Economic Cooperation between Singapore and India

An alliance in the making?

Faizal bin Yahya

Routledge Studies in the Growth Economies of Asia

Economic Cooperation between Singapore and India

Asian interregional economic cooperation has assumed greater prominence with the rise of Asia's two giant economies of China and India. The economic liberalization of China's economy in 1979, followed by India in 1991, signaled the presence of business opportunities to foreign investors—including those from Asia. This book examines the growing economic relations between Singapore and India which has culminated in a Free Trade Agreement (FTA), the Comprehensive Economic Cooperation Agreement (CECA), signed by both economies in June 2005.

Using the information technology sector as the main case study of the "alliance" between Singapore and India, the book examines the challenges that both have overcome to expand their bilateral trade. In the process, Singapore has become one of the top five foreign investors in India. The CECA is important as it is the first free trade agreement that Singapore signed with a developing country; and furthermore it provided a blueprint for India to conclude similar FTAs with other Association of Southeast Asian Nations (ASEAN) members.

This book provides a competitive analysis for intra-regional foreign direct investment. Faizal Yahya demonstrates that the economic relationship between Singapore and India illuminates how both economies are attempting to meet future challenges. It will be of interest to scholars of international business studies, cross-cultural management, international trade, international relations, information management and South and Southeast Asian Studies.

Faizal bin Yahya is Assistant Professor in the South Asian Studies Program at the National University of Singapore.

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Abbreviations and acronyms

3PL	Third Party Logistics
AI	Air India
APIIC	Andhra Pradesh Industrial Infrastructure Corporation
AREMS	Ascendas Real Estate Management Systems
ASSOCHAM	Associated Chambers of Commerce
BCA	Building and Construction Authority
BOO	Build-Own-Operate
BOOST	Build-Own-Operate-Share-Transfer
BOOT	Build-Operate-Own-Transfer
BSNL	Bharat Sanchar Nigam Limited
CAAS	Civil Aviation Authority of Singapore
CDMA	Code Division for Multiple Access
CII	Confederation of Indian Industries
CMM	Carnegie Mellon's Certified Maturity Model
Crore	10 million
DTS	Department of Telecoms Services
EDS	Enhanced Delivery Systems
FICCI	Federation of Indian Chambers of Commerce and Industry
GATT	General Agreement of Tariffs and Trade
GIC	Singapore Government Investment Corporation
GPPL	Gujarat Pipavav Port Limited
GSM	Global System for Mobile Communications
HDB	Housing and Development Board
HIAL	Hyderabad International Airport Limited
ICAO	International Civil Aviation Organisation
IIMS	Indian Institutes of Management
IIT	Indian Institutes of Technology
ILS	Instant Landing Systems
ITPB	International Technology Park Bangalore
ITPIC	International Technology Park Kolkatta
ITPL	International Technology Park Limited
IWT	India Water Transport
KLIA	Kuala Lumpur International Airport

JNPT	Jawaharlal Nehru Port Trust
Lakh	100,000
M&A	Mergers and Acquisitions
MAA	Malaysian Airport Authorities
MAHB	Malaysian Airport Holdings Berhad
MAS	Monetary Authority of Singapore
MTNL	Mahanagar Telecom Nigam Limited
NCAER	National Council of Applied Economic Research
PSA	Port of Singapore Authority
REIT	Real Estate Investment Trusts
REMF	Real Estate Mutual Funds
RT	Reliance Telecom
SCI	Shipping Corporation of India
SIA	Singapore Airlines
SME	Small and Medium Enterprises
ST	Singapore Technologies
STA	Singapore Township Alliance
STP	Software Technology Parks
STPI	Software Technology Parks of India
TAMP	Tariff Authority for Major Ports
TCS	Tata Consultancy Services
THAI	Thai Airways
TIDCO	Tamil Nadu Industrial Development Corporation
TRAI	Telecom Regulatory Authority of India
VSNL	Videsh Sanchar Nigam Limited

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1 Singapore and Asian giants

Introduction

The emergence of the Asian giant economies of China and India is seen both as an opportunity and as a threat to the established global economic order. Atul Kohli has argued that developing countries, which includes China and India, are characterized by the development patterns in their distinctive regions.[1] To a certain extent, the varied economic performances are due to the level of effective governance among states in the various regions. The East Asian economies are also characterized by strong states while the South Asian countries seemed to be muddling along a path of fragmented policies. The process of globalization has manifested greater cross-national economic interaction, visible by greater cross-border trade flows, finance, and the movement of people.[2] Goods and services are produced based on outsourcing to the lowest cost location. In this context, China has been dubbed as the world's factory with its ability to produce a diverse array of goods at low cost. In turn, India has been called the back office of the world with its ability to leverage on its huge pool of skilled and professional labor in information technology enabled services (ITES). However, the rise of India as a challenger to China is also being seen in the area of manufacturing but a trickling of foreign investments and the need to expand infrastructure could overheat the Indian economy because of "bottlenecks" in the economic system. The Indian Planning Commission, in its approach to the eleventh Five-Year Plan, has acknowledged the problems in infrastructure and has called for infrastructure spending to increase from 4.6 to 8 percent of Gross Domestic Product (GDP) in the period 2008 to 2012.[3] Other problems could also halt India's impressive economic growth of 8.6 percent from 2003 to 2006. These include weak regulatory framework, land acquisition problems, stretched capacities of domestic construction companies and lack of equipment availability in certain areas.[4]

The world is watching with fascination the rise of two Asian economic giants, China and India. The key assumption seems to be that economic competition between the two Asian giants will increase and that in the long run India will not be able to sustain its economic growth without huge amounts of investments in infrastructure. Both China and India have long historical ties with their neighboring region of Southeast Asia. Throughout history both China and India as ancient civilizations have interacted with the Southeast Asian region and influenced the region's development. The Association of Southeast Asian Nations (ASEAN), whose members comprise countries in the region, has engaged both China and India at various levels. India on its part has realigned its foreign economic policy in line with its Look East Policy (LEP) crafted shortly after its economic reforms and liberalization in 1991. The LEP was to reconnect India with Southeast Asia, a region with which it has strong historical, social, and cultural linkages.[5] India hopes to enhance these social and cultural linkages into stronger economic links.[6] However, to date, the ASEAN region has not been able to establish a common market for various reasons and as a result is likely to be marginalized by the global economic community. Talks of an ASEAN charter may create momentum to establish a common ASEAN market.[7]

Nonetheless, in the absence of a common ASEAN market, it is left to individual ASEAN economies to engage economically with China and India through their own bilateral free trade agreements (FTAs). While individual ASEAN economies have not managed to conclude bilateral FTAs with China because the latter preferred to deal with ASEAN as a region, ASEAN members Singapore and Thailand have been able to conclude their own bilateral FTAs with India. Singapore signed a framework agreement for an FTA with Thailand. The Indo-Thai FTA framework agreement that was signed in 2003 faced a number of problems and had stalled. The FTA signed between India and Singapore called the Comprehensive Economic Cooperation Agreement (CECA) was a much more diverse FTA covering services such as education and the movement of skilled and professional labor between the two signatories. Although Singapore is a supporter of a multilateral trading system that is being negotiated by the World Trade Organization (WTO), it has also adopted a bilateral and regional FTA strategy as a "fall back" strategy in the event a multilateral trading system does not materialize.

Singapore's emphasis on an export-oriented economy is conditioned by the constraints that it faces such as the limited size of its domestic economy, its relatively small population size and the lack of natural resources. Initially, its strategic location did prove beneficial for its status as an entreport hub but limits to expanding its own physical size and growing competition from regional economies such as Malaysia and Thailand has compelled the Singapore government to invest overseas. The state in Singapore used this growing economic competition from its neighbors as a rallying call to invest overseas through the process of regionalization. However, the process of developing an external economic wing has seen many challenges. These include the initial lack of information about an emerging economy such as India, the business risks involved and overcoming the reluctance of Singapore companies to venture into India among other problems.

There are various emerging economies such as Brazil, Russia, India, and

China (BRIC). However, in regionalizing its investments, the Singapore government's strategy had taken cognizance of the fact that China and India are Asian countries and that this is the "Asian Century." To tap into the growth of the Asian region, Singapore has invested in neighboring economies and China after its open door policy in 1978. Thereafter Singapore's regionalization strategies included Vietnam and India. As the two Asian giants, China and India hold special significance for Singapore because of their historical, social, and cultural linkages with Singapore. Singapore is a diverse and multiethnic society that is majority Chinese but is located in between much larger neighbors Indonesia and Malaysia. Indonesia and Malaysia are also predominantly Malay in terms of inhabitants but have their own ethnic Chinese citizens.

The aim of this monograph will be to examine how Singapore Incorporated (Inc) has enhanced its business and economic linkages with the emerging Indian economy. From a theoretical perspective, the monograph uses the case study of Singapore as a developmental state that has reached optimum expansion in its domestic economy and has to venture overseas through the process of regionalization and invest or expand economic linkages with developing economies such as India. India was chosen because it has historical, social, and cultural links with Singapore and both economies have many areas of economic convergence rather than competition. Using literature from the developmental state and big business theoretical perspectives, I will argue that as a developmental state Singapore is using its conglomerates and financial assets to forge strategic economic links with India. Singapore's strengths in infrastructure development, management, and systems are attractive to India, which has to build up its infrastructure and management systems but has limited resources to undertake this Herculean task. However, projects related to infrastructure development in India need to overcome various obstacles that will be discussed in a later chapter. In terms of the Indian market, the business climate will be influenced by regulatory mechanisms and vested interest groups such as politicians and local big business. Singapore and India Incorporated would need to overcome challenges from a variety of sources such as bureaucracy. For example, infrastructure projects are highly visible to the public and media. This makes them vulnerable to public opinions, vested interest, and political action, creating an element of political risk associated with the project.[8] Beyond this, issues such as governance and transparency will also influence the success or failure of Singapore companies investing in India.

How will Singapore companies gather the resources to implement their economic regionalization strategy in emerging economies such as India? State-owned enterprises (SOEs), known as government-linked companies (GLCs) or Temasek-linked companies (TLCs) in Singapore, have been spearheading Singapore's investments into India.[9] However, the state-centered approach adopted by the Singapore government to invest in the Indian economy might be problematic on several fronts. For example, India's foreign investment legislation has put a cap on ownership of companies by foreign governments. However, Singapore's Temasek Holdings have substantial shares in GLCs and smaller SMEs in Singapore. This could create share ownership problems for Singapore companies investing in India. Temasek Holdings faced such problems in other countries. For example; their acquisition of a stake in Thai company Shin Corp has raised a storm of protests in Thailand. Similarly, Singapore Telecoms (SingTel) had also faced street demonstrations and protests by acquiring a stake in telecommunications company Telekomsel in Indonesia.

The rise of China and India as the emerging giant economies of Asia highlighted the need for members of the Association of Southeast Asian Nations including Singapore, to develop a regional strategy to prevent marginalization by these economies. Early signs of China's potentially huge impact on the (ASEAN) regional economies were seen in China's ability to draw away investment from the region. At the end of November 2002, overseas investments in China reached U.S. $ 48 billion, an increase of 14.6 percent over the same period in 2000.[10] Concurrently, the inflow to ASEAN members such as Singapore, Malaysia, Thailand, Indonesia, and the Philippines fell from U.S. $ 27 billion in 1997 to U.S. $ 11.4 billion in 2001. China's exports will also compete with ASEAN exports in third-country markets.[11] Greater bilateral trade between China and India will also have significant impact on the ASEAN region as well as its individual economies. Table 1.1 reflects the bilateral trade between China and India from 1999 to 2005. The trend is that bilateral trade between India and China has surpassed U.S. $ 1 billion per month. The figures in the table, apart from indicating a rising trend in bilateral trade showed that, as of 2000, India's exports to China have offset its imports from China and this trend will continue until at least 2010.

On the trajectory of India and China trade, India's Minister for Commerce and Industry has commented that bilateral trade between both economies, "is expected to reach U.S. $ 30 billion by 2010."[12] China is also benefiting from enhancing its economic linkages with India because a range of Indian firms such as Bharti Enterprises, Bajaj Auto, and Videocon are investing in China

Table 1.1 Bilateral trade between China and India from 1999 to 2005 (U.S. $ billions)

Year	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*	*2006*	*2007 January to June*
Total Bilateral Trade	1.61	2.92	3.6	4.95	7.6	10.8	18.7	25.05	17.2
India's Exports to China	0.5	1.35	2.1	2.3	4.25	6.4	9.77	10.47	
India's Imports from China	1.02	1.57	1.5	2.7	3.34	4.4	8.93	14.58	

Source: Hindustan Times 19 February 2004, *Times of India* 17 July 2003, South Asia Monitor, *Economic Times* 15 February 2001, Chinese Embassy in India, *The Hindu* 12 August 2007.

to establish manufacturing plants[13] and sourcing for lower cost components from Chinese manufacturers. Former Indian Prime Minister Vajpayee has urged both nations not to look back at the "period of estrangement."[14] It is significant to note how greater economic relations between China and India will influence other ties in the region. Between April 2001 and March 2002, China imported U.S. $ 1.9 billion worth of goods from India compared to Japan at U.S. $ 1.77 in the same period.[15] China has increased the tempo for greater bilateral ties by enhancing cooperation in several economic sectors such as IT and infrastructure development. For example, China has pledged U.S. $ 500 million for infrastructure development and resource building in India.[16] India's Minister for Commerce and Trade Kamal Nath had argued that economic partnership between China and India "can unleash forces to realize the goal of a larger Asian Economic Community."[17]

While greater bilateral trade between China and India stabilizes the Asian region economically and strategically, there is also greater likelihood that the ASEAN economies such as Singapore may be marginalized to a peripheral role. ASEAN economies will be competing for markets and investments with the Asian giants. In 2000, Singapore's former Minister for Trade and Industry George Yeo had opined that China will compete with ASEAN industries for the "same investments from America, Japan and Europe. If we are divided, compartmentalized and unable to exploit our different strengths as one, I think we'll lose out to China."[18] Since 2000, the rise of India has also triggered similar concerns among the ASEAN members. Singapore has been at the forefront of calling for greater economic integration among the ASEAN members and to enhance a sense of ASEAN community to rise to the challenges and the opportunities emerging as a result of the rise of the Asian giants. Singapore's Prime Minister Lee Hsien Loong has argued that ASEAN must take decisive action to become a "strong and effective grouping to partner China and India effectively. If ASEAN's integration stagnates while the rest of Asia forges ahead, we will be left behind and become irrelevant."[19]

ASEAN Community

The template for an ASEAN Community that would stand a better chance of competing with the Asian giants was established at the ASEAN Concord II signed at the 2003 ASEAN Summit in Bali, Indonesia. The consolidation of the ASEAN grouping into a more dynamic organization will comprise of three main areas: the ASEAN Security Community (ASC), ASEAN Economic Community (AEC) and the ASEAN Socio-Cultural Community (ASCC).[20] In order for ASEAN to forge closer ties, the regional grouping are in the process of discussing the draft for an ASEAN charter that would take a step closer to having an ASEAN constitution.[21] The draft charter is expected to be presented to ASEAN foreign ministers for negotiation and discussion in September 2007 before the convening of the United Nations General

Assembly. Once the ASEAN foreign ministers approve the draft charter, the next step would be to present it to ASEAN leaders for their signature at the ASEAN Summit in November 2007 in Singapore.[22] The ASEAN leaders have signed the charter.

The ASEAN Community has to integrate as soon as possible as one market not only to compete with China and India but also to play a key role in the development of a New Asian Economic Community (AEC). The New AEC could be envisaged as the ASEAN + 3 (China, Japan, and South Korea) Northeast Asia grouping.[23] However, some analysts believed that with India's increasing economic presence in the East Asian region and sustained strong economic growth that the ASEAN + 4 arrangement or JACIK that includes India would be the more likely New Asian Economic Grouping.[24] After the first East Asian Summit (EAS) in December 2005, the Japanese Minister for Trade and Industry, Toshihiro Nikai, had proposed a Comprehensive Economic Partnership Agreement in East Asia.[25] The economic partnership included proposals to liberalise regional trade by creating a single economic space and making the region more attractive for investments through evolving common rules for trade in services and investments[26]. Singapore's Senior Minister (SM) Goh Chok Tong, a great admirer of India, has remarked that East Asia has to be reconceptualized to include South Asia and East Asia into one equation.[27] A larger AEC involving South Asia and East Asia will create greater complementarities among the various economies. This is because at the sub-regional levels of ASEAN and the South Asian Agreement for Regional Cooperation (SAARC), the full economic potential of Asian economic integration would be limited.[28]

Nonetheless, for ASEAN to play an influential role in the process toward creating a new Asian economic bloc it has to demonstrate that it is able to create a viable common market. The need for ASEAN member countries to form a regional trading group of a 530 million common mass market has become imperative to compete with China and India.[29] However, plans for ASEAN economic integration and the vision of an ASEAN common market have proven elusive. For example, the implementation of the ASEAN Free Trade Area (AFTA) has become problematic because some ASEAN members were unwilling to lower tariffs and promote greater economic integration toward a common market. For ASEAN members such as Singapore that have negligible tariffs and strongly support AFTA, the failure to implement AFTA has meant developing their own strategies to enhance economic links with emerging economies that would complement their own economic growth.

The FTAs have delivered strong economic growth for Singapore and with the multiplier effect of investment-yielding enterprises applied, it would provide employment for Singapore in an increasingly competitive environment.[30] In addition, the FTAs also have the potential to bolster Singapore's negotiating power in the international economic system because of its links with larger and more powerful trading partners.[31] To date, Singapore has concluded FTAs with some leading, emerging, and regionally important economies such as Japan, the United States, New Zealand, and India among others. Next, and high on its agenda, will be to conclude an FTA with China. At the tenth ASEAN Economic Ministers' Meeting (AEM) Plus Three in Manila in August 2007, the ministers agreed to put on hold starting new free trade with other countries in order to concentrate on completing existing negotiations, including those with China and India.[32] The economic ministers have also drafted a blue print for ASEAN to create a single market by 2015 through schedules and integration measures for goods and services[33].

The FTA strategy is also connected to a larger game plan in terms of how Singapore overcomes the constraints of its small size, no resources, and limited human capital. An early advocate of the FTA strategy, Singapore had realized that while its regional economies are becoming competitors, leveraging on their resources such as land and labor would extend the competitiveness of its own companies. In this regard, in the 1980s, Singapore mooted the Growth Triangle Model among the ASEAN members.[34] The Growth Triangle model involves economic cooperation among three economies that are contiguous to one another. For example, the Southern Growth Triangle (SIJORI) consisted of Singapore, Johor (Southern Malaysia state) and the Riau Island (Part of Indonesia). This was mutually beneficial for all concerned and it also provided employment and growth opportunities for Singapore's regional trade partners.[35] The additional benefit was that foreign investors continued to remain engaged with the ASEAN region. This concern would also explain why Singapore is keen to push for faster ASEAN economic integration. In the 1990s, Singapore's Ministry for Trade and Industry had moved beyond the Growth Triangle economic model to conceptualize economic links with its trade partners around the world, dispensing with the need to only have links with geographically contiguous economies. With more cross-border economic transactions, national boundaries and geographical distance are becoming increasingly insignificant.[36] Common concerns have become the norm such as security issues that have also become more cross-border in nature with the threat of terrorism. In contemporaneous terms, better security is linked to greater trade flows.

With the coming of globalization and increasing economic integration, economic security has also come into vogue and the Free Trade Agreements are part of a state's strategy of economic survival. Singapore has used the FTA strategy to great effect. Among its main trading partners, Singapore's trade with India has seen the fastest rate of growth at 79 percent among all of Singapore's foreign trading partners. At the end of 2005, bilateral trade between India and Singapore was approximately SGD $ 16.6 billion. Singapore and India signed a bilateral Free Trade Agreement called the Comprehensive Economic Cooperation Agreement (CECA) in June 2005. Besides trade in goods and services, Singapore is also exploring other means such as cooperation in infrastructure development to enhance economic linkages with India. Under the CECA, India had committed itself to 100 percent foreign direct investment in real estate development and 49 percent FDI in telecoms.[37] According to Singapore's Minister for Foreign Affairs, George Yeo, in the first seven months of 2006, Singapore's FDI into India was the second largest with total investments of U.S. $ 520 million.[38] However, investments in infrastructure in India have characteristically yielded low returns on account of low user charges such as in the electricity generating sector.[39] In Singapore's case, investments by its companies in the ports sector have encountered this problem and will be discussed in chapter 9. Nonetheless, infrastructure business opportunities are attractive to Singapore and fellow ASEAN members such as Malaysia that have primarily invested in India's road development.[40] Large Indian corporations such as Reliance have also led the way to develop infrastructure in India. In 2002, the Reliance corporation laid some 60,000 kilometers of fiber optic cable across India, in the process bringing the digital era closer to India.

Infrastructure

Stallings has opined that the trends of globalization and liberalization evident in the increasing trade deals have a direct bearing on employment generation.[41] Infrastructure remains the biggest challenge to the manufacturing sector in India. Apart from telecommunications, the cost of infrastructure services is around 50 to 100 percent higher than in China. In comparison to their Chinese counterparts, Indian manufacturers are paying twice as much for electricity and three times as much for rail freight services.[42] One important difference between India and China lies in the level of infrastructure development. The Chinese government had leveraged on low wages in manufacturing and spent billions on expanding infrastructure to make it a hub for mass production.[43] However, the infrastructure development of India has fallen behind requirements over the years and only after India's 1991 economic reforms and liberalization has the modernization and expansion of infrastructure become a priority.[44] In 1996, India's former Finance Minister, Dr. Manmohan Singh, predicted that India would need to spend about U.S. $ 200 billion on modernizing its infrastructure until 2001 and at least U.S. $ 50 billion needed to come from abroad.[45] In 1997, a report on the potential commercialization of India's infrastructure indicated that India would have to raise its annual investment in infrastructure from U.S. $ 17 billion per year to U.S. $ 50 billion per year by 2007.[46] For example, public transport has not grown as rapidly as private transport to cope with growth in India's metro cities in terms of population and land area.

In 1998, the World Economic Forum (WEF) in its global competitiveness report had ranked India's infrastructure development in last place out of 53 countries that it surveyed.[47] Following from this, according to a World Bank (WB) report, India needed to spend at least U.S. $ 215 billion in public infrastructure between 2001 and 2005.[48] It is estimated that at least U.S. $ 25 billion is required as investments every year for infrastructure projects.

For example, between 2005 and 2006, it was estimated that for the Power, Roads, and Ports sectors, the improvement to existing facilities and development of new facilities were estimated at U.S. $ 12.2, 2.7 and 0.7 billion.[49] From 2006 to 2007, the WEF ranked India 43 out of 125 countries in its global competitiveness report based on its 2005 survey.[50]

It is important for India to meet the challenges of infrastructure development not only to sustain economic growth but also to meet the expectations of foreign investors before they commit to projects in India. The quality and cost of infrastructure tariffs are important determinants of where new foreign direct investments are located. The lack of infrastructure and the antiquated state of India's infrastructure in areas where it existed posed a particular challenge to India's Look East Policy to attract investments from ASEAN's more developed states and in particular Singapore. In India, the lack of infrastructure and "bottlenecks" which prevented the timely imports of materials and exports of components caused computer multinational companies (MNCs) such as Hewlett Packard to move its 400 million manufacturing unit from India to China.[51] Table 1.2 indicates the level of investments that India has to allocate for infrastructure development. India's Finance Minister Chidambaram has drawn up an ambitious plan to develop four major sectors of India's infrastructure, they are: power, telecommunications, road and ports.

Table 1.3 shows the projected costs and areas of infrastructure expansion. In addressing the needs of a growing economy, the challenges to the Indian government are several including inadequate capitalization, dysfunctional regulatory and administrative practices related to a cumbersome and cautious bureaucracy.[52]

The public sector cannot mobilize the required resources therefore the

Table 1.2 Investment required in India's infrastructure U.S. $ billion

Years	*1996–2000*	*2001–2006*	*2006*
Investment required U.S. $ billion	115 to 130	130 to 215	267

Source: M.G. Srinath, "Infrastructure reforms holding India's economic progress," *Deutsche Presse-Agentur*, 6 August 1997 and $ 267–b required in infrastructure by 2006, the *Economic Times*, India, 17 May 2001.

Table 1.3 Infrastructure costs projection for India in specific sectors by 2006

Infrastructure by 2006	*Costs of expansion*	*Projected increase*
Electricity	U.S. $ 178 billion	111,500 MW
Telecom lines	U.S. $ 55 billion	52 million
Roads	U.S. $ 27 billion	
Ports	U.S. $ 7.3 billion	

Source: "U.S. $ 267–b required in infrastructure by 2006, *Economic Times*, India, 17 May 2001.

private sector need to play a role.[53] For example, the Indian government could only raise U.S. $ 440 million of the billions required each year for infrastructure development. Moreover, the shortfalls are likely to increase as industrial growth pick up speed.[54] Therefore, a series of reforms and liberalization were announced to attract private investments and participation in infrastructure projects.[55] The Indian government had put in place legal and policy structures which included fiscal incentives for foreign investors. The private sector is also being sought as a source for new technology and management expertise besides financial resources. The trend toward private sector investment is supported by the decentralization process from the center to state governments. This indicates that cash-strapped state governments are receptive to the private sector undertaking development projects. Beyond the Indian private sector, foreign multinational companies have also been invited to invest in infrastructure projects. The huge investments required for infrastructure development and its slower revenue returns relative to other investment projects such as in the retail sector was also a cause for concern among foreign investors.[56] In India's system of coalition government working in a pluralistic framework, changes in governments could underline change of policies and orientation that will have an impact on consistency and continuity in economic decision making.[57] For example, former Chief Minister Chandrababu Naidu of Andhra Pradesh said that he managed to add 5500 MW of power, reflecting an 18 to 20 percent increase in power generating output, during his tenure of office. However, despite his efforts to develop infrastructure and the IT sector in Andhra Pradesh, he and his party were voted out of power by the agrarian sector.[58] The agrarian stakeholders such as farmers felt that Naidu did not do enough to alleviate the plight of agrarian workers in the state.

During Indian Prime Minister (PM) Atal Bihari Vajpayee's visit to Singapore in April 2002, PM Vajpayee said, "In the development of our infrastructure we desire the help of Singapore."[59] In 2001, India was Singapore's fifteenth largest outward investment (OI) destination, absorbing S $ 1.3 billion or 0.6 percent of Singapore's OI compared to China that was first with S $ 18 billion.[60] At the end of 2004, Singapore had become India's fourth largest foreign investor. By 2005, Singapore's cumulative investments in India was worth about U.S. $ 2 to 3 billion. The signing of the bilateral Free Trade Agreement between India and Singapore called the Comprehensive Economic Cooperation Agreement was likely to further economic relations between both parties.[61] How could Singapore play a role in India's infrastructure development? Singapore's model of economic growth was based on developing its own infrastructure.[62] India needs massive upgrading of its infrastructure and Singapore should tap into the opportunities available.[63] In this regard, post 1991, India had started to liberalize several infrastructure sectors such as power, telecommunications, and port development to foreign investors.[64] In terms of infrastructure development, ports, real-estate, and the construction industry hold good potential for joint collaboration between

Indian and Singapore companies.[65] Temasek Holdings of Singapore has indicated that infrastructure in India remains one of its key exposures in the Asian region and has taken a 50 percent stake in Reliance India Power Fund worth U.S. $ 200 million in April 2006.[66]

Since 2003, economists have reported that in India "Rapid growth in demand for infrastructure over the past four years and a less than proportionate rise in infrastructure spending has meant that capacity utilization in electricity, roads, seaports, and major airports is at its maximum limits."[67] With strong economic growth, Indian companies that are making profits are ready to invest about U.S. $ 500 billion from 2007 to 2010 in infrastructure and manufacturing projects in order to ease "bottlenecks" or congestion in the supply chain management and to reduce inflation. The chief executive of ICICI Bank, India's biggest private sector lender, K.V. Kamath said that, "If you look at the pipeline of investment, this exceeds the investment done in the country today, in the history of the country."[68] Of the $ 500 billion earmarked by the private sector, about U.S. $ 300 billion was planned for investment in infrastructure and infrastructure-related sectors. The remaining U.S. $ 200 billion would be used for manufacturing and other sectors. Is the private sector able to afford the huge spending involved? Kamath said that private companies involved would fund about 70 percent of infrastructure spending from their internal cash.[69]

Financing infrastructure development is problematic for India because numerous areas require government spending. The Planning Commission is looking into using the foreign exchange (forex) reserve to develop India's infrastructure. The commission intends to use U.S. $ 15 billion from its forex reserves of U.S. $ 120 billion to develop India's infrastructure. What is the Indian government's view toward infrastructure development through foreign direct investment? The former President of the Federation of Indian Chambers of Commerce and Industry (FICCI) suggested that Indian trading houses could use Singapore's infrastructure and its ethnic connections with nonresident Indians for regional and global trading. Moreover, India is a member of the South Asian Agreement for Regional Cooperation grouping and has close links with the South Asian region. Therefore, Singapore could use India for market penetration in the South Asian region. Singapore could also benefit from India's long-standing relations with the Commonwealth of Independent States (CIS) countries for market penetration. The FICCI is in favor of foreign investments in India and the priority sector in India for economic development is the infrastructure sector where foreign investments and technology are required in large amounts. For example, in the power-generating sector, the modernization and renovation of existing plants require huge investments because of the need to construct roads, bridges, airports and port facilities. India could learn from Singapore's experience and in particular Singapore's management of its airport and port facilities. In this regard, the President of FICCI has always encouraged India to learn from the Singapore experience. The President of India's Associated

Chambers of Commerce (ASSOCHAM), S.M. Datta, also believes that there is great economic complementarity in terms of Singapore investing in India's infrastructure sector. A partnership with Singapore would help India to gain access to the ASEAN market and Asia Pacific Economic Cooperation (APEC) region. Furthermore, Datta also said that the Indian diaspora is very important to India's trade relations with Singapore in terms of maintaining cultural affinity between the two countries.

The involvement of the state in the economic development of India and Singapore respectively could not have produced more varied results. Singapore has achieved per capita income that is comparable to the average among the developed countries while India's per capita income still languishes among those in the low income countries. The establishment of a two-way partnership could hinge on India's potential as a new growth area for Singapore, while Singapore in turn could provide part of the required investment in infrastructure and expertise to sustain the economic development of the Indian economy. Critical areas where Singapore could be of assistance included the development of ports, airports construction and maintenance, township planning and construction, high-tech parks, and environmental services such as sewage treatment.[70] Then President of the Confederation of Indian Industries (CII), Y.C. Deveshwar, commented that "Given Singapore's expertise in developing world-class facilities like Changi airport, it should move quickly to reap the early mover advantage."[71] Infrastructure development has been pursued with a greater sense of purpose because of the report by the Rakesh Mohan Committee (Expert Group on the Commercialization of Infrastructure Project) on Infrastructure in 1996. This report set the stage for the assessment of infrastructure development in terms of financing requirements.[72]

Economic decentralization

In a federal system, the Indian government after its economic liberalization of 1991 has devolved more economic autonomy to the various provincial states. Realizing that certain states in India have the potential to expand their growth faster that others, by focusing on these more dynamic states, this would unleash the competitive drive in other states. SM Goh said of the Chinese experience: "China offers a useful lesson. Decentralization has led to intense competition between its provinces for investments. Provincial and local officials see it in their interest to grant quick approvals. The result is sharply differing growth rates between the more dynamic provinces and the rest. . . . But rapid income growth in the more dynamic areas eventually spurs on the lagging provinces."[73] Similarly, competition between Indian states for foreign investment and collaboration will encourage more economic growth.[74]

While investing in India, the Singapore government had initially developed a southern strategy to enhance economic ties based on the assumption that

Singaporeans would be more familiar with southern India. This is because Singapore's ethnic Indian population was predominantly from southern India. However, the Singapore government realized later that various states in India were different from one another and there were pockets of business opportunities throughout the whole of India. In formulating its investment strategy in India, the Singapore government has focused its attention on a specific area at the provincial state level. The key factors that foreign investors looked for before investing were political stability, steady policy guidelines, simple rules and regulations, rate of return, manpower availability and skills.[75] The favored states by foreign investors are Maharashtra, Karnataka, Andhra Pradesh, Tamil Nadu, Punjab, Haryana, and Gujarat. These states have substantially consolidated their positions in economic infrastructures.[76] However, other states such as West Bengal, Uttar Pradesh, and Orissa were fast catching up in attracting foreign investors.

In relation to economic development influenced by center (federal) and regional state issues, Singapore's Minister for Foreign Affairs, George Yeo, said that, "There is a lot of business here but you have to look at the state and you have to exploit windows of opportunity."[77] He added, "When I met the Chief Minister of Karnataka, he said don't just look at Bangalore but also at second-tier cities like Mysore and Belgaum. The Golden Quadrilateral highway project is changing the economics of many projects." Minister Yeo has also visited Kolkatta and Jamshedpur, the headquarters of Tata Steel. Apart from Minister Yeo, other Singapore Ministers are exploring various states in India to increase their understanding of the diversity of India and business opportunities available. For example, Singapore Senior Minister of State for Foreign Affairs, Dr. Balaji Sadasivan visited Mumbai in the state of Maharashtra and Gujarat, two of India's most industrialized states.[78]

An outline of chapters

This introductory chapter has discussed the challenges in developing infrastructure in India, especially the role of the state in infrastructure development. The influence of the state in India and Singapore in economic development had been different. While the Singapore government has maintained shares of GLCs in Singapore they have functioned as private companies. These GLCs abide by the regulatory and fiscal framework established by the government. Basically, the GLCs do not receive any special privileges by the government and have to compete with other big and small medium enterprises (SMEs) in the private sector. The Singapore government has been encouraging its GLCs to invest overseas through the policy of regionalization because the Singapore domestic market is too small and the GLCs could have the effect of crowding out the SMEs because of their resources and size.

The second chapter will deal with the respective academic works that have contributed to the research on developmental states. Apart from state developmental theoretical works, the chapter will also cover the academic literature on the role of business corporations in state development. It is crucial to link state developmental theory to literature on "big business" because in terms of state-led development, Singapore depended to a large extent on its particular type of MNCs called government-linked companies (GLCs) or Temasek Linked Companies (TLCs).

The third chapter will explain the emergence of an Indian incorporated (Inc) that has linked up with the Singapore incorporated to their mutual benefit. The process of regionalization in terms of the convergence of common interests between India and Singapore would not have been able to "take-off" without the linkages between the big companies from India and Singapore. In Singapore the role of government-linked companies or Temasek linked companies will be examined and compared to the role of Indian conglomerates such as the Tata Corporation. The collaboration between India and Singapore Incorporated could be used as a useful framework for business cooperation elsewhere in the region.

The fourth chapter will examine the fit between Singapore and India Incorporated by examining some of the potential pit falls of investing in India and the preventive measures that could be implemented to meet the various challenges. Some of these challenges include India's complex and stifling bureaucracy, cultural understanding, language, marketing, competition, infrastructure, human resources, and trade unions. The responses of Singapore companies will be evaluated as to how they faced the problems of a different and more challenging Indian business environment.

The fifth chapter deals with the booming IT sector in India despite the lack of overall quality infrastructure.[79] While India has the depth and breadth of human capital pool, the Singapore government realized that infrastructure facilities in India is lagging behind. For example, electricity generation, road networks, railway lines, and telecommunications are inadequate to support high-technology projects especially in IT hubs such as Bangalore.[80] Therefore, this provided an opportunity for Singapore government-linked companies such as Ascendas to market their expertise in constructing and managing high-technology parks in the IT hubs or "hot spots" in India.

The sixth chapter examines Singapore's self-contained IT Park in the southern Indian state of Karnataka in the city of Bangalore. The IT Park works on a "live–work–play" concept without being dependent on the state infrastructure. A self-contained IT Park in Bangalore in the state of Karnataka became Singapore's flagship investment project in India. In discussing the Bangalore IT Park, several challenges will be noted and how these were resolved will be highlighted. With the success of the Bangalore IT Park, Singapore has invested in and developed other IT Parks in Hyderabad, Chennai, and Gurgaon and is planning one in Kolkatta, but doubts remain over the sustainability of these IT parks. For example, Bangalore's infrastructure bottlenecks are becoming worse and new investors are likely to examine options in other Indian cities.[81] The lack of urgency by the state government to tackle the growing traffic jams, upgrade antiquated airports, and address the chronic shortage of quality hotel rooms is hurting the image of Bangalore as India's IT hub.[82]

The seventh chapter looks at the deregulation of the telecommunications sector in India and how Singapore companies such as SingTel have invested in India's Bharti Tele-Ventures. The chapter will also examine the volatility of the telecoms sector using the joint venture submarine cable venture called Aquanet between India and Singapore. Aquanet was developed to handle 100 million telephone conversations simultaneously at 8.4 terabits per second but has now come under receivership. Furthermore, new Indian telecom players such as giant industrial conglomerate Reliance have entered the market and are increasing competition. Faced with new competition and declining revenue margins, the chapter will also examine whether Singapore telecom companies such as SingTel will adopt a new approach to the Indian market.

The eighth chapter examines the housing sector in India. With the increasing overcrowding of India's urban areas, India faces acute shortages of suitable housing for its middle class. According to one of India's leading developers, Oberoi Construction Private Limited, apart from residential demand, the business process outsourcing (BPO) demands will increase the need for office space in Indian cities.[83] This is because various foreign MNCs have established their "back office" operations such as call centers in India to leverage on lower manpower costs. The demand for high-end residential property has also become a trend with Oberoi building a 90-floor rocket-shaped residential tower in Mumbai. In the next few years, Mumbai is likely to add eight to ten more signature high-rise buildings that would alter the city's profile. This chapter will examine the efforts by Singapore companies to undertake residential and commercial property projects in India. It will use the case study of Cesma international to illustrate the ability of Singapore companies to collaborate with Indian counterparts to undertake township projects in India. Singapore's experience with highly dense urban housing complements India's need to increase its housing supplies in highly dense urban areas.

The ninth chapter will examine the role of ports in India's economic development and the need to upgrade its sea ports. Ports development in India have been slow because the central government controls the major ports while the state government is at liberty to deal with minor ports.[84] Ports are important because the majority of Indian exports are shipped overseas through its ports. In large industrial cities such as Mumbai, the port has become the centerpiece of the city's infrastructure program. Singapore runs the world's busiest port and is facing strong competition from neighboring ports such as those in Malaysia and Thailand. To diversify its revenue stream, the Port of Singapore Authority (PSA) has started to invest in Indian ports, especially in the southern region in India. Apart from ports development and management, Singapore companies such as Gateway Distriparks are also involved in the logistics sector in India.

Civil aviation and airports development will be discussed in the tenth chapter. Airport developments are politically sensitive projects because they are highly visible to the public and touch nationalistic sentiments. However, the airports are the main gateways for foreign visitors to India and are increasingly important for the flows of human capital for the expansion of the economy. The flows of tourists also enhance people-to-people contact at the social and cultural level. In this regard, the tourism flows between India and Singapore are also expanding. According to Ratan Tata, chairman of Tata industrial conglomerate, "We don't need the government of India to transform every aspect of Indian infrastructure. All you need is for a private company to take over one airport and then show by results what everyone else is missing."[85] This chapter will elaborate on the potential for Singapore companies to play a role in the development and management of airports in India.

The concluding chapter eleven will examine the future trends in India's infrastructure development and the factors that would continue to have a part in its development. These would include the need to change the mindsets of the public and create greater awareness by educating the public about the need to maintain and upgrade public infrastructure. For example this could come in the form of user charges in terms of tolls for road development.[86] Political will among the top political leadership is also needed to implement the necessary changes to improve India's infrastructure. Sustained economic growth and development would be more impressive if the government could implement its reform packages.[87] The government of Prime Minister Manmohan Singh is surrounded by leftist coalition supporters who oppose economic reforms and right-wing opposition parties that debate government initiatives to maintain ownership in Indian hands.[88] However, the success of Indian companies in competing with foreign MNCs in the domestic economy and Indian companies venturing overseas would demonstrate that economic reforms and liberalization have transformed the Indian corporate sector.

2 Developmental states and big business

Developmental states

The experience of state intervention in economic development varies across regions. Using the developmental state literature, this chapter examines how the developmental state in Singapore has engaged with the government and corporate sector in India. The vehicle for state-led intervention in Singapore was big business. In this regard, it is crucial to link state developmental theory to literature on "big business" because the Singapore developmental state depended to a large extent on its government-linked companies (GLCs) or Temasek-linked companies (TLCs) to accelerate economic growth. India to a certain extent, despite its Nehruvian socialist policies, had a mixed model of economic development in which big business managed to thrive under the protection of the licensing scheme of the "license–permit Raj." The engagement of the Singaporean corporate sector with India would also include an analysis on how the state in Singapore is in the driving seat of this engagement policy called regionalization. This study will go beyond the work of Usha Haley[1] which focused on knowledge-intensive firms and only on the Singapore economy. This monograph in contrast, will cover a broad range of economic sectors that Singapore companies are involved with in the Indian market.

Chalmers Johnson introduced the idea of a capitalist developmental state in 1982, during the Cold War period, as an alternative model of development to the western capitalist and the socialist mode of development.[2] Using Japan as his case study, Johnson charted how the state played a role in Japan's spectacular post-war economic development. Robert Wade argued that East Asian developmental states such as South Korea and Taiwan created an authoritarian corporatist system by promoting selected interest groups. The state gave these vested interest groups a monopoly to represent occupational interest in return for the right to monitor them and prevent narrow conflicting self-interest.[3] Ankie Hoogvelt commented that for state capitalism, the main purpose of government intervention was to promote the interests of the business sector as a whole by creating conditions for capital accumulation and productivity improvement.[4] This could also be at the expense of extensive bureaucratic regulation and neglect of the interests of specific sectors and groups. Wade opined that within the authoritarian corporatist structure, the state undertook the redistribution of agricultural land, controlled the financial system, and maintained stability of parameters that could undermine the inflow of foreign investment. Nonetheless, there are variations in the type and experiences of developmental states. For example, although Singapore is a developmental state working the system of authoritarian corporatism, it did not have to undertake agricultural reform due to its lack of land and adopted an export-oriented industrialization (EOI) strategy immediately after independence.

According to Javeed Maswood, while developmental states differ from one another, they do have basic commonalities such as a strong commitment to national economic prosperity and the requisite structural capacity to act on state interests.[5] Robinson and White argued that only a handful of states that had rational or embedded authoritarian structures could claim to have succeeded in accelerated economic development and raised living standards.[6] Peter Evans referred to the term of embeddedness as the density and vitality of ties that connect the state to society that would provide institutional avenues for the negotiation and renegotiation of policies and objectives.[7] These embedded ties are important because they reduce the likelihood of the state becoming detached from the key private actors that are responsible for economic transformation and prevent these actors from engaging in predatory behavior against the state.[8] Embedded autonomy provides the corporate coherence and connectedness for successful state intervention in industrial transformation.[9] In this context, I intend to show that in the case of Singapore, the GLCs or TLCs provide the crucial link between the corporate world and the public sector for the transformation of the Singapore economy. The policies of regionalization would not have been able to be implemented without the GLCs. The state in Singapore also acted as a "midwife," a term used by Peter Evans to assist in the establishment of new entrepreneurial groupings or to guide them into more challenging kinds of production.[10] In Singapore's context, the state challenged the GLCs to expand overseas by regionalization to create "entrepreneurial space" for its small and medium enterprises (SMEs).

In the case of developmental states that contain the crucial mix of autonomy and embeddedness, the act of market intervention by the state in most cases was established over a period of time by convincing the private sector to accept its developmental goals. Critiques of the state-led developmental model received wide publicity during the Asian Financial Crisis of 1997 to 1998 because they claimed that the state was not able to regulate their financial markets leading to balance of payments (BOP) problems. Nonetheless, developmental state theorists have taken on board lessons from the Financial Crisis and returned to argue that the developmental state model may need reconfiguring, such as establishing more transparent financial and banking systems but in essence the principles of state-led development remain sound.

Vibha Pingle opined that the developmental state ensemble such as a cohesive bureaucratic structure and its autonomy to implement developmental policy remains relevant for economic development. Other factors such as political encouragement in the role of politicians facilitating economic growth and linkages between the bureaucrats and the private sector remain crucial.[11] Bureaucrats must be insulated from political interference in implementing developmental objectives but they also have to be aware of the changing needs of industry to realign policies or implementation procedures when necessary. Singapore exemplifies most of the qualities of a developmental state as mentioned. In contrast, Ronald Herring argues that India represented the most dramatic example of a failed developmental state.[12] Despite state intervention in capturing the commanding heights of the economy post-independence in 1947, the Indian economy degenerated into a "license–permit–quota raj" rule. Herring argued that with the setting in of "embedded particularism,"[13] India's bureaucracy suffered from vertical and horizontal incoherence. This was exacerbated by the tensions between the central and state bureaucracies which eventually led to the devolution of more economic autonomy to the various regional states in post-1991 economic reforms and liberalization.

