.353 (0.606)
Industrial relations problems	4.194 (0.001)***	n.c. n.c.	-1.817 (0.022)**
Others	1.907 (0.168)	-0.673 (0.485)	-0.235 (0.753)
Constant (β_0)	-7.174 (0.003)***	n.c. n.c.	4.758 (0.001)***
<u>Organizational and Technological constraints</u>			
Difficulty in obtaining capital equipment	0.617 (0.441)	0.925 (0.242)	-1.081 (0.170)
Difficulty in introducing new technology and techniques	1.970 (0.011)**	-0.293 (0.693)	-1.454 (0.049)**
Lack of good supporting services	2.214 (0.004)***	-0.874 (0.247)	-1.289 (0.057)*
Difficulty in securing funds for expansion	1.638 (0.088)*	-1.013 (0.369)	-0.672 (0.479)
High and/or rising overhead costs	2.497 (0.003)***	-2.466 (0.001)***	0.533 (0.382)
Others	n.c. n.c.	-0.192 (0.840)	-0.297 (0.736)
Constant (β_0)	n.c. n.c.	3.272 (0.126)	4.246 (0.024)**
<u>Environmental constraints</u>			
Impact of host government regulations	2.291 (0.003)***	-0.485 (0.378)	-1.353 (0.030)**
Competition from overseas industry competitors	2.163 (0.001)***	0.104 (0.848)	-2.137 (0.001)***
Others	-1.856 (0.129)	0.846 (0.192)	-0.360 (0.632)
Constant (β_0)	0.577 (0.630)	0.273 (0.709)	2.989 (0.003)***

Source: Questionnaire survey

Note: [∇] Estimated values were taken from "forced entry" regression.

^ϕ Values in parentheses are p-values for 2-tailed tests.

*** Significant at 1% level

** Significant at 5% level

* Significant at 10% level

n.c. Non-convergence