In the literature of East Asian development there are four tiers of East Asian groupings. The first tier East Asian Newly Industrializing Economies (NIEs) headed by Japan was closely followed by the NIEs of Southeast Asia. The rise of China has placed tremendous pressure on the second tier developmental states.[14] The third tier of East Asian NIEs are the newly emerging Indochinese economies of Cambodia, Myanmar, Laos, and Vietnam. These countries are also the newer members of the ASEAN grouping. The CMLV states are led by Vietnam, a relatively large country with a large population base in the Southeast region. The fourth tier of new East Asian states could be states that influence the East Asian region but by themselves as a norm are not considered to be part of East Asia. These states would include Australia, India, and New Zealand. Singapore has strongly mooted for the involvement of India in the East Asian grouping meetings.[15]

Christopher Dent has focused on Singapore's developmental state as the key actor in Singapore's foreign economic policy that emphasized survival by leveraging on its regional trade and investment role inherited as an entreport hub.[16] Dent described Singapore's Regionalization 2000 policy as an extension of the state's foreign industrial parks to distant locations, enhancing Singapore's role as a value-adding gateway to the Asia Pacific region and establishing stronger links with regional economies.[17] The impetus for regionalization according to Dent was the need to internationalize local firms that were being crowded out by multinational enterprises (MNEs). In Singapore's case, the state has led economic development by investing in critical areas such as infrastructure which required huge amounts of investments and a long period to recoup initial capital outlay. For example, land reclamation projects which cost billions are expensive but are needed to overcome Singapore's land constraints. While the stakeholder perspective is important and explains the role of the state in Singapore's economic development, the regionalization of state-owned enterprises (SOEs) could be problematic in terms of venturing overseas. For example, Singapore GLCs have been confronted with protests from neighboring countries because of the host countries' concerns over Singapore's GLCs ownership and control of its strategic assets. Therefore, this monograph will argue that while GLCs are majority owned by the Singapore government, its corporate agenda and policies are driven entirely by its board of directors and management as a revenue earning entity with responsibilities to its various shareholders.

Robert Wade commented that in terms of technological development cases where private enterprises are too small and the firms are not able to act on their own for lack of resources, the government may assume the role of coordinating public and private sector technological development.[18] Coupled with the harsh realities to struggle and survive in an ever-changing global market, the Singapore developmental state had to venture into new economic sectors or enhance capabilities of sectors that have strategic value. Peter Dickens has argued that resource scarcity has ensured only the fittest will survive and economic environment has a large influence.[19] In Singapore's case, geopolitics and the emergence of regional competitors have a direct influence on its economic policies.

The state in Singapore not only set the tone for technological advancement through institutions such as the National Science and Technology Board (NSTB) and National Computer Board (NCB) in the 1980s and 1990s but also invested huge sums in the Biopolis venture to expand the biotechnology and life sciences sector. The Biopolis, a research hub for life sciences built at a cost of US $ 300 million dollars and another US $ 700 million placed in government investment company BioOne Capital Pte Ltd, was to explore opportunities in biomedical business.[20] The other new initiatives led by the state to ensure Singapore's economic survival are the Integrated Resort and the Petrochemical Complex at Jurong Island.

The other ingredient which the developmental state in Singapore is acutely short of is talented human capital. Singapore has a population base of 3.1 million citizens, 440,000 permanent residents (PRs) and 798,000 foreigners here on long-term stay passes.[21] The state needed to maintain the "achievement motive" in economic growth. David McClelland opined that the need for achievement would translate into hard work and the desire to excel which would ultimately benefit the economy.[22] Singapore's dependency on foreign labor has been evident since its industrialization wave in the 1960s. At the time, Singapore was heavily dependent on traditional source of labor from Malaysia and then it leveraged on nontraditional sources such as Indonesia, the Philippines, and India.[23] However, during that phase of its economic development, it required unskilled or semi-skilled workers for low-wage employment categories. Moreover, the problem of a small population base was made more acute by declining total fertility levels due to its "two child" policy.

As of 1977, Singapore's total fertility rate has fallen below replacement level.[24] In 2005, there were 35,000 births falling short of the 60,000 births needed each year to sustain the economy. Total fertility has fallen to 1.24 and Singapore's Deputy Prime Minister Wong Kan Seng, who is also Chairman of the Population Committee, is concerned and commented, "We have to top up our population and work force with migrants."[25] The quest for foreign talent will become more acute as Singapore's regional competitors start to realize their potential and move into economic sectors where Singapore had been dominant such as airports and seaports.[26] DPM Wong added that to counter the growing economic threat, "We should encourage those who can contribute to settle down here . . . this is the way to enlarge the economic pie."[27]

How is foreign talent contributing to the Singapore economy? According to Minister Mentor (MM) Lee Kuan Yew, there are three categories of foreign talent in Singapore and they contribute to the economy in different ways. The first category constitutes foreign talent that could assist in the creation of new enterprises and expand existing enterprises into regional and global companies such as the Neptune Orient Lines (NOL).[28] These would include entrepreneurs and experienced individuals that could be captains of industry. The second category are the professionals and skilled workers who help attract foreign investments in large projects such as wafer fabrication plants that require scores of skilled workers to work 24 hours a day, seven days a week (24/7). The third category are foreign workers that undertake jobs unpopular with locals such as in the construction, marine, ship building, and conservancy services.[29] Although all three categories of foreign talent are important, the first two categories were more valuable in terms of growing the economic pie.

In early 2001, MM Lee remarked that if scores of foreign talent were to leave, Singapore's economic growth would be reduced by 20 percent.[30] This was amply demonstrated during the economic slowdown and rising unemployment caused by 9/11 and the SARS outbreak in 2003. Singapore's aviation and tourism industry in particular were adversely affected but Singapore continued its policy of attracting more foreign professionals and skilled workers.[31] In a policy statement at the opening of Singapore's new parliament building in 2002, then Manpower Ministry Minister Lee Boon Yang said, "There is a global competition for talent."[32] In 2002 when Singapore was affected as part of the global economic slowdown it decided to redefine its strategies to develop business.

Singapore has continued with its policy of attracting foreign talent for its banks, semi-conductor firms, engineering firms and science laboratories.[33] In 2003, MM Lee said that Singapore's foreign talent policy will not change because it will undermine Singapore's capability to grow and expand.[34] What are the main factors that could influence the capability of a city or region to grow economically? Richard Florida pointed out that the creativity output of a place would depend on the three "Ts:" technology, talent and tolerance.[35]

The Singapore government has placed the task of establishing an effective system of foreign manpower management with the Ministry of Manpower (MOM). In April 1998, the Foreign Manpower Employment Division was established under MOM to provide overall coordination and strategic directions to help employers meet foreign manpower needs and to effectively manage the foreign workforce in Singapore. To attract Singaporeans based overseas and foreign talent to Singapore, Contact Singapore was established as an information and resource centre. Contact Singapore provides a wide and comprehensive range of information on employment opportunities available in Singapore. To a certain extent, the Singapore's pragmatism for continued economic growth and development has seen activities catered for the gay community and visitors such as Asia's biggest gay festival at Sentosa in August 2004.[36] This "Pink Dollar" event was more than simply a revenue earner because to a large extent it also signifies an important shift in the position of the state which acknowledges that creative talent whether local or foreign include those that are gay as well. In 2003, the Singapore government has also changed its position on hiring homosexuals in the civil service. Then Prime Minister Goh Chok Tong said, "In the past, if we know you're gay, we would not employ you, but we just changed this quietly."[37]

A major factor that would shape future scientific and engineering developments would be the baseline level of education. Singapore is not alone in recognizing the importance of enhancing human resource through education and training to expand economic development. According to Senior Minister Goh Chok Tong, economies in East Asia such as Japan, Hong Kong, South Korea, and Thailand have made huge strides in economic development because of investment in education.[38] Singapore's emphasis on education is targeted to maximize the potential of its own citizens but in experiencing declining total fertility, it has to attract foreign talent. The Singapore strategy to attract foreign talent to its shores is a multi-pronged approach and involves a number of agencies. These included the Singapore Ministry of Manpower (MOM), the Ministry of Education (MOE), Singapore Tourism Board (STB) and spearheaded by the Economic Development Board (EDB) have established several Contact Singapore centers around the world to attract talented human capital to Singapore.

In Singapore as in other East Asian economies structural changes have been managed in a highly politicized way especially during times of economic crisis.[39] In this regard, the process of regionalizing the Singapore economy by developing an external economic wing was accelerated after the Asian Financial Crisis of 1998. The following chapters will show that GLCs such as Singapore Telecoms (SingTel) now derive most of their revenue stream overseas. This is in contrast to their assets in the 1990s. Similar to other developmental states, the Singapore government provided the entrepreneurial vision and implemented the required structural changes. In this context, Alice Amsden termed this process "state entrepreneurial capitalism."[40] In the process of structural changes, the state also provided the coordination for changes in strategic economic direction.[41] For example, when Singapore decided to undertake free trade agreement with India, the government in Singapore tasked its institutions to provide briefings about the implementation of CECA. The briefings for CECA to the business community in Singapore was undertaken by various institutions.[42] The process of undertaking restructuring in strategic terms to sustain economic growth and development would also mean a blurring of the economic and the political. For example, the private and public sector have to sing the "same tune" and need to understand their part in a larger sequence of events. The ability of the developmental state in Singapore to manage this process is largely attributed to linkages between top-level management and bureaucratic personnel. Given the large number of GLCs in Singapore, the senior management of these GLCs were usually occupied by a former senior civil servant from the civil or uniform institutions. This leads to the questions about the role of "big business" in the economic growth and development of Singapore.

Big business

The Transnational Corporations (TNCs), Multinational Corporations (MNCs) or the Multinational Enterprise (MNEs) refers to a company that enters markets throughout the world by establishing its own sales and production subsidiaries.[43] It is debatable whether MNCs pursue policies that are home country oriented or whether they exhibit no loyalty to the country in which they are incorporated. Big business definition is influenced by historical development and regional context. A wider concept of big businesses could include their large scale of operations, financial clout and power in terms of influence.[44] Other criteria to define big business could include the number of employees, the economic sectors in which they have a presence, physical assets, local and overseas presence. Most of the literature on big business indicate two clear schools of thoughts. These two schools of thought tend to focus on situations where government dominates business or business dominates government.[45] Among the Western developed nations, big business in the United States arrived in the form of conglomerates and franchise operations.[46]

In the East Asian context, Kubota has argued that in Japan, big business contribution and links to political parties have generated interests about the role of big business in trade negotiations with foreign economies.[47] In the case of South Korea, Eun Mee Kim had traced the rise and fall of big business or "chaebols" in relation to their support and alliance with the state.[48]

Peter Hall and David Soskice has commented that new forms of capitalism which focus on the concept of the firm is relational and discusses how the firm must develop relationships to resolve problems of coordination that is critical to their core competencies.[49] These problems broadly cover vocational training, education, inter-firm relations, employee relations, and corporate governance. In the case of Singapore, these issues are very pertinent and have been addressed by the state as the economy evolved from a manufacturing base to have greater interests in knowledge-based industries. In political economic terms, economies are either categorized as liberal or coordinated market economies. In liberal market economies, firms coordinate their activities through hierarchies and competitive market arrangements. In contrast, for coordinated market economies firms are heavily dependent on nonmarket relationships to coordinate their initiatives and establish their core competencies.[50] The Singapore economy functions on a market basis but is strong on coordination between big business and the state. The linkages are provided through institutional and organizational framework such as in the recruitment of foreign talent.

The recruitment of foreign talent is one means to strengthen the capacity of the economy to meet the challenges of knowledge-based industries which the state in Singapore has allocated vast resources. Besides strengthening domestic industrial capacity, Loraine Eden has commented that big businesses functioning across national boundaries as MNCs, should also be regulated to ensure state autonomy and sovereignty are maintained.[51] The penetration of MNCs in overseas markets would obviously depend on the regulatory framework of the specific market. However, with the process of closer economic integration as a facet of globalization, increasingly national economies may have to fall into line with multilateral trade obligations and this would normally include market access. Locational advantage is a key driver for MNCs and access to factors of production in foreign countries is of strategic concern. Strategically, apart from resource seeking investments another strategic imperative would be cost reducing investments.[52]

John Dunning has argued that while big businesses in Western developed countries could face limitations on the capital they raise from domestic sources, they could easily raise their financial capital overseas.[53] This would circumvent any restrictions that the state sought to impose over its own MNCs to prevent their products being exported to or concluding alliances, mergers, or business arrangements with unfriendly countries. In the 1980s and 1990s, the role of national governments shifted to sustain and generate wealth-creating activities and this involved the MNCs. There has been a radical shift from the state being involved in the removal of structural distortions in the domestic economy to facilitating the capabilities of their own firms. In the 1990s, Sanjaya Lall added that a decrease in the excessive intervention of the state in international capital flows among developing countries would enable more developing economies to be as successful as the East Asian NICs.[54]

Big business and developmental state

Barbara Stallings commented that the globalization of production has resulted in new ways for the TNCs to expand their networks to leverage on lowest costs of production or services.[55] In addition, Susan Strange argued that, to remain competitive, developmental states must be able to reap profits from as wide a market or markets as possible.[56] The government in Singapore has been urging its companies and investors to diversify and seek newly emerging economies. In the 1990s, the Singapore government started to encourage its local firms to become MNCs and to invest abroad. Susan Strange uses the terms "maximalist state" and "minimalist state" to explain the extent of state intervention to develop corporations.[57] Maximalist state exercises authority in the production structure by taking over R&D. Within the large corporation the maximalist state takes sole responsibility for making choices and taking decisions which may have social consequences. In contrast, the minimalist state leaves innovation to competition in a free market but leaves as much as it dares for its own social and economic security. In this regard, the Singapore government intervenes more as a minimalist state in the functions but it also sets the broad directions for R&D. Singapore's Senior Minister Goh Chok Tong had mentioned that within a seven hour flight radius from Singapore, there live 2.8 billon people with hundreds of millions in the middle income group.[58] Besides China, India also offered good growth opportunities and Singapore tried to implement its policy of regionalization to tap emerging opportunities overseas like those in India.[59]

I am of the view that MNCs in the context of India and Singapore are not only influential within their home countries but are also part of the state strategy for revenue and employment creation in overseas markets. State-owned enterprises, if they are employing vast numbers of people may have implicit guarantees from the government compared to small firms or small and medium enterprises (SMEs).[60] However, this is not the case with Singapore where GLCs will not be bailed out by the government if they fail to "perform." Singapore GLCs also had to vacate the domestic economy and regionalize to allow the SMEs to expand and strengthen themselves locally before they are encouraged to regionalize. Risk taking is also a part of the make-up of developmental states[61] and Singapore was no different when it led trade delegations into the Indian economy.

The developmental state in Singapore needed a "vehicle" to oversee state-led capitalism and Temasek Holdings was established in 1974 for this purpose.[62] Temasek Holdings has majority equity investments in GLCs or Temasek Linked companies (TLCs). Temasek Holdings took over the reigns of state capitalism from the Ministry of Finance and Economic Development Board of Singapore.[63] Another valuable role played by Temasek Holdings was to instill a high degree of corporate governance among Singapore GLCs such as DBS, SingTel, and PSA. Since its inception in 1974, Temasek Holdings has realized that it has to reduce its dependence on a maturing home market. When she took over the helm of Chief Executive Officer in 2002, Madam Ho Ching developed a new strategy for Temasek aimed at becoming an active investor to develop share holder value and dispensing with marginal businesses. Madam Ho Ching identified banking, telecoms, energy, and health care as among several industries that would expand on the back of a rising Asian middle class such as those in India.[64] In this regard, she established a target that two-thirds of Temasek's total assets should be foreign. This was a sea change in strategy because Temasek's total assets was less than half foreign when Ho Ching took over in 2002. As a result, Temasek's value has steadily risen to at least S $ 150 billion in 2007 from S $ 75 billion in 2003 and S $ 129 billion in March 2006.

In order to penetrate the Indian economy, the Singapore government has been reliant on the GLCs. The GLCs are majority owned by the Singapore government through Temasek Holdings. Temasek Holdings was worth around S $ 70 billion at the end of 2002 and has stakes in some 72 companies in Singapore. Temasek has also invested in a number of projects overseas because Singapore's economy has limited investment opportunities and is becoming increasingly saturated. Although it has investments worldwide to hedge against risks, Temasek has stepped up its investments in Asia including India.[65] Realising the potential of the Indian market, Temasek Holdings established several funds that would focus exclusively on investment opportunities in India. For example, Temasek has teamed up with Standard Chartered Bank to establish a US $ 100 million Merlion India Fund to focus on private equity[66]. Temasek Holdings have also teamed up with London-based Sabre Capital Worldwide to raise up to US $ 5 billion to invest in India.[67] Temasek has shares in a number of Singapore GLCs that have invested in India's infrastructure sector. These GLCs included Ascendas Land in India's information technology sector, Port of Singapore Authority (PSA) in Indian ports, Cesma International a subsidiary of Jurong Town Corporation (JTC) in housing, Singapore Airport Terminal Services (SATS) in airport ground handing and catering. One of the key areas that these GLCs have been involved in was the development of Singapore's infrastructure such as its seaports, airports, residential housing, telecommunications, and industrial and scientific parks. This expertise has complemented India's own need for infrastructure upgrading and expansion.

While the GLCs have led the way for Singapore's companies and investors to explore business opportunities in India, there has to be continuity in the form of SMEs also venturing into the Indian market. With the GLCs undertaking a large stake or anchoring a consortium of Singapore companies in a business venture in India, this might ally the fears of SMEs that they would be deprived of state support in the event of a crisis or business down turn in India. Another approach used by the Singapore government to have a "demonstration effect" that India has vast business potential would be to use the flagship industry or flagship investment approach. Alice Amsden defined flagship in the context of big business or chaebols in South Korea to indicate initial activity in a specific sector such as construction, steel or sugar refining.[68] In the case of Singapore, the flagship investment project in India was the Information Technology Park project in Bangalore (ITPB). The eventual success of ITPB tempered by the dotcom bust and the volatility of the global IT and IT enabled services industry proved to Singapore SMEs that business success is achievable in the Indian market. The story of ITPB is significant because it highlighted a successful example for Singapore's investments in India despite the turbulence and volatility of the IT industry.

Conclusion

The combination of state-driven developmental capitalism and support from big businesses to form Singapore incorporated (Inc) to pursue its regionalization policy will be discussed in the following chapter. How would Singapore (Inc) connect to the Indian economy? Is there an Indian incorporated (Inc) emerging from India rising? Big business is also present in India and it will be shown that Indian MNCs are keen to collaborate with like-minded foreign investors and companies on a wide range of sectors. While the label of developmental would not fit the state in India, the term "predatory" would seem harsh given India's economic reforms and liberalization. Foreign investors and foreign MNCs are exploring the Indian market and their influential presence is having a huge impact on the Indian economy. Singapore was one of the few countries that mooted for stronger economic links with India and continue to sustain its strategy by becoming the third largest foreign investor in India.

3 Incorporating economic development

Introduction

Why is Singapore keen to explore the Indian market? There are several reasons that could account for this. Primarily, business opportunities in the Southeast Asian region have become fewer and more competitive especially during and after the Asian Financial Crisis of 1998. The Indian economy caught the attention of Singapore because it emerged relatively unscathed after the Financial Crisis and that its rate of economic growth of 6 to 9 percent annually had surpassed that of regional ASEAN economies.[1] The fear of political uncertainty has also been dissipated because India's political system that once seemed shaky has become more stable in the mid-1990s with then Prime Minister Vajpayee completing his full term.

The trade relationship between India and Singapore was largely conceptualized by their political leaders but implemented by the private sector. This monograph will use secondary sources and primary sources to describe the process of interaction between Singapore Inc and Indian Inc. The primary sources include interviews with officials from Singapore companies and statutory boards. From India's perspective, views from officials in the Planning Commission, government officials at international conferences and officials from the private sector will be included. Speeches by political leaders and corporate chiefs were also used to establish how the state has influenced strategic planning and implementation. Government reports and reports from private economic institutions will provide the data to establish trend analysis in the various economic sectors.

Singapore Incorporated (Inc)

The state in Singapore has managed to internationalize the operations of its companies overseas. The creation of the Singapore brand was a strategic choice in the promotion of Singapore companies overseas. Using the GLCs, the Singapore government is manifesting clear examples for the small and medium enterprises in Singapore to follow the GLCs' lead to expand overseas. Leveraging on the economies of scale, financial muscle, and network with overseas counterparts, in regionalizing, the GLCs have signaled an intent from the state that they are facilitating the rise of Singapore Inc by encouraging its local companies to invest and compete overseas. In this regard, the Singapore brand which denotes efficiency, credibility, and professionalism has a large role to play.

An approach to asses whether the process of regionalization is being successfully carried out would be to examine the presence of Singapore-based MNCs overseas. Table 3.1 shows the ranking of Singapore companies among

Table 3.1 Ranking of Singapore companies by assets in world's top 100 nonfinancial MNCs in 2004 (millions of US $ and number of employees)

Corporation	*Industry*	*Ranking Foreign Assets*	*Foreign Assets*	*Sales*	*No. of Employees*	*No. of Affiliates*
SingTel Ltd	Telecoms	3	18641	5396	8676	23
Flextronics Int'l Limited	Electrical & electronics	14	5862	8181	89,858	100
Capitaland Limited	Real estate	15	5231	1536	5277	4
Asia Food & Properties	Food & beverage	30	3691	1511	33,511	2
Neptune Orient Lines Ltd	Transport & storage	38	3112	5498	10,344	60
City Developments Ltd	Hotels	40	2887	781	11,814	228
Singapore Airlines Ltd	Transport & storage	46	2423	3629	2367	4
Fraser & Neave Ltd	Food & beverage	54	1864	1372	11204	52
Keppel Corporation Ltd	Diversified	63	1340	924	12177	49
Sembcorp Industries Ltd	Diversified	64	1315	1730	4590	30
Pacific Century Regional Development	Telecoms	68	1222	262	331,697	–
Hong Leong Asia Ltd	Construction	78	1024	1143	11,753	24
Wbi Corporation Ltd	Electrical & electronics	94	780	828	15,704	31

Source: Country Fact Sheet, India, World Investment Report 2006, UNCTAD, Division on Investment, Technology and Enterprise Development.

the top 100 nonfinancial MNCs from developing countries. The MNCs' ranking are evaluated on the amount of foreign assets. How would the Singapore government meet the challenges of the Indian market? The Singapore state is encouraging individual ministries and statutory boards to market their expertise overseas and in particular in Asia and the Middle East.[2] The Singaporean model of development is largely attributed to a government that "works" and an efficient public service model based on the principles of "pragmatism" which has seen the state assessing and solving problems in a practical manner.

The state provided the strategic decision for the continued expansion of the economy by having a core team of like-minded officials in the public and private sectors to implement strategic decisions. Japan and Korea have similar elites in policy-making circles that came from the same universities and aspire to the same developmental philosophy. Alice Amsden termed the process of producing sameness among middle-level officials in business and government in Japan and South Korea as the "golden parachute."[3] How does the state develop strategic direction for Singapore Inc? In 2006, the Singapore civil service created an "action" team of about 20 civil servants from various agencies to discuss how Singapore could export its strengths.[4] Some of Singapore's strengths would be expertise in security and civil defence.[5] A unit in the public service division was created in the external projects office to implement the action team's ideas. Sharing the expertise of Singapore Inc overseas not only gathered the goodwill of other countries but also generated revenue for the public sector.[6] How would Singapore market its strengths overseas? While the idea to export Singapore's strengths overseas has been discussed in a framework over the last few years, the Singapore model of economic development has been debated for some time. The rise of the Asian Tiger economies of Singapore, South Korea, Taiwan, and Hong Kong had given to a large body of work that examined the role of the state in the development of these economies.

How would Singapore Inc respond to the rise of emerging markets in the region such as India? In response to the "opening-up" of new markets in the region, the Singapore government has outlined three approaches to assist its companies investing overseas.[7] Initially, the government would provide business enterprises the freedom to invest in their preferred sectors. The government would then encourage, assist, and facilitate the efforts of the business enterprises by supporting them through its various agencies such as the Economic Development Board (EDB) and the Trade Development Board,[8] now known as International Enterprises (IE) Singapore. Alternatively, the Singapore government or a Singapore consortium would identify a few major projects in selected cities, regions, or countries. These projects utilized the capabilities and expertise available in Singapore, according to an organized Singapore Inc basis.[9] Furthermore, these projects should have economic linkages and "spin-offs" for a wide range of Singapore businesses.[10] Through such projects, Singapore can transfer its expertise in master planning, development and operational management to the host country.[11] The careful implementation of such projects will be highly visible and can become the flagship of economic cooperation between Singapore and the countries that it has chosen to invest in.

Singapore chose to focus on specific Indian states whose leaders were eager to tap into Singapore's experience and expertise in drawing up and executing their economic development plans. Moreover, this approach is also likely to assist in establishing broad and deep relationships with provincial state leaders that will be of benefit to Singapore businessmen.[12] This approach in focusing on a particular state is important because Singapore investors have a vague knowledge of India and see it as a whole entity instead of a diversity of states with their own potential strengths and weaknesses. In evaluating the various methods that Indian states had adopted to market themselves, the Singapore Indian Chamber of Commerce (SICCI) commented that they have to demonstrate their advantages over other foreign rivals. For example, India should learn marketing techniques and each state could market a labor force that is skilled in a particular area, or a port with the best timetable between Singapore and India or an airport with so many flights a week for products that need air-freighting.[13] By not marketing themselves adequately, these Indian states were disadvantaged when competing with other emerging economies in attracting foreign investments.

Realizing that despite its problems India has potential for economic expansion, the Singapore government is focusing its economic activities in India's Southern states of Andhra Pradesh, Karnataka, and Tamil Nadu as well as traditional industrial hubs such as Maharashtra and Gujarat. The state of Kerala has not been actively courted because its Marxist state government is still hesitant on attracting foreign investment and foreign multinational companies. To a certain extent this would be true for the Marxist state of West Bengal, also within easy reach of Singapore by air travel. Singapore is keen to invest in Kolkatta but the lack of resolve over the special economic zones (SEZs) and political commitment has discouraged Singapore investments. For example, it will be shown in following chapters that Singapore GLC Ascendas has put on hold its IT projects in Kolkatta. With these challenges in mind Singapore Inc also has to grapple with the issue of convergence with an emerging India Inc. The following chapters in the monograph discuss projects that both Singapore and India complement each other. Singapore's strengths in infrastructure and operational systems development have manifested themselves in Singapore projects in India.

Rise of India Incorporated (Inc)

The emergence of an India Inc is often debated by juxtaposition to the poverty and underdevelopment that is still very much a reality in India. Myron Weiner coined the term the "Indian Paradox" and in this vein we could argue that the emergence of India Inc is happening in parallel to the continuing poverty and underdevelopment in India. What is the evidence for the emergence of an India Inc rising out of the Indian subcontinent? The economic crisis of 1991 brought forward a handful of reformers in the Indian cabinet such as the late Prime Minister Narasimha Rao, Finance Minister Dr. Manmohan Singh, his successor P. Chidambaram and senior bureaucrats such as Deputy Planning Commissioner Montek Singh Ahluwalia.[14] In short, the economic reforms through liberalization created a business climate for the rise of India Inc manifested by the growing presence of Indian multinational companies. Interviews undertaken by the author with Indian professionals and industrialists in India in December 2006 suggested that the emergence of Indian companies in the international market is the manifestation of India Inc.

The rise of Indian Inc is still being debated and economic institutions also vary in their assessment of the global presence of Indian MNCs. In 2006, the World Investment Report (WIR) by UNCTAD had placed the Oil and Natural Gas Corporation of India (ONGC) as the only Indian MNC ranked in the top 100 nonfinancial MNCs based on foreign assets. The ONGC was ranked 26 with assets of slightly over U.S. $ four billion overseas.[15] In 2006, the Boston Consulting Group (BCG) undertook a study to identify the 100 companies from rapidly developing economies (RDEs) such as Brazil, China, India, and Russia that are emerging global challengers.[16] The BCG cast its net across 12 major RDEs and began its search with more than 3000 companies. These 3000 companies were selected based on the size of their economies (GDP), the value of their exports and the amount of their FDI. Then a four-step selection process was undertaken to choose the 100 challengers from the 3000 pool of companies. For step one, only RDE-based companies were selected which meant omitting joint ventures and RDE subsidiaries of MNCs. In step two, as of 2004, only those companies with annual revenues of at least U.S. $ 1 billion were chosen based on the BCG's assumption that this is the minimum threshold necessary to drive a serious globalization campaign. In step three, companies whose current international presence amounted to less than 10 percent of revenue were eliminated. In the final step, the BCG gave a score to the companies that had passed its three-step screening process and this amounted to 80 companies. Twenty companies which did not pass the minimum U.S. $ 1 billion threshold but had unique globalization capabilities or business models were then added to the other 80.[17] The list of Indian companies among the 100 challengers are listed in table 3.2. Where once Indian companies were contented to be part of a joint venture partnership with foreign companies in India, now Indian companies are being noticed for acquiring foreign companies. Through the process of mergers and acquisitions (M&A), the rise of Indian Inc will enable Indian companies to play a prominent role in international economy.

The other factor for the rise of India Inc would be to create a new awareness about India as the other Asian economic giant apart from China. This could be undertaken through the process of creating a positive India brand

Table 3.2 Indian companies among the rapidly developing economies (RDEs) 100 emerging global challengers

Company	*Industry*
Bajaj Auto	Automotive component
Bharat Forge	Automotive component
Tata Motors	Automotive component
TVS Motor Company	Automotive component
Mahindra & Mahindra	Automotive component
Cipla	Pharmaceuticals
Dr. Reddy's Laboratories	Pharmaceuticals
Ranbaxy Pharmaceuticals	Pharmaceuticals
Hindalco Industries	Nonferrous metals
Tata Steel	Steel
Oil and Natural Gas Corporation (ONGC)	Fossil fuels
Reliance Group	Chemicals
Larsen & Toubro	Engineering services
Crompton Greaves	Engineered products
Infosys Technologies	IT services/Business process outsourcing
Satyam Computer Services	IT services/Business process outsourcing
Tata Consultancy Services (TCS)	IT services/Business process outsourcing
Wipro	IT services/Business process outsourcing
Tata Tea	Food and beverages
Videsh Sanchar Nigam (VSNL)	Telecommunications services
Videocon Industries	Consumer electronics

Source: The New Global Challengers, The Boston Consulting Group, May 2006.

overseas. In this context, Indian companies and the government are collaborating to advertise the available business opportunities and potential of the Indian market. The "old" image of India perpetuated by images of poverty, ethnic strife, underdevelopment, in the media is now being confronted by a "new India." The new India tells a different story of economic success borne out of adversity and challenges which is creating the rise of Indian multinationals. The Indian MNCs, especially in the IT sector, realized that the Indian market does not have the consumer demand to drive their growth; therefore, they are exporting to overseas markets to grow their companies. It is also observed that while the Indian economy was closed, Indian entrepreneurs, professionals, and skilled workers form an influential part of the 25 million Indians residing overseas. These Indians are trained in among the best business schools in the world and also work in senior positions in foreign companies. As India liberalized its economy, Indian MNCs found that not only did they have the financial muscle but that they also have a pool of local and overseas Indian talent available that they could tap into to launch their overseas ventures.[18]

Mergers and Acquisitions (M&A)

Post-independence India of 1947 had emphasized the need for heavy industrialization and implementation of five-year plans to set India onto the road of economic development. India's first Prime Minister, Jawaharlal Nehru, wanted to raise India as an industrial nation and bridge the economic gap with the developed nations. According to Francine Frankel, the director of the Centre for Advanced Study of India at the University of Pennsylvania, "Indians became subordinate to the West through the dominance of foreign capital."[19] This subordination to Western domination created an insulated economy post-1947 and Indian companies were protected by tariff and non-tariff trade barriers. The Indian economy suffered its most severe economic crisis in 1991 because of a culmination of internal and external factors which showed that a business as usual (BAU) approach to economic development would not suffice. Post-1991, Indian companies were concerned over their own survival as foreign capital and multinational companies began to enter the domestic Indian market after its reforms and liberalization. Calls for protectionism were heard as the government liberalized the economy incrementally in phases. In 1998, during the Asian Financial Crisis, Western MNCs were able to invest or acquire Asian MNCs such as cement companies that had previously shunned foreign investments and collaboration.[20] At the time the Indian economy was not fully integrated into the global economy and was not as adversely affected as the East Asian economies. However, in the wake of the 1991 economic reforms and Asian Financial Crisis, Indian MNCs began to be more mindful of inventory levels and tried to reduce costs by lowering wastage.[21] India's industrial sectors were also transformed, such as the automobile industry. Once it was a technologically backward industry but the automobile industry has become high growth and export oriented.[22]

Indian MNCs were clear in their strategy that the M&A route was the quickest and best option to obtain access to markets, expertise, and technology. There are other benefits of the M&A strategy such as cost reduction in scale economies through synergy that could develop into a strategic foothold.[23] The acquisition of the Anglo-Dutch steel firm Corus by one of India's leading industrial giants Tata Steel for U.S. $ 7.6 billion has attracted the world's attention to India's growing economic might.[24] Overnight Tata Steel rose from the fifty-sixth largest steel manufacturer to become the fifth largest in the world. Psychologically, this had marked a reversal of fortunes for an economy that had been dominated by colonialism built on foreign capital, socialism, and then a fear of foreign capital.[25] The Tata Group in the wake of its latest acquisition is also receiving plaudits for deciding to make the first great acquisition for an Indian company in 2000 by buying Britain's Tetley Tea for U.S. $ 435 million.

In 2000, the outward M&A strategy that began with Indian IT companies has spread into other economic sectors. For example, in 2005, Wipro acquired Nerve Wire and Mastek took over Enteram. Then, in 2006, Wipro acquired the Portuguese IT company Enabler for U.S. $ 52.2 million. Economic consultants highlighted companies in India's automotive, pharmaceuticals, and software services as potential acquirers in the global markets.[26] The average size of overseas takeovers by Indian companies had also risen from U.S. $ 10 million in 2003 to U.S. $ 50 million by the end of 2006.[27] What are influencing these M&A strategies for Indian MNCs that are establishing a global face to Indian incorporated? There are several reasons for the M&A boom by Indian companies and they are related to internal and exogenous factors which influence the growth of the Indian economy.

There was a lot of pent up desire to obtain more capital, better technology, and better access to overseas markets prior to India's economic liberalization in 1991. Furthermore, those Indian companies that had thrived on government protection are now seeking global footprints and most of them prefer to go thorough the overseas acquisitions route.[28] With deregulation, Indian interest rates have come down and Indian companies have been able to borrow more competitively on international debt markets or accumulate capital by listing on the booming local exchanges.[29] The chief executive of ICICI Bank, K.V. Kamath, commented that outward focus of Indian companies was supported by easier access to capital because of their better corporate structures. This is mainly due to a booming economic growth of sustained 7 to 8 percent growth over for the past several years which also instills confidence on the part of lenders. The Indian stock market has also grown over 40 percent from 2005 to 2006. More than U.S. $ 400 billion are traded on India's stock exchanges where a number of companies have market capitalizations greater than U.S. $ 1 billion each.[30]

In 2003, then Finance Minister Jaswant Singh announced that companies with a proven track record would be allowed to make acquisitions abroad in nonrelated as well as their major fields.[31] As a follow up, the Minister also removed the U.S. $ 100 million foreign investment cap by Indian companies and raised it to the net worth of the companies themselves.[32] The Reserve Bank of India (RBI) also supported the M&A strategy of Indian corporates by stipulating that companies can raise external commercial borrowings for overseas direct investments in their joint ventures and wholly owned subsidiaries. In January 2007, a proposal mooted by the Reserve Bank of India (RBI) indicated they were prepared to allow Indian firms to lend 200 percent of their net worth to overseas step-down subsidiaries. Step-down subsidiaries are ventures that are promoted by the holding company of the Indian corporate group.[33] The proposed changes will enable the step-down subsidiary to leverage the balance sheet of both the Indian subsidiary and the parent holding company that had floated the step-down arm. This has the potential to provide more financial clout for Indian companies to expand their M&A strategy overseas. In an interview with a senior RBI official in December 2006, the official confirmed that the RBI has taken a more liberal view on the flow of capital going into and out of the economy.

The IT companies in India started their M&A strategy because they were export oriented and had to gain the expertise and domain knowledge of new systems to service their overseas clients. Excellence in service from the IT sector has spread to other sectors of the Indian economy. The Indian manufacturing sector has also started to establish an international presence after it had consolidated its domestic market share.[34] Having improved their productivity, quality, and reliability, Indian manufacturers are looking for overseas markets to expand their businesses further. Apart from new export markets, the M&A strategy will benefit Indian companies in several other ways. In the initial years of India's economic liberalization, Indian companies were unsure of their brand and products and opted for joint ventures to acquire new technology.[35] However, with easier financing and growing confidence, Indian manufacturers are using the M&A route to obtain better technology residing within international companies.[36] In interviews with leading Indian IT companies in Bangalore and Hyderabad in late 2004, the author can confirm that these IT companies have the financial reserves to acquire foreign IT companies without resorting to external borrowing.[37]

In 2005, the M&A strategy of Indian companies continued overseas and well-known Indian entrepreneur in the liquor industry, Mr. Vijay Mallya of United Breweries (UB) group, acquired rival Shaw Wallace.[38] The U.S. $ 370 million take-over by UB ended a 20-year competitive struggle with Shaw Wallace and made UB the second largest liquor company in the world. The food and beverage industry was also in the news when Global Green Company of the U.S. $ 2.1 billion Thapar Group acquired Belgium-based Intergarden Group for U.S. $ 65 million to become the third largest pickle supplier in the world with an annual turnover of U.S. $ 100 million.[39] The Chairman of the Thapar Group, Mr. Gautam Thapar, said, "It reiterates our commitment to creating a globally successful Indian company in the agriculture sector." The acquisition extends the Thapar Group's penetration into their market niche because Intergarden has processing factories in Belgium, Hungary, and Turkey besides India.[40]

In interviewing Indian MNCs during December 2006, I observed the same M&A trend among manufacturing companies. For example, Essel Propack is one of the largest manufacturers of laminated tubes in the world used to package toothpaste. Propacks's president, R. Chandrasekhar, said that, "We definitely see an opportunity to move further into the global space . . . India always had a global outlook in the past but we became very inward—looking after independence. Now we're back."[41] Will India Inc run out of steam with the M&A strategy? Mervyn Davies, the CEO of Standard Chartered Bank in India, commented that the overseas acquisitions of Indian firms were only the tip of the iceberg. He added that in one to two decades Chinese and

Indian firms will expand overseas once they have acquired scale in their own markets.[42] The national mood in India was encapsulated by steel magnate Lakshmi Mittal when he said, “For India, it is a harbinger of things to come—economic superstardom.”[43] The trend of acquisitions from early to mid-1990s of Indian firms overseas has indicated that India’s M&A strategy looks set to continue. In 2004, Indian firms expended less than U.S. $ 500 million through the M&A strategy and even this was dominated by Tata’s acquisition of Tetley Tea.

In 2005, Indian firms spent U.S. $ 2.9 billion in overseas M&A as shown in table 3.3. This trend increased in 2006 as Indian companies appeared to be cash rich because 99 percent of overseas M&A were made with cash.[44] Smaller tier-two companies in the U.S. $ 300 to 500 million capitalization range are getting into the M&A strategy with average deals of U.S. $ 30 million and becoming more aggressive because they need to keep up with the larger companies.[45] In February 2006, Hyderabad-based drug producer Dr. Reddy’s acquired German-based rival Betapharm for U.S. $ 572 million. A few months later, major construction company Punj Lloyd bought Singapore-based SembCorp Engineers and Constructors for U.S. $ 22 million.[46]

In late 2006, Indian firms announced total overseas acquisitions of U.S. $ 19.5 billion and stock markets were up 40 percent.[47] Some of the target

Table 3.3 Indian companies and acquired foreign companies, 2005

Indian Company	*Acquired Foreign Companies*
Auto component companies	
Bharat Forge	CDP, Federal, Imatra
UCAL Fuel	Amtec
Sundaram Fasteners	Cramlington
Amtek	GWK, Zelter, Anvil
Tata	Incat, Wundsch, Weidinger
Pharmaceutical companies	
Matrix	Docpharma, Mchem, Explora
Jubilant	Target Research
Malladi	Novus Fine Chemicals
Consumer goods companies	
Tata Tea	FMALI, Good Earth
Apeejay	Premier
IT companies	
Wipro	Nerve Wire
Mastek	Enteram

Source: ICDFC New Delhi.

Table 3.4 Indian companies M&A of foreign companies, 2006

Indian company	*Acquisition*	*Value (Rs Cr)*
Mylan Labs	Matrix Labs	3367
Tata Tea	Energy Brands	3150
Citigroup	HDFC	3020
Dr. Reddy's Labs	Betapharm Arzneimittel	2530
Suzlon Energy	Hansen Transmission	2337
Holcim	Gujarat Ambuja	2115
Aban Offshore	Sinvest ASA	2040
ONGC	Columbian Oil Block	1865
Ranbaxy Labs	Terapia Cluj-Napoca	1448
R R Donnelley & Sons	Office Tiger	1125
Aditya Birla Nuvo	Minacs Worldwide	776
United Phosphorous	Advanta Netherlands	508

Source: Raghuvir Srinivasan "Corporate India goes shopping—And lands smart deals on foreign shores," *Business Line*, 14 January 2007.

foreign acquisitions by Indian companies are shown in table 3.4. The expansion of India Inc could perhaps spell the latest wave of Asian invasion overseas after the Japanese takeovers in the 1980s and Chinese takeover phase in the 1990s. Despite the murmurs of "reverse colonization" in international financial capitals the world over, is this phase of Indian corporate history a myth or reality? Some economic analysts are concerned over the M&A strategy of Indian companies overseas because they pointed out that despite the U.S. $ 165 billion of foreign reserves in 2007, more financial capital is flowing out from India than coming into the country. They added that the financial and tax implications of such trends will have an impact on the Indian economy and it will require the experience and expertise of the industry captains in India to ensure that this does not drag on the performance of the domestic economy.[48] However, other analysts noted that in 2005, Indian companies finalized deals overseas worth some U.S. $ 2.9 billion compared to over 134 deals in India valued at U.S. $ 7.2 billion. Therefore, an analyst pointed out that the M&A strategy of Indian MNCs overseas is comparable to those companies from New Zealand, one-third of those by Chinese companies and about one-hundredth of those by American companies.[49] Indian MNCs need also to be more adept to handle nonIndian managers[50] but with 25 million nonresident Indians (NRIs) globally, the corporate sector would have a fair share of human capital among the NRIs.

Is there a difference between the M&A strategy of India firms and those of East Asian firms? Indian companies that are breaking the East Asian economic mold of domestic companies must first establish economies of scale through exports and then gather the skills of being a multinational company.[51] The rise of smaller or mini Indian MNCs on the global market place despite being unable to capture large sectors of their own market suggests that they are seeking to be innovative companies. The rise of the smaller Indian IT companies and their ability to achieve Capability Maturity Model (CMM) Level I certification indicated their drive toward excellence in their own niche areas. Indian companies also do not receive the same level of state backing and subsidies as their Chinese counterparts. While the Indian government and institutions such as the RBI have made the business environment in India more conducive for domestic firms to expand, they do not have direct ownership of these firms nor are they influencing their growth trajectory.

Branding India

Prime Minister of India, Dr. Manmohan Singh, who is not normally associated with hype, had remarked, "Brand India has begun to make its mark on the world stage."[52] The Indian brand name in the IT sector in particular has also helped other economic sectors such as pharmaceuticals to gain a good reputation and credibility in the global market.[53] Other prominent political figures such as India's Commerce Minister Kamal Nath said, "Indian industry is just starting to take off, and I think the centre of economic activity is changing from the Atlantic Ocean to the Indian Ocean."[54] The rise of India Inc is also influenced by the branding of Indian companies themselves as well as their products and services. How would an Indian company promote its product overseas? For example, Tata Tea wanted to penetrate into the Western market to sell its products. Its strategy was to acquire Tetley Tea, which is already known and has a strong presence in Western markets.[55] It would have cost and taken more effort from Tata Tea to build their own brand overseas.[56]

Historically, goods made in India had been associated with poor quality and inefficiency because Indian manufacturers were protected from foreign competition in a closed economy.[57] Nonetheless, the "Made in India" brand could prove a positive enabler for India. With the rise of India's IT industry, global consumers are made aware that India has the human capital to service and develop software programs. For example, Indian chip designers produce the microchips that go into hand phones but this "Made in India" brand is hidden. Now "Made in India" phones are finding their way onto the overseas market. For example, Nokia are investing U.S. $ 150 into its Chennai production unit and exporting phones to Singapore, Indonesia, and Thailand.[58] Nokia also commented that with markets in the Middle East and Africa expanding, India becomes the logical base to manufacture handsets because transportation costs were lower than from China or Europe. The manufacturing sector in India accounts for 45 million jobs and 53 percent of India's total exports.[59]

The automobile industry in India is another sector which could enhance India's image as a manufacturing hub overseas and create a positive brand image for Indian-made products. Indian-made cars are exported to about 80 countries every year.[60] A large part of capital expansion is not only going into services but also into manufacturing, especially the automobile and auto components sectors.[61] Tata Motors has tied-up with the United Kingdom-based Rover to sell its cars in Europe such as the Euro IV Tata Indica.[62] Tata Motors Limited owns 21 percent of Spanish bus manufacturer Hispano Carrocera and has formed a joint venture with Brazilian bus maker Marcopolo.[63] Tata Motor's acquisition of South Korean Daewoo's Commercial Vehicle arm would also mean it would make inroads into the South Korean market, which makes an ideal platform to penetrate the Chinese market. Another Indian automobile producer Mahindra & Mahindra (M&M) has a joint venture with China's Jiangling Motors to build tractors. Two-wheeler manufacturer TVS Motor has established an assembly plant in Indonesia and India's number two motorbike producer Baja Auto has set up a plant in Indonesia and an assembly unit in Nigeria.[64] While the "Made in India" brand is coming into recognition the world over, India has yet to fulfill its potential as a global manufacturing hub.[65] India's exports accounted for 0.8 percent of world trade compared to China with 6.4 percent of its total trade. A myriad of problems plague the manufacturing sector but infrastructure is one of its key problems and where it has to invest heavily over the coming years.

Conclusion

While the M&A strategy by India Inc has transformed India's media image from an economy mired in poverty into one that is the next Asian economic power, the reality is that foreign MNCs and investors would have to grapple with a challenging Indian business environment. Despite, the generally positive branding of Singapore companies across India, the next chapter outlines the difficulties that various companies had encountered in dealing with the Indian market. In an interview with the chairman of the Institute of South Asian Studies (ISAS) in Singapore, Ambassador Gopinath Pillai, who is himself an investor in India, had opined that the first two years of a Singapore's company initial foray is crucial. If the Singapore company in question could overcome the challenges of the first two years, they would have the ability to navigate the difficult terrain of the business climate in India.

4 Business challenges

Introduction

In the process of overcoming the impediment of limited land and human resources, the Singapore government had to invest in new emerging economies such as China, Vietnam, and India.[1] Then Singapore Prime Minister, Goh Chok Tong, said: "There is so much we can do in the region. Our problem is that our manpower resources are limited."[2] Former Prime Minister Goh explained that by establishing economic and investment linkages with other countries, Singapore could overcome its domestic manpower and resources constraints[3] In turn, the late Indian Prime Minister Narasimha Rao replied that: "India looked toward Singapore as a vibrant and responsive partner which would be able to complement India's economy."[4] India has an abundance of skilled and professional manpower resources on which Singapore leverages to expand its economic growth.[5] India's other resources such as land, minerals, and basic industry had the potential to complement Singapore's own strengths in investment, management, and high-technology industries.[6] However, Singapore companies are not used to functioning in a business environment such as India where there is a lack of transparency, lack of governance in most areas, poor coordination among various ministries and departments, and a lack of infrastructure among other factors.

This chapter aims to examine the operationalization of the regionalization strategy through interviews with several Singapore companies that have joint ventures or have invested in the Indian economy. Interviews were conducted with ten Singapore companies of various sizes and from various sectors to gather a perspective on the difficulties and successes that they have experienced by entering the Indian market. This chapter will also examine some of the challenges that Singapore companies were likely to encounter in India. It also illustrates some of the lessons learnt by "pioneering" Singaporean companies that could provide insights to other Singapore companies aiming to achieve success as they seek business opportunities in India. In 2004, there were more than 300 Singapore companies registered in India. They ranged from trading, low-base manufacturing, engineering services, industrial park development, healthcare, info-communications, logistics, shipping, port development, and the sectional sector among others.[7]

Despite the potential difficulties in operating in India, the Singapore government decided to emphasize the importance of India as an emerging market because it wanted to diversify its investment projects in the region. The state in Singapore also acted to correct a misperception that Singapore favored business links exclusively with East Asia and in particular, China. While Chinese business networks between China and Singapore have been in place for decades, in geopolitical terms Singapore is situated between much larger countries that are predominantly Islamic in faith: Malaysia to the north and Indonesia to the south. Being seen to favor China in business and especially investments would damage Singapore's image as a multicultural, multiracial and multilingual society. Then Singapore's Prime Minister Goh mentioned that, "We should not look just at China . . . now that would not be the right impression."[8] Goh explained that other new markets are emerging in the Asian region and Singapore companies should invest in them: "Although China beckons, there are also opportunities elsewhere. India and Vietnam will become attractive as they open up and welcome foreign investments. We should be among the first to get through the door."[9] In addition, Goh also urged Singapore companies to diversify their investment around the region because this "makes good economic sense"[10] in the event that there are economic problems in a particular country or countries. The emphasis by Goh in urging Singapore companies to invest in India also comes with the realization by the Singapore government that, to some extent, Singapore seized the opportunity rather late to realize China's investment potential.[11] The Singapore government was aware that it was behind the "investment curve" when the Chinese government opened up their economy to foreign investors in 1979. Thus, the Singapore government does not intend to repeat the same mistake with India.[12]

Going regional

There are several reasons as to why the Singapore government chose to emphasize regionalization as a long-term economic strategy to ensure expanded growth and development.[13] However, as a nation that favors international trade, it is peculiar that Singapore would prefer regionalization as opposed to globalization. Then Singapore's Deputy Prime Minister Lee Hsien Loong gave the reason for emphasizing regionalization instead of globalization. Deputy Prime Minister Lee opined that: "In general, it will be harder to break into the European or American markets than for us to make an impact in the Asian market. It's more competitive and complex (Europe and America), we understand it less and the chances of making mistakes are greater."[14] Hence, the Singapore government is focusing on finding a role and creating a niche for its economy with other emerging Asian economies.

The emphasis on regionalization by the Singapore government also came at a time when the government decided to adopt a more systematic approach to tap into the Asian regions' emerging potential. Previously, Singapore's economic initiatives in the region were not planned as an overall strategy as explained by then Deputy Prime Minister Lee Hsien Loong: "We have been around the region, but I think we have not done it quite as systematically as we could. So we had to focus a little bit more attention on this, particularly by making use of our capabilities in our statutory and government-linked companies."[15] With the assistance of the statutory boards and government-linked companies (GLCs), the Singapore government has been focusing on establishing strategic linkages with other Asian economies. Singapore's Temasek Holdings have acquired some assets in India, especially in the banking sector. However, Temasek has also invested in some of India's infrastructure and services such as spending U.S. $ 40 million for a 7.7 percent stake in Bangalore-based Matrix labs and U.S. $ 10 million for a 5 percent stake in Apollo Hospitals.[16]

An added reason to explain Singapore's need to invest in the region was that its investments in its domestic market are declining in terms of returns.[17] In the 1990s the returns for Singapore's investments in its own domestic market generally has been 18 percent but this has dropped to 13 percent since 2000. The process of regionalization is mirrored by Temasek Holding's strategy to focus on the growth and opportunities available in various emerging and developing economies.[18] According to Madam Ho Ching, the Chief Executive of Temasek Holdings, "Temasek has to transform its portfolio from a proxy for the Singapore gross domestic product into a balanced gross national product portfolio leveraging on the growth and promise of Singapore, ASEAN, Asia and the World." Temasek is serious in its intent on India because it has opened an office in Mumbai.[19] Ho Ching added, "As an equity house with the mandate to maximize long-term returns on our investments, we are keen to deepen our connection with India, as part of our wider interest in Asia."[20]

What could Singapore contribute to India in infrastructure development as part of its regionalization strategy? One of the areas that Singapore had excelled in was infrastructure development and this was deemed as a key factor by the Singapore government to market to the region. Then Deputy Prime Minister Lee said that: "For example, take our Housing Board and Port of Singapore Authority . . . we run a good port, we have a successful housing programme and maybe some of these skills will be useful to other people."[21] In refocusing onto the Asian region, the Singapore government has tried to blunt its globalization drive, which has become synonymous with expanding its trade linkages with the developed Western countries.[22] This realignment of Singapore's foreign economic policy to place greater emphasis on the Asian region is also recognition that the global economy will be driven by the Asian region and predominantly by the Asian giants, China and India.

This shift in long-term economic strategy is not out of sync with the outlook of Singapore companies. This is because even without the strategic shift toward regionalization, Singapore companies have for decades invested in Malaysia and some have invested in Hong Kong and China.[23] The strategy of regionalization[24] was also implemented to ensure that based on economic growth and development, Singapore could maintain its industrial and technological lead over its competitors.[25] Singapore's political leaders emphasized that Singapore would be left behind when other more outward-looking New Industrializing Economies (NIEs) surged forward and would eventually reach the level of Singapore's economic achievement.[26] The former Senior Minister of Singapore Lee Kuan Yew commented that: "We are in danger of becoming an economy that nearly made it but had stalled halfway and got left behind."[27] Referring to Taiwan, Hong Kong, and South Korea, Senior Minister Lee commented that: "With a domestic and an external economy, the other three NIEs had two wings with which to take flight. Singapore, however, had one wing built from the domestic economy. With only one wing we will stay on the ground and not get airborne."[28] The need to ensure economic expansion for the future forced the Singapore government to practice its brand of state capitalism by propelling its investments and entrepreneurs overseas into the region.

To stay ahead

Due to the increasingly competitive economic environment, the process of regionalization was also aimed at staying ahead of the other NIEs and the fast-growing Southeast Asian economies that included Malaysia and Thailand.[29] Prime Minister Goh explained that the objective of regionalization was to expand the national economy by building stronger private companies and establishing some of them as multinational companies (MNCs).[30] Singapore's political leaders had commented that within seven hours' flight time from Singapore there are 2.8 billion people living in major cities. For example, all of India's major cities could be reached from Singapore within seven hours. The four southern Indian states of Andhra Pradesh, Karnataka, Kerala, and Tamil Nadu, as well as West Bengal, an east Indian state, are approximately fours hours' flight time from Singapore. In promoting regionalization, Prime Minister Goh had outlined five principles and three approaches for Singapore enterprises venturing abroad. The principles for regionalization included the need for Singapore to diversify its investments and not put all its "eggs in one basket." According to Prime Minister Goh, this not only makes sound economic and political sense but the region is vast and abounds with opportunities.[31] There is an imperative need to venture into new markets to form a steady and durable relationship and not for quick exploitative profits.[32] Nonetheless, the next stage comes with consolidating and building Singapore's strengths in traditional investment destinations such as Malaysia and Indonesia. Why is there a need to strengthen links with Singapore's traditional trading partners? This is crucial because

Singapore's venture into new regions must not weaken its historical link with its traditional economic partners.[33]

Singapore's small size and generally good reputation as a foreign investment partner assisted in the process of economic complementarity with India because Singapore was not seen as a threat to local Indian businesses. Nonetheless, Singapore investment must be seen to benefit the host country in terms of technology transfer and manpower training.[34] This complemented India's objective of obtaining advanced technology, expertise, and capital through joint ventures with foreign partners. The Singapore companies venturing abroad are also duly advised to invest in community projects to enrich the lives of the host countries' citizens.[35] Physical size of the host country is of great relevance to the Singapore government when the strategy to regionalize was conceptualized. The Singapore government realized that in large emerging markets such as India, the economic reforms implemented by the central government will fall short of desired objectives if the provincial state governments were not involved in the process of economic reform. PM Goh said that: "Commitment to reform from the central government alone will not be enough, state governments play a critical role because they can facilitate the implementation of projects or stymie it with innumerable hurdles."[36]

Nonetheless, Singapore companies have become risk averse and would rather undertake business in places suchas China with a "top down" approach that they are more familiar with rather than India with a "bottom up" approach.[37] In India, influence and authority are not concentrated in the hands of a few individuals, therefore, networking and obtaining approvals to establish a company may take a longer time. India was often deemed to be more chaotic than China and the formers' infrastructure is not as good as that found in China.

Economic nationalism in India

Government-to-government contacts are very important in bilateral trade relations, but the sustainability of bilateral trade relations also depends on the perception of the private sector and how it views the emerging trade linkages between Singapore and India. Foreign investors still hold the view that India's openness to the international market economy is tempered with its ethos to be self-reliant[38] and to be cautious when liberalizing its domestic market.[39] Until the end of the 1990s, Indian economic nationalists[40] using issues such as health and environmental degradation still caused problems for foreign investors wanting to invest in India. For example, the largest MNC project in terms of costs that was affected by economic nationalists was the Enron project in the state of Maharashtra. Enron Corporation had to overcome nationalists' pressure to build a U.S. $ 2.8 billion power plant in Maharashtra.[41] India's premier IT hub, Bangalore, in the southern state of Karnataka was also not spared the brunt of economic nationalists. For example, franchise Kentucky Fried Chicken (KFC) was forced to close down its operations in Bangalore due to protests from local farmers amidst allegations that KFC's chicken was high in the flavor enhancer monosodium glutamate.[42] Moreover, KFC is reopening its outlet in the capital Delhi and 14 more outlets across the country. Along the way, KFC has learnt to deal with localizing its operations in India including balancing its menu with vegetarian fare.[43] Well-known international brand Coca Cola also faced the ire of environmentalist when their sludge was alleged to contain the toxic presence of cadmium, a substance found in pesticides.[44] Pepsi Cola has overcome these challenges to plan for future investments of U.S. $ 300 to $ 500 million in India. Apart from its well-known soft drink label, Pepsi Cola has also expanded its other brands including Lipton Iced Tea and Gatorade in India.[45] Pepsi Cola in India is also expanding into the Quaker breakfast products.

There seems to be a lingering fear of exploitation being used as a cover by the pro-nationalists and protectionists lobbies that large foreign MNCs were out to capture the Indian market and drive local businesses out of the market. In order to be accepted by the Indian population, the MNCs have to be seen to be investing for the long-term rather than make a quick profit and investing elsewhere after that. Indian economic analysts opined that if foreign MNCs were giving something back to the community or were to be seen to make an effort to ensure that India benefits from their entry into the domestic market, this will help to change the generally negative perception of MNCs. This relates to the key principles that Singapore's then Prime Minister Goh explained to local businessmen in the process of persuading them to regionalize. Prime Minister Goh emphasized that Singapore companies should move into emerging markets with a long-term view. In addition, Singapore investments need to benefit the host countries and they must get involved and support the host community in their cultural and social activities.[46] However, with the increasing globalization of Indian-owned MNCs such as Ishpat Steel, Wipro, Tata, TCS, Satyam, and Infosys, the perception is growing that Indian companies are competitive on the international market.

Governance and bureaucracy

The governance structure in India appeared perplexing for Singapore companies and investors. The federal government in India is a coalition government and there are separate governments for each of the 28 regional states. Center and state politics is an important issue for foreign investors because it directly affects the business environment. Singapore's Minister for Foreign Affairs, George Yeo, commented that the business climate in India is still difficult and local awareness is required about state and national laws.[47] The federal government is led by a former World Bank economist, Prime Minister Dr. Manhohan Singh, and capable cabinet ministers such as P. Chidambaram, Kamal Nath, Pranab Mukherjee, and others; however, governmental policies need to be implemented at the regional level and where the regional political parties could have a differing perspective on economic development.[48] For example, the strike by airport workers affiliated to various trade unions against foreign investment into India's major airports and the protest by farmers in West Bengal over inadequate land compensation for land acquired by the state government to build industrial plants show the unpredictability of the Indian business climate. According to Minister Mentor Lee Kuan Yew of Singapore, apart from a strong and capable federal government, India needs a strong administrative system to deliver the policies on the ground as well. MM Lee commented that, "To get the policy implemented, you must have a strong administrative machinery and apparatus."[49] In this context, India would have to depend on its large and influential bureaucracy.

Post-independence, India's bureaucracy became all powerful when India adopted self-reliance and self-sufficiency as its economic principles. Bureaucrats assumed the commanding heights of the economy and set about managing a complex labyrinth of regulations and licensing procedure.[50] After 1991, it was assumed that India's economy was being liberalized and that bureaucrats with licenses to dispense were becoming less influential. Some more progressive states had established one-stop agencies to expedite approvals for foreign investment and to overcome bureaucratic inertia but these had proven to be ineffective.[51] A survey of 16 major foreign corporations and joint ventures located in India indicated that the bureaucracy has been the biggest challenge for Singapore foreign investors.[52] From interviews, a disgruntled director of an international company selling health products said, "Regulations are tedious, ambiguous, and tiring. When I went to the government secretary (senior official) in Delhi she asked, why do you want to invest in India?" I was surprised because I came to put money here. In another case, the representative of a firm providing consultancy and financial management services for Singapore companies wishing to go to India commented, "The license Raj is still there, so there have been bureaucracy problems so far." The director of a management company complained, "You need one week to approve a visa. The processing is also a hassle because they need an invitation from the local company and so many details."

A senior executive of a healthcare company opined that his company has expanded into India and commented that the bureaucracy in India was a problem but that bureaucracy was the same everywhere.[53] There are problems related to licensing, legal and intellectual property protection, repatriation of profits, and there is "no level playing field" in India.[54] However, India is the next Asian Tiger and strong economic growth will result in an increasing affluence that will ensure a growing demand for private healthcare. The expansion of medical tourism in India will also result in growing demand for healthcare and medical facilities in India. For some industries, the rigid regulatory mechanism has been relaxed and changes are being made to improve the cumbersome bureaucracy. For example, one company director thought that he would encounter problems and restrictions in repatriating his profits out from India. However, to his surprise, when he went through his corporation based in Mauritius, he was advised to fill in the required forms by the

Reserve Bank of India after which he was able to repatriate his profits from India. Commercial banks have been given the authority to approve remittances. Another director of a company which provides container feeder services from ports in Singapore to ports in India said "Now we don't have to go to the Central Bank." Even if reforms are taking place at the level of the central government, they may not permeate uniformly across all states and down to lower government levels. The President of U.S. telecoms giant AT&T said that "At the lower levels, there is no sense of urgency, no sense that the world is not going to wait for you."[55] Thus dealing with different states entails dealing with a multitude of diverse problems. This is because according to Bullis,[56] policies aimed at attracting investments vary in strength and nature from state to state.

The degree of bureaucratic hurdles also depended on the type of industry. For example, nationalistic politicians may desire investments from high-technology firms but are opposed to the entry of such consumer-oriented companies as Heinz, Kentucky Fried Chicken (KFC), and Kellogg's. They believe that Indian brands could satisfy the Indian market without consumers resorting to foreign consumer goods. These nationalists work with the motto that India is better off with "microchips and not potato chips." As mentioned, the KFC outlets in Bangalore had been ransacked and allegations of using monosodium glutamate and inhumane chicken-rearing practices have been leveled at KFC by nationalists and animal rights groups. This opposition is probably due to a fear of the social effects of a consumer boom or the added competition on domestic small-scale producers. However, the director of a local architectural company with wide international experience said, "We didn't experience many bureaucratic hassles. It is because our skills are in demand. The red tape has transformed into a red carpet for us." Infrastructure and technology-related areas such as architectural services are in demand. Some companies such as the management consultancy firm faced no encounters at all with bureaucrats because they "only talk to the private companies" who are their clients. However, another consumer trend that may also affect the sales of fast-food products could come from unlikely sources such as the philosophy of Swami Ramdev, a Yoga guru. To the dismay of canned drinks and fast-food producers, Swami Ramdev has opined among his 50 million followers that carbonated drinks and fast food are bad for health and advised his followers to avoid them.

Bureaucratic hurdles also spill over into other areas such as infrastructure and added to overall operational costs. The director of an educational institute said, "Some states are unable to provide adequate infrastructure because of budgetary constraints. These constraints exist not so much due to poverty but more because of bureaucratic and political issues." To deal effectively with the bureaucracy, companies have to be familiar with the rules and regulations and having regular contacts with senior bureaucrats and politicians will minimize the frustration and costs associated with undertaking business ventures in India. The chief operating officer of a machine tools company said, “We don’t look at it as a handicap because we have experience. Our method is to know the administration as a business role. Easiness comes through awareness.” How could bureaucratic hurdles be overcome? Kumar and Thacker-Kumar[57] propose that decisions about where to locate, who should be the India partner, which managers to select and appoint as parent representatives, and the nature of expatriate training and support can all serve as potential tools in overcoming bureaucratic impediments.

Some companies suggested that one of the best ways to circumvent the costs of dealing with bureaucracy is to have the right partner when starting a joint venture. “If the partner knows the ropes, then things will be a lot easier” commented the manager of a healthcare company. As suggested by Kumar and Thacker-Kumar,[58] having one person that knows the system intimately taking care of the government work saves delays and interruptions. For example, this person helps to establish the requisite contacts and becomes a “known face” in government circles. This was expressed by a shipping company, “We have an agent to deal with the bureaucracy in India. He knows all the loopholes. Also, because he’s been there for some time, they know his face and he can get things done.” In this regard, the Singapore government in one of its principles of regionalization has advised local companies to take on joint ventures with Indian partners. Generally due to the efficient administrative and bureaucratic system in Singapore, many local companies are likely to find India’s bureaucracy backward looking and frustrating. However, if local standards are not used as a yardstick and India’s bureaucracy is viewed as just another indigenous way of working, the pain of Singapore companies may be eased. Prior education about the system and a proactive outlook is also necessary to deal with the problems. The extent of bureaucratic hurdles also varies depending on the industry and state.

Several Singapore companies emphasized the need to do one’s “homework” about the business climate in India and engage a local representative who knows the local system. The Vice-President of Crimson Logic, Mr. Kenneth Lim, said that his company entertained local businessmen to gather information at the local level and advised that new companies venturing to India should talk to Singapore companies already established over there and to Singapore institutions such as IE Singapore to seek their advice.[59] He added encouragingly that his company was able to incorporate in India in less than five months. Using leverage on local contacts is a must and another company based in Singapore, Modern Montessori International group, did exactly this. Mr. T. Chandoo of Montessori said that he tapped on his ethnic links and business friends and spent some time searching for a local partner with the right values.[60] In this context, Singapore’s Foreign Minister added that, “To succeed you have to Indianise to a certain degree. The only way to do that is to be there and learn the hard way. It’s the same in China and elsewhere.”[61] This point on localization will be elaborated further in this chapter.

Social and cultural links

Singapore's traditional ties with India include family linkages from immigrants and the legacy of legal and administrative systems left by the British. These have been promoted by the Singapore government and the Indian government as a foundation for bilateral relations. For example, former Prime Minister Goh Chok Tong in his speech at the acceptance of the Jawaharlal Nehru award in India on July 2004 said, "Our trading and cultural links with each other go way back and we share a part of each other's history."[62] The Singapore government has hosted cultural exhibitions from India and over the past decade both governments have signed two agreements on cultural exchange.[63] Cultural understanding is an important component of successful business partnerships. However, despite the rhetoric and efforts made by the governments, the respective nations' business cultures are perceived to have significant differences. It was presumed that India had many cultural rigidities and barriers to entrepreneurship and change.[64] For example, issues such as punctuality, ignorance of each other's cultures and ability to understand provincial languages in India surfaced during the interviews.

Kanekar and Vaz[65] observed that "Indians are notorious for their unpunctuality" in their study of undergraduate students in Mumbai University. This phenomenon commonly known around the world as "Indian Stretchable Time" (IST) was a problem that some Singaporean businessmen had identified pertaining to their Indian counterparts. For example, one exasperated entrepreneur from an international pharmaceutical company complained, "For a 10 o'clock appointment, the customer came at one pm—three hours late! To him it was normal. If you came in early, they thought something was wrong with you." Another company official said, "In Singapore, I consider myself late if I am not 10 minutes early for any appointment. But in India, I will end up losing my head if I follow that rule. It is not advisable to schedule too many appointments in one day." The habit of disrespecting schedules can extend to late delivery of promised products and services. "Always be prepared for lengthy delays when dealing with the Government. We had ordered some equipment from abroad. It was supposed to arrive in February, in time for a particular promotion. But we only received it much later, thanks to the delays and long processing period by the government," said the manager of a healthcare company.

However, not all companies felt that punctuality was a major issue. Even if the problem existed, they suggested coming to terms with it. "We can't change them, so it's best to just get used to them" said the director of an engineering consultancy services firm. This was opposed to the director from the pharmaceutical company who insisted that Indian businessmen change their ways. A director of a management consultancy firm felt that it was excusable to be late in India because of the perpetual traffic jams. The manager of a photo processing firm remarked that "the culture was changing" and that when dealing with MNCs, Indian companies "take care to be punctual." Educating Indian businessmen will help to circumvent problems borne out of cultural disparity. For example, if Indian businessmen knew that Singaporeans valued punctuality, they would make an effort to be on time. In this regard, Basu and Weibull[66] commented that punctuality can be both a shared social trait and an equilibrium response on the part of every individual, hence whether we choose to be punctual or not may depend on whether others with whom we interact are punctual or not. Generally, Indians are uninformed of global business cultures. The chief operating officer of a machine tools company said, "The exposure of Indian people is less. Their knowledge of international cultures does not extend beyond the latest fashion shown in MTV." However, given the liberalization of the Indian economy and the foreign investors exploring opportunities in India, this is likely to change.

There also seems to be ignorance on the part of Singaporean companies about the business culture of in India. For example a director of an architectural company said, "A lot of Singapore companies are completely green in India, they only know of Little India." And the owner of a photo processing firm said, "Singaporeans take too many things for granted. As a result they end up feeling out of place in the Indian business environment because they did not prepare well enough." Bardhan and Patwardhan[67] in their article on MNCs in India postulated that MNCs need to spend more time and resources on understanding the cultures and context of the countries in which they conduct business. In this context, statutory boards such as International Enterprises Singapore (IEs) have produced publications such *Venture India*[68] and *India–Singapore: Moving on*[69] to enlighten potential investors about what to expect in India. Many of the companies mentioned maintained links with these organizations to be updated about the latest business trends in India. The director of a healthcare company said "Although we discovered India way before the Government, we still maintain contact with their organizations just to keep up with the latest developments and to tap into an all round knowledge of Indian business culture."

One architectural company official highlighted the advantage that Singapore companies have in dealing with Asian counterparts as compared to European or American MNCs. He said, "There is competition from American firms but we have an upper hand because they are used to a high comfort level and there is a difference in cultural approach. We are not so contract minded. They are not willing to start a job with a handshake and they are not willing to stay through the end." A background of mutual trust takes time to be cultivated for any transaction between members of different cultural backgrounds. At the very least a shared understanding of a contract is required to hold expectations about others' behavior and to act on the basis of trust in contexts where one cannot control or guarantee the other's actions.[70] However, the director of a management consultant firm remarked that Indian businessmen were becoming more contract minded. Price and branding are also important issues. The owner of the photo shop added, "It is not true that

Asian companies are favored. If the Western brand offers a good price, Indians would generally prefer them."

In order to circumvent the cultural problem, some firms utilize expatriate employers of Indian ethnicity to head their operations in India. For example the director of the management consultancy firm said, "During the initial start-up phase, we advise companies to use an expatriate Indian manager to overcome cultural barriers." These managers have the dual advantage of knowing the company and the host country's culture. However, Abdoolcarim[71] opined that, "Having an Indian is not as important as having someone with the right outlook, someone who really likes India, because there are lots of frustrations, delays, and a different work ethic." This maybe the strategy for some companies, the operations manager of the machine tools company said, "My boss is Chinese and I am Indian. But my boss was the one in charge of the India project because I was not very interested. It was due to his positive outlook and persistence that we were able to be successful." Therefore, it is important to have "positive leadership" rather than simply an Indian company official heading the company or project. In some business sectors there is no need to employ a local Indian manager at all. The director of a company providing feeder services for multinational shipping companies in India opined that, "There was no need for us to put an Indian there because although we are working in India we deal mainly with foreigners." This shows that depending on the industry and the perceptions of the company, different companies have different ways of dealing with the cultural problem.

Mr. T. Chandoo of Montessori International Group said that his company met, listened to, and visited several local Indian businesses to understand their cultural practices. The CEO of Singapore Computer Systems, Mr. Pek Yew Chai, added that his company spent some time listening to and understanding local Indian business and cultural practices to get used to their norms.[72] For example, Mr. Pek commented that an employee might leave a firm in India for an extra $ 100, which is not much by Singapore standards but a lot to Indian standards. Experienced Singapore businessmen pointed out that many visits and a long courtship is necessary to build a successful joint venture in India. For example, the chief executive of Frontline Technologies, Mr. Lim Chin Hu, said that he spent about a year talking to officials from an Indian IT company called Accel based in Chennai. He also persuaded Accel officials to visit his company in Singapore before he was able to fork out S $ 13 million for a controlling stake in Accel, one of India's top ten IT services companies.[73]

Linguistic skills

Another important aspect that was raised in the course of our interviews is the linguistic issue. With some one billion people, India has the world's second largest English-speaking population. Generally, it has been portrayed by the government that because India was a former British colony like Singapore, and English is the principal language of higher education, commerce, and administration, there would be no problems in terms of communication between the two countries. Most companies interviewed have expressed that language was not a problem for investing in India. However, in reality, only about 6 percent of the population know English.[74] In fact, a company selling pharmaceutical products pointed out, "Its not true that all Indians can speak English. Only a fraction can speak, but even then 100,000 English speakers are good enough." The director of the management consultancy firm quipped that the old businessmen who are unable to communicate in English often employ an English-speaking representative from the new generation.

Besides Hindi and English, there are 17 other major Indian languages. Consequently the pharmaceutical company had to label their products in different languages according to the state in which they sold their product. Designing and translating brand names is not an easy task as the symbols associated with the original names can be lost when translated in a different social setting. Li and Shoostari[75] in their article about branding in China opined that brand naming was an application of language symbols that have been shaped by societal factors such as beliefs, values, constraints, and prescriptive rules. One company representative said, "We had to pick a suitable name for our product in different languages such that the symbol of power and virility is not lost. For example, in one society a tiger may be seen as a powerful symbol but in another it may be the symbol of terror." The meaning of a symbol maybe lost when translated in another language. Translation errors can be costly to correct and irreparable damage might have already been done to the reputation of the firm involved.

Since the Indian population consists of people of various ethnicities and languages, the extent of business that can be engaged with them depends on the linguistic capabilities of both the investor and the clients. There is hardly a substitute for an intimate acquaintance with both the language and the culture of business associates. The director of an architectural company said, "Our mobility depends on our linguistic base. Different companies have different linguistic abilities and hence mobility." Alternatively, some companies resort to hiring local agents to handle marketing. "Our agent handles all our marketing, advertising and sales. As long as we can reach our financial targets we will hire him even if there is a risk that he may be cheating us," said the human resource manager of a healthcare company. Some companies go to the extent of training their employees to speak Indian languages but there maybe a chance of missing the mark because of the diversity of language. For example, the Chinese manager of a photo shop franchise who ventured to India said, "I learnt Tamil. But somehow I only had the opportunity to do business in Calcutta, where they speak Bengali. So I was lost."

While the use of English facilitated good business linkages, in some cases it backfired. For example, when an English-speaking Singaporean Indian (the use of whom was probably seen as an advantage) was utilized to negotiate business, he was ridiculed because he could not speak Hindi. One of the cardinal rules from the companies which responded was "Never send an NRI (nonresident Indian) to India, better to send a nonIndian there. Unlike China, there is more respect for foreigners than NRIs. If I spoke Hindi, it would be different," remarked the Chinese director of the company that experienced this. From the interviews, it seems that linguistic issues pose a challenge depending on where the company sells it products. Also, the potential solution for this problem was multidimensional and has to be treated on a case-by-case basis. The nuances of business language could also be different in India compared to Singapore. For example, when an Indian businessman says "yes", it could be a real "yes" but it could also mean a "maybe."[76]

Marketing—"Localizations"

Singapore's Foreign Affairs Minister stressed that in India, "To succeed you have to Indianize to a certain degree. The only way to do that is to be there and learn the hard way. It's the same in China and elsewhere."[77] However, Minister Yeo also added that, "Once you have learnt, that is the advantage which you have."[78] One important lesson that Singapore companies and investors are learning is that apart from Indianizing their operations and mindsets in India, they are dealing in multiple segmented markets in the various states across India and in different marketing niches. For example, India's huge middle-class population has often been highlighted as an advantage for investors. The market of some 300 to 400 million middle-class consumers has increasing disposable incomes. The "best places are Delhi, Bombay, Bangalore and Chennai in order of spending power/propensity" said the director of a consulting firm which helps Singapore firms establish themselves in India. However, according to Ramachandran,[79] American executives erroneously conclude that the Indian middle class was analogous to the middle class in the United States or Europe but the reality is that the income levels characterizing the Western middle class represent only a tiny upper class in India. Nevertheless in India's case, most entrepreneurs maintain optimism due to its huge population.

The diversity of the population in India requires different marketing strategies. For example, nationwide advertising is difficult. For example, it was hard to find consensus on what represents India. The director of a pharmaceutical company advised "There are different problems when selling to different states. The trick to dealing with India is like eating an elephant. Eat it piece by piece. We fashion our product according to the state that we are marketing in." A healthcare company overcomes this problem by producing a variety of goods for the different classes of people according to their taste, "Our lab produces for local market, not international. We offer different range of services for different classes of people." However not all companies will have a range of consumers to cater to. The director of a management consultancy firm said that they mainly aid foreign industrial firms and thus did not have to worry about marketing their products to the heterogeneous market.

As for packaging and promoting products, Ramachandran[80] advises that rather than "force" global products on the Indian marketplace, it is far better to "Indianize" or localize products. He gave the example where Kellogg's tried a dollar-to-rupee pricing for breakfast products. But because of the relatively high price and Indian food preferences, the company has never been able to sell profitably in India. The owner of the international photo processing franchise said "We had difficulty in competing with Indian photo shops. We had to tailor make our services to suit the Indian market. For example we did not use the international mascots of our company. We had to incorporate Indian mascots and Indian stars to attract the crowd." This of course is not true for all products. Certain industries such as architecture specifically demand foreign and world-class designs. The director of such a company said, "They [Indian clients] were looking for contract building types which were not available in India. Also before 2001, shopping malls were not available in Mumbai. Now they are coming up in many prominent states and they are open to innovative designs." Generally Indians are culturally sensitive in certain industries such as food, medicine, and music and open to foreign products in other sectors. For the former category Indians dictate the form of the product while for the latter category the multinational companies wield more power in the kind of products they supply.

Another challenge in marketing is that despite the huge market potential some companies face restrictions in shareholdings. The Foreign Exchange Regulation Act (FERA) of 1973 put a ceiling of 40 percent on foreign equity participation and multinationals which did not want to dilute their stake were asked to leave the country.[81] But since the New Industrial policy of 1991, foreign investment rules vary according to the area of investment. According to Asher et al.,[82] although foreign direct investment was freely allowed in most sectors, including the services sector, there are still a few sectors where the existing policy does not permit FDI beyond a prescribed investment ceiling. One pharmaceutical company recalled bitterly, "Although we are an internationally established company we had to share 50 percent of our company with a domestic partner. Only recently was this rule abolished." Besides this, according to Banks and Natarajan[83] tariff barriers between states, differential sales tax, municipal taxes, and packaging requirements are some of the internal market factors that must be explored before deciding on where to invest.

Many companies entering India opted for joint venture arrangements because "break-even" points can be achieved more quickly. For example about 60 percent achieve break even within four years.[84] Some cautioned that a suitable partner should be carefully sought. The human resource manager of a healthcare company said, "Finding the right partner is important. There must be mutual synergy and rapport. Our motive was to acquire a lab for profitability and we hoped to grow but our partner had their own point of view, they were not receptive to changes and wanted to remain in their own comfort zone." International companies such AT&T had a distributorship agreement with Bharti Telecom but decided to leave them for the Birla group because, "With the Birlas, we feel very comfortable. We share the same philosophies of integrity and customer focus."[85] One director from a consultancy company remarked, "They [Indian companies] don't have an investment mentality, they're in a deal for a quick profit, not for the long term." However not all companies felt that establishing partnerships was important. "We are already a well established international firm. We have many projects in many countries, so we are used to working in foreign ground. If we try to establish partnerships in each and every country, the quality of our output will be affected," said the director of the architectural firm.

Another problem encountered in marketing was related to copyright issues. Inadequate protection of copyright and intellectual property discourages firms from investing in high-tech and advanced knowledge projects.[86] Banks and Natarajan[87] narrated the case of a businessman with a very successful operation in India who was not producing his latest model because of fears about intellectual property protection. The director of a pharmaceutical company said, "When India began to recognize international trademarks in 1993, we spent the first four years suing five imitation companies." Another company selling machine tools said, "Although we were an internationally recognized brand we had trouble registering our names because there was another company with uncanny resemblance to us. We had to adopt another name for the first few years, until we took legal action and got approval for ourselves." But architectural companies, shipping companies, and industrial companies expressed that they were not affected by copyright problems due to the nature of their industry.

Legal disputes

A corporate lawyer from a human resource firm opined that he has had cases for firms tied up in the Indian judicial system for as long as 12 years.[88] The legal system in India was deemed to be professional but the sheer volume of cases has made it inadequate to handle corporate cases. This has frustrated a number of companies that had decided to invest elsewhere. The corporate lawyer asked the Commerce Minister for India, Mr. Kamal Nath, why the Indian legal system took on an average such a long time to clear cases in the courts. Mr. Kamal Nath replied that Indians are very creative, indicating that they would find "loopholes" in the law to exploit.[89] The same corporate lawyer mentioned that the Indian judicial system could take a leaf from Singapore in terms of how it clears cases. In this context, the SICCI together with the Singapore Law Academy had organized a seminar on "Singapore Calling—All Indian Businesses," on 20 January 2005. The aim of the seminar was to examine how Singapore firms could play a role in legal support for Singapore firms venturing into regional economies like India[90]

The legal sector has great potential for collaboration between Singapore and India. With the rise of Indian MNCs on the global stage and increasing use of mergers and acquisitions strategy to enlarge their capabilities it is likely that legal disputes would arise. The Indian legal system although acknowledged as competent and based on the common law of Britain suffers from an acute lack of legal experts. There are 30 million civil and administrative cases pending before the Indian courts, an increase from 20 million since 1997.[91] However, compared to Britain where there are about 51 judges to every million people, in India there are only 11 judges to one million people.[92] The long delays in resolution of disputes will discourage foreign investors and Indian companies are looking for alternatives. Singapore has built up an impressive infrastructure to support cross-border transactions. Also based on British Law, Singapore has been trying to promote itself as a neutral or alternative venue to handle corporate legal disputes. For example, Singapore's arbitration potential could be useful for Indian companies transacting or operating from Singapore or in other countries in the Southeast Asian region. Four leading Indian trade and economic institutions, namely the Indian Merchants' Chambers, Agri Trade India Services, Multi Commodity Exchange of India and Transworld Group had agreed to support the use of Singapore law to govern their transactions when an alternative to Indian Law is required.[93]

Competition

One advantage often cited was that since India is a new market, there is less competition. A pharmaceutical company representative said, "India's market is not as sophisticated as Malaysia's or Singapore's. Its just opening up and there is less competition." Some companies expressed that unlike the more industrialized countries of Asia, the Indian market is not biased against Asian companies, "The Indian market is more receptive to Asian architects as compared to European and American ones, because they feel there is more value for money" noted the director of an architectural company. However, the director of an engineering firm quipped, "India may be looking to Asia now, but things will change in the next couple of years. As the level of affordability goes up, their tastes will gear toward Western products. Just like you may buy a Toyota now, but when you have more money, you'll switch to a Merc." Inevitably, investors and researches have compared the Indian market and the Chinese markets.[94] Initially, as mentioned before, the government advocated investing in India to "balance the China fever with a mild Indian fever."

However, investors are seeing more potential in India although the size of investments may not be as large as in China. The director of a pharmaceutical company said, "The Indian market is better than China because the Indian corporate set up is clear cut, although it is slow moving. It is predictable." An architectural firm said, "Forget China, we will be medium players there. In India we'll be top end." The machine tools manufacturer said, "Largest clients overseas are in China but fastest growing is India." "In India although the cost is higher, the quality is better. Quality control in China is not as good," said the director of a management consultants firm. But the director of a pharmaceutical company said, "We can never expect our business in India to be as big as in China because of the nature of the Indian business environment. There are just too many loopholes for us. In China we can always turn to the Government to help us if we feel we have been treated unfairly but in India we have to fight ourselves." Invoking political protection[95] through networking is one way of removing obstacles. Thus far there seems to be an urban bias amongst the investors. Krishna Rao Gowd, general marketing manager for India's Sunku Auto Ltd said, "Look to rural India, which has vast potential." Except for a couple of firms producing consumer products, none of the firms that we interviewed mentioned anything about India's rural population. Given the nature of their business it is not easy to translate their products to meet the demands of the rural population.

Infrastructure

Since India's economic reforms however, a different image is in the making. High-tech developments such as the Bangalore IT Park and other IT park successes such as Cyber Pearl in Hyderabad have been showcased by the Singapore government in their bid to attract investors. Nevertheless, many firms continue to face infrastructural problems. A frustrated director of a machine tools company said, "Infrastructure for movement of parts between states is complex in terms of easiness of local tax and administrative procedure. There are also difficulties due to lack of financial infrastructure. The banking system is at an infant stage. Financial transactions are still not automated." A consultancy firm executive said, "Infrastructure does not exist to help small firms go to India—its like we want to go somewhere but there is no bus to get us there. There are also no export credit companies. Banks and lending institutions are immature. They don't know enough so MNCs have to make an effort to teach them and make them understand. They are not proactive." The efforts undertaken by India have not gone unnoticed though many complained about the need to improve transportation infrastructure.[96] The director of an engineering company said, "Roads and communication need a lot of investment and although improvements are being made, there is a huge task ahead. Things are happening but very slowly." The director of a consultancy firm said, "We have an agent to deal with infrastructure bottlenecks in India. In Singapore, things are much easier, we have TDB, IRA etc. to serve as one-stop centers for businesses and we can use the email system. In India it can take about three days for correspondence." It might be especially difficult for companies that are accustomed to working in the Singapore environment. Singapore companies accustomed to good infrastructure facilities will need to lower their expectations when undertaking a business venture in India. However, not all Singapore companies were stymied by the lack of infrastructure facilities in India. For example, the director of a pharmaceutical company said, “We don’t face infrastructural problems because we don’t require much infrastructure.” This view was also shared by Singapore consultancy operating in India.

Several companies expressed their concern and worry over exorbitant airfares and hotel rates. The director of an architectural company said, “Airfares are too high. To fly from here to Sydney is about $1000, but a four-hour flight to India costs $1200. India is restricting the number of flights.” However, one representative company felt that the travel cost of international flights to India were reasonable as compared to the cost of domestic flights. Other infrastructural difficulties include finding accommodation and schools for families. The owner of the photo processing franchise said, “Although I stayed there for many years, I did not bring my family along. I was afraid that my children may not get a proper education which would be internationally recognized.” Companies which work on a contract basis did not of course face this problem. The director of an engineering consultancy company said, “My family remains in Singapore. I fly to India to meet clients and provide consultancy services only when I am needed. We have the local staff in our branches to handle routine jobs.”

Talent and trade unions

The existence of a low cost, but highly skilled labor force has attracted many MNCs. The director from the machine tools company commented, “We had a good experience working with Indian engineers. Good local talent is the reason for setting up in India. In 1995 we had a small operation, of only 20 people. Later we discovered the engineering potential in the Indian labor force when we worked with them in Japan. After five years, we expanded to Pune, Chennai, and Koimbatore and employed 130 people.” However, problems with unions exist. The same company executive said, “There are transport strikes at least once a year.” “The Union is sticky down there,” remarked a representative of a consultancy company. Depending on the scope of the job and the nature of the industry companies are adversely affected by militant labor unions in different degrees. The director of a shipping company said, “Labor unions are still strong in India. Port workers’ strike affects us indirectly, not directly.” A healthcare company manager said, “Other companies which do not have production control or employ only a small labor force did not face such problems.” An engineering company executive added, “We don’t manage staff, only the financial part, so we have no problems as we are only a consultation company. We do not employ them so there are no problems.” Besides the nature of the industry, labor problems would also vary according to state. Though there is a need for uniform labor laws for all states, no action has yet been taken by the central government.[97] The machine tools company official said, “In some states, we have had an easy time managing the staff. But in other states, where the labor laws are complicated, we had a tough time.”

Technology

Technology is the key driver of various industries and the former Indian High Commissioner to Singapore P. Shukla believed that apart from investments Singapore could bring world-class technology to India.[98] For example, Shukla would like Singapore to focus more on promoting India's life sciences sector. Shukla remarked, "I want to build some specific shape to our life sciences collaborations and hopefully establish some specific projects too."[99] Shukla added, "Some things are happening in research, but we need to strengthen these cooperative links. This is what we are trying to do—to educate ourselves and our friends about the new India. There are business opportunities that did not exist before."[100] Singapore companies have responded to this call because consultancy companies have opened up private schools in India to tap into the educational technology market. However, some companies such as Informatics Private Limited, a leading IT educational center in Singapore and the Southeast Asian region, did not manage to take off in India. Why? This was because Informatics were competing with big names in IT education in India such as NIIT and a host of smaller players. These Indian companies were offering more modern and complex IT modules at competitive prices which Informatics were unable to match. Chapter ten of the CECA addresses the issue of cooperation in education and science and technology. The areas covered included information technology, space research, biotechnology, and advanced materials among others.

Table 4.1 summarizes some of the key challenges experienced by Singapore companies in India. The "license-permit Raj" or bureaucratic inefficiency was still prevalent at the lower levels of hierarchy. Powerful bureaucrats not keen on reforms still exist and they are an impediment to economic growth unless foreign companies are familiar with various rules and regulations.

Table 4.1 Key challenges in India's business environment

Key challenges	*Companies' remarks*
Bureaucracy	Bureaucratic inefficiency still prevalent especially at lower levels
Culture	Indian businesses need more exposure to international economic and business practices
English language	Other languages such as Hindi or provincial languages also important
Marketing	Has to cater to peculiarities of Indian consumers
Competition	Increasing in a segmented market
Infrastructure	Improving but slowly
Talent—Human resources	Available but subject to trade union politics in certain sectors

Source: Interviews from companies in 2005.

Certain economic sectors such as food and beverage are especially difficult if they are part of a Western franchise because they are seen to be iconic and challenging indigenous Indian values. Other areas related to specialized services such as architecture or technology related are seen to be beneficial to India and face lesser hurdles. In terms of culture and business ethics, punctuality for appointments is a major problem and foreign investors and companies faced lengthy delays and long waiting periods. This is changing slowly as Indian companies become more exposed to the international economy and foreign companies. Singapore companies are informed and educated on the major peculiarities of the Indian market and have an edge over Western counterparts because of their ability to be less contract minded and work through trust with their Indian partners. English speakers in India number from 100 to 150 million and India has 17 other major languages besides Hindi as well as thousands of dialects. Knowledge of major provincial languages and Hindi are important in terms of establishing a distinct brand through advertising and sales.

Foreign companies ventured into India because of the huge middle-class market. But due to the diversity of the population, a homogenous marketing strategy could not be adopted. The market is segmented in India and the middle class is also differentiated based on their varying disposable income levels. Therefore, marketing strategies has to vary according to different states and according to the nature of the consumers in that particular economic sector. For example, companies producing consumer goods had to localize for the ordinary citizen and market their products to suit native tastes. Big industrial giants importing international goods to India have to worry instead about meeting international standards. Also not all companies are allowed to have complete access to profits and market share. India's lack of copyright issues could affect small-scale producers such as pharmaceutical companies more than large-scale producers such as engineering and architectural firms. Packaging and sales are likely to be more successful if they adapt to the Indian environment through the process of localization. Nonetheless, producers have to be sensitive to the evolving change in consumer tastes as they become more sophisticated with rising income levels.

Conclusion

The infrastructure remains a massive problem and sectors such as power generation, telecommunications, water distribution, and management requires a lot of foreign investments and needs to be expanded and modernized. Indian talent in services such as IT was available but they are also subjected to the vagaries of labor laws. The talented workforce were saddled with problems of trade unionism. Generally strikes affected some companies which have a higher employment base. Infrastructural problems affected companies that had established their production base in India. Singapore MNCs in India which are consultancy based, or managing certain aspects such as finance in joint ventures were less affected by infrastructural problems. The findings from the various interviews showed that there are no uniform challenges for businesses that are going to India. Although generalizations cannot be made, challenges vary according to the nature of the industry, the regional state, and the expectations of the Singapore companies.

Other challenges that Singapore companies could face in India would also include the scale of projects in India, the lack of knowledge about the Indian business environment, and the political uncertainty prevailing in the Indian market for Singapore investors. The main attraction in India is arguably its diverse and huge human capital resource as will be discussed in the next chapter. With the right business environment, India could exploit its human resource potential and expand its economic development. Singapore could complement India in this regard and could play a large role in infrastructure development.

The following chapters will examine the various infrastructure projects that Singapore companies are involved in and these include the information technology (IT), telecommunications, civil aviation, ports development, and residential construction. These sectors were chosen because they represented success and problems in relation to the complementary strengths of Singapore and Indian economies. While the IT sector has reflected success between Indian and Singaporean economic ties, the civil aviation sector has been problematic and the telecommunications sector is becoming competitive with the entry of large global players such as Vodafone.

5 Singapore and software clusters in Indian cities

Introduction

In developing information technology parks across India, Singapore GLCs and in particular Ascendas are leveraging on the talented human capital of India. The high-tech parks are essentially clusters of specialized firms that have links to the government and tertiary institutions in India. For example, Texas Instruments (TI) maintains links with local universities around its Bangalore set up and provides these universities with free software that has been designed by the TI team. Although, Texas Instruments runs the risk of copyright violations and software piracy, the chance to enter the Indian market offset these factors. Moreover, the undergraduates using the TI systems in universities will then be familiar with TI products and will provide TI with knowledgable workers in future. Clusters tend to promote both competition and cooperation and it could be argued that without rigorous competition a cluster will cease to be innovative.[1] Despite the prevailing competition, clusters also promote cooperation among the various rival companies and R&D institutions. How could cooperation be carried out? Cooperation within clusters is essentially through the flow of information that contributes toward solving problems and overcoming challenges to innovation.[2] The breeding of innovation in a cluster could also be promoted through strong linkages between technology users and producers.[3] Eventually, cluster activities could increase the likelihood of spillover effects in the diffusion of new technologies and new ideas because of the concentration of large numbers of high-tech firms within a geographic region.[4]

Michael Porter[5] had used the concept of clusters to explain how knowledge-based economies could use linked industries to create critical masses in order to expand economic activities. According to Porter, clusters affect competition, which increases a firm's competitive advantage and is beneficial overall to economic development.[6]

Balasubramanyam et al. had also used the cluster approach to account for the expansion of the Information Technology (IT) sector in Bangalore.[7] John Stremlau had written on the transformation of Bangalore into India's silicon city and how this will affect economic development throughout India but pointed out that there are adverse impacts to Bangalore's expansion of its software industry.[8] India's low cost but large and skilled IT human resource pool is the main attraction for IT MNCs in Bangalore. In this context, AnnaLee Saxenian had written a number of papers on the "brain drain and brain gain" aspect of the IT sector with specific reference to the loss of software talent from developing countries such as India to Silicon Valley in the United States. Saxenian had examined whether Bangalore could be considered the Asian equivalent to Silicon Valley in the United States.[9] In a more recent article, Ambika Patni reported on the progress of Bangalore in specific areas such as software development.[10] In contrast, geographers such as Mark Holstrom[11] have used the spatial approach to examine Bangalore as an industrial district with specific reference to the engineering and electronic industries.

Figure 5.1 illustrates some of the possible variables affecting an innovative IT cluster in Indian cities. To research the capabilities of innovative clusters, David Rosenberg has examined six locations worldwide, including Silicon Valley and Bangalore to examine the benefits of a technology cluster.[12] Rosenberg has outlined several key features of software technology parks such as geography, company culture, venture capital, stock market capitalization, universities as talent pools, and government policies to foster IT growth.[13] In relation to Bangalore, Rosenberg had described this IT hub as a "silicon island, Third World Sea." The chairman of Infosys, Narayanan Murthy made a similar observation when he commented that Indian IT workers in Bangalore had to make the mental adjustment from living in a third world to working in a first-world environment on a daily basis. Are the IT clusters sustainable over the long term from an infrastructure and people point of view? Locational advantages of established companies are dependent on the fluctuations of wages, changes in local environmental regulations,

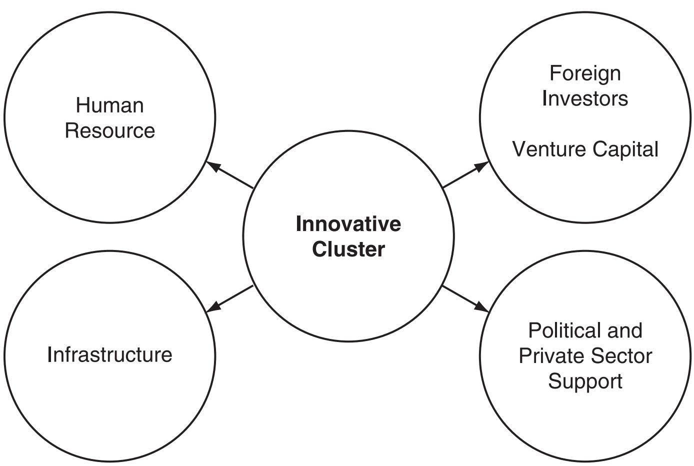

Figure 5.1 Innovative clusters in Indian cities.

transportation alternatives, and commodity suppliers.[14] Using Bangalore as a case study, the emergence of the IT clusters there will be examined using the variables mentioned in Figure 5.1. I wish to ague that the sustainability of IT clusters in India would depend primarily on the infrastructure facilities available. Moreover, as these "silicon islands" or "IT hot spots" mushroom across Indian cities wherever IT talent remains untapped, companies such as Ascendas could exploit the niche demand to provide self-contained IT parks.

High-technology background

In the case of Bangalore, the concentration of electrical and aeronautical industries has also created backward and forward linkages. This has triggered the appearance of upstream and downstream activities that support and are linked to electronics. With the presence of the academic community contributing to a vibrant R&D scene, private electronics companies started to move to Bangalore. As a result of this high-tech clustering, people from all over India also started to migrate to Bangalore, adding to the cosmopolitan character and culture of the city. Arguably, the cosmopolitan nature of the city and its "open" life style added to the attraction of moving there from an expatriate's point of view. The presence of the academic community, high-tech industries, strong industrial base, and social networks provide an environment in which information and technology can be shared. The sharing of information and technology can be undertaken through collaboration or the rotation of labor which can lead to a certain degree of technological diffusion.[15]

How should we evaluate the effectiveness of the Bangalore IT cluster? One approach will be through internal benchmarks of excellence among the companies residing in Bangalore. The international benchmark of excellence for software development could be gauged using the ISO 9000 certification and in 2001, of the 300 leading IT companies worldwide with this certification, more than 170 of which are based in India. Another often-used IT benchmark is the SEI-CMM standard developed by the Carnegie Mellon Institute in the United States. The SEI-CMM standard ranges from 1 to 5 for highest excellence. There are over 50 companies worldwide with SEI-CMM Level 5 status, India has about 40 companies with CMM Level 5 and more than half of them are found in Bangalore.

Table 5.1 indicates that the Bangalore IT industry is dominated by about 13 companies that are valued between U.S. $ 50 million to more than U.S. $ 1 billion each. Besides the dominance of a handful of large Indian companies, software companies in Bangalore are also confronted with other challenges threatening their sustainability. From a creative R&D perspective, the sustainability of the Bangalore software phenomenon has rested upon three distinct types of activities dealing with targeted domains, differentiated activity, and synergistic innovation of Indian software firms.[16] Software production in Bangalore has become increasingly capital intensive, raising the cost

Table 5.1 Number and value of IT companies in Bangalore from 1999 to 2002

Value of companies in U.S. $ million	*Number of companies*		
	1999–2000	*2000–01*	*2001–02*
Above 200	Nil	2	2
Between 20 and 200	6	13	13
Between 2 and 20	51	66	95
Less than 2	100	189	246
Less than 0.5	277	212	326

Source: Government of Karnataka website (www.karnataka.gov.in).

Table 5.2 Information and power network in Karnataka, 2002

Infrastructure	*Unit of measurement*
Power deficit	4000 million Kwh
Plant load factor	64.9%
Installed captive capacity	15.5%
Projected power deficit	–20.8%
Tariff industrial	Rs 1.77 / kwh
Number of phones	560 733
People per phone	80.25
Phone services	DOT, Hughes Ispat
Cellular services	Modi Communications
Radio paging	Arya, Hutchison Max

Source: Government of Karnataka website (www.karnataka.gov.in).

of entry and participation in overseas markets in terms of technology access, software development tools, techniques, and methods.

Bangalore suffers from water shortages, inadequate sewers, erratic power supply and pot-holed roads. Although the state of Karnataka has some 134,000 kilometers of road network, they need to be expanded and upgraded to attract more MNCs and foreign investment. The transportation networks in Bangalore could be improved because its roads were not designed to accommodate the huge increase (approximately 9000 per day) in volume of motorized vehicles. Bangalore's image as an IT hub from the point of view of foreign investors also suffered when it was shown that the state government was poorly equipped to handle the massive floods which inundated the state in early June 2004. With the rate of Bangalore's population expansion from 800,000 in 1951 to 5.6 million in 2001 and the expansion of business in IT, the state infrastructure is not able to cope with the pace of continued expansion in the IT sector.

Table 5.2 illustrates the information and electricity-generating network in Karnataka. Bangalore suffers from a power deficit and "brown-outs" are quite common, prompting the need for businesses to have their own captive electricity generators, which increases the costs of their operations but there is no alternative for the foreseeable future.

Figure 5.2 shows an STD booth in India next to crumbling pavements in Bangalore. Table 5.3 shows the transportation networks and export processing zones (EPZs).

The long, drawn-out tender and selection process to construct a new international airport in Bangalore is also reflective of the slow process of decision making that discourages MNCs and foreign investment.[17] The congestion of Bangalore's main roads and the government's inability to plan for an increased volume of traffic adds to the loss in manpower cost. The dispute over the cost in the construction of flyovers meant to ease traffic congestion has left these projects idle, adding to traffic woes.[18] This has resulted in the major IT companies consolidating their operations in self-contained campus-like facilities on the city's outskirts. The state government has not sustained investments and improvements in infrastructure even as MNCs are expanding their IT operations in Bangalore. Moreover, the "Bangalore Agenda Task Force," an initiative led and largely financed by Nandan Nilekani, the chief executive of Infosys, has not received strong government support.[19] The state government has also imposed a 13.5 percent duty on goods brought into the state which will be a heavy burden for firms relying on imported computers.[20] Overall, the IT industry in India will not suffer because of Bangalore's inability to improve its public infrastructure. IT companies have the option of moving to

Figure 5.2 STD booth and crumbling pavements—Bangalore.

Table 5.3 Infrastructure network in Karnataka, 2002

Infrastructure	*Unit of measurement*
Railway track length	3089 km
Domestic airports	6
International airports	1
Cities linked	Ahmedabad, Kolkatta, Delhi, Mumbai, Thiruvananthapuram
Road length	133, 987
National highway length	1968
Ports	2 (New Mangalore, Port Karwar)
Industrial zones and parks	23
Export processing zones	1
State-identified priority sectors	Electronics, informatics, pharmaceuticals, telecoms, leather, and leather products

Source: Government of Karnataka (www.karnataka.gov.in).

other Indian cities and IT firms can have their own campuses that are self-contained. The loser in all this will be the Karnataka state government.

The Software Technology Park of India

How were IT clusters able to thrive despite the infrastructure problems faced by Indian cities? One of the main facilitators for expansion of the IT sector was the organization Software Technology Park of India (STPI). The Software Technology Park (STP) scheme was introduced by the Department of Electronics (DOE) in the early 1990s to ensure that the infrastructure and administrative support for exporting IT services were available in India.[21] Similar to an export processing zone, an STP provides export-oriented software firms in designated zones five-year tax exemptions and guaranteed access to high-speed satellite links and reliable electricity. The DOE also provides basic infrastructure such as core computer facilities, reliable power supply, communication facilities including internet access, and ready-to-use office space. Firms in the STP scheme could also import all equipment without duty and import licenses and have 100 percent foreign ownership in exchange for a sizeable export obligation.[22] In June 1991, the STP was registered as an autonomous agency indicating that the DOE wanted to avoid direct government involvement but wished to facilitate the expansion of the IT sector.

Figure 5.3 shows an STPI earth station. To facilitate the growth of software exports, in 1992 a satellite earth station was established in the southern city of Bangalore in the state of Karnataka for high-speed communication services to facilitate software exports. Thereafter, India's first international gateway and network operations for Information Technology were established

Figure 5.3 Software Technology Park of India (STPI) earth station.

at the STPI in Bangalore's electronic city. The STPI is an autonomous society that was established by the government under the Ministry of Information Technology (MIT) for the purpose of promoting export of computer software.[23] The STPI also facilitates links with leading international telecom providers and has operations across more than 25 states. Besides Bangalore, other cities such as Hyderabad and Chennai have also developed their own STPs to lure both Indian and MNCs involved in the IT sector. However, Bangalore is considered to be India's leading IT hub for software exports. The Bangalore Technology Park has evolved since its inception in 1991. The original STP concept was a physical entity and companies had to hire space and export their software from these STPs. Rapidly changing technology and business conditions dictates that a virtual STP could react faster to changing business trends. In this regard, companies could acquire STP status in their chosen locations and the STPI will grant them, upon approval of their status, the STPI benefits.

Government's role

In October 1999, the then Indian Prime Minister, Vajpayee, announced the formation of the Ministry of Information Technology to transform India into a global IT superpower.[24] MIT was tasked to be the nodal institutional mechanism to facilitate IT initiatives from various sources such as the central government, the state governments, academia, and the private sector for the overall growth of the IT sector. MIT's main target was to implement a comprehensive plan to achieve a target of U.S. $ 50 billion in software exports for India by 2008. In October 2000, India's Information Technology Act came into force, making India one of the few countries in the world and the second after Singapore to have an IT law. Regional governments in the various states also began to attract direct foreign investments in the IT industry. The various state governments took their cue from the federal government on IT matters and implemented their own IT strategies. In late 1999, S.M. Krishna took over as Chief Minister in Karnataka and continued the state's development as an IT hub.[25] Krishna introduced several incentives such as a "one-stop" approval agency for IT investments and fiscal measures to attract more investments such as cyber parks and a convention centre built to international standards. The fiscal incentives included exemption from stamp duty and 100 percent exemption from entry tax on computer hardware and other imports, which proved popular with MNCs. By the end of 2001, there were more than 100 MNCs in Karnataka and the cumulative investment in the software[26] industry amounted to some U.S. $ 1.3 billion.

Human resource pool

The required human resource for the growth of the IT industry could come in several categories such as academic labor and skilled labor. Academic labor could refer to the extent in which a firm's labor force acquires the necessary expertise for operations outside formal education. In contrast, skilled labor refers to critical expertise attained through formal or informal channels of work experience.[27] India produces about 80,000 skilled IT workers every year but the majority of them prefer to work overseas especially in the United States. The remaining IT workers from across India usually shift to where the IT hubs are, such as Bangalore. Of the total IT companies in India, more than a quarter are located in Bangalore: 1154 STP registered companies as of April 2003. In addition to their English-speaking skills, Indian software engineers and other skilled IT workers have excellent skills in hardware programs such as IBM Main Frame, MAC, Novell LAN, AS-400 and others. Indian software companies also have competency in project management to develop software but ensuring overall cost effectiveness, quality, and timely delivery. To publicize their competency, Indian software companies had achieved ISO 9000 certification and SEI-CMM Levels 2 to 5. However, the main draw about software development in Indian IT hubs such as Bangalore is that on average an Indian software engineer is paid four to five times less than their U.S. or European counterparts. This enables MNCs and Indian IT firms to employ more skilled IT labor to work on a project thus reducing development time. While high "turnover" employment rates are becoming a real challenge in continuity, IT companies have managed to reduce the

Figure 5.4 Human resource—Infosys personnel at Bangalore campus.

problem with attractive perks such providing company stock options for staying with the company and the attraction of working on value-added projects such as product development.

Figure 5.4 shows personnel at the campus of Infosys in Bangalore. Human resource talent in Bangalore and India as a whole has improved because the dominant business model in the Indian IT sector has changed from one focusing on UNIX computer platform services to one focused on the growing number of internet-related services. Indian software engineers are realizing that their capabilities are suitable for a wide range of internet-based activities such as e-commerce, data centers, application hosting, and medical transcription.[28] While, Indian software engineers had in the past provided most of the low-cost activities for IT companies, such as coding, this is beginning to change. Multinationals in India had mentioned that the training imparted to India IT workers is in tune with industry needs and a large number of these firms also undertake to train those IT workers whom they recruit. Infosys Technologies in Bangalore employs some 4000 people, about half of its total workforce worldwide. Increasingly, more technology design is being undertaken in India and by Indian entrepreneurs in India. Indian IT firms that had initially started as consulting firms are now developing new technologies and products. Well-known IT MNCs, such as Texas Instruments, employ over 600 software professionals at their large complexes in Bangalore to develop software for digital signal processing to operate many of the gadgets we need such as cellular phones, CD-ROMs, multimedia, and so on. In terms of salaries and gender disparities, the IT sector in Bangalore seems to be battling the trend of male dominance by having equitable salaries and hiring the best qualified talent regardless of their gender.

Labor mobility within a cluster also promotes innovation and compels companies to maintain their best and brightest by persuading them to stay and work on cutting-edge R&D. Nonetheless, labor interchangeability between firms in Bangalore conforms to the patterns seen in the Silicon Valley model.[29] The mobility of workers in a cluster is also easier as the costs of job searching are lower because of the large number of firms with complementary skills.[30] With rapid technology change, clusters also encourage firms to hire workers with experience and skills besides fresh recruits. Besides the inter-firm movement of people, the hundreds of themed pubs around the city also provide a social environment for networking. Pubs are nightly pit stops for Bangalore's tech elites, especially over the weekends. These pubs offer a huge selection of choice that cater to every imaginable taste and life style.[31] There are about 100 bars with names such as *Pub One, Knockout, Sonia Green's Thumbs Up, Pubworld* and *NASA* around Mahatma Gandhi Road at Bangalore's congested central district, Shivaji Nagar. The other main area for socializing and networking is along the pubs at Church Street, where many of Bangalore's smaller software firms, restaurants and cybercafes are located. The average staff turnover in Bangalore's IT sector is around 25 percent total manpower and Church Street remains a main recruiting area, where you could land a new job just by having coffee at a café. Figure 5.5 shows Infosys personnel at its outdoor café on its campus in Bangalore.

Figure 5.5 Infosys personnel at café on campus.

Technology

In the 1970s and 1980s, the Indian computer industry limped along because of its self-imposed isolation after removing IBM or Big Blue from the local market. However, this self-imposed exile also had unforeseen benefits because free from the stumbling block of old legacy systems, India managed to leapfrog obsolete technology. For example, without IBM, there was no proprietary software base and everything became open as India turned into a Unix power. This period of technological isolation also compelled Indian companies to procure indigenous technology. A number of established but unlikely firms went into the IT business. For example, companies such as Wipro, more known for being a producer of vegetable oil, toiletries and soaps, started to produce indigenous software products. Post-1999, the returning MNCs discovered that India had home-grown expertise and talent in software development. For India to realize its ambition to be an IT superpower it had to move up the value-added chain and be involved in strategic consulting, R&D, and providing more web-based and e-commerce interactive services. Most of India's firms are engaged in generalized activities that compete mainly on the basis of costs and will have limited success in migrating to higher value-added work. The dilemma is that to dispense with low-end work could mean a reduction in profits and focusing on innovative and creative work will mean increasing expenditure on R&D.

Following the norm, technology-intensive firms in the early stages of their product life cycle tend to locate around major research universities to leverage on technology transfer opportunities. However, as the firms mature, in-house capabilities and R&D will begin to rival and even exceed university-level research. In this instance, the firms will rely on other factors such as the local environment, land costs, or regulations.[32] To ascertain how technology influences the development of the IT cluster in Bangalore, some trends should be examined. Furthermore, the Indian IT industry has to recognize the importance for innovation and creativity in order to create a position of strength and to move up the value chain. Indian firms tend to classify miscellaneous spending under the category of R&D, inflating the dismal figure of true R&D spending. Nonetheless, there are some local Indian IT companies such as Bangalore based Silicon Automation Systems Limited (SAS) that have become well known in the system chip business. While Indian IT companies have been reluctant to spend on R&D, MNCs have no such qualms and are leveraging on Indian talent for innovation and creativity. For example, Indian engineers in MNCs have moved into the chip designing niche. MNCs such as Texas Instruments, National Semiconductors, and Intel are increasing their chip designers in India. For example, TI has the largest chip design center in Bangalore and is expected to recruit up to 2000 engineers from 2002 to 2007. TI have close links with tertiary institutions in Bangalore and hire about 75 engineers in India every year. TI and other companies such as DCM Data Systems and Philips are also working with educational institutions to help design the curricula that will be most useful to them after the students graduate.

Venture capital and stock market capitalization

The importance of venture capital for the development of the IT industry was reflected by MIT's decision to establish a National Venture Fund for software and IT development with the assistance of the Small Industries Development Bank of India (SIDBI) and the Industrial Development Bank of India (IDBI). The objective of the fund is to provide venture capital for software professionals to nurture their small-scale start-up companies.

Venture capital funds in India will be taxed in the hand of investors but will not be taxed on the amount of distributed or undistributed income.[33] In its efforts to attract foreign investments to India, the Ministry of Finance has also given the approval to the Indian government to source for funding overseas.[34]

Under the liberalized scheme, Indian companies that are keen to issue American Depository Receipts (ADR) or Global Depository Receipts (GDR) could go ahead after appointing a merchant banker that is registered with the capital markets regulator. Firms raising money in this way would need to inform the Finance Ministry and the Reserve Bank of India (RBI) 30 days after the issues.[35] This has benefited well-known Indian IT companies such as Infosys Technologies, which has seen its ADRs rise nine times its original value to U.S. $ 308. The liberalized foreign investment regulations would enable ADR and GDR to function as domestic issue shares. Companies could also sell their shares directly to investors if the issues are managed by an investment banker registered with the U.S. Securities and Exchange Commission, under the U.K. Financial Services Act, or other appropriate regulatory authority in Europe, Singapore, or Japan.

IT hubs such as Bangalore have gone further to attract venture capital firms to establish a base in their respective states. The state government of Karnataka together with the Confederation of Indian Industries (CII) organized a Global Investors Meeting in June 2000 in Bangalore to attract investors to Bangalore and India as a whole.[36] Encouraged by the initiatives to attract foreign capital to India and concerned over the after-effects of the global IT crash with the failures of dotcom companies, venture capital firms in India have become more discerning in investing their money in India. Venture capital firms are concentrating their focus on tech start-ups with strong revenue models rather than firms backed by little more than internet ideas. However, this may be beneficial to IT hubs such as Bangalore because venture capital firms are interested in areas such as software services: IT services that drive or speed up the internet, wireless applications, computer networking, and telecommunications.[37] Leading global venture firms such as Walden, Draper, and Intel Capital have established operations in India. The potential for Indian companies to develop cutting-edge technology solutions has been enhanced with the clustering initiatives and interaction among private industry, tertiary institutions, and government backing. Westbridge capital had observed that investments are shifting into pure technology companies that could create more revenue and a clearer path to profitability. Westbridge capital had launched a U.S. $ 140 million fund for Indian tech companies with a focus on start-ups in IT and IT-enabled products and services.[38] Other venture capital firms such as Accordiant Ventures, a U.S.-based fund, had announced plans to invest U.S. $ 250 million in Indian IT firms working on semi-conductors, internet infrastructure, and wireless telecommunications.

Venture capital firms are also drawn to Bangalore because of the increasing joint ventures (JVs) between Indian corporations such as Tata and global IT firms such as IBM. The JV between Tata and IBM was conceived in 1992 and indicated IBM's official return to the Indian IT scene after its exit from India in 1972. IBM and Tata are compatible business partners as they have similar business outlooks and philosophies. For another Indian IT firm, TISL, Bangalore was an ideal location because of its creative talent and innovative dynamism. According to a TISL executive, Bangalore has the same conditions for innovation as the aerospace industry in Southern California, United States, in the 1960s. Part of the culture of innovation came from IBM's presence in India before its exit. The departure of IBM in 1972 from India was significant because it led to India's IT isolation and compelled India to leapfrog over obsolete technology. The "silver lining in the cloud" was that without IBM to dictate software and programming languages, there was no proprietary software base, every software base became transparent, and India acquired open IT software knowledge such as Unix. The vacuum created by IBM's departure also forced Indian companies to source indigenously for software programs, therefore, creating the impetus for a skilled talent pool that attracted the MNCs back to India to places such as Bangalore.

Challenges to the IT sector

The city of Bangalore is about 366 square kilometers and has some six million inhabitants. Despite the presence of R&D set-ups in electronics, government research organizations such as ISRO, and tertiary institutions, the city did not anticipate the problems that came with the technology boom in IT. The city's naturally cool climate is changing with the felling of trees and air conditioning sets now sell briskly. The appearance of cybercafés on most streets, shopping malls, food courts, and swanky resorts does not dispel the realities of water and power shortages. Constant power outages prevent effective communication and computer work if a company is dependent on the state grid. Electrical brownouts called "load sharing" have been common and software companies have back-up generators to take up the slack of shortages in electricity supplies. Sewage still clogs the slums that reside at the periphery of the city. It could take more than an hour to travel 20 kilometers from downtown Bangalore to the software parks on the city's outskirts.[39] In 1997, the city had 1800 buses which were quickly overtaken by 100,000 private cars, 600,000 two-wheelers and 35,000 three-wheelers. The streets have not been designed to accommodate this much traffic and the result has been chronic pollution with a steep rise in asthma cases and other respiratory illnesses. In 2000 alone there were 622 fatal accidents on the roads. Bangalore city officials have requested help from experts from the United States to solve their transport and infrastructure problems.[40]

The government-driven National Task Force on Information Technology and Software Development aimed at attracting foreign investments into the software sector came with a massive price tag. Heavy investments in the form of STPs were a necessity with their earth stations, gateway switches, high-tech data communications, professional training, and marketing and support services. These heavy investments in infrastructure, transportation, education, and environmental improvement are needed to develop these areas to compete in the international software trade. For education alone, the state government is trying to use IT to provide computer training facilities in schools, universities, and other tertiary institution. The policy initiatives implemented in Karnataka state might entail some problems. For example, government policy might be held captive to the needs of dominant IT firms in Bangalore and scarce government resources might not be allocated efficiently.

India's main software export market is the United States followed by Europe, which is highly vulnerable to the volatility of the international IT industry. The revenue earned by Indian IT companies could also be improved from the low-end customized packages to those involving coding and testing of software conceptualized by their foreign clients.[41] Apart from inadequate infrastructure and cultural differences, Indian software firms need to consider the geo-political situations that affect their global delivery capabilities.[42] Indian IT companies with local presences have to develop and market credibility such as building a reliable brand together with a decentralized offshore decision-making structure. Indian firms have to specialize and not generalize their expertise because their competition will adapt to offering offshore services and exploit specific market niches. However, Indian IT companies, even large ones such as Infosys, are subjected to customer "churn," that is, as Indian companies gain new customers they are also loosing their existing ones. While the Indian companies may have added overall to their number of clients, they have to gather more new clients to offset increasing loses of existing clients.

Bangalore land and rental prices have increased sharply with the expansion of the IT industry. This and the lack of infrastructure to meet growing demand for services have companies looking at other emerging IT hubs in alternative cities such as Chennai, Hyderabad, and Pune. Skilled IT workers are also demanding higher pay in Bangalore, hence undermining one of the key factors that have promoted India as an IT hub, that is, low labor costs. Increasing IT wages also widen the socio-economic disparities between the IT elites and nonIT elites. IT talent from across India is flowing to Bangalore, indicating that Bangaloreans are not reaping the full benefits of the IT revolution. Other challenges includes the digital divide, which will also have a strong influence on the trends of IT development in Bangalore and India as a whole. The recent general elections suggest that the benefits from IT and outsourcing business that has created thousands of jobs in India for the middle class has not had much impact on the rural population of India. Following the ouster of Chief Minister Chandrababu Naidu of Andhra Pradesh, Chief Minister S.M. Krisha of Karnataka appeared to have been unseated by the rural voters. Reportedly, the rural voters felt that he had paid little attention to the poverty, illiteracy, and lack of amenities that they had to face on a daily basis.[43] The objective of spreading the use of IT for e-commerce and e-governance was to bridge the digital divide.

Whether this would have larger implications for the IT sector in India's high-tech hubs such as Bangalore remains to be seen as MNCs, foreign investors, and Indian companies involved in IT work take stock of the election results. The elections do indicate that the euphoria of job and business creation due to the IT boom and especially outsourcing of IT-enabled services has not had much impact for the majority of Indian voters, especially those in the rural areas. In relation to gender, less than 10 percent of all skilled IT workers in India are women because of the type of training required and the frequent traveling which it involves.[44] While Bangalore deservedly receives accolades for being able to attract over 1000 MNCs and Indian firms into India that employ over 120,000 people, the paradox is that Bangalore also has the highest suicide rates among all the other states in India. The alarming suicide rates which are 35 per 100,000 compared to the national average of 11 per 100,000 are many and interlinked. More disturbingly, the age group most affected by suicides is the 15 to 45 years range, the most productive years for most people. The transformation that has taken place in Bangalore over a short period of ten years or so since the mid-1990s is seen as a major contributing factor to the high rates of suicide.[45] Moreover, the traditional charm of a lifestyle and values favored by pensioners and "honeymooners" has led to increasing in migration from other regions in India. The socio-economic result has been increasing alienation as supporting family networks have broken down or become simply nonexistent. Bangalore is also known for its pub scene with 3500 outlets selling alcohol and 27 percent of attempted suicides have been under the influence of alcohol. Academic pressures to succeed in education especially in private schools have increased the pressures on students' expectations.

The expansion of the IT industry in Bangalore has caused a number of adverse impacts. Ironically, IT is a clean industry but it depends on human resource and Bangalore's infrastructure is struggling to cope with an increasing inflow of people. Air pollution with growing levels of carbon monoxide is damaging the environment in Bangalore. Social costs as a result of the IT boom also comes in the form of increasing rates of asthma and lung infection among Bangalore's population, especially among the very young. The increasing volume of traffic and the state's apparent inability to regulate the number of vehicles and set a minimum emission standard of vehicles will magnify the air pollution problem in the near future. The public transport system in Bangalore consists of buses that are around 20 years old or more and the system of roads are unable to accommodate the increase in the volume of road traffic. Large IT firms prefer to locate away from the congested city and have their businesses concentrated on sprawling campuses on the city's outskirts, between 45 minutes to an hour's drive from the city centre. These factors will have a great impact on the sustainability of Bangalore to continue being the Silicon Valley of India. Power shortages and increasing land prices will add to the costs of product development and the state government has to resolve these emerging problems. While internal migration toward Bangalore sustains its IT creativity and talent pool, these IT professionals are the new elites of Bangalore. For the majority of this group, the digital divide and digital disparity are furthest from their minds and hardly a concern.

The rural poor seemed to bear the heaviest toll of the IT industry as the "gap" between them and the IT elites becomes wider. While some IT companies such as Wipro, Tata, and Infosys have a community-based program to assist the poor in Bangalore, the majority of IT firms do not take such an interest. While it could be argued that the Indian paradox of rich and poor has been a part of Indian life, the IT sector seems to magnify the disparity. The state governments that are pro high-tech and IT, such as those in Karnataka, have been replaced but would an alternative state government seriously disrupt or impede a U.S. $ 12.5 billion revenue exporting industry? Using a latecomer strategy to leapfrog competitors and develop Indian IT hubs such as Bangalore compels India to leverage on MNCs and foreign investors to expand its IT industry. It will be damaging if IT hubs such as Bangalore sever their linkages with MNCs and shifts their emphasis totally toward rural development. The approach lies in striking a compromise to develop the IT sector and the agrarian sector. IT programs could be structured to educate the rural poor and help farmers to develop a better understanding for market crop prices.

Conclusion

India's establishment of high-tech parks to expand its IT sector using innovative clusters as its main approach is producing positive results. These high-tech parks overcome the impediments caused by India's inadequate overall infrastructure. High-tech parks such as those in Bangalore are a huge attraction for MNCs looking to reduce their operational costs by establishing a subsidiary or joint venture in India. The outsourcing of offshore IT-enabled services to India has strengthened India's role as an IT hub. For Bangalore, its future survival as an IT hub will depend on whether local and federal political leaders can meet the challenge of dealing with MNCs, raising billions of dollars to expand and improve the infrastructure and dealing with disparity between the poor and the rich.[46] The increasingly detached nature of the IT hotspots from India's society at large is likely to increase not only the digital divide but also the disparity gap as well.

India has an abundance of human talent which is proving its competency as reflected by their ISO 9000 and CMM Level 5 standings. Indian IT companies in Bangalore are now trying to achieve the six sigma standard of excellence. While high staff turnover is a major problem with the average attrition rate at around 20 percent of total staff strength, company loyalty is usually rewarded and this has reduced the turnover rates. While, the contraction of the international IT market has increased the exodus of returning Indian IT professionals to India, there is an acute shortage of IT workers with three to five years' experience and able to lead a IT development project. Most of the skilled IT workers with this experience would have at least two or more job offers to consider. The IT professionals that have two years' experience, especially with one of the larger Indian IT firms, have ambitions to either work overseas in the United States or to work for an MNC in India. In Bangalore, young software engineers do gossip and move between firms but this process also aids in the process of learning and dissemination of information.[47] The campus setup being adopted by larger IT firms also creates a conducive environment for interaction and exchange of ideas among IT workers.

As wages rise in Bangalore and other IT hubs such as Hyderabad it will add to the overall costs of services eroding India's IT competitiveness unless they move up from low-end IT contracts to value-added R&D activities. Most Indian IT firms cover a range of IT services from the low-end number crunching to consultancy services but the bulk of their profits are at the low end, still leveraging on low-wage costs. Foreign investors and venture capitalist are unlikely to support India if they could earn more revenue in lower-cost countries such as China, Hungary, or the Philippines. The lack of funding for Indian R&D in IT will stifle innovation and creativity when Indian companies decide to move up the value chain. In this regard, Singapore GLCs such as Ascendas are well placed to provide the necessary IT infrastructure to foreign MNCs and Indian IT companies. Ascendas has also established a Real Estate Investment Trust (REIT) to invest in more scientific and IT parks in India. With regards to venture capital, Singapore's GIC and Temasek Holdings have invested in various economic sectors. The Economic Development Board has also leveraged on R&D potential in India by creating incubation projects and a fund called "Incube" to help nurture promising Indian high-tech (including IT) companies. The next chapter will examine the role of Ascendas in the development of the IT park in Bangalore as well as in other IT "hotspots" in various Indian states.

6 High technology/information technology parks

Introduction

When late Prime Minister Jawaharlal Nehru and his administration team took over ruling post-colonial India in 1947, their plan was to build a new India and part of this manifestation was the creation of heavy industries in the 1950s and 1960s to have a commanding height of the economy. The new religion then for India was industrialization and the "temples" were heavy steel and cement plants.[1] Fast forward to India's economic reforms and liberalization in 1991 because of post-Cold War developments and effects of four decades of closed economic policies. In contradiction to India's third world appearance, which still pervades throughout the subcontinent, the gleaming and ultra modern high-techology (high-tech) parks which house mainly information technology (IT) companies are the new temples of modern India. If high-tech parks are the new temples, then IT is the "new religion" of modern India. What is the link between India's new religion and temples with Singapore?

In the process of implementing its regionalization strategy to create an external economic wing for the Singapore economy, the Singapore government was essentially replicating the model of success that it has in Singapore. How could the government replicate a Singapore overseas? One approach would be to focus on the factors that Singapore had thrived on such as efficiency, infrastructure, management expertise, and construction of high-tech parks. Singapore high-tech parks have proliferated throughout the region and made an initial entry to India in the mid-1990s in the city of Bangalore in the state of Karnataka. Instead of developing an industrial park, the Singapore consortium in Bangalore together with its Indian partner decided to build an IT park.

Why was Bangalore chosen as India's silicon plateau? Part of the answer lies in the historical decisions to turn Bangalore into India's city of the future by India's first Prime Minister Jawaharlal Nehru. In the 1950s and 1960s, large public sector enterprises such as Bharat Electronics Limited (BEL) and Hindustan Aeronautics Limited (HAL) were established in Bangalore by the government. Together with national defense laboratories and the Indian

Institute of Science they formed the crux of Bangalore scientific foundations. In the 1970s, the Indian Space and Research Organization (ISRO) and Bharat Heavy Electronics Limited (BHEL) were also established in Bangalore. In the 1980s because of the rising rent and land prices in Mumbai, an influx of industrialists relocated the high-tech parts of their businesses to Bangalore. With its strong base of government defense labs such as those developing aeronautical technology and the presence of automotive and electronics companies, Bangalore was provided with a suitable environment for the take off of the IT industry in the mid-1980s. This process of clustering high-tech companies and R&D set-ups provided the foundation for innovation. It will be argued that, for various reasons, the government had chosen Bangalore to stimulate technology innovations.

The software sector has emerged as one of the key revenue-generating sectors for the Indian economy. In 1999, a report by consultancy firm McKinsey predicted that the IT sector in India could be worth around U.S. $ 87 billion by 2008 with exports accounting for U.S. $ 50 billion. This figure has since been revised due to the global downturn in the IT sector in 2000 and the terrorist attack on the Twin Towers at the World Trade Center in New York on 11 September 2001 (9/11). Earlier, the collapse of the "dotcom bubble" in mid-2001 had already triggered alarm bells for India's IT sector.[2] Among U.S. companies the applications for H1-B visas decreased by 100 percent to 16,000 in 2001 from the previous year. Traditionally, India accounts for over 40 percent of the total H1-B visa applications.[3] However, the pattern of India's software exports is still focused on the U.S. market even after the second global IT downturn in 2002. The effect of 9/11 has also restricted India's ability to expand business with the United States due to more stringent visa restrictions. Coupled with the increasing outsourcing of IT enabled services (ITES) jobs overseas from developed to lower-cost countries such as India, this trend has triggered a political backlash and indicates the need for India to diversify its software export markets.

While the uncertainties of the IT industry persist, India stands to gain from the need to rebuild company data bases destroyed in the Twin Towers attack and possibly others in future. In 2003, India's software industry earned revenue of approximately U.S. $ 9.55 billion and this was predicted to increase to U.S. $ 22 billion by the end of 2007. This accounted for approximately 60 percent of the total revenues of the IT industry. The National Association of Computer Companies (NASSCOM) is also confident that India's total IT exports, including software, will reach its U.S. $ 50 billion software export target by 2008 but this will require at least a 33 percent annual growth in the sector. Table 6.1 indicates the total value of India's software exports and a breakdown of its domestic software market and export segment from 1998 to 2007. The table illustrates a steady increase for India's software exports. The Indian software development sector mainly caters to an international market and exports most of the software programs that it designs.

Table 6.1 India's software industry, 1998–2007 (U.S. $ million)

	1998–99	*1999–2000*	*2000–01*	*2001–02*	*2002–03*	*2004–05*	*2005–06*	*2006–07 estimate*
Domestic software market	1250	1700	2450		1700	4800	6000	7000 to 7300
Software exports	2650	4000	6300		9500	13,100	17,300	2100 to 22,000
Indian software industry	3900	5700	8750	10,300	12,200	17,900	23,300	28,000 to 29,300

Source: National Association of Computer Companies (NASSCOM) and High Commission of India in Athens.

Table 6.2 Profile of India's export overseas from 1996 to 2003

	1996–97	*1997–98*	*1999–2000*	*2000–01*	*2001–02*	*2002–03*
Percentage of export market	U.S. 58% Europe 21%	U.S. 65% Europe 20% Japan 5%	U.S. 61 % Europe 24% Japan 3.5% Southeast Asia 3.5% Australia and New Zealand 1.5% W. Asia, 1.5% Rest of the World 4.5%	U.S. 63% Europe 24%	U.S. 67% Europe 24%	U.S. 69% Europe 23% Japan 3%

Source: National Association of Computer Companies (NASSCOM) India.

Table 6.2 provides the percentage in terms of India's total export to its main overseas market from 1996 to 2003. The United States has been India's main software export market followed by Europe and much lower in third place is Japan. The export of Indian software at the end of 2003 is predominantly to the United States with 69 percent, followed by Europe with 23 percent, and Japan with 3 percent. The percentage share of IT exports to the United States has steadily increased from 1999 to 2003. This leaves India's software sector highly vulnerable to the vagaries of the U.S. economy and their European counterparts. To insulate and cushion the Indian IT industry, major IT companies have been discussing and implementing their own "de-risking" strategies. These de-risking strategies include market penetration into alternative nonU.S. IT markets overseas, the creation of a competent and value-added Indian IT brand globally, moving into more lucrative but challenging contracts such as consultancy but maximizing locational advantage for outsourcing work, and exploring niche markets when competing with global IT firms.

When the Singapore government examined the growth of the software sector and market in India, it looked at the sector's export potential and decided that this was where it should invest its money in. The main attraction was India's human resource[4] but the constraint was the smaller land parcel that could be acquired to undertake the project instead of more land for manufacturing purposes. The Singapore consortium was examining sites that had a sufficient number of major software companies so that its Information Technology park could tap into a ready pool of possible tenants. Simultaneously the consortium also wanted an area that could cater for further expansion. The three locations considered were Mumbai, Bangalore, and New Delhi. Bangalore was chosen above the other two locations because of the cost factor and competition. It offered the lowest price for rental and purchase of land whereas the land and rent prices in Mumbai are the highest in India followed by the federal capital New Delhi. Another major consideration that swayed the Singapore consortium's decision against investing in Mumbai or Delhi was that the software competition in those cities was already intense and the existing pool of skilled manpower was limited. Moreover, Bangalore is also geographically closer to Singapore than it is to Mumbai or New Delhi and its climate is more temperate throughout the year.[5] The Singapore proposal to build an Information Technology park in India received several serious bids. The strongest bids came from the southern states of Tamil Nadu and Karnataka. However, apart from Tamil Nadu and Karnataka, other states also competed for the IT park project based on the strength that it would bring new technology and expertise to India.

The Singapore consortium, which included Jurong Town Corporation's (JTC) subsidiary Ascendas Land Private Limited, decided to develop a high-tech park. JTC has particular expertise in this area because of its experience in the construction of science parks in Singapore to accommodate high-tech industries. JTC had pioneered the high-tech park concept.[6] Singapore was able to play a significant role in the development of India's IT sector because of this particular expertise.[7] Bangalore has become the equivalent of the Silicon Valley in India but is more aptly known as the "Silicon Plateau," the hub of India's computer industry and software technology.[8] Bangalore has traditionally been the hub of India's Science and Information Technology Capital.[9] The skilled and professional manpower of Bangalore comes from its 9 universities, 51 engineering colleges, 169 polytechnics and 35 Industrial Training Institutes.[10]

Overseas, Bangalore's reputation became popularly known as a source of competent IT professionals in the 1980s, when computer experts with Bangalore credentials began making a name for themselves overseas.[11] However, this should come as no surprise because the state of Karnataka has an annual output of 30,000 skilled professionals of whom 8000 are trained in information technology and electronics.[12] This prompted foreign computer companies to have a closer look at the untapped potential and talent graduating from Bangalore's technological institutes. For example, Texas Instruments started a software programming operation in Bangalore in the mid-1980s. According to Richard Gall, Managing Director of Texas Instruments in India, "We came because of the amount of talent that was available here . . . we couldn't hire enough software designers in Europe to meet demand and India was producing more than it could use."[13]

Evolution of IT Industry in Bangalore

As shown in table 6.3, since the arrival of Texas Instruments in Bangalore, other MNCs such as Motorola and IBM have established software-programming offices there. Some companies such as 3M have started expanding their manufacturing operations based in part on the locally available managerial and technical talent.[14] In this respect, the technical talent available

Table 6.3 Milestones in the evolution of the IT industry in Bangalore

Years	*Events*
1984	Texas Instruments enters India for offshore development
1986	Department of Electronics announces software policy
1991	Software Technology Parks of India (STPI) is set up
1992	Exclusive satellite international gateway for export industry is set up
1997	Government of Karnataka announces IT Policy—the first state to do so
1998	Number of IT companies under STPI grows to 253, with total projects worth U.S. $ 840 million
1999	Indian Institute of Information Technology, Bangalore (IIITB) and the Kitven Fund are established
2000	Number of IT companies under STPI grows to 782, with total projects worth U.S. $ 1.1 billion
2001	Number of IT companies under STPI grows to 928, with total projects worth U.S. $ 1.58 billion
2001	Number of hardware companies under the Electronic Hardware Technology Park Scheme (EHTP) grows to 24, with hardware exports worth U.S. $ 0.076 billion
2002	Number of IT (software) companies under STPI grows to 1038, with total projects worth U.S. $ 2.06 billion (as of May 2002)
2002	Number of hardware companies under EHTP grows to 27, with hardware exports worth U.S. $ 0.17 billion (as of May 2002).

Source: Bangalore IT website (http://nitpu3.kar.nic.in/blrcustoms/EOU.htm).

in Bangalore has been able to attract foreign investors such as those from Singapore. Therefore, the Singapore government decided to base its flagship investment project, on a $ 670 million IT park in Bangalore.[15] The Information Technology Park Bangalore (ITPB), being Singapore's flagship project in India, was also a symbol to advertise Singapore's capabilities to India and the potential synergy that could be exploited for their mutual benefit.

Figure 6.1 shows the Texas Instruments building in downtown Bangalore. What could the Singapore consortium offer to Bangalore? On show to the world at ITPB are Singapore's capabilities in the designing, planning, constructing, and managing of industrial and technology parks. The technology transfer[16] in terms of developing a high-rise tech park in India for the first time will be significant to India. The joint venture is arguably a strategic choice not only for Singapore but also for India that has to overcome its infrastructure frailties. Furthermore, Singapore companies will manage the ITPB after its completion to ensure that the initial investment will be sustained with proper maintenance and management.[17] The Indian federal government and Karnataka state government hope that the ITPB will attract further foreign investments to the state and to other regions in India.[18] The ITPB was a unique type of industrial park as it was the first of its kind in

Figure 6.1 Texas Instruments building in downtown Bangalore.

India to consolidate and integrate IT operations that will tap into the "Silicon Valley" potential of Karnataka.[19]

Figure 6.2 shows the ITPB in Bangalore. Its ultra-modern, first-world amenities have been a benchmark for other IT parks. The cost of rental is high compared to other locations but the security, first-rate amenities, consistency of service, and good maintenance has been its main attraction. The ITPB covers about 27.4 hectares and was financed as a joint venture project by the private sectors from Singapore and India.[20] A consortium of six Singapore companies has a 40 percent stake in the ITPB project. One of India's biggest Industrial Conglomerates, Tata Corporation, has 40 percent and the Karnataka state government owns the other 20 percent.[21] The ITPB was developed in two stages over three years. It comprises office and high-tech production units, including two blocks reserved by American multinationals IBM and AT&T.[22] In addition, there is a residential section with 520 freehold

Figure 6.2 Information Technology Park Bangalore.

condominium units, a clubhouse, and shops. The mixture of tenants expected were MNCs and Singaporean and Indian companies involved in high-tech and IT research activities.[23] Within a week of the ITPB's launch, firm enquiries for 30 percent of its space were received.[24]

Karnataka state government's commitment

The ITPB could not have been initiated without political commitment from the Karnataka state government. Then Singapore's Deputy Prime Minister Lee Hsien Loong commented that when the Memorandum of Understanding (MOU) was signed to build the ITPB, the then state opposition in Karnataka's government was led by Mr. Deve Gowda. Deputy Prime Minister Lee said that when: "The Project ran into some difficulties . . . the state government was very cautious about overcoming these difficulties because state elections were around the corner."[25] However, in December 1994, the Congress state government lost the elections in Karnataka and Deve Gowda became the Chief Minister when the Janata Dal party swept into power. Deputy Prime Minister Lee said that: "Within two weeks, Mr. Gowda had settled the outstanding difficulties and approved the IT Park project proposal."

Chief Minister Deve Gowda then went on to become India's Prime Minister. According to Deputy Prime Minister Lee, while Prime Minister Goh Chok Tong was in Kolkatta attending the Confederation of Indian industry's centenary celebrations, Prime Minister Deve Gowda flew to Kolkatta to personally reassure Prime Minister Goh Chok Tong that the Karnataka state government had approved the IT park project. Deputy Prime Minister Lee commented that this showed: "Prime Minister's Gowda's conviction,"[26] reflected in the state government's determination and resolve to secure the IT park project from Singapore. The political and personal commitment of Prime Minister Deve Gowda was very important to the success of the Bangalore IT Park as demonstrated by Deputy Prime Minister Lee. According to Cheang Kok Kheong (former Chief Executive of Information Technology Park Limited) the Singapore consortium emphasized the importance of state government cooperation in India to ensure the long-term viability of the ITPB. Although there were other strong contenders from various states that were competing to host the IT park, the Singapore consortium members agreed that the Karnataka state government had done the most to accommodate the requests of the consortium and were "serious" about the requirements of the IT park.[27]

Consortium of Singapore companies

What was the level of commitment of the Singapore government in the collaboration? The political commitment by the Singapore government to regionalization is important for the success of the Singapore consortium investing in the ITPB. Moreover, there are strong linkages between the concept of regionalization and the thrust into emerging markets for Singapore investors. This is visibly seen by common characteristics among the companies involved in the ITPB. The various companies forming the Singapore consortium undertaking the development of the ITPB had two common characteristics between them. First, the companies involved in the Singapore consortium have strong linkages to the Singapore government, in the context of being partly owned or having close personal links with the Singapore government. This can be illustrated through the personalities that own and manage the companies involved in the Singapore consortium.[28] The top management personnel in the Singapore consortium have strong links with the government and some were even senior government officials. Therefore, the channel of communication between the consortium and the government will be enhanced through this personal networking.[29] In this context, the Singapore government would have a considerable amount of influence on the consortium and their policy decisions. Second, the companies involved in the consortium have worked with one another before on other overseas projects. Hence, there is a level of familiarity and common experience between the consortium members concerning the operational procedure of each company. This common experience and complementary capabilities of the Singapore consortium will be demonstrated in the later half of this chapter.

The companies comprising the Singapore consortium involved in the construction of the ITPB were: L&M Corporation Private Limited, RSP Architects Planners and Engineers Private Limited, Technology Parks Private

Limited (now Ascendas Land Private Limited), Singapore Technologies Industrial Corporation, Sembawang Construction Private Limited and Parameswara Holdings Pte Limited. The Singapore consortium was established under the Economic and Development Board's (EDB) fusion concept. This effectively means that a group of companies with different and complementary capabilities and expertise were assembled to construct the ITPB. The person that coordinated and put together the group of companies to construct the ITPB was Mr. Philip Yeo, who was the chairman of the EDB.[30] On examining the Karnataka site in 1993 with Ratan Tata, the chairman of the Tata Corporation, Philip Yeo put together a consortium based on a strategic partnership of companies with individual but complementary capabilities. However, the different capabilities and expertise of the Singapore consortium also represented a "flexible consortium" approach toward regionalization. The flexible consortium approach was designed to facilitate the horizontal integration of the different companies. Moreover, the horizontal integration of the different companies comprising the consortium was facilitated through reciprocal stock ownership and all the companies have close links with the Singapore government. Another important ingredient for the Singapore consortium was the fact that they had enough financial capita[31] to carry the project through to completion.

L&M Properties Private Limited

The Singapore consortium constructing the ITPB was led by L&M Properties Private Limited. L&M Properties Private Limited is a subsidiary of L&M Corporation, a specialist construction conglomerate which has more than 30 subsidiaries. The question remains as to why L&M were chosen to lead the consortium in constructing Singapore's flagship project in India. Under the fusion concept L&M was best able to lead the consortium because of its horizontal integration with the other consortium members. The strategy that L&M adopted to enter the Indian market was based on its reputation, financial standing, expertise in specializsed construction, depth in technical expertise, and strong links with the Singapore government. Moreover, L&M has experience in construction projects overseas including South Asia. L&M's reputation is based on its ability to attract contracts because of its expertise in specialized construction work. This ability in specialized construction can be demonstrated through L&M's ability to win national awards such as the National Productivity Board's (NPB) award for innovative techniques.[32] L&M has also won several national awards from the Construction Industry Development Board (CIDB) and the former National Science and Technology Board (NSTB). This made L&M not only popular among main contractors but also gave it the necessary capabilities to secure overseas contracts to become one of Singapore's few MNCs. In terms of contracts awarded from 1992 to 1993, L&M was ranked the top company in Singapore by the CIDB.[33]

What was the experience of the L&M group in overseas projects? The L&M group before its venture into India had already been involved in other overseas projects such as in China, Vietnam, Taiwan, Thailand, the Philippines, and Malaysia.[34] More importantly, L&M has undertaken construction projects in South Asia before the ITPB project. L&M has been involved in construction projects in Pakistan[35] and Sri Lanka.[36] In October 1991, L&M managed to secure an Indian contract worth U.S. $ 10.8 million to supply bridge bearings for the Narmada Dam and irrigation project in the state of Gujarat.[37] Therefore, in terms of development expertise in the region, L&M has a broad range of experience in dealing with different countries. Moreover, L&M has ventured into South Asia and has experience in India. In choosing L&M to lead the Singapore consortium in the ITPB project, the Singapore government was depending on L&M's prior building experience in India. The other consortium members had no working knowledge of South Asia. Figure 6.3 shows Phase I of the ITPB.

Figure 6.3 Information Technology Park Bangalore.

Experience in doing business in India was another important factor that favored L&M's leadership of the Singapore consortium.[38] Furthermore, L&M was also chosen to lead the Singapore consortium because its senior staff members had close ties with the Singapore government. L&M's chairman, Albert Hong, also sits on the board of several other organizations: the Construction Industry Development Board where Albert Hong is also deputy chairman,[39] the Housing and Development Board, Hong Leong Corporation and Singapore Broadcasting Corporation.[40] Hong's ties with the government are strong as the Construction Industry and Development Board, the Housing and Development Board and the Singapore Broadcasting Corporation are owned by the Singapore government. The L&M group's managing director, Liew Mun Leong, was formerly the chief executive of the Singapore Institute of Standards and Industrial Research (SISIR), a government organization. Moreover, Liew Mun Leong was also a director of several government-linked companies.

The appointment of Albert Hong and Liew Mun Leong to lead L&M was an indication that the specialist contractor would link up with government-linked companies for joint ventures in the region. Another indication that the government had chosen L&M to "spearhead" its regionalization drive into the India market was when Albert Hong was appointed a member of the Committee to Promote Enterprises Overseas.[41] The chairman of the committee was Rear Admiral (NS) Teo Chee Hean, the Minister of Education. L&M's close links with the Singapore government was also important because of the financing that was required for its regionalization drive. In venturing overseas, L&M expected strong competition from other foreign MNCs and the ability to offer a package (construction proposal) with financing often determines the MNCs ability to win bids for projects.[42] In this regard, Liew Mun Leong commented: "Government support would indeed boost bankers' confidence in funding big jobs overseas."[43] In 1992, L&M raised S $ 40 million to assist in the financing of its overseas operations. Nine local and foreign banks took part in the syndication of the three-year loan that was a multi-currency and multi-option facility.[44] In addition, in 1993, L&M Group Investments Limited tapped the Singapore market for additional funds to finance its operations by announcing a private share placement of 6.6 million shares in order to raise $ 10.6 million on top of the $ 40 million it had raised a year earlier.[45] This corresponded with the strategy for government-linked companies (GLCs) to expand overseas by acquiring assets and using the capital market to fund their overseas expansion.

Table 6.4 illustrates the financial standing of L&M Group Investments Limited from 1987 to 1991, prior to undertaking the ITPB project. L&M's turnover has increased from S $ 42.34 million in 1987 to S $ 235.87 million in 1991, indicating that the level of investments and projects that L&M was handling had increased.[46] L&M had been able to penetrate regional markets because of its specialist nature. This is reflected in the high proportion of technical staff that comprises half of its full-time employees.[47] Since the

Table 6.4 L&M Group Investments Limited for year ended June 30, 1991 in $ million

	1991	*1989*	*1987*
Turnover	235.87	83.78	42.34
Operating profit	3.30	0.95	3.32
Pre-tax profit	3.60	1.26	2.94
Profit after tax and minority interest	2.01	0.45	2.09
EPS (cents)	5.9	1.5	7.0

Source: Business Times (Singapore), 18 February 1992.

government's call to regionalize, the L&M Group has focused its efforts to take full advantage of the Singapore Government's regionalization drive. According to Liew Mun Leong, Group Managing Director for L&M, the group will intensify its overseas operations in the next few years.[48] India is becoming an increasingly important market for L&M. This is because apart from its involvement in the ITPB, L&M has also shown interest in other projects in India. These projects include the Bangalore Airport project, a 900 hectare industrial park in Rajagaon in Pune, an industrial estate in Gujarat and an industrial estate in Rajpura Punjab[49] apart from the software industry at Hi-Tec City, Hyderabad in Andhra Pradesh. L&M has spearheaded Singapore's regionalisation drive into the Indian economy. Realising that India had urgent need to improve and expand its infrastructure facilities, the Singapore government through the EDB and its linked companies are exploiting this lucrative sector in the Indian economy.

RSP Architects, Planners and Engineers Private Limited

The Singapore government relies on key personnel in GLCs to guide, steer, and shape its projects in India. The appointment of Albert Hong as chairman of L&M was significant because Hong was also the managing director of RSP Architects, Planners and Engineers Private Limited (RSP) another company involved in the consortium developing the ITPB. The partnership between L&M and RSP Architects was crucial for the construction of the ITPB. It was important that L&M and RSP combine together to horizontally integrate their different capabilities because this improved the corporate networking of the consortium. Horizontal integration between the two firms was possible as both firms have prior experience working with each other. L&M Group investments and RSP Architects Planners and Engineers have collaborated on other overseas projects such as in Myanmar and China.[50]

Hong's role as chairman of L&M and as managing director of RSP was significant as he provided the link to ensure that these two companies would complement one another within the consortium.[51] It was important that the capabilities of L&M and RSP complemented one another because L&M was involved in all negotiations with the Indian authorities and RSP was the main architect and planner for the Bangalore IT Park. Moreover, Albert Hong has the most experience in dealing with Indian authorities as he was involved in several business ventures in India before the idea of the Bangalore IT Park was conceived.[52] None of the other consortium members had any Indian experience before their involvement in the ITPB.

RSP is also connected to the Singapore government in terms of its senior staff members. RSP directors include Liu Thai Ker, the former chief executive officer and chief planner of the Urban Redevelopment Authority (URA). Furthermore, in addition to Liu, RSP has two other former URA heads on its payroll: Alan Choe and Ho Pak Toe.[53] The collection of former senior government officials became more impressive when RSP recruited another senior public servant, Leong Wei Leng, the executive director of the National Science and Technology Board and deputy chief of the Singapore Institute of Standards and Industrial Research.[54] The circle of former senior government officials involved in the Singapore consortium became wider as they occupied key positions at L&M and RSP Architects.

The synergy between L&M and RSP indicated a complementarity of expertise as the two firms are also involved in the master plan and building design services for the $ 700 million Sentosa city mini-township in India's Ghaziabad City.[55] This indicated that L&M and RSP were exploring other projects in India for future development. The Singapore government acknowledged that L&M and RSP are two "home-grown" companies that are carving out a "new frontier" in their regionalization drive. Then Singapore's Prime Minister, Goh Chok Tong, commented that the two firms were focusing on two core business sectors identified by the government by "developing and managing of industrial parks and the development of infrastructure."[56] Therefore, it is to L&M's benefit that they work in conjunction with the government to fulfill the objectives of regionalization. The involvement of L&M in the construction of other industrial parks in China, Vietnam, and Myanmar indicate that L&M is a trusted GLC tasked with the duty of exploring and venturing into new markets for the Singapore government.

As the company leading the consortium, L&M brought in other companies to develop the ITPB such as Sembawang Corporation.[57] Sembawang Corporation is owned by the Singapore government through Temasek Holdings.[58] The Singapore Technologies Industrial Corporation (STIC), a government-owned company, is also part of the consortium.[59] STIC specialized in infrastructure development.[60] The infrastructure experience and expertise of STIC is important to the ITPB project because STIC has been involved in an earlier Singapore flagship investment project, the Batam Industrial Park in Indonesia, and has a 30 percent share in that venture.[61] The construction and development division of STIC has been very active in handling the infrastructure projects at Batam Industrial Park.[62]

STIC has senior government officials such as Lim Siong Guan as its chairman and Eddie Teo Chan Seng as its director and deputy chairman.[63] Singapore Technologies specializes in infrastructure development and had ventured into projects overseas such as in China and Indonesia. Therefore, the EDB in drawing STIC into the consortium to develop the ITPB, is implementing the fusion concept to integrate STIC's capabilities horizontally with the other consortium companies. The involvement of the government linked and owned companies are also important because it provides an element of security for investors and assures them that the project will be completed and will be profitable.[64] This is the same rationale used to entice investors in the Batamindo project.

STIC has since sold its share of ITPB project to the other consortium members. Sembawang Corporation, a GLC, specializes in marine technology but has been trying to diversify its business interests.[65] Sembawang Corporation's role was also passive in the construction of the Bangalore IT Park. Similarly, Sembawang Corporation's role would reflect that of a "safety measure" for investors in the IT park as it shows government commitment to the project. Sembawang Corporation is 38 percent owned by the government through Temasek Holdings, the investment arm of the Singapore government. Although Sembawang Corporation has expertise in management and construction work, its role in the ITPB was also passive. However, Sembawang Coproration's role is more than investing its share of funds with the consortium.

Sembawang Corporation also handles the financial aspect of operations by the Singapore Consortium in terms of monitoring the project cost.[66] Once the ITPB was able to develop its second phase, SembCorp exited altogether from the IT Park by swapping its stakes with Ascendas to gain a controlling stake in Singapore's joint venture industrial park in Wuxi, China.[67] Ascendas exchanged 34.97 percent of its stakes in Singapore Wuxi Investment Holdings for U.S. $ 16.7 million to SembCorp's wholly owned subsidiary Singapore Technologies Industrial Corporation (STIC).[68] Sembawang Corporation has indicated that it also intends to compete for the huge construction projects in India by forming a joint venture with L&M.[69] The L&M and Sembawang Corporation joint venture intends to build residential estates, commercial buildings, and infrastructure projects.[70]

Arcasia Land Private Limited (now known as Ascendas) is a wholly owned subsidiary of Jurong Town Corporation (JTC), a statutory (semi-government) organization that will provide the necessary experience in the development of the ITPB in terms of development and management of science parks.[71] JTC has considerable development experience and management of science parks due to its involvement in the Batam Industrial Park.[72] The main problem that Arcasia Land has encountered during the construction of the ITPB was the level of expertise of the construction companies in India.[73] The main Indian builder of the ITPB was Larsen and Toubro (L&T), a listed and well-established building corporation in India.[74] However, being a showpiece project the ITPB was built on a multistorey concept, something that has never been done before in India.[75] Therefore, Arcasia Land brought key personnel from L&T to Singapore and conducted workshops and seminars to bring them up to date with the "international standards" required of the ITPB.[76] Arcasia Land also sent its key personnel to Bangalore to assist the Indian builders with the construction of the ITPB.

According to a former CEO of ITPB, the three key areas that Singapore extended assistance to its Indian partners were planning, method of construction, and management.[77] It was estimated that the Indian construction industry and its expertise were about 5 to 20 years behind the demands and expertise of modern construction.[78] The assistance extended by the Singapore consortium to its Indian partners in the planning stage involved imparting knowledge on the demands of a hi-tech manufacturing facility. This included all aspects of manufacturing operations at the ITPB such as loading and unloading of supplies, water and electricity supply, movement of goods within the facility, raised flooring, and lighting requirements.

The Singapore consortium extended assistance to its Indian partners in the area of construction methods by essentially mechanizing the labor intensive methods of Indian construction. Architects and engineers from the Construction Industry Development Board and the Jurong Town Corporation in Singapore were flown to Bangalore to ensure that proper procedures were implemented during the construction of the ITPB to maintain quality control. Particular attention was given to technical drawings of the ITPB in order to prepare a program of construction in proper stages so that building work progressed rapidly. The program of construction was important because it gave an indication as to the type of equipment that should be installed in the proper sequence with estimated time of completion for each stage. The management of construction stressed two fundamental areas of quality and operational efficiency. For example, sub-contractors that were hired to install lighting fixtures were given a fixed date to start and finish their work in order to prevent them from damaging other fixtures already in place should they start or finish at a different date. Another example was the fire and laboratory safety factor of the ITPB that required a higher than normal standards of construction.

Since there was a significant amount of technology transfer from Ascendas to L&T, the Indian builders gave their full cooperation to the Singapore consortium.[79] The level of technology transferred was sufficient to enable L&T to start building other IT parks on their own in India.[80] The transfer of technology to host countries was one of the key objectives of the Singapore government during its regionalization drive so that Singapore and the host countries would benefit from regionalization. During the construction phase of the ITPB, the level of government to government cooperation was crucial to the project. Ascendas had assumed the apex role in the Singapore consortium once the Bangalore IT Park was under way.

The Indian authorities gave their full support at the federal and state level because they stood to gain substantially from the ITPB. The construction of the ITPB would provide a suitable environment for foreign MNCs in Singapore that have their overseas headquarters in Singapore to transfer some of their operations to Bangalore while maintaining their presence in Singapore.[81] Therefore India and Singapore would benefit from the creation of the ITPB. However, there was still a lot of "red tape" encountered during the construction of the ITPB. Another major problem was cost, due to the shortage of land acquired for the ITPB. Although the Karnataka authorities did their best to acquire as much land as possible, there were some problems associated with the farmland that needed to be acquired.[82] The cost of construction could have been reduced if more land had been given to the project because construction could be more spread out without having to build multistorey buildings.[83] Given the limitations of the land acquired, the Karnataka state authorities had given their full cooperation to the project by even handling lawsuits against the Bangalore IT Park project by irate farmers whose land had been acquired for the project.[84]

Parameswara Holdings Pte Ltd

Thus far, the GLCs that had been involved in the corporate networking approach in a horizontal integration paradigm. However, Parameswara Holdings, the investment arm of the Singapore Indian Chamber of Commerce and Industry (SICCI), was inducted into the consortium based on the concept of linking with the Indian diaspora networks in India. Parameswara Holdings was formed after a high-level official Singapore delegation visited India in February 1993.[85] While Parameswara Holdings' inputs to the consortium were financial and cultural, it played a relatively passive role in the development of the ITPB because its capabilities are different from the other consortium companies.[86] The companies that Parameswara represented were trading companies not contractors, technology specialists, or architectural planners like the other consortium members. However, the government wanted Parameswara Holdings' involvement in the ITPB because it believed that Parameswara Holdings had the important diaspora networks that would help in the construction of the Bangalore IT Park.[87] Other members of the Singapore consortium that had a relatively passive role were Singapore Technologies and the Sembawang Corporation.[88]

Parameswara Holdings was brought into the Singapore consortium after the consortium experienced difficulties in marketing the Bangalore IT Park due to different business ethics with their Indian partners.[89] These problems arose as a result of different expectations on the Indian and Singapore sides. The Singapore consortium was used to building and managing construction projects to exacting demands and standards. Differences of opinions arose because of misperceptions on both sides. The Singapore consortium perceived rather incorrectly that their Indian counterparts might feel inferior to them because the consortium was providing modern management, technology transfer, and marketing techniques. In contrast, the Indians perceived that the Singapore consortium was there to assist them to develop the Bangalore IT Park.

To prevent and mitigate further misunderstandings that could have adversely impacted on the IT park project, the Singapore government used Parameswara Holdings as a "middleman" to ensure that work progressed and to smooth "ruffled feathers."[90] The government viewed Parameswara Holdings' role as important because it seemed both prudent and profitable to tap into ethnic connections for mutual benefit.[91] However, it took considerable persuasion from the Singapore government to let Parameswara Holdings have a 10 percent share of ITPI.[92] According to a staff from the Singapore consortium, cultural differences in general were never a problem in the development of the ITPB and probably will not be a problem in managing the ITPB. Lee Fook Chiew (vice president, finance, Sembawang Corporation) commented that as Indian culture was familiar in Singapore, there was some cultural affinity between the Singapore consortium and their Indian partners.[93]

The problems that the Singapore consortium encountered were associated with the Indian administrative and management system. For example, cash flow in India at the time was very tight, unlike the case in Singapore, due to the relatively higher cost of borrowing in India.[94] Therefore, there were inadequate spare components available at short notice and this was a cause of some friction between the Singapore consortium and the Indian builders. In Singapore, there were usually reserve funds on short call that could be used to meet unexpected demands but this was not the case in India. In addition, Singapore builders were used to working on projects at a faster pace than Indian builders, who were more "casual" about short falls and not meeting expected deadlines for completing different stages of the project. The ITPB was a compact and integrated construction that had workshops and laboratories in high-rise flats. High-rise industry construction was different from what the Indian builders usually constructed because they were more familiar with low-rise factories that sprawl over a large area. While differences over business and work ethics had emerged, these were resolved during the construction phase of the IT park.

The Singapore government and consortium decided that the ITPB should be constructed as a self-sustaining facility with its own water, electricity, and telecommunication facilities. However, the concept of self-contained industrial plants with their own power and water was not a new phenomenon because in the 1980s, Suzuki–Maruti Udyong had already used this strategy to keep its automotive plants running.[95] Maruti–Udyong even administered the transmission and distribution systems to ensure that it could produce its vehicles.[96] This would satisfy the stringent requirements needed to placate the anxiety and concerns of MNCs wanting to occupy the IT park but fearing the unreliability of infrastructure facilities there. However, this would increase considerably the costs of the construction project. Debating the advantages and disadvantages of the ITPB, the Singapore government and consortium decided to proceed with its construction.[97] However, constructing the ITPB as a self-sufficient project had entailed several difficulties in relation to obtaining the necessary approvals required to generate its own electricity supply, and have its own water treatment plant and own satellite dish for communication purposes. Unlike Singapore's earlier experiences in developing industrial and science parks in Indonesia, China, and Vietnam, the Indian project was more complicated.

In examining the Batam model of developing the Batam Industrial Park in Indonesia, the project was assisted by the creation of a special government organization in Indonesia with political influence to approve the necessary permits. However, in the Indian case there is no such body, hence the approval time for various permits took longer.[98] In terms of infrastructure, the ITPB will have its own private power plant, sewage treatment unit, and water storage facilities.[99] Furthermore, a high-speed data transmission line operating at two megabytes per second is already completed at the ITPB. The infrastructure of the rest of Karnataka has yet to reach a level that would satisfy most MNCs. Dewang Mehta (the late executive director of India's National Association of Software and Service companies), with reference to the IT park, commented that: "If the take-up is lower than expected, it is not the fault of the Park management but because of Bangalore's own infrastructure constraints that are annoying investors."[100] However, this is beyond the control of the Singapore consortium. The Singapore consortium could only persuade the Karnataka state authorities to upgrade their existing facilities as quickly as possible.

Economic crisis and the Bangalore IT park

The marketing woes of the Singapore consortium was aggravated by the Asian economic crisis that created punishing interest rate payments burden on the consortium and Tata group of companies. In order to counter this problem, the Singapore consortium and the Tata group decided to inject fresh equity of 2.8 billion Rupees (S $ 117.6 million).[101] The fresh equity injected over a span of two years will see the partners' share of equity rise from 40 percent to 46.5 percent each, while the Karnataka state government's share will be scaled back from 20 to 7 percent.[102] However, the Karnataka state government would retain its level of board membership and be given a place in the executive committee of the ITPB.[103] Demonstrating its continued commitment to the ITPB, the Karnataka government through the Karnataka Industrial Areas Development Board will inject Rs 130 million into the IT park.[104]

While the promoters of the IT park acknowledged that the Asian financial crisis had adversely impacted on investments from Southeast Asia, they believed that there was still an investible pool of funds available in Singapore. They believed that many Chinese entrepreneurs in Singapore were interested in taking a closer look at investment opportunities in India. However, India should go on a fast-forward mode and remain committed to the economic liberalization drive. To complicate matters from the Singapore side, at the time the experiences and perceptions of the various agencies in Singapore differed over India. While the Trade and Development Board and the Singapore Tourism Board were confident about India, the EDB, which was more concerned about investments and joint ventures, was reportedly more reserved because of its past experiences.[105]

Information Technology Park Investment Private Limited (ITPI)

The injection of capital would be implemented through a separate holding company called Information Technology Park Investment Private Limited (ITPI).[106]

ITPI consisted of the various Singapore consortium members that owned 40 percent of the Bangalore IT Park.[107] The rest of the ITPB was owned by the Tata Corporation (40 percent) and the Government of Karnataka (20 percent)[108] as shown in table 6.5.

The CEO of ITPI is Chong Siak Ching who is also the general manager of Arcasia Land Private Limited. She is in charge of the marketing and maintenance of the Bangalore IT Park.[109] Chong Siak Ching was made the CEO of ITPI because Arcasia Land is ITPI's main shareholder (40 percent).[110]

Information Technology Park Limited (ITPL)

In order to administer the daily functions of the IT park, the Tata Corporation, ITPI and the Karnataka state government formed a separate company

Table 6.5 Partners in Bangalore IT Park

Company	*Percentage of share owned*
Tata	40
Government of Karnataka	20
Information Technology Park Investment Pte Ltd (ITPI) Consisting of:	40
A: Technology Parks (Arcasia) Pte Ltd—40%	
B: Sembawang Industrial Corporation—20%	
C: L&M—14.9%	
D: RSP Architects—15.1 %	
E. PHL—10 %	
Total	100

Source: Parameswara Holdings Limited, shareholders report and Joint Venture Agreement, January 28, 1994.

called Information Technology Park Limited (ITPL). ITPL will oversee the project implementation, management, and eventual marketing of the Bangalore IT Park. The close relationship between ITPL and ITPI in terms of marketing is important, which is one reason why Chong Siak Ching is the chief executive of ITPI. ITPL was headed by a senior member of staff from the Singapore consortium and the deputy is a senior staff member from Tata Industries.[111] The chief executive officer is Singaporean Kang Kok Hin,[112] who was the deputy chief executive and took over the helm at ITPL from another Singaporean, Cheang Kok Kheong.[113] Cheang Kok Kheong was the chief executive of ITPL from 1994 when he took over the helm from yet another Singaporean, Alan Yeo Hwee Tiong,[114] until June 1997. The Singapore consortium is heading ITPL because of the new technology and expertise that the consortium was introducing into India.[115] According to Cheang Kok Kheong, the main functions of ITPL were to maintain and improve the property management system at the Bangalore IT Park.[116]

In order to manage the Bangalore IT Park efficiently, the senior engineers employed by ITPL were sent to Singapore for two weeks' attachment to various government bodies such as the CIDB and the JTC to learn preventive maintenance.[117] ITPL also ensured that the Karnataka state government was involved in the management of the Bangalore IT Park.[118] The inclusion of the Karnataka state government by ITPL in its operations was important because the state government was able to resolve land-use problems associated with the IT park.[119] As a CEO of ITPL, Cheang Kok Kheong also had to select key staff members in order to handle the daily operations at the Bangalore IT Park. The completion of the Bangalore IT Park required regular meetings to assess progress reports. Since the company board of ITPL was not able to meet on a regular basis, an executive committee was formed to monitor its progress.[120] The executive committee comprised the representatives of the various companies of the Singapore consortium, Tata Industries and the Karnataka state government. According to a staff member from the Singapore consortium, the formation of an executive committee for projects undertaken by Singapore companies overseas is standard practice. The EDB is also represented at the executive committee meetings to monitor the progress of the ITPB project.[121] The executive committee meets once a month alternately in Singapore and Bangalore. The chairman of the executive committee is Major-General (NS) Lim Neo Chian, a former senior military officer of the Singapore armed forces.[122]

Countering negative perceptions

The problems encountered by the Enron Corporation made the Singapore consortium realize that they were fortunate to have dealt with the Janata Dal party of Prime Minister Deve Gowda in Karnataka.[123] In order to prevent future problems from arising with the management of the ITPB, the Singapore consortium established ITPL. However, the formation of the ITPL has not completely eradicated the negative perception that Singapore investors have in general about investing in India. Members of the Singapore consortium had expressed concern about the marketing aspect of the ITPB. Furthermore, it has been difficult convincing Singapore investors to invest in India.[124] However, the Singapore consortium's attitude is that they are fully supportive and committed to the ITPB. The Singapore consortium has already spent millions on its construction and did not want to abandon the project.[125]

Former Singapore Prime Minister Goh Chok Tong believed that India's depth of human resource and talent pool could be harnessed effectively for the benefit of India and Singapore. How could Singapore harness this talent pool? While short of skilled and professional labor itself, the Singapore government also faced the twin need to expand its economy beyond its boundary to create an external economic wing through the process of regionalization. In looking at the various high-tech industries, Singapore decided that IT should be its flagship investment in India.[126]

In June 2005, Ascendas decided to widen its business focus toward Bangalore city as a whole and re-branded ITPL to ITPB. The re-positioning of ITPL to ITPB was to strengthen Ascendas' presence in Bangalore and at a time when Ascendas was actively pursuing IT projects across India.

The ITPB is in its third phase of development and has enjoyed full occupancy in the first two phases. As of April 2007, the ITPB has six buildings. The first five buildings are called Inventor, Discoverer, Innovator, Creator, and Explorer.[127] The latest building, named Navigator, is the largest at 400,000 square feet and brings the total built-up area to 2.3 million square feet over 20.3 acres of land.[128] Navigator can accommodate up to 4000 employees and had 80 percent occupancy at its launch. Thus far, Ascendas has spent about S $ 330 million on the ITPB but it may develop another three million square feet of space at the ITPB over another 26 acres in the next phase at a cost of additional S $ 270 million.[129] Singapore companies, in particular Ascendas, have gone on to invest in other IT parks in different Indian states. Next to Bangalore, the other prominent Singapore IT investment is Cyber Pearl in Hyderabad in the southern state of Andhra Pradesh.

Hyderabad: Hitec City

Hyderabad is relatively new to the world of IT but it has strong political support from its former chief minister Chandrababu Naidu.[130] Andhra Pradesh is one of a handful of states that have taken the opportunity of economic decentralization from the central government seriously. Arguably, it is a manifestation of India's economic reforms and liberalization from the ground up by having the various states implement their respective economic initiatives.[131] The city of four million people and once the home of Muslim noblemen who built elegant palaces has been slowly transformed under the leadership of Naidu. Chandrababu Naidu has constructed Hyderabad

Information Technology & Engineering Consultancy (Hitec) city into clusters of IT industries and created another cluster called Cyberabad at the city of Charminar.[132] CM Naidu has impressed not only private companies but also his own federal government and foreign governments alike. Through the use of information systems and computerization, Naidu and his team of officials have been able to generate accurate data and present compelling arguments to attract foreign investors to Andhra Pradesh.[133] This also promoted transparency and accountability in his administration.[134]

The political support has been translated into bureaucratic efficiency, and fast follow-up action on decisions has made Andhra Pradesh attractive to foreign investors. How was Naidu able to achieve his objectives? Using the process of central decentralization to full use, Naidu and his team of officials were able to respond faster to all queries and have the necessary permits in place for projects to be implemented. In addition to the package of benefits such as tax incentives, for foreign investors, Naidu has also added safeguards against future project cancellations approved by the state.[135] Another attraction for investors was Naidu's ability to obtain funds to improve the state's infrastructure such as roads, airports, and railways. For example, in recognition of Naidu's commitment to economic development, the World Bank has offered millions in aid to assist the development of the state's infrastructure. However, the potential danger is that while recognition from global institutions such as the World Bank is good for the image of Naidu as a "go-getter"and dynamic CM, it does not translate into votes by those hit by rising prices of rice and electricity.[136]

Then Singapore Prime Minister Goh Chok Tong was also supportive of Naidu's efforts and saw the potential of the state in terms of its untapped human resource pool, especially in IT.[137] At a glance, the depth of this large talent pool in 2000 is manifested by: 24,315 graduate engineers, 3510 master of computer applications graduates, 4280 MBA graduates, and 104,380 certificate holders from industrial training institutes.[138] While Singapore has its own IT park in Bangalore, the infrastructure in Hyderabad had also impressed PM Goh. However, the financial cost of these infrastructure projects as well as the cost of developing Hitech City were very costly and possibly undermined the credibility and public support of the Naidu government. For example, 18 flyovers were built and partly funded by Rs 45 crores (1 crore = 10 million) raised by auctioning plots in the up-market Jubilee Hills area.[139] However, local residents reported that these flyovers had increased to 22 by mid-2004 and most of them did not connect to any roads and became "white elephants." Figure 6.4 shows Cyber Pearl at Hitec City in Hyderabad.

The lure of Hyderabad for IT MNCs is the availability of skilled IT talent, good infrastructure, a responsive and efficient state government, and relatively low rental space starting at Rs 24 per square foot compared to between Rs 25 and 40 for other major towns such as Bangalore and Mumbai. The Hyderabad Information Technology and Engineering Consultancy City

Figure 6.4 L&T Infocity Ascendas—Cyber Pearl.

(Hitec City) project is managed by L&T Infocity, a joint venture between L&T and the Andhra Pradesh Industrial Infrastructure Corporation (APIIC).[140] Hitec City is located near Madhapur village adjacent to the fashionable Jubilee Hills in Hyderabad[141] and is being built across 158 acres to provide five million square feet of office space at a cost of U.S. $ 375 million. Phase I of the project built over six acres is a ten storey structure of 120 modules and a large range of user-friendly features[142] called Cyber Towers and the second phase is Cyber Gateway.[143] The third phase is called Cyber Pearl and is a joint venture between L&T Infocity and Singapore firm Ascendas, an experienced business space provider.[144]

Cyber Pearl is Ascendas' first business venture in Hyderabad but its third in India. Ascendas' flagship and first project was the ITPB and the Gurgaon Tech Park in Haryana was its second. Figure 6.5 shows the interior finishing of Cyber Pearl with its marbled floors and wood-clad columns. A fourth project, the Ascendas IT Park, is being developed in Chennai, in the southern state of Tamil Nadu. A fifth IT park is being planned in Kolkatta in the state of West Bengal.[145] The Cyber Pearl project was planned in two phases on a five acre plot to provide 500,000 square feet of business space. Cyber Pearl was completed in September 2004 and is expected to house about 5000 people in IT and high-tech companies. The first two phases of Hitec City has been completely taken up and Cyber Pearl is nearly 95 percent occupied. It already

Figure 6.5 Interior of Cyber Pearl.

houses tenants such as Microsoft Inc., Oracle Inc., and Tata Consultancy Services (TCS). Due to the strong demand for office space by IT companies attracted to Hyderabad, Ascendas has bought Vanenberg IT Park from the Dutch Technology Group Vanenberg. Although this is an anomaly in terms of building its own high-tech park, the acquisition of Vanenberg is in line with Ascendas' strategy to regionalize and replicate its highly successful high-tech parks in emerging economies.

The Vanenberg Park site has a total floor area of 850,000 square feet and is 95 percent occupied.[146] The Vanenberg Park is spread across 20 acres in three multi-tenanted buildings and houses about 7000 IT employees. Among the companies in the park are Cognizant, Computer Associates, SSA Global, Motorola, and TNS. There is room for a fourth building in the master plan for the park. According to the chief executive of Ascendas, Chong Siak Ching, "Vanenberg fits well with our overall strategy to grow a strong presence in Hyderabad, having completed Phase I of Cyber Pearl. Our flagship in India, the International Tech Park in Karnataka, is recognized as a quality IT park in India. In Tamil Nadu, we aim to further raise the bar with our IT Park project in Chennai, the first phase of which is scheduled for completion in May next year. We continue to look for more acquisitions to beef up our property portfolio in this fast-growing market."[147]

Not resting on its laurels with the acquisition, Ascendas has renamed

Vanenberg as "The V." According to CEO of Ascendas India, Jonathan Yap, "The V" is a reflection of what the state of Andhra Pradesh, where it is located, stands for in terms of being a vibrant and progressive state.[148] The V inaugurated phase four of its development with the addition of a new building called the Capella. Phase four added 217,000 square foot to the previous 850,000 square foot. The Capella already has tenants such as Computer Associates, Cognizant Technology Solutions, Manugistics, and Conexant.[149] Phase five of the V creates additional space of 600,000 square foot and was completed in April 2007. Phase five provides space for another 5000 IT professionals.

Private sector

The private sector in Hyderabad has shown strong support for Hitec City since Phase I. Some of the global players that have shown interest and invested in Hitec City included Microsoft India (R&D) Private Limited, Oracle Software India Limited, Toshiba Power Projects, and Metamor Global Solutions.[150] Microsoft's Bill Gates was impressed with Naidu's IT vision for the state and decided to set up its first software development center outside the United States in Hyderabad. After Microsoft a range of other major global IT players followed suit such as IBM, Motorola, and Oracle.[151] Among the local Indian IT players, major companies such as Wipro, TCS, and Satyam have also invested in Hyderabad. TCS has established a software development center at Hitec City and it houses over 800 staff in Phase I. Phase II of TCS' new complex will double its staff number to 1600 and TCS also has a center in the twin city of Secunderabad that is dedicated to development and support activities for Unigraphics Solutions of USA.[152]

The Singapore private sector is also bullish about the IT potential of India. For example, ECS Holdings Limited planned to enter the Indian market with a local partner in order to diversify its revenue. ECS Holdings is an IT products and services providers and its main market is China.[153] India has the potential to be second in terms of revenue earnings after China for ECS Holdings. ECS derives 50 to 55 percent of its total revenue from China. Singapore also actively courts Indian companies to locate in Singapore and use it as a launching pad into the region. For Indian IT companies the need to diversify away from the U.S. market and develop insulation against unexpected down turns in the U.S. economy may increase their interests to establish a base in Singapore. Of the 1500 Indian-owned companies, about 350 to 400 are IT companies of various sizes.

Tamil Nadu—Chennai

Chennai is also emerging as a viable alternative to Bangalore as India's next IT hub. Chennai has 25 universities and 250 engineering colleges that produces about 60,000 engineering graduates each year and about 35,000 of them specialize in IT. The major Indian IT companies such as Wipro technologies, Infosys Technologies, Tata Consultancy services, and Satyam Computer Services have invested in Chennai's IT expansion. These companies are building the world's biggest software development center on a 53 hectare site that is part of the 687 hectare Mahindra City IT industrial park. Approximately 35,000 jobs were created in Chennai in 2004, placing the city as the second largest job creator after the National Capital Region. The aim will be to create 70,000 jobs per year by 2008. The government of Tamil Nadu had allocated land for an IT belt on the outskirts of Chennai in an area known as Tidel Park.[154]

Figure 6.6 shows the front of Tidel Park IT complex in Chennai. A number of MNCs such as Electronic Data Systems Ltd (EDS) have established operations at Tidel Park. The EDS facility will develop application development, offer production support maintenance, and create new solutions for the domestic market and for the company's global customers.[155] Chennai also hosts business process outsourcing activities for big international banks such as Citibank, Stanchart, ABN Amro, and the World Bank. Consultants CB Richard Ellis commented that there is a high requirement for grade A office space in Chennai.[156] Figure 6.7 shows the side profile of Tidel Park.

Tidel Park I is fully occupied and despite the strong commercial demand for high- end commercial space for IT and ITES space, the construction of Tidel Park II has been delayed by 15 to 18 months. Reportedly, the state government

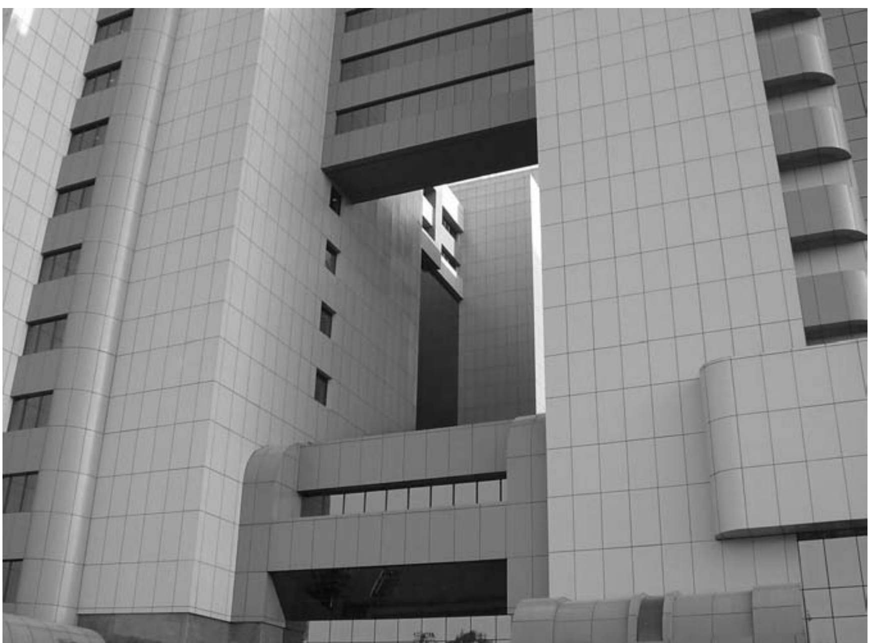

Figure 6.6 Front profile of Tidel Park—Chennai.

Figure 6.7 Side profile of Tidel Park—Chennai.

is still haggling for a better deal for the evaluation of the proposed site. However, the project appears to be back on track with the company inviting bids from a consortium of design and construction firms for the Tidel Park II project. Tidel Park phase II, developed across from phase I by Singapore company Arcasia Land now known as Ascendas, has become known as Ascendas International Technology Park. The partnership between Singapore private companies and the state government of Tamil Nadu has been reinvigorated in the IT sector after the shelving of the "Madras Corridor" proposal when both parties after a detailed feasibility study signed a Memorandum of Understanding (MOU) to develop an IT complex in Chennai[157] for the second phase of Tidel Park IT complex. The state government has allocated 40.19 acres of land adjacent to the existing Tidel Park for the joint venture between Ascendas Pte Ltd and the Tamil Nadu Industrial Development Development Corporation (TIDCO). Although, the MOU was signed at the downturn in global IT industry, the expected commercial demand for IT/ITES space in Chennai indicated a need for more IT infrastructure.

Figure 6.8 shows Ascendas' IT Park in Chennai. In the project agreement for Tidel Park II, Ascendas could construct up to 1.5 to 2 million square feet of built-up space in phases depending on the demand for office space[158] and Ascendas will be responsible for the overall implementation of the project including its management, assisting the special purpose for structuring

Figure 6.8 Ascendas IT Park—Chennai.

its financing and being the lead marketing agent for the project. The first phase of the five acre IT complex was completed by the end of 2004 and estimated to cost approximately S $ 52 million.[159] Both Ascendas and Tidco have agreed on the special vehicle on how the project should be structured, especially the equity holding. Reportedly, Tidco has an 11 percent stake with Ascendas holding the rest[160] which is similar to the financial structure for Cyber Pearl in Hyderabad but financial institutions are likely to take up stakes in the project. Figure 6.9 shows the glass panel entrance of Ascendas IT Park in Chennai to allow maximum lighting to shine through to save on artificial lighting.

Reportedly, Ascendas is open to the idea for a third partner at the onset of constructing Tidel Park II or at the completion of the project. The revival of the "Madras IT Corridor" proposal is ongoing and Chennai is also the "landing ground" for two telecom submarine cables from Singapore (Tuas) to provide a ten plus terabit per second capacity that will enhance the capabilities IT industry. Other IT infrastructure in place in Chennai includes those undertaken by Software Technology Parks of India (STPI). Similar to other IT parks across India, VSNL, DoT, and STPI are providing services to Tidel Park. For example, two dedicated communication frameworks created for operation by VSNL and STPI have been provided. Each office space module at Tidel Park will have a facility for a bandwidth of 10–12 Mbps. The Tamil

Figure 6.9 Glass interior of Ascendas IT Park—Chennai.

Nadu Energy Board (TNEB) is also constructing a 110 Kv sub-station with a 10.5 MVA diesel generator set for 100 percent. Tidel Park has also taken a long-term lease on 15 acres of land from the neighboring MGR Film City. This is to provide additional parking space and recreation facilities such as swimming and outdoor games. The state government has also established the Chennai Metropolitan Development Authority (CDMA) to speed up the process and approve building applications for the state's IT infrastructure with the creation of an exclusive IT channel. The channel aims to clear any applications within one to two weeks.[161]

Ascendas has invested in Chennai in a big way by completing the first phase of its International Technology Park, Chennai (ITPC) for occupation by a range of software and IT-enabled companies from July 2005. Ascendas IT Park will have an overall area of 1.5 million square feet to be built in three phases and has undertaken the project as a joint venture with the Tamil Nadu Industrial Development Corporation (TIDCO). The first phase of the ITPC will consists of an 11 storey, grade A business space for IT, ITES, call center, software, data centre, and R&D units of large corporations. Besides the grade A space, the 525,000 square foot of space in phase 1 will utilize the "work and play" concept with extensive landscaping, water features, and aesthetic artworks.

There will also be amenities such as a large food court (larger than at Tidel

Park), al fresco dining, retail outlets, and a fitness center for employees and tenant companies in the park. The companies that have taken leases at the park included iNautix, Profit Logic Software, Fitness One, Paris Bijoux, and Sumanas Florist. Although the Ascendas Park has standby generators and has their own telecommunications link, the city of Chennai also needs to invest in infrastructure for continued growth of its IT sector. Although, electricity supply is of lesser concern because Chennai is not as populated as Bangalore, Chennai has to provide more suitable land for the expansion of the IT sector. According to real estate firm CB Richard Ellis, Chennai could only provide 0.6 million square foot of the 20 million square foot meant for IT firms in 2004. This is well below the 2 million square foot provided to IT firms in Bangalore in 2004. Nonetheless, the software output of Tamil Nadu has increased from 3.9 billion rupees in 1998 to 8.1 billion rupees in 2003. When completed, the International Tech Park Chennai (ITPC) will have a working area of 1.75 million square foot.

The strong demand for more IT/ITES space on the outskirts of Chennai has seen Ascendas signing another MOU with local joint venture partner Mahindra Industrial Park (MIPL) to develop a million square feet of ready built space at the Mahindra City near Chennai catering to the IT and BPO industries.[162] Both companies also agreed that Mahindra City will adopt Ascendas Real Estate Management System (Arems) to enhance the quality of the park management. Mahindra City will leverage on the Ascendas brand as a premier business solutions and space provider throughout Asia and Ascendas will transfer its best practices and know-how in high-end real estate management to the park. These included master plan review, asset management, marketing consultancy, property management, lease management, and the use of its proprietary web-based Ascendas Integrated Management System (AIMS).

Potential IT projects

Besides the southern states of Karnataka, Andhra Pradesh, and Tamil Nadu, Ascendas is also involved in developing IT parks in the north of India in the state of Haryana at Gurgaon, Pune (Uttar Pradesh state) and Kolkatta (West Bengal state). Pune is a city in the northwest part of India about a 45 minute flight from Mumbai. According to Goh Kok Huat, the CEO of Ascendas India, “Pune has always come up when we talk to clients, so that’s where we are headed. Most of the projects there are IT and R&D facilities and so therefore we go to where our customers are telling us are locations where they would like to set up shop.”[163] The Pune IT Park was expected to cost about S $ 150 million. According to Goh Kok Huat, Ascendas’ long-term strategy in India will be to explore different cities in India because their ultimate strategy will be to establish a pan-Indian presence. However, will IT clusters be sustainable in the long term in India given internal factors such as the competition for human capital, increasing wages, venture capital, technology, and infrastructure? Externally, the competition for IT enables services (ITES) in terms of outsourcing from other economies such as China, Vietnam, and the Philippines will force India to review its IT strategy.

Kolkatta

Ascendas' strategy is to create a pan-India presence and the latest state to attract its attention is the city of Kolkatta in the state of West Bengal. Through Ascendas, the Singapore government has placed greater emphasis on the IT sector in India. For example, Ascendas is developing a 20 acre International Tech Park in Kolkatta (ITPK) for S $ 150 million at a town called Rajarhat.[164] The town is located 15 minutes drive from the airport and situated within a 10,000 acre development site in Rajarhat demarcated for a new integrated township by the state government of West Bengal. To complement the IT parks, other construction projects in Rajarhat will consist of entertainment and residential spaces. Apart from Ascendas, other real estate companies looking closely at Rajarhat are DLF, the Unitech group, and Keppel Land.

Why did Ascendas choose West Bengal for its next IT park development? Ascendas' head for North India operations, Harminder Singh, explained that the IT industry in Kolkatta is growing at an annual compound rate of 119 percent against a national average of 36 percent between 2001 and 2003. Moreover, West Bengal accounted for 14 percent (over 140,000) of the IT and ITES workforce in India. The ITPK, once fully completed, will provide 2 million square foot of business space for IT and software operations, making it one of the largest IT parks in the city.[165] The ITPK will be built in four phases, with phase one creating 500,000 square foot of grade A office space and completion in early 2007.[166] The ITPK will include al fresco-style cafes, supermarket, food court, health club, medical clinic, travel agency, launderette, gift shop, book shop, and auto banking in a lushly landscaped environment.[167] Ascendas was also planning for the expansion of the Rajarhat project and has sought more land from the state government in West Bengal. According to Harminder Singh, the senior vice-president of Ascendas India, at the meeting between Chong Siak Ching, the president and CEO of Ascendas, and the Chief Minister, "we also discussed the possibility of being allotted some more space. We'd be happy if its adjacent to the plot we are working on in Rajarhat."[168] Moreover, Ascendas would like to develop the IT park into a special economic zone and the Chief Minister asked Ascendas to table a proposal.[169] However, Ascendas has put the ITPK project on hold because of political uncertainties over the special economic zones (SEZs).

Some other potential states for Ascendas' investment would include the northern states of Chandigargh, New Delhi, and Jaipur; while in the east, the state of West Bengal looks attractive. In India's most industrialized state of Maharashtra, which is famous for the Bollywood film industry and the country's financial hub, Ascendas has signed agreements to build two new IT parks in the cities of Nagpur and Pune respectively.[170] The IT parks will be built within the state-promoted SEZs and will have a combined office space of seven million square feet, which is enough to accommodate 70,000 people. Ascendas will be in partnership with the Maharashtra Airport Development Corporation in the construction of Nagpur IT Park.[171] The Nagpur IT Park will have an office area of 4.5 million square feet and will be located in the Multimodal International Hub Airport. Ascendas will be partnering the Maharashtra Industries Development Corporation in the construction of the International Tech Park Pune. The total cost of constructing the two IT parks is estimated at S $ 570 million.[172]

Conclusion

Singapore's IT investments in India managed to coincide with India's desire to leverage on its human capital strengths in IT to expand its own economic development. Ascendas' initial IT investment in Bangalore has paid handsome dividends and the Singapore GLC has explored other states in India. However, Ascendas also learnt important lessons along the way such as center and state politics and the devolution of economic autonomy to regional states will involve closer scrutiny of state politics. It is also important to consider that the IT parks developed by Ascendas were not connected to the larger infrastructure framework of Karnataka and the respective states. The impact that these self-contained IT parks will have on the improvement of overall state infrastructure will depend on the "spill over" effects into other sectors such as telecommunications. Telecommunications is a visible manifestation of the process of economic transformation taking place in India and is an important tool in commerce and trade. This will be discussed in the next chapter.

7 Telecommunications

Introduction

Telecommunications and information technology are the two most dynamic economic sectors in India. The telecommunications sector has undergone tremendous improvement in technology and competition among the service providers for a share of the Indian market.[1] How did Singapore become attracted to the telecoms sector in India? Singapore Telecommunications better known as SingTel has been facing increasing competition as Singapore liberalized its telecommunications market on 1 April 2000. Once a monopoly, SingTel now has to compete with dozens of companies such as Starhub, ST Telemdia, Flag Telecom, MCI Worldcom, Singapore Power, and Telstra. Given that the limited Singapore market has become increasingly saturated, SingTel's growth strategy has been to regionalize and invest overseas, especially in Asian telecom companies. According to SingTel's former chief executive Lee Hsien Yang, in 1994 close to 50 percent of the company's revenue came from the international direct dialing business and they had negligible overseas investments. In the 1980s, before SingTel was corporatized, the then statutory board knew that it had to regionalize because the regulatory environment in Singapore would become tougher and in due course it would face full competition.[2] With the deregulation of the telecommunications sector in Singapore and the entry of foreign players such as M1 and Starhub, SingTel has seen its traditional source of income declining. In particular, revenue from international calls in Singapore had declined for the latter half of 2000.[3] SingTel considers the Indian telecommunications market to have huge potential and capacity for expanded growth.

With a domestic market of just 4.4 million people and where four out of five people own a mobile phone, SingTel has spent about S $ 17 billion since 1993 in making acquisitions overseas but started out by investing small amounts.[4] Ironically, SingTel made an initial foray into India in 1993 but withdrew because the business climate was still heavily regulated at that time. By end 2001, 48 percent of SingTel's revenue flow of U.S. $ 3 billion had come from outside Singapore.[5] While telecom investments in the Southeast Asian region assumed a lot of risks, SingTel has spread its investments wider into the Asia Pacific region in Australia and India. SingTel identified early on in India that Bharti Tele-Ventures showed a lot of potential for a largely untapped market in India.[6] What was the impetus for telecoms growth in India? As recently as the 1980s, the telephone service in India was one of the worst in the world. The telephone was considered a luxury and the ratio was one per 200 people.[7] The telephone sector needed overall improvement and upgrading but received scarce attention from the bureaucrats. This attitude was replaced in the late 1980s with a critical view that telecommunications is a crucial sector that would play a large role in economic development. The revolution in the telecommunications sector began under the term of late Prime Minister Rajiv Gandhi. The telecommunications sector received further impetus to expand in the 1990s with the liberalization of the Indian economy through economic reforms in 1991. The private sector and foreign investors were given a large role in the modernization and expansion of the telecoms sector because the public sector did not have the funds to develop the vital sector. To attract foreign investors, the government decided to expand foreign ownership of Indian telecom companies from 49 to 74 percent.

India is underdeveloped in its telecoms infrastructure and has one of the lowest teledensity rates in the world.[8] India has one of the lowest telecom spending rates in the world, at just 1.2 percent of its gross domestic product. Prior to the economic reforms and liberalization in 1991, from 1947 to 1988 the rate of telephone penetration grew at 0.2 percent.[9] The government and bureaucracy had a heavy hand in the telecoms sector, making it difficult to implement reforms. When the Indian government issued a tender to invite bids for cellular networks in early 1990s, a number of problems emerged. The lack of transparency in the tendering procedure for telecoms contracts had been an irritant to foreign companies. Some local telecoms players at the time were still determined to prevent the entry of foreign competitors.[10] Moreover, India's huge expanse of territory and large population are attracting investors into the telecoms sector. In 1995, the government tenders for 21 telecom circles attracted U.S. $ 30 billion worth of bids. The telecommunications sector has become an important sector in India because it has direct bearing on the growth of the economy. Reliance Industries, which considers telecoms as a new but emerging area of business, is spending U.S. $ 5 billion in laying fiber optic cables about 116,000 km long across India to increase access speeds to one terabit per second. In early 2003, the GSM cellular subscribers surpassed 12.7 million and is targeted to reach 43.5 million by 2006. The rival CMDA network rose to 2.12 million users by early March 2003. What was the impetus for telecoms growth in India?

In the late 1990s, after launching the 1994 Telecommunication Policy, the government of India realized that its privatization policies have not been implemented according to plan. Although there had been rapid expansion of the cellular mobile networks in the cities and various states, most of the projects are facing problems. The main problem seems to be that revenues generated from the projects have not been sufficient to cover the operational costs of the projects themselves. In 2001, India's state-owned BSNL experienced a profit erosion of U.S. $ 400 million and this trend continued among India's 22 private telecoms service providers. This was primarily due to low tariffs, debt burden, and uneven regulatory policies. Indian telecom tariffs are one of the lowest in the world, suggesting that private telecom companies may need five to fifteen years to recover their investments. Without cash-generated profits, telecom companies had to borrow huge amounts and follow a high volume and low margin strategy. Other costs included service tax and interconnections charges. Spectrum availability is also a problem and basic telecommunication services have not expanded in a significant way, especially in rural areas. With the recent developments of high technology sectors that are closely linked with telecommunications such as IT, consumer electronics, and media industries, the government decided to issue a New Telecom Policy in 1999 (NTP 1999) to replace NTP 1994. The targets of NTP 1999 were to: make telephones available on demand by the year 2002 and sustain this thereafter so as to achieve a teledensity of 7 per 100 people by the year 2005 and 15 per 100 people by the year 2010; encourage the development of telecoms infrastructure in the rural areas and make it more affordable by a suitable tariff structure; and, ultimately, increase rural teledensity from the current level of 0.4 to 4 per 100 people by the year 2010, including the provision of reliable transmission media in all rural areas.

The establishment of the Telecommunications Authority of India (TRAI) in 1997 as an independent regulator was a key step toward the effective implementation of reforms in the telecommunications sector. The TRAI was constituted in March 1997 and initiated measures to deregulate the telecoms sector but it was stymied in the process by the Department of Telecom (DOT), which did not relish relinquishing control over the sector.[11] The battle between the TRAI and the DOT was manifested when the TRAI quashed an order by the DOT to hike tariffs from fixed line to cellular phones in June 1997.[12] The DOT managed to challenge the authority of the TRAI and took it to court to revoke all its orders because certain clauses in the TRAI Act 1997 were ambiguous.[13] Furthermore, when the Indian authorities formed the TRAI, it did not repeal the 1885 Telegraph ACT which gave powers to the DOT and the matter was worsen by the hands-off approach taken by the judiciary to resolve the issue, delaying the reform process. The government was compelled to rectify the status of the TRAI in 1999 when it disagreed with the TRAI over policy deregulation. The Indian government decided to reconstitute the TRAI by clearly defining its regulatory functions but removing policy and judicial functions from its purview.[14] A new organization called the Telecom Dispute Settlement Tribunal (TDSAT) was established as an appellate authority to enable firms to appeal against the regulatory actions of the TRAI.[15] Despite resolving problems related to the regulatory mechanism, problems continued to surface such as licensing and pricing.

What were the problems related to pricing and licensing? The Indian system of segmented licensing has proven to be a key constraint because it involved differential pricing for different categories of service.[16] As technologies converged, the market found it difficult to operate in an environment of individual licenses. The way to resolve the situation would be to move toward a unification of licenses.[17] The TRAI tried to move the initiative for unification forward by releasing a consultation paper on unified licenses and invited comments from the various stakeholders.[18] However, the timing and scope of the proposed new license were not appreciated by private cellular operators because they had been in disagreement with the DOT regarding the policy to allow basic operators (fixed line, usually government-owned operators) to provide limited cellular services.[19] From the private cellular point of view, if accepted, the proposal would have allowed the entry of some big market players from the two state-owned fixed line carriers (BSNL and MTNL) to subsidiaries of Indian conglomerates such as Tata Teleservices and Reliance Infocomm.[20] The established cell phone providers, which have significant foreign investor participation, objected for two main reasons. When the cell phone market was first liberalized, the winning bidders were paid substantial entry fees and spectrum license fees through an expensive auction process. The unified proposal would have allowed fixed-line providers to offer cellular services without paying the market value for cellular licenses and entry fees. The other problem was that telecom competition laws would favor the state-owned providers and conglomerates.[21] The proposal allows for mergers and acquisitions but this will favor the major conglomerates, and the private cell phone operators will also be constrained by the 49 percent equity restriction imposed on foreign ownership.[22]

Why did the TRAI believe that convergence was inevitable and reviewing the separate licensing arrangement for basic and cellular services was necessary? This is due to the technological developments, reduction in the costs of wireless technologies, quicker rollout, and huge growth of wireless subscribers. The trend indicated that the growth of cellular phones would overtake that of fixed line phones as in most countries.[23] However, the scenario is set for more legal battles because the DOT is reluctant to accept the TRAI recommendation to ban call forwarding and multiple registrations.[24] In November 2004, the unified initiative took its first tentative steps by combining both basic and cellular services on a single platform. The follow-on initiative will be to encompass national long-distance services, global mobile communication by satellite, radio paging, internet service, and infrastructure providers.[25]

The TRAI also faced challenges in terms of spectrum allocation to private cellular companies. The global system for mobile communication (GSM) and code division multiple access (CDMA) players are disputing over the use of the 1900 MHz band.[26] GSM companies argued that they needed the 1900 MHz band to upgrade their services to high-speed third generation (3G) networks. The CDMA players on the 800 MHz band have also argued that they needed the 1900 MHz spectrum for their operators. International telecom equipment vendors such as Nokia supporting GSM and Lucent Technologies for CDMA have joined the dispute. From the Cellular Operators Association of India (COAI) perspective, the allocation of the 1900 band to CDMA will result in major interference to GSM operators as it will block the progress of 30 million subscribers to 3G.[27] However, if India adopts the 1900 (non3G), it will be against global trends but the move toward convergence is a potential solution. The migration paths of GSM and CDMA are likely to converge and the provision of Wideband CDMA to get to 3G will appease both lobbies. The Department of Telecom has embarked on a fiber optic cable project to enable defense forces to vacate spectrum for use by commercial and cellular service providers.[28] The exclusive optical fiber network for the armed forces will link crucial establishments across the country and shift part of its existing wireless communication to a wire line network. In this context, the move will free up 45 MHz of radio frequency for cellular usage.[29]

Transparency

The 1999 liberalization of the telecommunications services sector has produced a positive overall impact in the development of the sector by lowering the prices of telecom services in India, including the internet. If the government's ambition of raising the teledensity of India to 7 per 100 people materializes, India could rank among the biggest seven or eight telecom markets in the world. India's internet sector has a large influence in the development of the telecoms sector. The growth of the software industry alone is likely to fuel a huge demand for a range of high-end telecom services. The issuing of telecom licenses in fast-growing cities in India such as Delhi, Karnataka and Andhra Pradesh, would also spur the development of the IT sectors which has significant presence in these areas. The telecommunications sector in India seems to be moving in the right direction toward privatization despite the difficulties of bureaucratic inertia and a large staff strength of 400,000 workers in the Department of Telecom Services (DTS). DTS was second only to Indian railways in staff strength and faced opposition from its workers and trade unions on the transformation into a government-owned company, BSNL. Despite the concerns of O.P. Gupta, the secretary general of the National Federation of Telecom Employees, BSNL was able to convince its workers about the transformation after providing assurances on pension benefits and job security. BSNL's new status is expected to cut red tape and improve its fund-raising capabilities with a view toward sale of its shares in the near future.

The involvement of policymakers in the process of telecom reforms had also led to the reshuffling of cabinet ministers. For example, the Minister of Communications, Jagmohan, was removed from his office because he had insisted that cellular phone operators entering the telecoms sector in the wake of liberalization must abide by the rules.[30] In 2002, former Minister of State for Communications Sukh Ram, former DOT Director General (Lease-Financing) Runu Ghosh and businessman Rama Rao of Advanced

Rao Masts (ARM) were accused of corruption. The case centered around the DOT's invitation for bids to expand rural telecoms network through multi-access rural radio (MARR) systems.[31] The DOT were evaluating MARR systems provided in the bids and had stated that ARM's crystal-based systems were only able to operate at a single frequency and were inferior to the more advanced synthesized MARR systems on offer that could operate at multiple frequencies and recommended a substantial price reduction for the crystal version. The DOT's technical experts were overruled on this by Runu Ghosh and Sukh Ram, who favored the ARM version. In this regard, ARM not only gained a significant profit margin but Runu Ghosh and Sukh Ram in supporting the ARM bid also went contrary to expert opinion.[32]

Private sector

Despite the lack of transparency, some of India's biggest industrial houses such as Reliance have gone into mobile phones as one of their diversifications into an emerging sector. Reliance is using Qualcomm's CDMA 2000 1X standard for its mobile service and investing U.S. $ 5 billion on infrastructure. For example, Reliance is building a 60,000 km terabit capacity broadband-capable fiber optic network connected to 673 cities.[33] Reliance Industries which considers telecoms as a new but emerging area of business is spending U.S. $ 5 billion in laying about 116,000 km of fiber optic cables across India to speed up access speeds to one terabit per second. In early 2003, the GSM cellular subscribers passed 12.7 million and were targeted to reach 43.5 million by 2006. The rival CMDA network rose to 2.12 million users by early March 2003. However, Reliance normally goes it alone to develop its various business enterprises. Reliance Telecom (RT) has more than 1.5 million subscribers in central and eastern India while Reliance Infocomm Limited has more than 11 million customers.[34]

Another of India's leading telecom companies, Bharti Enterprises, is positioning itself as a major player but welcomes foreign collaboration and joint ventures. The Bharti group's involvement in India's telecom sector is extensive. The driving force behind Bharti is its founder, chairman, and managing director, Sunil B. Mittal. Mittal, an economics and political science graduate, started business in 1976 by making bicycle parts. He moved on to become India's largest importer of generators and started taking an interest in the telecom sector in 1985. In 1985, Bharti Enterprises became involved in the telecom business by manufacturing push-button telephone sets. Mittal has formed a holding company called Bharti Telecom to manage his telecommunication's portfolio. Bharti Telecom functions as a holding company with two majority-owned subsidiaries, Bharti Tele-Ventures and Bharti Telespatial. In turn, Bharti Tele-Ventures is the holding company for three cellular operations—Bharti Cellular, Bharti Mobile, and Bharti Telenet.

According Sunil Mittal, the turning point for Bharti was when the company acquired the cellular license for New Delhi in 1994. At the time, Mittal was able to assemble a consortium comprising France's Vivendi and Mauritius-based Emtel to win the license despite strong competition. Starting with the networks in Delhi and the northern state of Himachal Pradesh, Bharti began acquiring unprofitable cellular networks in the states of Karnataka, Tamil Nadu, and Andhra Pradesh and managed to make a profit from running them. Bharti also established India's first private fixed-line network in the state of Madhya Pradesh and was the first Indian telecoms group to venture overseas with a foray in the Seychelles. Bharti was also in talks to buy stakes held by Luxembourg's Millicom and BellSouth in Skycell Communications in a bid to acquire complete control of the Chennai-based mobile operator. As of August 2001, Bharti was operating its cellular phone services in Himachal Pradesh, Delhi, Karanataka, Andhra Pradesh, Chennai, and Kolkata.

As of June 2000, Bharti had more than 800,000 customers and 4000 employees. By the end of 2002, Bharti's customer base has grown to two million customers. In December 2006, Bharti's total consumer base rose to 32 million, an increase of 96 percent over the previous year.[35] In the shareholding pattern of Bharti Tele-Ventures, a 54 percent stake in the company is held by Bharti Telecom, 18 percent equity is owned by Singapore Telecoms (SingTel) and 21 percent by Warburg Pincus (one of the world's largest equity investors), while the remaining balance are owned by other small stakeholders. Bharti has also attracted funds from other key investors such as AIF Funds Management, which has invested $ 35 million, IFC ($ 20 million) and New York Life ($ 5 million). The Bharti group has also received additional equity investment of $ 460 million from various global partners including $ 200 million each from SingTel and Warburg Pincus.

Bharti enterprises are a diversified group with stakes in the cellular, fixed-line, long-distance and internet interests. India's potential as a telecommunications market is huge because of its fast-growing sector for software development, call-centers and data-centers. In August 2000, SingTel pumped U.S. $ 400 million into Bharti Telecom for an effective 28.5 percent stake in the latter's telecom stake.[36] This SingTel investment in Bharti Telecom translates into ownership of 20 percent of Bharti Telecom Limited and 30 percent of Bharti Tele-Ventures. SingTel and Bharti have also signed a memorandum of understanding (MOU) to extend their partnership. This MOU could also include the enhancement if the i2i cable network to other parts of Asia, West Asia, and Europe.[37]

Bharti also has a 17 percent share in India's cellular phone and internet access markets with a total of 500,000 subscribers. In October 2000, SingTel and India's Bharti's enterprises signed a U.S. $ 650 million deal to build India's first private sector undersea cable.[38] The collaboration between SingTel and Bharti Enterprises are being seen in terms of synergy and mutual benefit for both corporations because of the scale of projects that they are attempting. For example, SingTel and Bharti are involved in a joint venture to build an 11,800 km undersea fiber optic cable called Aquanet to connect the Indian cities of Mumbai and Chennai with Singapore. The 50–50 joint venture to build and operate the world's largest submarine cable in terms of capacity would provide a bandwidth of 8.4 terabits per second, which allow it to accommodate more than 100 million conversations simultaneously.[39] According to Lee Hsien Yang, "this cable network will provide . . . the stimulus to drive the internet and e-commerce activities between India and Singapore and between these two countries and the rest of the Asia Pacific region."[40] SingTel has also established a subsidiary presence in India called Singapore Telecom India Private Limited[41] (SingTel India).

According to SingTel's executive vice-president for Global Services, Lim Shyong, the Singapore–Chennai leg of the submarine cable would cost U.S. $ 250 million and that France's Alcatel Submarine Networks and Japan's Fujitsu have been selected to design, manufacture, install, and commission the Singapore–Chennai cable network.[42] Aquanet comprised part of the 17,000 km pan-Asian telecoms network called C2C.[43] According to SingTel's chief executive, Lee Hsien Yang, "This cable network will provide . . . the stimulus to drive the internet and e-commerce activities between India and Singapore, and between these two countries and the rest of the Asia Pacific region."[44] However, the telecom industry has been beset by a capacity glut and it has become cheaper to lease capacity from other operators. The financial commitments to the global submarine cable industry had risen to U.S. $ 1 billion and SingTel had to provide another tranche of U.S. $ 225 million to fund its troubled subsidiary C2C.[45] SingTel has written off its investment in C2C at a cost of U.S. $197 million. SingTel had owned 59.2 percent of C2C that was placed under receivership by its creditors to restructure a U.S. $ 650 million debt.[46] On hindsight, the C2C SingTel televenture was a mistake because the demand was unlikely to rise sufficiently to meet supply because prices have plunged by 95 percent since 1998.[47]

The Bharti–SingTel collaboration is also driven by the motivation behind SingTel to be the biggest telecom MNC in Southeast Asia. With a population of only four million in Singapore, SingTel has seen the need to expand outside of its domestic market, especially with the entry of foreign players. SingTel's loss of its domestic fixed-line monopoly in April 2000 provided further impetus for it to expand overseas. The synergy between both companies is strong with cash rich SingTel hoping to capitalize on the untapped Indian market and Bharti needing the funds to expand their network of operations and compete with other local and foreign players in the Indian market. The Singapore government in its efforts to nurture home-grown MNCs has targeted SingTel as one of its best-placed local companies with the potential to make the transition from operating in tiny Singapore into a pan-Asian telecommunications giant.

Bharti Telecom has been India's largest GSM mobile operator. India's GSM mobile phone base was over 12.7 million subscribers by 2003 and projected to reach 44 million by 2006. However, the rival CDMA standard is also gaining popularity. In addition, two large corporations, Reliance Infocomm and Tata Teleservices are gaining popularity in India via a wireless-in-local-loop (WLL) limited mobility service in India's major metro cities. Reliance Infocomm has spent some U.S. $ 5 billion laying out a fiber optic cable grid connecting India's metros and intends to increase its subscribers by more than one million every month. The WLL services have not been licensed to provide mobile services and are arguably competing in an unfair manner with the other licensed telcos.[48] SingTel and Bharti have also submitted a joint bid in April 2001 to acquire India's long-distance monopoly company, Videsh Sanchar Nigam (VSNL), a quarter of which was sold by the Indian government. VSNL and SingTel have decided to expand their cooperation by doubling their net connectivity from 2 Mbps to 4 Mbps.

Foreign telecom operators

Indian telecom operators even if they are large ones such as Reliance Infocomm are not off limits to foreign telcos. Russian conglomerate AFK Sistema has offered Anil Dhirubai Ambani Enterprises (ADAE) U.S. $ 1 billion for its GSM standard operator Reliance Telecom.[49] Sistema is also in discussions with another Indian telco, Aircel, to purchase 49 percent of the latter's stake for U.S. $ 450 million. GSM operator Hutch (short for Hutchinson Whampoa) has decided to order 30 million lines from 2005 to 2007 in order to keep its share intact. Hutchinson's Indian partner the Essar Group has agreed to acquire private-equity backed BPL Mobile Communications Limited for U.S. $ 1 billion.[50] Essar will then merge its acquisition with a joint venture that it manages with Hutchinson Whampoa. This joint venture will launch Hutchinson into second position in India's fast-growing cellular services behind Bharti Tele-Ventures.[51]

Hutchinson's main GSM rival, Bharti, operates Air Tel and had established 10,000 bases by March 2006, which doubled its capacity across India. Other telecom operators such as Reliance and the Tata–Birla venture are also aggressively expanding their market share in the region. Sunil Mittal of Bharti has predicted that consolidation of smaller telecom companies and foreign telecom companies will become a trend because of the intensity of the competition. For example, Hutchinson telecom and the Rulas of Essar are proposing to merge their licenses to a single Hutch–Essar cellular entity.[52] The consolidation of various cellular mobile operators will also continue in India. Players such as Hutchinson and BPL Mobile will have the critical mass to provide value-added services. Singapore-based content providers can strike profitable deals if they move fast and offer effective content delivery technologies.[53] SingTel is already helping Bharti to roll out more mobile applications and will continue to work closely with Bharti to derive more operational synergies and leverage on their combined strength in purchasing, product development, and marketing.

SingTel India provided one of the best connectivity levels to Internet Service Providers in India through the SingTel Internet Exchange.[54] SingTel

India was established in January 2001 and is located in the four metros of Delhi, Mumbai, Bangalore, and Chennai and provides liaison and coordination services for SingTel's customers in India. In mid-2005, SingTel raised its stake in Bharti Telecom limited to 32.81 percent from 26.96 percent for U.S. $ 252 million.[55] In addition, SingTel will also raise its effective interest in Bharti Tele-Ventures, a company listed on the national stock exchange of India, from 28.16 percent to 30.84 percent. According to SingTel, "The acquisition of Bharti Telecom shares is in line with SingTel's strategic focus on maximizing the value of existing business and its regional franchise, which includes reviewing opportunities to increase shareholdings in existing associates."[56]

Alternatively, Singapore is also seen by India as a "gateway" to the Asia Pacific region. One high profile example is the acquisition of Indian overseas calls telecoms company Videsh Sanchar Nigam Limited (VSNL) by the Tata Group. Tata paid U.S. $ 530 million for a 46 percent stake in VSNL. This gave the Tata group an advantage in terms of a seamless telecoms service. Tata–VSNL has established its International Business Group headquarters in Singapore. VSNL has launched Tata Indicom Cable (TIC), essentially Singapore's first fully Indian owned, undersea fiber optic cable. The 3175 km-long cable links Chennai in southern India, Tamil Nadu, to Changi in Singapore. Construction of the cable began in November 2003 and was completed and made operational on 15 September 2004. What is the significance of this for VSNL and India's telecoms sector? The new 5.12 terabit (Tbps) TIC cable system will increase the bandwidth into India. This would provide the required diversity to telecom operators and enterprises in terms of services and will increase their presence in India. The rise of the business process outsourcing and proliferation of MNCs together with India's domestic economy has indicated a promising future for the international bandwidth market in India.

For Singapore, the launch of the TIC would strengthen its position as an important IT and telecommunications hub in the Asia–Pacific region. The executive director of VSNL International Business Group, Vinod Kumar, said that, "The TIC launch is perfectly timed to meet the growing need for bandwidth into and out of India." TIC would also provide the much needed diversity to support the applications that are mission critical and decision support systems for VSNL's customers. The Infocomm Development Authority welcomed the launch of VSNL's new cable landing in Singapore. This showed VSNL's commitment to investing in new facilities that would further enhance Singapore's role as a leading infocomm hub. In addition, the TIC would also facilitate business links between India and Singapore because businesses in both economies will have more choices in direct communications link. VSNL is also working in tandem with Singapore when the latter overhauls its national broadband system to handle ultra-high speeds of between 100 megabits per second (mbps) and 1000 mbps. VSNL is building an underwater cable that is costing U.S. $ 200 million to provide faster broadband connection for users in Singapore.[57] According to VSNL International

President Vinod Kumar, "Singapore is an important hub for our Asian network. For instance, it carries substantial portion of all the traffic between India and the United States."[58] VSNL has unveiled plans for a new network that will link Singapore, Hong Kong, and Japan because it was dependent on buying bandwidth from other providers on the Singapore–Hong Kong–Japan leg before it is connected to the United States.[59]

Overall, SingTel's overseas strategy has been successful because its Optus operations in Australia are providing the bulk of its revenue stream. In addition, SingTel's investments in emerging markets such as India are providing the growth in its profitability in the near future.[60] SingTel's CEO Lee Hsien Yang is leaving the company once a successor has been found. However, this is not expected to erode SingTel's share value. Two thirds of SingTel's revenue is now derived from overseas operations.[61] According to Lee Hsien Yang, SingTel has a strong management team and the company would be able to attract credible candidates internally as well as externally.[62] Under Lee's leadership, SingTel spent about SGD $ 20 billion building a presence in regional mobile phone markets;[63] for example, for Optus in Australia, SingTel paid U.S. $ 14 billion.[64] In addition, SingTel owns 21 percent of Thailand's Advanced Info Service Plc, 30.8 percent of Bharti Group, 44.6 percent of Telecom Inc. in the Philippines, 35 percent of Indonesia's PT Telkomsel, and 45 percent of Pacific Bangladesh.[65]

While the level of public and private sector support for Singapore and India collaboration appeared positive, a problem emerged related to the ownership structure of Singapore telecoms companies. How did this problem emerge? The problem of monopoly arose as more Singapore telecoms companies such as S T Telemedia decided to invest in the Indian telecoms sector. S T Telemedia (partly owned by Temasek Holdings) had paid U.S. $ 47 million for a 20 percent stake in ModiCorp to form joint ventures and establish internet data centers and national long-distance telephony in India.[66] At the same time, Temasek Holdings through its investments in SingTel also owned shares in Bharti Tele-ventures. This would put Temasek in an influential position in the Indian telecommunications sector. Temasek-linked company Singapore Technologies (ST) Telemedia has submitted a joint bid with Telekom Malaysia for a 48 percent stake in Idea Cellular.[67] The U.S. $ 390 million acquisition that is awaiting approval from the Indian cabinet has sparked opposition from a number of government officials. The protesters pointed out that the proposed deal would give Temasek significant stakes in two competing mobile operators.[68] Moreover, Indian laws forbid a single company from holding a stake in excess of 10 percent in more than one licensee company in the same service area.[69] Both Bharti and Idea provide cellular services in eight common areas and this overlap prompted the Foreign Investment and Promotion Board (FIPB)[70] from citing a regulation to safeguard the interests of joint venture partners. Temasek has a 61 percent share of SingTel, which owns a 28 percent stake in Bharti, and through ST Telemedia, Temasek will have a 28.6 percent stake in Idea.[71] ST Telemedia and Telekom had earlier written to FIPB to clarify the role of Temasek in ST Telemedia. The letter stated that Temasek is only an investor in Telemedia.[72] From the FIPB's perspective, ST Telemedia will need a no objection certificate from Bharti for its plan to invest in Idea. Eventually, the Indian government denied Temasek approval to purchase India's fifth largest mobile phone operator, Idea Cellular.[73]

To address the perception that the Singapore government through Temasek Holdings has a tight grip on Temasek-linked companies (TLCs), SingTel had appointed nonSingaporean Mr. Chumpol Na-Lamlieng, a Thai national and former president and director of Siam Cement, onto its board of directors.[74] In the past, the position of Chairman of a TLC had been filled by former cabinet ministers or well-known Singapore businessmen. The change in SingTel's management has also reflected that of its board members of which 40 percent comprises nonSingaporeans. In 2000, all of SingTel's board members were from Singapore.[75] Bharti has also caught the attention of bigger telecom players such as Vodafone of the UK.[76] Vodafone has bought a 10 percent stake of Bharti Tele-Ventures Limited for U.S. $ 1.5 billion.[77] It is likely that Vodafone will try to exploit India's potential as a booming mobile phone market. Unless SingTel takes more risks in terms of acquisition, it might be forced out of the Indian telecoms sector. Vodafone has received permission from the FIPB[78] to double its 10 percent stake in Bharti Tele-Ventures Limited. The FIPB has given Vodafone the go ahead to acquire as much as 49 percent of Bharti Enterprises translating to a 21 percent stake in Bharti Tele-Ventures.[79] Industry analysts expected Vodafone to build up its initial position to that of control as it has done with other overseas acquisitions. Should it achieve a controlling position at Bharti, Vodafone could pressure minority shareholders such as SingTel. For example, Vodafone could initiate a share buy back scheme at really low prices or stop dividend payment. Bharti Tele-Ventures sold a 4.4 percent stake while Warburg Pincus traded in its final 5.5 percent stake to make up the 10 percent stake for sale which Vodafone bought in October 2005 for U.S. $ 1.5 billion. This is 10 percent more than what SingTel had paid earlier for an equivalent 10 percent stake in Bharti Televentures.

In January 2006, Bharti Tele-Ventures Limited was renamed Bharti Airtel Limited and Vodafone is involved in a bid to acquire Hutchinson–Essar (India's third largest cellular phone provider) and this may indirectly involve SingTel and increase the latter's share of Bharti.[80] Vodafone has agreed to acquire a 67 percent interest in Hutchinson–Essar for U.S. $ 11.1 billion from Hutchinson Telecommunications International (HTIL), a unit of billionaire Li Ka-shing's Hutchinson Whampoa.[81] However, to purchase the Hutchinson–Essar stake, Vodafone is obliged to sell its 10 percent stake in Bharti to be in compliance with India's anti-monopoly regulations.[82] SingTel's 30.5 percent share of Bharti has seen its net income more than double from October to December 2006.[83] Reportedly, SingTel is keen to increase its share of Bharti at the right price. Should SingTel buy out Vodafone, and reportedly negotiations had started, it will increase its stake in Bharti to 40.5 percent, just below the 45 percent owned by Sunil Mittal and his family.[84] SingTel's 30.5 percent stake in Bharti is worth S $ 13.6 billion while Vodafone is reportedly offering U.S. $ 2.9 billion for its 10 percent stake in Bharti to SingTel.[85] SingTel has several options, it could maintain its current stake in Bharti, sell its stake in Bharti, or increase its stake in Bharti by purchasing Vodafone's stake in Bharti. An indication of what SingTel might do is based on what it has mentioned many times before, which is to increase its stake in all its associates at the right price. New SingTel CEO, Ms Chua Sock Koong, reiterated that SingTel was interested in raising its stake in Bharti and is keen on purchasing Vodafone's 10 percent stake in Bharti Airtel.[86] On purchasing Hutchison–Essar for U.S. $ 11.1 billion, Vodafone granted Bharti Airtel an option to purchase its 5.6 percent stake of the latter company.[87] Bharti exercised the option and Vodafone sold its stake back to Bharti Airtel for U.S. $ 1.5 billion.[88] According to Sunil Mittal, "SingTel has also shown interest to pick up 5.6 percent stake which Vodafone has offered to sell."[89] However, Vodafone retained its 4.4 percent indirect stake in Bharti Airtel through a 26 percent stake in Bharti Infotel Pvt Ltd, which will reinforce its ongoing relationship with Bharti.[90]

Despite SingTel's marginalization in the Vodafone acquisition strategy, Vodafone's acquisition of Hutchinson–Essar hit a snag with Indian telecom regulators because of the complex structure of Essar's shareholder structure. If Vodafone is successful in acquiring Essar, it would directly own 52 percent of Hutchinson–Essar but another 15 percent would be held by HTIL's existing partners. Two of these existing partners are Indian business people: Asim Ghosh is managing director of Hutchinson–Essar and Analjit Singh is chairman of Max India, a healthcare group.[91] Companies owned by Mr. Ghosh and Mr. Singh hold 12.26 percent of Hutchinson–Essar on HTIL's behalf. The remaining 2.77 percent are held on HTIL's behalf by a company called Infrastructure Development Finance Company. This complex shareholder structure was designed in compliance to India's FDI rules. However, the 12.26 percent stake owned by Mr. Singh and Mr. Ghosh does not contribute toward the 74 percent FDI ceiling for the telecoms sector.[92] In addition, HTIL has options to purchase the 12.26 percent share and Vodafone has the same options under its plans to acquire Hutchinson Essar. However, Vodafone could not exercise its options to acquire the 12.26 percent because it would breach the foreign direct investment (FDI) ceiling.[93] This is because Essar holds 22 percent of its 33 percent stake in Hutchinson–Essar through offshore companies. Would Vodafone persist despite regulators reluctance to approve the deal? This would depend on the long-term potential of the Indian telecoms market, especially penetration into the untapped rural areas.

What is the potential for India to sustain its telecom's growth? The Indian mobile phone market is the fastest growing in the world and is forecast to hit 500 million consumers by 2010. Is the rate of teledensity improving in India? The rate of penetration has reached 18 percent in February 2007 and continues to gain momentum.[94] By the end of 2004, fixed telephone lines touched 44 million subscribers but cellular phone subscribers reached 48 million. With a rate of increase of 68 percent, more than a third of cellular scribers were added in 2004. Mobile phones in India are adding 60,000 new subscribers daily thus making India the second largest market for mobile phones after China.[95] Moreover, foreign companies were becoming increasingly interested because the government had decided to increase the FDI cap in the sector from 49 to 74 percent.[96] The subscriber base for cellular phones have increased by more than nine times and tariff rates have decreased by more than 90 per cent.[97] Furthermore, mobile phone connections cost less than one-third that of fixed-line connections.

Conclusion

By 2005, India had about 48.5 million fixed-line subscribers and 71.5 million mobile phone users giving a total of 120 million users. By the end of 2006, the number of mobile phone subscribers had increased to 137.4 million with 62 million new subscribers added in 2006.[98] However, this would only translate to 11 phones per 100 people or a teledensity of 11 percent. In 2004, a number of telecom players from China, Russia, Korea, Singapore, and Taiwan had made their way into the Indian telecoms market.[99] SingTel is undergoing a period of transition with Lee Hsien Yang stepping down and Ms Chua Sock Koong taking over as its chief executive.[100] SingTel may not be as interested in acquiring new assets with the installation of its new chief executive Ms Chua Sock Koong. Unlike her predecessor, Ms Chua does not believe that acquisition in itself will provide long-term growth. She commented, "Growth must come . . . from maximizing value from our existing businesses in Singapore, Australia and our regional associates."[101]

The shift in SingTel's growth strategy focuses its attention more on value-added services in Singapore such as financial transactions using mobile phones. While, SingTel is still looking for investment opportunities in Asia, its focus could change to other emerging markets such as Vietnam. The shift toward Southeast Asia would also be challenging because of telecom rivals in the region such as Telekom Malaysia.[102] Regional neighbors also appear hostile over Singapore companies acquiring stakes in their "national companies" such as Shin Corp and Telkomsel (Indonesia). While SingTel was frustrated in the past to acquire more shares in Bharti, the Indian telecoms market is likely to emerge as its main revenue earner in the near future. Bharti contributed S $ 162 million to SingTel's overall earnings of $ 994 million in 2006. Bharti's contribution to SingTel's revenue was only S $ 62 million in 2005.[103] SingTel has also set its sights on alternative markets in Central Asia and the Middle East.[104]

The problems that SingTel has faced in the acquisition of stakes in foreign telecoms companies such as in India is connected to a larger concern by Temasek Holdings and the Government of Singapore Investment

Corporation (GIC) over growing opposition to sovereign wealth funds. Sovereign funds are linked to government funds that buy stakes in large foreign companies.[105] For example, Temasek impairment charge over the deal involving Thailand's Shin Corp was estimated at a loss of S $ 830 million caused by a fall in investment value.[106] To disarm potential critics, Temasek has taken steps to be more open about its investment strategy. The deputy chairman of GIC, former DPM of Singapore Dr. Tony Tan, has cautioned the GIC which manages Singapore's reserve funds of more than U.S. $ 100 billion that it must be prepared for the "unknown unknowns." In response to a question about whether the GIC is concerned over a possible backlash against government investments, Dr. Tan responded that other countries are starting such funds and did not want protectionism developing.[107] In July 2007, in response to a more challenging investment environment, the GIC has undertaken a senior management restructuring. Dr. Tan commented that the high-level changes in the GIC, "Will prepare GIC to meet the challenge of operating in a more demanding investment environment."[108] The GIC has also taken a keen interest in property investments globally as well as in India which will be discussed in the next chapter.

8 Construction and real estate

Introduction

In the 1990s, the domestic demands of the construction industry peaked at S $ 24 billion and contributed between 7 to 9 percent of Singapore's GDP. However, according to Singapore's Minister of State for National Development, Mr. Cedric Foo, the buoyant growth of the 1990s is not likely to be repeated.[1] The construction industry in Singapore would stabilize at SGD $ 12 to $ 14 billion per year. However, construction services exports appear to be increasing to countries such as China and India. This is a trend that should be encouraged because as the domestic market becomes saturated and slows down, Singapore developers should look more toward the SGD $ 5 trillion global construction market.[2] Senior Indian officials visiting Singapore noted the ability of the Singapore government to provide affordable urban housing. Singapore's expertise and experience may help to ease the critical urban housing shortage, especially in the Indian cities. In terms of size, Singapore's 647 square kilometers is not comparable to India's three million square kilometers; nonetheless, India's political elites such as former president K.R. Narayanan have visited Singapore's townships to look at Singapore's Housing and Development Board (HDB) residential precincts. In contrast, planning appears random in India's metro cities such as Mumbai. In the federal capital, with limited land area, Delhi authorities are abolishing height restrictions for buildings to provide incentives for developers.[3] Skyscraper dwellings will be a radical housing solution for Delhi where height restrictions have kept most buildings at tree level. However, with the annual arrival of half a million migrants driven by poverty to the city, radical solutions are required.[4] In this regard, Singapore building authorities and companies who face similar problems of housing and have experience in high-rise and high-density urban development are able to provide pointers for India's housing solution.

Working toward achieving mutual benefits, India and Singapore have decided to enhance their bilateral cooperation in housing construction. Singapore architectural companies such as RSP Architects and Cesma International have the required expertise for master township planning as well as building and design. In this context, in October 2002, a 29-member business delegation organized by International Enterprises (IE) Singapore and the Building and Construction Authority (BCA) of Singapore was led by Singapore's Minister of State for National Development, Mr. Mah Bow Tan. This was a follow-up initiative to the earlier trade mission undertaken by Dr. Vivian Balakrishnan, Minister of State for National Development, on a visit to India to explore investments and potential collaboration opportunities in the Indian construction industry. In line with its strategy to focus on the more advanced industrial states in India and the southern region, Singapore has looked at the following states: Maharashtra, Andhra Pradesh, and Tamil Nadu.[5]

The focus on the selected states was made based on IE Singapore's findings about the construction industry in India. Singapore's focus on these states are based on IE Singapore's study that noted the rate of urbanization at 42 percent in Maharashtra, 27 percent in Andhra Pradesh, and 44 percent in Tamil Nadu.[6] In these more urban states there are good opportunities for Singapore companies to collaborate in housing development. The concept of township living in apartment blocks with nearby facilities such as shops, sporting complexes, and recreational areas is gaining popularity in Hyderabad, the state capital of Andhra Pradesh. In this context, Andhra Pradesh, which is India's fourth largest state in terms of industrial output, represents a potential boom for the residential sector. With their expertise and experience in township planning and construction, Singapore companies have a readily recognizable brand in their advantage. IE Singapore has made the point that Singapore companies should exploit the potential of their brand name and fill the void for demand or else it risks others using its brand names such as "Sentosa" to attract buyers and investors.

In terms of office space demand, the big cities in India are also facing an acute shortfall of high-quality real estate and supporting infrastructure. The India country head of Jones Lang LaSalle said that, "South Mumbai is operating with a vacancy rate of 2 percent, so technically there isn't any space . . . every deal is a pre-letting deal" because any new supply is immediately snapped up.[7] In Delhi, grade A office rents in central and secondary business districts increased by 54 percent to U.S. $ 553 per square meter by the end of 2006 with a vacancy rate of 4.3 percent.[8] In Mumbai, in the central and secondary business districts, the office rents for grade A office space has increased by 66 percent and was U.S. $ 691 per square meter with a vacancy rate of 5.4 percent.[9] As businesses move to the suburbs of big cities or to smaller cities, rising rentals seem to be following them. For example, the demand for office space in the outer reaches of Mumbai had more than doubled at the end of 2006 compared to a few months earlier. The only solution is supply for India's corporate tenants and this would mean an increase in the volume available of quality real estate to relieve the pressure. Does this create opportunities for Singapore developers?

In the 1990s, Singapore construction companies had hardly any foothold in India's construction industry. From 2000 to 2003, Singapore construction firms managed to clinch about SGD $ 210 million worth of projects in India.[10] In 2004, the value of construction projects won by Singapore firms increased to SGD $ 693 million.[11] What factors accounted for the success of Singapore construction firms in India? The main factor was the intensification of marketing efforts by the Singapore government and firms in over 22 cities in India to increase awareness about the Singapore brand and its expertise.[12] The Singapore brand is gradually becoming known in areas such as design consultancy, master planning, project management, and engineering consultancy. The Comprehensive Economic Cooperation Agreement between India and Singapore is also accelerating the pace of Singapore investments in the construction industry. The construction industry in India is projected to grow by 30 percent every year and the deregulation of the sector would allow more foreign investments.[13] Some relaxation of the rules included the ability of foreign developers to proceed with housing investments without obtaining prior approval but they needed to notify the Reserve Bank of India of the investment within 30 days.[14] Previously the approval by the bureaucracy would have taken a long time. Another obstacle to foreign investment was the minimum 40 hectare area requirement for development projects. This requirement has now been reduced to 10 hectares[15] and is significant because developers were reluctant to undertake huge investments and choice plots were hard to find. The backlash by farmers in the state of West Bengal over the acquisition of their land by the state government to develop a 1000 acre plot for a Tata Motors car factory has made property investors jittery.[16] This was in addition to another land dispute in West Bengal state involving farmers and the state government in their bid to develop special economic zones (SEZs) to woo foreign investors has yet to be resolved.[17]

The liberalization of the construction industry has meant that Indian builders and professionals in the industry have to compete with foreign companies in a wide range of services. For example, Indian architects are facing competition from overseas because Indian builders are hiring foreign architects to design new-age buildings, rental malls, and integrated townships.[18] Nonetheless, Indian builders opined that foreign architects bring in fresh ideas and give an international perspective to the buildings. Furthermore, many multinational companies (MNCs) as potential future tenants have quality standards for buildings such as safety issues, air quality, and lighting which the builder has to adhere to. In this regard, foreign architects are preferred because they undertake more research on Indian sensitivities, culture, and design.[19] Developers were also bringing in foreign architects because they are used to working with new building materials that are now available in the market.[20] The India Retail Summit[21] mentioned that by the end of 2004, only 77 malls out of the 300 needed were built. Some reports predicted the number of shopping malls in India would rise to 358 by the end of 2007.[22]

The construction industry in India is being fueled and dictated by several new trends that are sweeping across the subcontinent caused by changing mindsets and social environments. Would shopping malls prove to be a lasting trend or a short-lived fad? The middle class in India, to whom shopping malls are targeted, have broken their preference of traditional standalone Indian stores that have no air conditioning, organized parking, or other public amenities.[23] Malls in India are increasingly larger and being positioned as a "one-stop-shop" for shopping, entertainment, organized parking, and other public amenities. Changing trends in India is also favoring shopping malls. One of these trends is "lifestyle" that is associated with increasing consumerism. The media is also influencing the lifestyle phenomenon by devoting television airtime to this new fad. For example, India's Times Group has developed a new lifestyle channel called Zoom to capture the lives and aspirations of the global Indian.[24] From the media perspective, at least 50 private channels are promoting a more "bindaas" or free spirited lifestyle that is connected with consumption. In reaction to this trend, New Delhi has lifted a decades-old ban on late night shopping for its population of 14 million and shops can stay open until 11 pm. Moreover, if the shopping extension is a success, closing time for restaurants and bars will also be extended.[25] How will India cope with a "lifestyle" fad and the "shop till you drop" mentality? One obvious way would be to construct more shopping malls and build related infrastructure to support this trend.

The other trend that India has to accommodate in relation to the new lifestyle of Indians is to develop suitable housing for this expanding niche of upper middle-class consumers. The new middle class are to be found in the expanding service industries post-1991 such as hi-tech industries like information technology (IT). The more industrialized state capitals of Mumbai (Maharashtra), Kolkatta (West Bengal), and Ahmedabad (Gujarat) are well known for their overcrowding. India's federal capital Delhi was also not spared the expanding urban population. A relatively new trend has been the expanding urban population of the southern Indian cities of Chennai (Tamil Nadu), Bangalore (Karnataka), and Hyderabad (Andhra Pradesh). These southern states are expanding relatively quickly because of hi-tech industries such as IT, biotech, and software development. These IT companies are like magnets that have pulled in skilled migrants from other parts of India who have flocked to these states seeking employment and better lives for themselves and their families.

The demand for real estate in India's metro cities has ignited a boom and the property sector in India is growing at 30 percent every year.[26] If the trends continue, this sector could be worth some U.S. $ 45 to 50 billion by 2012 and more than U.S. $ 90 billion by 2017. The Indian government has tried to sustain the boom by allowing 100 percent foreign direct investment in large projects and reducing stamp duties.[27] The Government of Singapore Investment Corporation (GIC), which manages more than U.S. $ 100 billion in foreign reserves, could be focusing more on the Indian property market because of falling U.S. property prices.[28] The president of the property arm of GIC (GIC Real Estate Pte), Dr. Seek Ngee Huat, said that the unit plans to invest, "Hundreds of millions of dollars."[29] GIC Real Estate is one of the world's top ten real estate investment companies and manages about a tenth of GIC's assets. The growing demand for office and retail space because of sustained economic activities is also fueling the property boom in India.

Retail trends

The shopping mall (center) phenomenon is changing the manner in which people shop and entertain. Historically, retailing formats in India come in the form of bazaars, branded stores, departmental stalls, and malls. As single point destinations for food, shopping, and entertainment, malls have revolutionized retailing and have led to an increase in consumption spending. This has created a need for world-class retail facilities.

Foreign investors in the construction industry such as those from Singapore are interested in building malls[30] and department stores[31] in India. According to the Confederation of Indian Industries, the Indian retail scenario has changed radically over the past seven years with the exponential growth of organized retail chains. Another study conducted by *Images* magazine and retail industry consultant KSA Technopak predicted that organized retailing is likely to grow at the rate of 25 to 30 percent per year over the next few years.[32] Clothing and textiles constitute the largest block of organized retailing in India, while other organized retail segments include footwear, health, beauty care, and entertainment.[33]

International chain stores are slowly penetrating the Indian market but traditional shopping facilities still predominate. While shopping malls are concentrated in metros, they have started to penetrate the secondary cities. Some of the international retailers that have increased their presence in India include Marks and Spencer, Hugo Boss, Mango, Tag Heueur, Fila, Swatch, Daks, Swarovski, Metro AG, Planet Sports, and Royal Sporting House among others. The consumer boom is being driven by a number of factors. These include the boom in IT enabled services (ITES) due to outsourcing to India and the upswing of the Indian stock market. By the end of 2004, producers and retailers of consumer goods reported an increase of 45 percent in the sales of high-end products.[34]

The increase in consumer spending was not limited to the urban metros as consumers in semi-urban and rural markets had also upgraded their purchases. According to Gulu Mirchanndani, the managing director of Mirc Electronics, the consumers were very keen to acquire the latest technology product in the market. For example, the sale of high-end televisions in the 21 to 29 inch categories had risen sharply.[35] Moreover, most customers were keen to upgrade their products every three to five years as opposed to eight to ten years in the earlier trends. The director of Samsung, R. Zutshi, commented that consumers are demanding high-end products such as home theater systems, flat televisions, plasma televisions, frost-free refrigerators, high-end microwaves, DVDs, and mobile phones.[36] Retail stores were also witnessing an increase in consumer spending as expatriates shop more in India. For example, expatriate fund managers who now visit India regularly due to the boom in the share market are also counted as high-value shoppers.[37] The executive director and senior vice president (consumer electronics) of Philips India, D. Shivakumar, said that there has also been an increase in finance-aided sales.

By 2007, retail sales in India were growing at a rate of 25 to 30 percent every year and were worth about U.S. $ 250 billion per year.[38] Pegged against an economic growth rate of 8 to 8.5 percent, there is potential for enormous growth. Industry watchers have also estimated that the middle class in India are the ones leading the consumer boom and their numbers are approximately 300 million. The definition of the Indian middle class was often based on the report by the National Council of Applied Economic Research (NCAER) in the mid-1990s. Based on a population of one billion people, the salaried class in the private and public sector alone number around 30 million without including another 10–15 million for doctors, consultants, lawyers, and the entrepreneurs.[39] The NCAER estimated that the very rich numbered around 6 million (1 percent) of total population and below these were three sub classes. These are the consuming class of about 150 million (17 percent), the climbers of some 275 million (30 percent), the aspirants of 275 million (30 percent). Below this were the destitute of around 210 million (23 percent). The consuming class is the group that interests middle-range property developers. This consuming class is reported to have an annual income of U.S. $1300 to U.S. $ 6000. The majority of them own a scooter, color TV, electric iron, blender, sewing machine, and refrigerator. However, the most coveted possession is a house, preferably one made of brick and cement. The consuming class is expected to reach 450 million people by 2010.

Shopping malls

The metro cities in India have exclusive shopping areas and upcoming malls. Malls require an extensive area and it is difficult to find a choice location. Malls in metro cities such as capital Delhi have become a huge hit with commuters and Delhiites would get to enjoy the “shop as you travel” experience.[40] The high construction and high overheads makes shopping malls an expensive proposition. However, well-known corporations such as the Tata group have invested in the retail industry in building Westside stores across India.[41] Most malls have many small shops with one or two anchor stores consisting of large format stores. Promoters of shopping malls realized that they have to create a shopping destination and it is not good marketing to have designers and bargain corners in the same place. There must be a right mix of shops so that the clientele gets a good blend of products. For example, “Westside” is a branded clothing store that caters to the upper middle class segment and has built its customer base through affordable style. In 2000, there were three shopping malls in India, this has increased to 25 in 2003 and more than 100 had been built by the end of 2005.[42]

There have been reports that consumers are suffering from "mall fatigue" with the excitement of malls fading away.[43] While new cities such as Gurgaon experience a rush of shopping mall development, retail analysts are questioning whether the shopping mall concept would survive in India. However, with an expanding middle class, bright and sustained economic growth with better employment opportunities, the retail sector remains an attractive proposition. The Indian middle classes prefer to shop in the malls because they can shop for whatever they need under a single roof.[44] However, foreign direct investment (FDI) has faced impediment in the retail sector. Foreign construction companies have been given permission to enter India to build malls and the government could lift the cap on foreign investment in the construction industry.[45] According to Charles Grossman, the chairman for the International Council of Shopping Centers Inc, foreign investors are likely to consider funding mall development in India if there is a similar commitment from Indian partners.[46] Another reason for the boom in mall activity is the opportunity given to retailers for greater accessibility to real estate at affordable prices. This is partly a result of easier availability of bank and institutional financing. In some cities such as Mumbai, the mall is freeing up much needed real estate because many closed textile mills in the city are now allowed to exploit their real estate for other commercial purposes.[47] In return, investors are attracted to the 14 percent returns in malls investment in comparison to 11 percent in the office segment and 6 percent in the residential segment.[48]

To construct shopping malls in India, several serious issues have to be discussed such as long-term funding, development of retail infrastructure, and planning. India and Singapore-based companies have agreed on a joint venture to construct two shopping malls in Mumbai and an IT complex in Hyderabad. The projects included a second "Crossroads" shopping mall at Nariman point in downtown Mumbai, a shopping mall at Goregaon in north western Mumbai and "Cyber Oasis" in Hyderabad. The shopping mall in Goregaon is a 300,000 square foot project development between India's Kingston properties, a subsidiary of Oberoi Constructions and JTC Consultants India (a Singapore subsidiary). JTC Consultants will provide project management, architectural, civil and structural engineering services. The new Crossroads II is the second project in a series of similar projects that DP Architects from Singapore is designing for the Piramal Holdings group in India. The project is an 11 storey, retail and entertainment complex with eight storeys plus one basement car park at Nariman Point. Another major Singapore developer, CapitaLand, also has specific interest in building shopping malls and service apartments in India, which it will operate under the Ascott Group brand.[49]

Singapore is keen for a public–private partnership with India in the real estate and construction sectors. According to the chief executive of Singapore's Building and Construction Authority (BCA), Chionh Chye Khye, urban infrastructure development, real estate development, and the construction industry in India hold good potential for joint collaboration between Indian and Singaporean firms. Ramesh Nair, associate director of Jones Land Le Salle, concurred with this assessment and added that Chennai together with Pune and Hyderabad were the fastest growing secondary hubs for real estate while Delhi, Mumbai, and Bangalore are the primary hubs. For example, in Chennai there was a lot of scope for constructing infrastructure facilities for business process outsourcing (BPO) companies. In 2004, in Chennai alone there was a 20 percent growth in the housing and construction sectors. Moreover, 14 million square feet of office space was occupied mainly by IT and ITES companies involved in BPO activities.

The BCA is planning to make more inroads for Singapore construction-linked firms in India. A memorandum of understanding (MOU) signed by the BCA and its Indian counterparts aimed to encourage the sharing of information on infrastructure projects in both countries.[50] The two building authorities will also promote networking between the construction companies of both countries and to market BCA's rating standard for building—CONQUAS—for adoption by the Indian construction industry.[51] Another means to promote Singapore and India's collaboration in the construction industry will be to allow Singapore-based real estate investment trusts or REITs to operate in India. For example, Mr. Gaurav Dalmia, who manages Landrup Holdings, is partnering with a Singapore businessman to establish a U.S. $ 50 million real estate fund called Solitaire. The potential for the Indian market to develop has attracted one of the region's largest listed property companies called CapitaLand. A CapitaLand spokes person said that "India is a new market with vast potential for the CapitaLand group. At this stage we are studying the business environment in India and evaluating opportunities."[52] CapitaLand has a presence in 25 countries and derives over 60 percent of its revenue from outside Singapore. In India, besides real estate, CapitaLand is interested in real estate services, retail mall management, and facilities management.[53] GIC RE, the real estate investment arm of the Government of Singapore Investment Corporation, is examining investment opportunities in India's real estate sector.[54] A Singapore-based consulting firm called Meinhardt has also been appointed to improve the civic amenities and develop Jharkhand's dilapidated capital. The consultancy project was worth U.S. $ 4.8 million. Apart from established firms, Singapore investors in the private sector have taken the initiative to form a consortium to promote real estate projects in India.[55] According to the chairman of the Singapore Indian Chamber of Commerce & Industry, the consortium would enter the Indian real estate sector to develop the layout and infrastructure without participating in the actual construction of the buildings.[56]

The construction industry in Singapore consists of both small and large construction firms. While the larger firms may have varied expertise to branch out into various construction niche markets, the smaller firms have fewer options. To assist these smaller firms, the Singapore government has announced an S $ 600 million stimulus package in the form of more than

60 public sector infrastructure projects.[57] These projects include the development and upgrading of roads, schools, community clubs, and drainage and sewerage systems. The Singapore government advanced these projects forward by a few years to take advantage of the relatively lower costs for these projects as well as to assist smaller firms. These small projects are aimed at the local contractors, sub-contactors, and suppliers in the construction industry. According to the chief executive of Koh Brothers (Singapore construction firm), Koh Tiak Chye, "Foreign contractors have larger overhead costs and tend to go only for big projects. So smaller projects will help the local contractors."[58]

To mitigate the adverse impact of weak domestic demands for construction projects, the Singapore government has asked construction firms to regionalize by venturing overseas and exploring investment opportunities, especially in emerging Asian markets. This forms the other prong of the government strategy to improve the construction industry. Leading by example, the Singapore government through its investment arm, the Government of Singapore Investment Corporation (GIC), has invested in several property projects overseas. For example, GIC, through its subsidiary GIC Real Estate, has taken an 8 percent stake in developer Beijing Capital Land in China. The 8 percent stake was reported to cost GIC S $ 67 million.[59] GIC Real Estate is actively building up its real estate portfolio and has paid U.S. $ 42 million to develop its office site in Shanghai, China. Another Singapore construction firm, Antara Koh Development Pte Ltd, has teamed up with the Hanoi Housing Development and Investment Company to develop the Red River City project in Hanoi, Vietnam. The project on the banks of the Red River is reported to cost U.S. $ 240 million.[60] Singapore and India's collaboration in the construction industry has been discussed at the highest political levels. The construction industry is likely to be the growth pillars for the Indian economy in the Tenth Five-Year Plan. According to International Enterprises Singapore (IE S'pore), India's residential construction market was worth S $ 6.77 billion in 2001 and has grown by 15 percent every year from 1997 to 2002.[61]

Table 8.1 shows the increasing urbanization trends and the emergence of mega cities in India. The overall construction industry in India is driven primarily by private sector residential construction activities. IE Singapore pointed out that Singapore firms should focus on integrated township developments which have good growth potential and Singapore has decades of experience with these kinds of construction. The housing shortage in India's urban areas is around nine million units. New entrants to the construction industry, especially foreign companies, face a number of challenges, such as an investment of at least U.S. $ 10 million and a minimum project size of 40 hectares.[62] However, IE Singapore believes that Singapore construction companies should try and gain first mover advantage with some of the Indian companies interested in township development.

The township development projects would appeal to the Indian urban

Table 8.1 Million plus cities in India, 1951 to 1991

Rank	*City*	*Population (million)*		
		1951	*1971*	*1991*
1	Bombay (Mumbai)	2.97	5.97	12.57
2	Calcutta (Kolkatta)	4.67	7.42	10.92
3	Delhi	1.44	3.65	8.38
4	Madras (Chennai)	1.54	3.17	5.36
5	Hyderabad	1.13	1.80	4.28
6	Bangalore	0.79	1.66	4.09
7	Ahmedabad	0.88	1.75	3.30

Source: Government of India (Census of India 2001).

middle class of approximately 20 million because there is greater acceptance among them of an organized and modernized living environment.[63] The Indian middle classes place house ownership as their main priority and are willing to pay as much as five times their annual salary on purchasing a house. Increasing availability of home financing schemes also facilitates the purchase of houses. Some of these expectations come from the unfulfilled demands of India's burgeoning middle class who face a lack of choice as well as the shortage of reliable developers in residential development. This provides immense opportunities for reliable and credit worthy foreign companies with a good track record to make an impact in the Indian residential market. As a whole, the infrastructure sector will also generate greater demand such as the urgent need for 6300 kilometers of road by the end 2003 and another 7000 kilometers by 2007, which will provide a positive catalytic effect on private investment. As India is not in a position to finance its own housing requirements, it is looking increasingly toward the domestic private sector and foreign collaboration to undertake these housing projects.[64] In order to stimulate the expansion and modernization of its infrastructure, the Indian government has opened up the construction sector to attract private and foreign investors and has terminated its own monopoly over the construction industry. For example, the Indian Minister for Urban Development, Ram Jethamalani, had decided to terminate the Delhi Development Authority's monopoly in developing land in the federal capital.[65]

Table 8.2 shows the rising urban population in India which imposes a severe burden on public facilities. The housing shortage has become critical in India and individual states such as those in the southern part of India have begun to adopt a more proactive housing policy to reduce housing shortages.[66] For example, in the southern Indian state of Karnataka, Chief Minister S.M. Krishna has launched a massive campaign to provide at least 200,000 affordable homes to the poor each year. India's residential construction market was worth S \$ 6.77 billion in 2001 and has experienced 15 percent growth rates since 1998.[67] Nonetheless, India's urban housing shortage is

Table 8.2 Indian urban population growth, 1901 to 2001

Year	*Population (million)*	*Percentage of urban to total population*	*Decade growth rate (per cent)*
1901	29.9	10.8	–
1911	25.9	10.3	0.4
1921	28.1	11.2	18.3
1931	33.5	12.0	19.1
1941	44.2	13.9	32.0
1951	62.4	17.3	41.4
1961	78.9	18.0	26.4
1971	109.1	19.9	38.2
1981	159.5	23.3	46.1
1991	217.6	25.7	36.4
2001	306.9	30.5	41.0

Source: Government of India (Census of India 2001).

pegged at nearly nine million units. In total, India's construction business in the industrial, residential, and commercial segments is worth some U.S. $ 63 billion.[68]

The rising contribution of India's urban population to its national income, as shown in table 8.3, highlights the critical need to improve urban housing. Singapore's strategy for private companies wishing to enter the Indian construction sector will depend on its brand name, ability to forge alliances with relevant firms and the need to focus on specific regional states because of India's diversity and huge size. The Building and Construction Authority in Singapore has asked Singapore's Minister for National Development, Mah Bow Tan, to lead a consortium of 31 Singapore companies and officials involved in construction to the major Indian cities of New Delhi, Hyderabad, and Chennai. The construction companies are mainly small and medium enterprises and some of them have used a group or consortium approach to explore housing projects in India. For example, among the 31 companies,[69] there are 14 companies that have grouped together to provide architectural, consultancy, and contracting jobs. These 14 companies are members of the Singapore Township Alliance (STA) and they have signed MOUs with two

Table 8.3 Contribution of urban sector to national income as percentage of total national income, 1951 to 2001

Year	*Percentage of urban to total population (%)*	*Estimated contribution to total national income (%)*
1951	17.3	29
1981	23.3	47
1991	25.7	55
2001	30.5	60

Source: Government of India.

Indian firms, Hi-Line Constructions and Hi-Pillar Constructions. The project at stake will be the construction of residential properties called Singapore Heights and Radhika Brindavan. The project will comprise of 95 houses with facilities such as health clubs and swimming pools.[70] In 2002, Singapore firms managed to secure 36 consultancy projects in India that is equivalent to about 24 percent of the total consultancy projects it won overseas.

Financing

The Indian government is not able to finance the annual S $ 8.5 billion building program for new urban housing and upgrade the existing housing available. Therefore, it has examined various options to raise capital and attract investments. Hence, it has turned to the domestic private sector and foreign participation to implement these construction projects.[71] The moves by the Indian government to allow foreign direct investment (FDI) in the real estate sector and the establishment of real estate mutual funds are being considered as potential catalysts to spur the expansion of the construction industry.[72] However, the response by foreign investors has not been enthusiastic and the FDI approved for the building industry since 1992 has been less than 1 percent of the total FDI inflows into India.[73] In an attempt to stimulate greater interest and foreign participation, the Indian government has allowed 100 percent foreign participation in developing integrated townships.

The establishment of the real estate mutual funds (REMF) will invest directly in property or indirectly in the equity of real estate investment trusts (REIT).[74] The introduction of the REMF is viewed in a positive manner as it would not only provide capital for developing infrastructure and housing by directing small investors into the construction industry but also provide investors additional revenue for their investments.[75] The Indian government has also given greater emphasis to the growing housing problem in India by giving greater priority to housing and financing needs in the tenth Five-Year Plan. Besides this, the Indian government has also requested the Asian Development Bank (ADB) to assist in the long-term objectives of the National Housing Policy. The ADB has responded by approving a U.S. $ 300 million loan under the Housing Finance Project. The three borrowers under this ADB loan scheme, namely, the National Housing Bank, Housing and Urban Development Corporation, and Housing Development Finance Corporation will each receive U.S. $ 100 million loan. The housing sector in India was also given a boost by handing the provision of interest deductible income tax of up to U.S. $ 3000 annual wage income for potential home owners wishing to purchase a self-occupied house.

Andhra Pradesh

The Andhra Pradesh Housing Board (APHB) was established in 1960 with the objective of providing housing at an affordable price to those in need and of recovering the cost of construction from the sale of these housing units. The timely establishment of the APHB is crucial to accommodating the swelling ranks of Hyderabad's (state capital) population. The population of Hyderabad has increased from 1.13 million in 1951 to 4.28 million in 1991. To date the APHB has constructed over 69,000 houses in different categories. The residential construction industry has good potential for growth in Andhra Pradesh because of the projected demand for 1.5 million houses spread over the twin cities of Hyderabad and Secunderabad as well as other major towns.[76] The Andhra Pradesh state government is focusing on the needs of lower-income families because the upper- and middle-income market will be attractive to other interest groups. New projects to be undertaken by the APHB include the township at Pocharam, infrastructure facilities, and development of privately held lands at Warangal.

Cesma International, the wholly owned subsidiary of the Singapore Housing and Development Board (HDB), has won S $ 1 billion contract to initiate master planning at the housing site at Pocharam in Andhra Pradesh state, as well as designing recreational and other facilities. The proposed integrated township is located on the Hyderabad–Warangal highway and most of the apartments to be developed have been sold.[77] Subsequently, Cesma International won an S $ 70 billion contract to build the first phase of the township project consisting of 1600 homes to accommodate an estimated 60,000 residents.[78] Cesma has also invited other Singapore companies to participate in the project. According to Cesma President, Low Seng Poh, "We believe this is a good way for Cesma International to help other Singapore companies to penetrate the Indian market."[79]

A major problem faced by Singapore companies in the construction industry and infrastructure projects in general was the scale of the proposed projects in India, which were larger than what these companies had experienced in Singapore. However, this challenge could be overcome through the consortium approach. By clustering relevant Singapore companies together as a consortium to undertake these massive projects, these companies leverage on their respective strengths. According to IE Singapore's Regional Director for South Asia and Middle East, Mr. Raheed Nargund, "Singapore companies, which tend to be small by international standards, stand a far better chance of success by teaming together to clinch projects, which may otherwise be too large for them to handle individually."[80]

The construction of the U.S. $ 40 million "Singapore-style" self-contained township at Pocharam will be the first of its kind in Andhra Pradesh. The Pocharam housing complex will have a cluster of one-plus 12-storey and one-plus four-storey apartments and is located 18 kilometers from Hyderabad. The APHB has acquired 723 acres for the construction of the housing complex and the first phase will involve the construction of 1600 flats on 50 acres of land. These flats will have three- or two-bedrooms of 1400 and 1100 square feet respectively. The three-bedroom flats will cost approximately U.S. $ 20,000, while the two bedroom will cost U.S. $ 16,000. The remainder of the acquired land belonging to APHB will be utilized for later phases of the township project.[81] Chief Minister Chandrababu Naidu has also hinted that township projects are likely to be connected by a metro train service to Hyderabad in the near future.

The Pocharam township project has caused great interest in the housing market because of its space-saving features and infrastructure facilities and all the flats have been sold. The facilities at the Pocharam township project will include schools, shopping complexes, places of worship, flower gardens, playground, swimming pools, club houses as well as wide roads. It was reported that similar townships are being planned in other areas around Hyderabad such as Gachchibowli, Kukatpalli, and Lakshmipuram. Chief Minister Chandrababu Naidu has said that he would like Singapore to replicate its business environment at Pocharam. Naidu also believed that Cesma International's expertise and experience would help in completing the project in one and a half years.[82] The Pocharam project has been endorsed by the political leaders from India and Singapore. For Singapore companies in particular, it represents a test case for undertaking large residential projects in India.

The city of Hyderabad continues to be a top draw for Singapore's developers. Three Singapore developers—RSP Jurong, CPG Consultants, and DP Architects—are developing about 34 million square feet of building space.[83] Some other examples of Singapore building companies involved in projects in Hyderabad in early 2000 to 2005 are CPG, which is working on a 4.5 million square foot IT Park for the Nuziveedu Group, and RSP, which is building two IT parks for India's Raheja group totaling 10 million square feet. RSP is also building 1.5 million square feet of office space for Microsoft while its Lanco Hills condominium project will have 8 million square feet of floor space. The third Singapore developer Jurong International is designing a 3 million square foot IT park for the Phoenix Group in addition to the 600,000 square foot IT park that it is designing for iLabs.[84] Jurong International is also involved in a project designing luxury condominiums for the KSR Group.

Finding niche markets

Singapore construction company Cesma is also interested in Kolkatta's first 50 storey building in the state of West Bengal.[85] The project commissioned by the government of West Bengal will feature amenities such as multiplexes, shopping malls, and a food court on a seven acre land area.[86] The Kolkatta tower will be the tallest structure in West Bengal and surpass the Chatterjee International and Tata Center. The building, called the "Gateway to Kolkatta," will be three-way joint venture project between the Kolkatta Municipal Corporation (that provided the land), Srishti Infrastructure Development, and Srei International.[87] Cesma International will undertake the project's master planning as well as architectural designing, structural engineering, and quality surveying.

A Singapore-based infrastructure development company is also involved with the developers of Jawaharlal Nehru Pharma City in Parawada on the outskirts of Visakhapatnam. The company invested in the industrial site in India with the objective of attracting multinational pharmaceutical companies to establish their operations in India.[88] Located in a special economic zone, the Pharma Park was aimed at enabling pharmaceutical MNCs to outsource 400-plus drugs manufacturing from India in the post-GATT regime. Pharma City will provide the infrastructure for drug recovery, research, and development functions and help with clinical trials. Other amenities will facilitate the manufacturing and marketing functions for both Indian and international pharmaceutical companies. Moreover, the company is in discussions with 14 top MNCs which all have wholly owned subsidiaries in Singapore. The project is being executed by Ramky Pharma City, which is based in Hyderabad, and will be the first of its kind in the southern state of Andhra Pradesh and was initiated by the Bulk Manufacturers Association.

The state of Chattisgarh has also attracted the attention of Singapore and other Southeast Asian developers from Indonesia and Malaysia. According to the state's Housing Minister, Ganesh Ram Bhagat, seven firms from Singapore, Indonesia, and Malaysia applied to develop the up-market neighborhoods in the capital Raipur. The project involves the development of 3000 bungalows and high-rise buildings.[89] The state government also plans to build around 10,000 homes for middle-income families for around S $ 6000 and will cover both urban and semi-urban areas. The state government also plans to construct houses in tribal areas such as Jagdalpur in Bastar district and Ambikapur in Sarguja district.[90]

Large Singapore developers such as Keppel Land have also identified India as one of the key countries for development in the region.[91] According to Keppel Land's director of regional investments, Mr. Ang Wee Gee, "We welcome the free trade agreement as it will further strengthen India's economy, enhance the property sector, and create positive spin-offs for the industry as a whole."[92] He added, "We are actively seeking housing opportunities including large scale integrated township projects in major growth cities such as Mumbai, Delhi, Chennai, Hyderabad and Kolkatta."[93] Keppel Land has embarked on two condominium projects with a joint venture partner in Bangalore. It launched the 1572 units Elita Promenade in July 2005 and another condominium in late 2006.

Keppel also has two condominium projects in Bangalore and another in Kolkatta and is building a 509 unit high-rise apartment block in Mumbai suburb.[94] According to CapitaLand spokesman Baaskaran Nair, "India is the next major country where we will increase our multi-sector presence comprising residential, retail, service apartments and possibly commercial development."[95]

The other major Singapore developers in India are RSP Architects, CPG Group, and Jurong Town Corporation's Jurong International. These three companies are developing a combined floor space of 500 million square feet.

Jurong International is developing a 80 ha township in Amritsar and the CPG Group is designing a 13,000 ha township in Mundra, Gujarat. The managing director of RSP (India), Mr. Gopi Bhawnani, who is based in Bangalore, said that, "What we are seeing is the tip of the iceberg that is to surface in the next 10 to 15 years . . . in the long run, a lot more is going to happen. China has gone through enormous growth; in India, the infrastructure story is just beginning."[96] Jurong International has a similar view on India. According to Jurong International's Bangalore-based chief executive, Mr. Rao Munukutla, when he arrived in India in 2000, he was a one-man operation but, as of early 2007, Jurong India has 400 professionals and will increase this to 1000 by April 2008. Jurong International is involved in more than a hundred assignments, which range from SEZs to hotels and span across 18 cities. Mr. Rao added that, "The lessons we picked up from projects in Singapore and the Middle East are coming in useful because we have already done what India is looking to get for itself in five years' time."[97] Smaller Singapore developers such as CPG and DP Architects are also very much involved in the construction boom in India. For example, CPG has about 30 million square feet of projects completed or under construction, while DP Architects has contracts to design IT parks and shopping malls.[98]

The Senior Minister of State for National Development, Mr. Cedric Foo, also urged firms to consolidate or form consortiums so that they could expand their services and expertise.[99] Are Singapore developers keen to consolidate or form consortiums? The chief executive of building consultants CPG, Mr. Khor Poh Hwa, is keen to acquire Jurong Consultants because it has a strong niche in industrial parks while CPG is strong in airports, healthcare, and consultancy projects.[100] CPG also believes that HDB Corp should merge with itself and Jurong Consultants so that they will have the scale of 3000 skilled workers and professionals to compete in overseas markets.[101] CPG derives about half of its revenue from overseas markets, in particular China and India. Although CPG was bought over by Australia's Downer, it still retains a Singaporean identity. Being seen as a Singapore company has helped CPG to market their trustworthiness and professionalism. CPG has also pulled out of bids against other Singapore developers because with limited resources it felt that Singapore companies should not compete unnecessarily.[102] CPG Consultants and BRR Holdings subsidiary Singapore Piling won an S $ 80 million contract to design and build a 2.6 million square foot development in India for Whitefield Shelters of Bangalore.[103] The project is close to the International Technology Park in Bangalore and was to be completed in three stages.

Conclusion

Cesma International and other Singapore construction companies face strong challenges from rival construction firms such as those from Malaysia who have experience in undertaking large projects such as building highways. For example, IJM Corporation, a major construction company based in Malaysia, is involved in a joint venture with the APHB to develop a 25 acre site located at Kukatpally in Hyderabad. The IJM Corporation is also involved in the construction of the Mumbai–Pune expressway and the Chennai bypass.[104] Singapore builders are competing with a number of builders from East Asia for a slice of the Indian market. However, Singapore companies such as Cesma International, which is part of the Surbana Corporation, has accumulated more than 40 years' experience in building mass public housing and could leverage on this strength. Cesma's connection to Singapore's larger brand image of being efficient, trustworthy, and able to complete projects within given deadlines provides it with a slight competitive edge against other potential rivals.

The Government of Singapore Investment Corporation (GIC) has also established a wholly owned subsidiary in India called India International Insurance Private Limited (IIIPL). The IIIPL will be responsible for routing GIC's investments for developing an integrated model township in the southern state of Tamil Nadu.[105] The Indian partners in the joint venture will be B.P. Ventures Private Limited. The township will be built on the Chennai Information Technology Corridor and involve the development of at least 2000 residential units spread over 100 acres of land.[106] Jurong Town Corporation (JTC), a statutory board in Singapore that has built industrial, science, and hi-tech parks in Singapore, has also established a subsidiary in India. The subsidiary called JTC Consultants (India) has linked up with Indian developer Kingston Properties, a subsidiary of Oberoi Constructions, to develop a shopping mall at Goregaon in Mumbai in the state of Maharshtra in Western India.

The other challenge that could surface could be a backlash for Singapore developers from local developers that have been displaced since their entry to the Indian market. For example, the influence that Singapore developers had on the Hyderabad construction industry could breed contempt for Singapore companies. According to New Delhi architect Sanjeev Chhabra, "Mumbai and Bangalore architects used to dominate the market. Now they are being pushed down by the Singapore firms, so people like me who operate further down the chain have less space."[107] He has closed his small design firm in Chennai and moved to Delhi where he now works for a design firm. Overall, local resentment against Singapore developers has not festered because of the booming construction industry and projects are plentiful.[108] It was reported that Singapore firms have also declined new projects because they were fully booked. However, local resentment could develop in tight market conditions of oversupply but this appears unlikely in the near future. However, given India's large size and need for infrastructure, Singapore developers are already venturing across several states.

For example, apart from Andhra Pradesh, Cesma International has also shown interest in other Indian states such as West Bengal. The government of West Bengal has proposed to develop the state's first 50-storey building in the state capital of Kolkata.[109] The proposed building, to be known as the "Gateway to Kolkata," will feature shopping malls, food courts, and multiplexes. Cesma International will be responsible for the project's master planning, its architectural design, structural engineering, and quality surveying.[110] The local partners involved with Cesma in the consortium to develop the proposed project are Srishti Infrastructure Development and Srei International.[111] Singapore companies through exploring of suitable investment opportunities in specific states in India have begun to show productive results as well as the ability to cooperate with Indian firms in joint ventures. Cesma International has led the way for Singapore companies and the clustering strategy to establish a consortium to bid for projects seems a good approach to impress potential clients. Singapore companies have to regionalize to survive but their capabilities to manage large and complex projects as well as a good brand name could give them an edge over their rivals. India too stands to gain because Singapore statutory boards have large monetary reserves and its companies are able to produce the necessary financial means to undertake various projects in India. In this regard, the ports sector is another area where Singapore companies are investing and collaborating in India and this will be discussed in the next chapter.

9 Ports development and logistics services

Strategic gateway

With the liberalization of the Indian economy, the ability of India's congested ports to cope with further growth in traffic has become increasingly doubtful. The government of India has predicted that by 2011 to 2012 the cargo handled will reach over 900 million tonnes. India's sea-borne trade constitutes nearly 95 percent of India's total foreign trade and the Indian maritime fleet can be divided into three major segments: overseas, coastal, and offshore.[1] Approximately 38 percent of the Indian maritime fleet is involved in the transportation of liquid cargo, while 44 percent transports dry bulk cargo. While there is great potential for India to modernize and upgrade its ports, major impediments remain in the transformation of these ports. Some of these include domestic issues such as environmental concerns and labor-intensive operations that are strongly backed by trade unions.[2] External issues include the rise of China as a major shipping nation that attracts majority share of foreign investment in ports development because of its manufacturing prowess and security concerns stemming from the after effects of the 11 September 2001 (9/11) bombings of the World Trade Center in the United States.

Despite challenges, the main advantages that India should leverage over China are its strategic location in the Indian Ocean between the developed countries of the West and developing countries of the East. With a coastline of 7517 kms, India has the potential to be a major modern shipping hub and could radically shift away from its policies of self-reliance and self-sufficiency to take advantage of a globalized economy. In 2006, India had 12 major ports and 187 minor ports. The major ports accounted for 95 percent of the total traffic handled, which in 1996–97 was approximately 227 million tonnes. This figure has risen to 325 million tonnes by 2000–01 and is projected to rise by 540 million tonnes in 2005–06. The major ports are administered by the Port Trusts under the control of the central government and the minor or intermediate ports are administered by the respective state governments.[3] The major ports account for the large bulk of the total cargo traffic handled (approximately 90 percent). However, 45 other minor and private ports have to be modernized and upgraded to make Indian goods competitive in the international market.[4] In this regard, how could Singapore play a role to facilitate India's goal? Singapore has some of the busiest ports in the world and they are managed by the Port of Singapore Authority (PSA). Singapore's ports handle some 200 million containers (Twenty-foot equivalent units or TEUs) for 200 shipping lines that serve 600 ports in 123 countries.[5] According to the chief operating officer of PSA, Tan Puay Hin, "Most containers don't stay for more than a week, two-thirds leave within a few days. About 16 percent don't even stay here overnight."[6] In addition, the PSA mishandles, loses or damages less than ten containers every year. In India, the total container traffic handled by Indian ports from 2005 to 2006 was 4.61 million TEUs.[7] The problems besetting ports development in India involves lack of coordination between relevant governmental agencies, labour relations, environmental concerns, lack of technology and infrastructure.

A major problem that impedes India from becoming a strategic gateway to the East is the mismatch between existing capacity and the demand for traffic that has resulted in pre-berthing delays and longer ship turn-around time.[8] The Indian government has realized that it would require about U.S. $ 112 billion by 2012 for the modernization of the 12 major ports in India. To finance its port modernization program, the Indian government plans to evolve concessionary agreements for the port sector and facilitate the participation of the private sector. The task of preparing the concession agreement which essentially establishes the terms under which the private bidder can bid was prepared by an inter-ministerial group called the Prime Ministers' Infrastructure Committee. The Indian government decided that all new berths would preferably be constructed through public–private partnership. A committee of government secretaries will also be established to suggest ways to improve the connection between rail and road connections to ports. One of the priorities would be to increase the financial resources of major ports at about U.S. $ 100–120 million. The committee suggested that it may be necessary to resort to market borrowings especially for the development of common facilities such as capital for dredging. A sub-committee will prepare a plan to implement dredging at ports so that bigger vessels that require a deeper draught could use them. These dredging projects will be offered for tender to international as well as local firms but the government would assist in payment of costs up to a ceiling of U.S. $ 55 million. The government has privatized its ports by allowing 100 percent foreign direct investment (FDI). The impact has been immediate because several international port developers and operators have shown great interest in India. The intense "cut-throat" competition in the ports and shipping industry has raised the importance of India due to its potential.

Regional competition in shipping

Competition from regional ports such as the Port of Tanjung Pelepas in Malaysia has seen the PSA exploring more overseas business opportunities.

Since its first overseas port project in 1996, the PSA has expanded and is involved in 25 port projects across 14 countries.[9] For example, a planned U.S. $ 1.7 billion deep-sea port in Jakarta could take about 10 percent of the goods volume handled by PSA in Singapore.[10] Three-quarters of Indonesia's international shipments are handled by Singapore's ports because its main port at Tanjung Priok, which handles about half the country's export and import, is not deep enough.[11] Congestion at Tanjung Priok also meant that companies had to wait longer and pay more for exporting and importing their goods.[12] This justifies the need for the new Jakarta port that will have a capacity of one to two million TEUs. The growth of the Indonesian economy also increases the demand for a deep-sea port because more goods have to be shipped. Moreover, a lower handling fee than that of Singapore's U.S. $ 68 per TEU could be charged to attract customers.

The biggest competition for Asian ports, including efficient ones such as Singapore and Busan in South Korea, comes from China. Seven of the world's top 20 container ports are located in China and container traffic in Shanghai and seven other major Chinese ports grew by an average of 53 percent between 2003 and 2005. The construction of its own deep-water ports and bigger berths has enabled China to be less dependent on foreign ports to ship its own goods.[13] A spokesman for Hanjin Shipping (the largest South Korean line) said that, "This was a big blow to other ports, given the fact that Chinese shipments bound for Europe and North America alone account for more than 20 percent of all global containerized traffic."[14] He added, "We are redrawing our shipping routes focusing on Chinese ports. Now, we often skip stops in Busan, Tokyo or Osaka."[15] The opening of the deep-water port in Yangshan, China in 2005 at a cost of U.S. $ 16 billion with five berths and a planned expansion of 16 berths by 2010 and 52 by 2020 has indicated the serious competition meted out by Chinese ports on other regional ports.

Competition in international shipping has seen the emergence of large international port operators such as the PSA, Dubai Ports World (DP World), Hutchinson Whampoa, and Moeller Maersk.[16] Neil Davidson, a container port analyst at Drewry Shipping Consultant said that "It's an all or nothing business; you have to go after it in a big way or not at all."[17] The PSA has competed with DP World and lost to it for the purchase of the port business of the American rail company CSX for over U.S. $ 1 billion.[18] DP World and PSA were competing next for the bid to control Peninsular & Oriental Steam Navigation (P&O). P&O has 29 container terminals and logistics operations in 19 countries in significant regions such as East Asia, Europe, Australia, and India.[19] P&O (a British MNC) is the world's third largest port terminal operator behind Hong Kong's Hutchinson Terminals and Temasek's PSA.[20] The PSA was still dependent on its ports in Singapore for more than half its container volume and is under pressure to reduce its dependency on the city-state.[21] Container ports are a rapidly maturing business in Singapore and the PSA has to look for opportunities overseas.[22] Should the PSA acquire P&O it would become the world's biggest port operator.

The PSA made a counter bid for P&O at a cost of U.S. $ 6.7 billion against DP World's earlier offer of U.S. $ 6.3 billion[23] in January 2006. DP World made an improved offer for P&O for U.S. $ 7.4 billion, which was accepted by the P&O board and shareholders.[24] According to PSA after it failed to provide an improved bid, "For PSA, to pay more than this price would not be compatible with commercial business sense and PSA's future success."[25] Prime Minister Lee Hsien Loong of Singapore commented that, "We don't come with gas and oil in our pockets . . . we have to make hard-headed business decisions and we go for opportunities. If you get them, that's good. If they don't come your way, well, you have other ways to make up."[26] If PSA had succeeded in acquiring P&O, it would have a near monopoly of the container handling in India. This is because the PSA would have under its control India's three major container terminals: Nhava Sheva in Mumbai, Chennai Container Terminal and Mundra International Container Terminal in Gujarat, and a share in the Vishaka Container Terminal at Visakhapatnam. The terminals under DP World together handled 2.53 million TEUs in 2005; this translates to 51.3 percent of total market share that will make DP World a dominant container operator in India.[27] Uncomfortable with monopolism, India will continue to encourage competition in its ports sector and encourage foreign investment. Apart from the PSA, other Singapore companies such as Neptune Orient Lines (NOL) and Gateway Distriparks are in business in the ports and related services in India.[28] Besides competition, the ports business in India is challenging in a number of other ways in terms of environmental concerns, trade unions, and the efficiency of the ports themselves.

Environment

Environmental concerns that affect the development of ports are addressed by the Committee on Environmental Clearance under the Chairmanship of the Secretary, Ministry of Surface Transport that was empowered to clear port projects.[29] The concern over the environment has become a popular issue in the redevelopment of India's major ports. In 1997, P&O picked Vadhan to the north of India's biggest port in Mumbai to develop a deep-water port which could have decreased the congestion at the Mumbai port if the project had been implemented. However, environmentalists in the area were concerned over the possible ecological damage of building a port and started legal proceedings against the proposed development which lead P&O to abandon the project.

In a separate project, P&O Ports also wanted to build a huge industrial port in an ecologically fragile region at Dahanu on India's west coast. Close to Mumbai, the port project would be conveniently located to serve the growing middle-class consumers of that city. However, Danahu is also designated as one of India's three most ecologically fragile regions by the Federal Ministry of Environment and Forests. In addition, the Indian Supreme Court also ruled in 1991 that industrial development should be strictly limited in the region. The Danahu area is 120 kilometers north of Mumbai, it has 49 percent forest cover, is rich in biodiversity, and is a breeding ground for turtles. The region is home to various tribes and fishermen, is abound with meandering creeks and wetlands, and provides Mumbai with flowers, fruit, and other foods.[30]

Labor relations

Labor relations were a major concern because of the labor-intensive operations of Indian ports. The Indian port sector had an excess capacity of labor and strong unions. Some of the main unions to which port workers are affiliated to include: All India Port and Dock Workers' Federation (Workers), the Water Transport Workers' Federation of India, the Indian National Port and Dock Workers' Federation, and the Waterfront Workers' Federation of India.[31] The port worker unions also have links with unions in other economic sectors and together with the banking and mining sectors, they called a nationwide strike in 2002 to protest against the disinvestments of Public Sector Undertakings (PSUs) or public sector companies.[32] The government is concerned over the declining productivity of various ports because of over manning and had asked major port trusts to roll back the retirement age of employees from 60 to 58 years. The conventional ports of Mumbai, Kolkatta, and Chennai are relatively more adversely affected by over manning. However, Mumbai, Kolkatta, and other ports such as Tuticorin and New Mangalore have started to reduce their retirement age to 58 years. The divergences between the various ports are starling in terms of labor productivity. This ranges from Mumbai port that employs about 30,000 people to handle 13 million tonnes of cargo of which 50 per cent is fully mechanized to neighboring Jawaharlal Nehru Port Trust that employs around 2000 workers to manage 14 million tonnes of cargo. In relation to Mumbai, it was estimated that 14,000 of its employees were redundant. The primary responsibility for the development and management of major ports rests with the central government. Administration of minor ports is the responsibility of the state government. Individual Port Trusts are responsible for the administration, control, and management of major ports.

Would the trade unions be open to liberalization and reforms in the port sector? It could be argued that more liberalization facilitates competition, which influences the trade unions. For example, the Cochin Port Staff Association recommended to the management of the Cochin Port to terminate the operations of the cargo handling pools at the port.[33] This move would reduce the overall cargo handling costs and increase the revenue of the port. The Association pointed out that several agencies were involved in the management of the labor pools and were levying exorbitant rates for the port users. In relation to workers' welfare, the Association would like to see an increase in jobs and the total cargo handled by workers.[34] This would not occur because of the notorious reputation which Cochin Port has earned for low productivity and expensive charges compared to other south Indian ports such as Ennore and Tuticorin. In this regard, both the port workers and authorities have to cooperate to build up the name of Cochin port so that foreign investors such as the PSA could be interested in investing. The government and the federations and unions representing the port and dock workers have drawn up a ten-year agreement which establishes a new benchmark in the settling of wage and other disputes related to working conditions.[35] This was a major breakthrough because the trade unions have been adamant in only accepting the usual five-year wage agreement instead of the ten-year agreement advocated by the government. In the spirit of compromise, the Indian Ports Association have also offered an attractive increase in wages amounting to nearly a 35 percent increase and an annual bonus of Rs 280 crores to the approximately 1 lakh (100,000) employees at the various ports in the country.[36] The new agreement also makes a commitment to an enhanced productivity regime with the option to rationalize the scales used to employ laborers in the various ports.

Port efficiency

In general, ships that berthed at Indian ports in 2005 took 84.72 hours to unload and reload cargo in comparison to the 12 hours that it took in Singapore.[37] The figures for Average Ship Turnaround (ASTA) time and the average pre-berth waiting period is exceptionally high for Indian ports.[38] In 1991 to 1992, the ASTA time for Indian ports was 6.7 days, this rose to 7.8 days by 1996 to 1997 and the average pre-berth time also increased from 1.6 days to 2.4 days in the same period.[39] However, improvements in ASTA began in the late 1990s. Pre-berthing at Indian ports reduced from 41 hours in 1997 to 1998 to 14 hours in 2001 to 2002. The ASTA has also decreased from 180 hours in 1997 to 1998 to 98 hours in 2001 to 2002. While the ASTA has decreased further to 84 hours in 2006, this is still a far cry compared to the 10 hours for Hong Kong ports.[40] In terms of number of containers handled per crane per hour, Indian ports scored the lowest with 14 to 17 boxes, Singapore ports managed 25 to 27 containers, Colombo port managed 26 and Hong Kong scored 28 containers.[41] The low productivity of the Indian ports are caused by several factors: failure of cargo-handling equipment, inadequate dredging and container-handling facilities, poor coordination, nonoptimal use of equipment, labor-intensive instead of capital intensive methods of bulk handling, and the failure to replace ageing equipment.[42] Congestion at Indian ports was primarily caused by slow evacuation of cargo and poor hinterland connectivity.[43] Table 9.1 shows the volume of cargo handled at India's major ports.

The Indian government allowed 100 percent foreign investment in the construction and maintenance of ports and harbors.[44] According to Shipping Secretary A.K. Mohapatra, "If we don't start the process of doubling the

Table 9.1 Cargo handled by major ports in India from 2004 to 2005

Major port	*Trade (04–05, MMT)*	*Container traffic (04–05) (million TEU)*
Chennai	44	0.62
Cochin	14	0.19
Ennore	9.5	—
Haldia	36	0.13
JNPT	33	2.37
Kandla	42	0.18
Kolkata Dock System	10	0.16
Mormagao	31	0.01
Mumbai	35	0.22
New Mangalore	34	0.01
Paradip	30	—
Tuticorin	16	0.31
Vizag	50	0.05

Source: Indian Ports Association (www.investmentcommission.in).

capacity now, we will be behind demand all the time."[45] With maritime trade growing at 15 percent annually, the modernization and expansion of India's ports has become critical. If the ports modernization and expansion plan is implemented, the cargo-handling capacity of Indian ports will increase from 676 million tonnes in 2006 to 1500 tonnes in 2012 and 2000 million tonnes by 2016.[46]

Economic development

The expansion of India's trade sector has led to bottlenecks at its various ports because of limited capacity and infrastructure.[47] According to Dr. Jose Paul, chairman of Mormugao Port Trust, India's national strategy to increase its exports should be comprehensive and involve India's port systems because 95 per cent of the country's trade passes through its ports.[48] Paul added that, despite its long and suitable coastline, India has not managed to emerge as a strong maritime nation because of ten major problems: high idle time at berths, frequent breakdown of cargo handling equipment due to obsolescence, inadequate dredging alongside berths and channels, absence of 24-hour pattern of three 8-hourly shifts, lack 365 days operating concept, Customs Department not oriented to commercial needs of ports, lack of integration of port railways with the trunk railway operations, inadequate financial and administrative autonomy of port trusts, rigid institutional framework of port trusts under MPT Act 1963, and lack of statutory and legislative support to make ports function as business enterprises.

In order to make Indian port operations more effective, Dr. Jose Paul commented that, "This would mean legislative reforms, by amending the relevant Acts of Parliament and introducing new legislation."[49] The range and content of the reforms for ports should cover all aspects from institutional to managerial and regulatory areas but it would be pertinent to decide before implementing the process of reform which port organizations, if any, should remain under the public sector. Under India's eighth Five-Year Plan (1992–97) the outlay for major ports was U.S. $ 0.9 billion but it was estimated that investments worth U.S. $ 7.3 billion are required to create the 350 million tonnes of additional capacity needed by 2005–06. It is estimated that the ports' internal resources could optimally yield only U.S. $ 3.9 billion, which still leaves U.S. $ 3.4 billion that needs to come from other sources such as foreign direct investments. Indian ports face competition from Colombo, Singapore, and Hong Kong for trans-shipment cargo, and on the west coast of India, the new terminals such as Salalah port in Oman, Aden, and Dubai are competing with the Indian ports. If Indian ports were to survive in a highly competitive environment, the major Indian ports would have to entice foreign partners to establish joint ventures under innovative investment models to enhance the pace of port development.[50]

Corporatization

The Indian government is looking at privatization and corporatization of its ports to remedy various problems, which includes their inability to meet customer demands, lack of flexibility to meet challenges of a changing environment, outdated systems and procedures of work practices, and strong unions. The ports of Kolkatta, Mumbai, Chennai, and Mormugao are more than 100 years old, while the ports at Cochin and Visakhapatnam are more than 60 years old. After independence, the ports of Kandla, New Mangalore, Tuticorin, Paradip, and Haldia were developed. Due to the congestion of cargo at Mumbai port, Jawaharlal Nehru port was developed and became operational on 1989. The latest port to be developed is the Ennore port. The funds needed to modernize the existing facilities at India's major ports are estimated at Rs 25,000 crore. In contrast, between 1990 and 1997 the total planned government expenditure for ports development was only Rs 4240 crore.[51] Hence, private sector investments are needed to provide the main share of funding to transform India's ports. In 1996, guidelines given by the government allowed private investors 100 percent entry into the construction and operation of container terminals, multi-purpose cargo berths, container freight stations, warehouses, and equipment.[52] This is to enable the government to increase India's annual capacity from 215 to 424 million metric tonnes by 2003 among its 11 major ports.[53]

To complicate the process of modernization, major ports in India have different age profiles and their growth has been influenced by various historical factors in different ways. In 1999–2000, the total traffic handled by the major ports amounted to 272 million tonnes as against their capacity of 250 million tonnes. The Indian government is pushing for corporatization of all its 11 major ports that are governed by the major Port Trusts Act, which comes under the purview of the Companies' Act.[54] The government's view is that corporatization would make the functioning of these ports more flexible in terms of their operations. Flexibility in operational terms would be in the form of lowering tariffs that could help to attract and woo customers away from competitors. A major gain would also be to regulate the accounting standards and to maximize returns to enhance value for shareholders.[55] The initial steps to transform these state-owned ports into corporations would have to come from the government's plan to amend the existing Major Port Trusts Acts. Ministry shipping sources said that corporatization would begin with ports such as Haldia, Goa, Mormagao, and New Mangalore.[56]

Tariff Authority for Major Ports (TAMP)

The Ministry of Surface Transport in its 1997 to 1998 Annual Report identified various initiatives in its Inland Water Transportation (IWT) program to be implemented to improve the infrastructure of its waterways. The government has also made the Tariff Authority for Major Ports (TAMP), established under the Major Port Trusts Act of 1963, the main regulatory agency for its 11 major ports. The TAMP was established on 10 April 1997 with Shri Sathyam as its Chairman.[57] The TAMP has the authority to fix and revise various port charges to be collected by private providers of port facilities. In the wake of global economic recession made worse by the terrorist attacks on the United States on September 11, the majority of Indian shipping companies were heading for a 20 to 30 percent fall in profits for fiscal year 2001.[58] A case in point, India's largest shipping company, Shipping Corporation of India (SCI), posted record profits in 2000 at Rs 383 crore. In contrast, at the end of 2001, SCI expected to lose 20 to 30 percent of its net profit.[59] The slump in profits has also led to protest by major foreign shipping companies over the TAMP's order to reduce handling charges at Mumbai Port.[60] The foreign container lines have decided not to follow the TAMP order.

However, the role of the TAMP is being questioned as a regulatory authority in the era of open economy and competition. The TAMP has control over the major port trusts and private terminals. It is empowered to notify the tariff rates and conditions governing their usage.[61] The TAMP has the responsibility to prescribe rates for services provided, facilities extended by them and the lease rates of port trust properties.[62] However, the minor ports, which handle 25 percent of port cargo, do not come under the jurisdiction of TAMP and this is fueling unhealthy competition among the major and minor ports. In a highly competitive environment, this situation will lead to business being driven away from the major ports to the minor ports. Analysts believe that the TAMP should have control over the minor ports as well or that it should be abolished and let market forces dictate the rates.

Privatization

India opened its doors to private investment in the ports sector in the early 1990s and has seen several projects being implemented with the collaboration of major shipping lines such Canada's SNC Lavalin, U.S.-based Stevedoring Services, and the Port of Singapore Authority (PSA).[63] Ports run by the private sector have a large influence on the shipping sector in India. Maersk Sealand shipping company decided to send its Mumbai-bound ships to dock at the Rs 7bn Nhava Sheva International Container Terminal, a privately managed modern container terminal built by P&O Australia instead of docking at the adjacent state-run Jawaharlal Nehru Port Trust.[64] The decision by Maersk-Sealand to stop using the badly managed state-owned Jawaharlal Nehru Port represented a loss of Rs 320 million in terms of revenue for the port. Maersk-Sealand's example was followed by APL-NOL shipping lines, signaling a new era of competition between privately managed and state-owned ports.[65] The Indian government realized that to generate additional capacities in its major ports it had to increase the role of the private sector through either joint ventures or foreign collaboration.[66] The Indian government rationalizes that the private sector would attract new and better technology, increase managerial efficiency, expedite implementation efforts, and create alliances with minor ports. In order to implement joint venture projects, some of the legislative rules that govern port operations such as the Indian Ports Act of 1908 and Major Port Trusts Act, 1963 have to be amended.[67]

Containerization

The practice of containerization in India is only available at selected Indian ports of Jawaharlal Nehru, Visakhapatnam, Chennai, and Cochin, which are equipped with quay cranes to handle containerized cargo. The rate of container moves also varies significantly from 11 moves per hour at Chennai to seven moves per hour at Tuticorin. In comparison, the Port of Singapore Authority (PSA) Corporation at its container terminals in Singapore has recorded an average vessel rate of 86 moves per hour. PSA Corporation operates the world's largest integrated container and transhipment hub in Singapore. The PSA Corporation provides a range of 250 shipping lines with connections to 600 ports in 123 countries. PSA is also venturing overseas and has participated in 13 port projects in eight countries. The PSA has ports in Antwerp, Zeebrugge in Belgium, Muara Container in Brunei, Dalian, Fuzhou and Guangzhou Container Terminals in China, Tuticorin Container Terminal in India, Voltri Terminal Europa and Venice Container Terminal in Italy, Incheon Container Terminal in Korea, Sines Container Terminal in Portugal and Aden Container Terminal in Yemen.

At India's most modern and efficient port, the Jawaharlal Nehru port (JNP), the JNP Trust owns the port, operates one of the terminals, maintains the navigation channels, and provides tugs. The JNP handled about 3 million TEUs in 2006 out of a total of 5.7 million TEUs.[68] The Trust has yet to arrange for the channel to be dredged to a deeper depth to allow for larger and more efficient container ships. The tenants of JNP pointed out that JNP's role is conflicting with its landlord status because it also operates one terminal and charges high fees for tug services. In response to criticism, the JNP trust commented that it was close to awarding a contract for dredging. There are signs of other progress such as the improvement of rail line services and upgraded road links. However, deals involving foreign investors and companies are closely scrutinized by Indian politicians and civil servants. For example, deals involving Hutchinson Ports, which is the world's largest port company based in Hong Kong, were scrutinized based on security concerns. This could be beneficial for Singapore companies that have a good image and deem to be less of a threat.

Port of Singapore Authority (PSA)

When India's Finance Minister, Yashwant Sinha, visited Singapore in May 2001, he said that Singaporeans could participate in infrastructure projects such as seaport development because the Indian government is liberalizing its economy further and some sectors are 100 percent open in equity terms to foreign investment.[69] Sinha added that previous problems encountered in business by Singaporean companies such as reneging on contract, and government and interest group opposition have been reduced. The Port of Singapore Authority (PSA), a corporatized government company in Singapore, had tied up with South India Corporation (Agencies) Limited (SICAL) in order to bid for containerization, operation and maintenance of a berth at the Tuticorin port in southern India.[70] The PSA was permitted to operate a container terminal at Tuticorin port on a Build–Operate–Transfer (BOT) basis. SICAL's deputy chairman, Ashwin Mutiah, remarked that his company intended to collaborate with PSA to tap the emerging opportunities in India's privatization of its port infrastructure.[71] PSA is keen to invest in India despite losing out to a joint venture headed by P&O Australia in a failed bid to manage one of India's first major private port projects at the Jawaharlal Nehru Port Trust near Mumbai.[72]

PSA was also interested in setting up joint ventures to develop Chennai and Tuticorin ports, which lacked quay cranes to handle containerized cargo and vessels have to load and unload their own cargo.[73] PSA's involvement in ports development in India was through its collaboration with the state government of Gujarat to build the private sector-run Pipavav port. Gujarat Pipavav Port Limited (GPPL) is located in the northwest Indian state of Gujarat and is India's first privately administered port. Originally established as a bulk and liquid cargo port, the PSA has said that its three existing cargo berths would be converted into a "full-fledged container terminal."[74] The PSA has a 26 percent stake in the GPPL since it joined hands with 53 percent majority stakeholder Sea King International Holdings in 1998. In 1991, Sea King's engineering division originally submitted its Pipavav port development proposal to the Gujarat Maritime Authority and incorporated the GPPL in 1992 and this was followed by the commissioning of all berths by 1999. Other key GPPL shareholders are New York Life Insurance with 3 per cent and the Commonwealth Development Corporation with 7 per cent. The remaining share of equity at approximately 11 percent is held by various financial institutions.[75]

Gujarat has become one of the key areas for port development because of its potential to be a "gateway" to the rapidly developing but landlocked northwestern region of the subcontinent. The Mundra multi-purpose port has a deep draft of 15 meters and would serve six landlocked northern states—Uttar Pradesh, Punjab, Haryana, Jammu and Kashmir, Himachal Pradesh, Delhi, and Madhya Pradesh. One of Gujarat's port projects at Mundra, 400 kilometers from Ahmedabad, is expected to handle 2.5 million tonnes of general cargo and one million tonnes of liquid cargo. However, PSA had sold off its 20 percent stake in GPPL to rival Maersk, a fellow shareholder in GPPL, in what it has described as a "strategic exit."[76] What could be the cause of PSA's strategic exit from Pipavav, Gujarat? The stiff competition for projects at major ports could be a factor and PSA may have changed its tactics to focus on minor ports with good potential but lesser competition.

In another development, PSA expressed interest in building and operating a container terminal at Hazira port in Gujarat at a cost of U.S. $ 23 million and participated in the due diligence exercise with other contenders. The proposed project represented the PSA's first move to build and operate a container terminal on its own in India. In the first quarter of 2007, PSA won the concession to develop the Hazira container terminal at a cost of S $ 350 million to be developed on a Build-Own-Operate-Transfer (BOOT) basis.[77] The PSA is developing two berths with an annual capacity of one million TEUs in the first phase of the project. The terminal will have a draught of 12.5 meters and is scheduled to be operational in 2009.[78] Hazira is 250 km from Mumbai and the port is well poised to tap into the rich cargo hinterland of Gujarat and Maharashtra which handles more than two-thirds of India's container traffic. In Tuticorin, the PSA operates a 300,000 TEU capacity container terminal from a usable quay length of 350 meters in association with local partner South India Corporation (Agencies) Limited (SICAL). The PSA together with SICAL entered a bid for a U.S. $ 110 million project in Chennai Port that they won and are constructing a second container terminal to be operational by October 2008.[79] Chennai hub is vying to be the container hub in India's east coast and the car export terminal of the country. When the second container terminal is ready and able to handle one million TEUs by 2012–2013, Chennai Port plans to have a third container terminal.

However, competition for port business in India will also increase. Would PSA compete with DP World again but this time in India? This is likely because both companies are interested in acquiring more terminals, especially in areas such as Mumbai in the state of Maharashtra. The state of Maharashtra has a coastline of 720 km or one-tenth of the total coastline in India.[80] The Mumbai Port Trust has taken up an expansion programme and the Maharashtra Maritime Board (MMB) has also initiated plans to develop its minor ports. The Board has assembled together a comprehensive development policy that envisages development by Build–Operate–Own–Share–Transfer (BOOST) basis. The concession period will be for 50 years with more than 90 percent discount on wharf charges.[81] In terms of equity, the board or government will take up to an 11 percent share and partly fund the road that will link to the nearest state highway. The potential sites of minor ports are Wadhavan, north of Mumbai, and to the south, Redi and Vijaydrug. The proposed port at Wadhavan will handle containers from the northwestern region while Redi will handle commodities such as iron ore, bauxite, coal, and other products.[82]

The Indian government is establishing five free ports in five different locations in India to specialize in different fields.[83] The government is keen to see future port development in India function along the lines of other free ports in Hong Kong, Singapore, and Colombo. The commerce committee has been tasked to handle the free port concept in India and it has linked the concept not only to the development of the port sector, but also to the domestic shipping sector.[84] The five locations in India that have been identified by the committee on the basis minimum port facilities and proximity to major shipping routes are: Nhava Sheva near Mumbai for off-shore financial center; Visakhapatnam for ship repairs and maintenance and software services; New Mangalore for financial services, medical services, software services, and transit port; Tuticorin port for trans-shipment services; and Mormugao for tourism and ship maintenance services.[85]

India's plan to diversify its major ports into areas of specialized operations would enhance its operational capacity by working the economies of scale to its advantage. As India has to compete with major ports in China, it has taken steps to improve its image concerning its management and labor relations. The fact that Indian ports are consciously striving to improve their operational efficiencies by taking lessons from other Asian ports puts them is a favorable light with potential foreign investors. The Ministry of Surface Transport has also examined and taken steps to improve other infrastructure assets such as roads and highways, which have a direct influence on the productivity of various ports.

The PSA would be an ideal partners for India to collaborate with to upgrade its port facilities and operation efficiency because PSA has the necessary experience and resources. Singapore also has interest in India's minor ports such as Mundra port in Gujarat. The port is managed by Gujarat Adani Port (GAPL) and is controlled by the Adani Group. GAPL is expected to go public by 2008 because it is establishing a special economic zone (SEZ) in Mundra and requires capital for that venture. GAPL is also establishing residential and recreational complexes and a power plant in the SEZ. The government of Singapore (through its holding company, Temasek Holdings), 3i and a few other private equity investors are likely to purchase equity stakes in GAPL.

The difficulties of operating in India's business environment for foreign investors such as the PSA has been highlighted by the of lack of bureaucratic coordination with regards to policy implementation. The PSA administered terminal at Tuticorin was designed to handle up to 450,000 TEUs but moved 377,777 TEUs in March 2007. PSA SICAL charges about 2500 rupees (S $ 94) to move a standard TEU, which is less than the 2700 rupees charged at other major ports such as JNP and Chennai Container Terminal. The PSA handled 377,000 TEUs by the end of March 2007 and is considered to be one of the most efficient ports in India.[86] However, the TAMP in India has ordered tariffs paid by container ships to be reduced by more than half to just 1137 rupees. This was meant to encourage more shipping lines to visit the port. While the lower tariffs would mean more profits for the shipping industry and could encourage more use of containerization, it would also take longer for foreign investors to recoup their initial outlay in infrastructure. PSA Sical said that tariffs cuts would halve Tutirorin Container Terminal's (TCT) annual revenue to a point where it will not be able to cover operating expenses and the royalty payments it makes on containers.[87] PSA International has responded to say that it had to adjust its operations to meet the concession commitment of the government by handling 300,000 TEUs per annum. PSA Sical will start to operate with only two quayside cranes from its usual three and this would lead to longer port stays for ships. The Container Shipping Lines Association of India has written a protest note to the Prime Minister's Office to explain about the adverse impact tariff reduction would have such as the potential loss of foreign investment.[88] This is particularly damaging to the Indian economy coming at a time when India is seeking to increase its international trade by encouraging investments in the ports sector.

Port-related services

India has been trying to catch up on capacity building for growing demand for port services but even at its most modern port, JNP, services are stretched. Chief operating officer of Allcargo Logistics, Ashit Desai, said of JNP, "Periods of severe congestion lead to longer waiting periods for ships to get a berth."[89] Logistics services is one area in India which holds potential and in which Singapore companies have the technology and necessary experience.[90] The president of the Singapore-based container carrier South Asia APL, Kenneth Glenn, commented that issues related to ports used to be low priority for India's political leaders but that is changing with increasing recognition of ports' importance for economic development.[91] Singapore has for years recognized the importance of supply chain management as part of its business competitiveness.[92] In 2002, Singapore had over 3000 international and local logistics companies.[93] The market for logistics service providers in India is highly fragmented. Most of the existing companies are performing various functions in logistics but the great demand is the provision of integrated logistics services.

This has created a need for a range of services ranging from supply chain management, IT, inventory management, and others. For Indian manufacturers to expand overseas, they could leverage on third party logistics (3PL). That is, Indian manufacturers should focus on its core competency in production and outsource its logistics requirements to a 3PL provider.[94] Third party logistics that were asset based have to evolve toward a new model of lead logistics provider offering entire supply chain solutions.[95] In this context, 3PL involves the provision of end-to-end logistics solutions from picking up the product from a factory to deliver to the end user. A disaggregated industry where even the lead logistics provider has only 3 percent of the market has to consolidate. How would this industry consolidate? One option would be mergers and acquisitions that would create a company providing a range of services.[96]

Another approach would be to increase the efficiency of the supply chain management that would entail the use of technology-intensive systems in warehouse management, transport management, and trace and trade systems.[97] Other value-added services would include MRP labeling, tagging, stickering, repackaging, kitting, repairs and damage, and barcode scanning.[98] For example, Ajay Bhutani, the chief executive of Barcode India, believes that the barcode technology will be used extensively in the industry.[99] What is the potential of the Indian market? In comparison, India spent 13 percent of its GDP on logistics services compared to an average of 10 percent for developing countries.[100] In 2003, the Indian logistics industry was worth U.S. $ 50 billion.[101] Unlike the situation in the United States and Europe, despite the large market in Asia, there is no dominant integrated logistics player in the Asian region but this could change.[102] However, leading European companies such as Deutsche Post, Schneker, Tibbet and Britten, and Excel are establishing their links in Asia.[103] Singapore companies had also recognized the potential of the Indian economy and had taken part in logistics fairs in India from the late 1990s. Singapore's Minister of Transport, Mr. Yeo Cheow Tong, said that, "The market is huge and the potential opportunities are abundant. Some of our Singapore companies which are already there included SembCorp Logistics, CWT and Gateway Distripark."[104]

The potential of the logistics sector is huge and it has attracted the attention of Indian corporates such as Reliance, which has formed Reliance Logistics based in Mumbai.[105] Logistics providers also have to work closely with their customers and use the supply chain to link the supplier and consumer.[106] In 1999, two Singapore GLCs—Singapore Technologies Logistics and Sembawang Marine & Logistics Limited—merged to form SembCorp.[107] Singapore-based SembCorp Logistics moved into India to provide integrated logistics management, first to Chennai and later to Pune and Jamshedpur.[108] In 2002, SembCorp Logistics predicted that in the coming years, China and India would account for 40 to 50 percent of its total revenue. In 2004, SembCorp reported a 16 percent increase in net profits that amounted to S $ 78.9 million.[109] Besides SembCorp, another Singapore company that could develop India's port-related services was Gateway Distriparks Limited (GDL).

Incorporated in 1994, GDL is a provider of port-related logistics and support services in India and is promoted by three business groups in Singapore—Windmill Group, Parameswara Holdings, and Thakral Corporation—together with its Indian partner, Prism International Private Limited. GDL caters to shipping lines and consolidators. It started from its sole containerization freight station (CFS) at Jawaharlal Nehru Port (JNPT), India's largest container port. The services provided by GDL included container transportation to and from port, stuffing and de-stuffing of cargo, general and bonded warehousing, customs clearance, and container maintenance. The chief executive of GDL, CS Verma, is unhappy with the continuing inefficiencies of Indian ports. For example, Verma commented that JNPT has the potential to be one of the world's top ports but the financing needed for the ports and the surrounding infrastructure is not made available.[110] He added, "Maintenance is not carried out, upgrading is not carried out . . . you therefore end up with the inability to expand and handle more cargo."[111]

Other services provided by GDL are general and bonded warehousing. GDL now has three CFSs and one inland container depot (ICD), which makes it a private sector player with a pan-India presence.[112] These facilities are at Chennai and Gurgaon and a greenfield facility at Visakhapatnam. The acquisition is part of GDL's growth strategy in India. The acquisition of the ICD belonging to Continental Warehousing Corporation at Garhi Harsaru, Gurgaon, was for U.S. $ 37 million. GDL will continue the modernization of the ICD and serve its existing customers.[113] As part of the modernization process, GDL will approach the railway ministry to lay a railway siding to the Garhi Harsaru ICD which is located on the Delhi-Jaipur railway line.[114] GDL has acquired stakes in two money losing companies in Chennai and Visakhapatnam and will have to fine tune these companies to turn their fortune around. In Chennai, GDL is investing about U.S. $ 14 to U.S. $ 17 million in the Visakhapatnam project in a phased manner.[115]

In Gurgaon in the state of Haryana, GDL has expanded its facility with the addition of a railway siding to enhance its cargo-handling capacity.[116] Next to Haryana in Delhi (federal capital), GDL has entered into an arrangement with Container Corporation of India to increase it cargo-handling levels. This would also provide GDL with a share of the containerized cargo that is channeled through the Mundra and Pipavav ports in Gujarat.[117] GDL is also planning to expand its business interests by going into port terminal operations, supply chain management, and cold chain management.[118] GDL was planning its diversification into these various markets through strategic alliances with existing players by acquiring smaller players engaged in providing these services. In the area of supply chain management, GDL intends to offer a combination of third party logistics (3PL) and 4PL services. According to Mr. Anand Kapil, the CEO of GDL, "As far as port terminal operations are concerned, we will be looking out for smaller terminals or minor ports."[119]

The company is also in the process of expanding its CFS capacity because of the growing container trade in the country. The trend in increasing containerization occurred from the mid-1990s because of an improvement in port infrastructure and increased private participation. This has led to the development of modern container-handling terminals at ports such as JNPT, Chennai, Vizag, Mundra, and Pipavav. Trade through containerization has grown at a faster pace compared to the total growth in export–import trade. From 1995 to 2005, the cumulative average growth (CAGR) of containerized traffic is at 12.3 percent compared to the 5.3 percent CAGR of export–import trade. According to Anand, "We are aiming at having a share of 25 percent of the CFS market within the next five years, for which we will be investing Rs 200 crore to Rs 250 crore in this period. Part of the investment will be from internal accruals, part from the IPO surplus that we have and the remaining through debt funding."[120] Most of the major global shipping lines such as APL, CMA, P&O, and Mitsui are on GDL's client list. In terms of GDL's revenue income, 90 percent came from its Dronagiri CFS in Navi Mumbai close to JNPT.

Conclusion

India is an attractive market for investments in ports and logistics. However, competition in this sector looks set to become fiercer with the presence of big shipping and port operators such as Maersk and DP World. The PSA could leverage on the Singapore brand, especially its expertise in infrastructure development and maintenance to gain business opportunities in India. The move toward concentrating on minor ports with potential for greater expansion by the PSA could be rewarding given the underdeveloped nature of minor ports in India. Asian port planners including those in India also have to cater to bigger container ships as shipping lines seek to achieve greater economies of scale.[121] However, the Indian authorities such as the TAMP needs to have better coordination with other government agencies and decide on the main objective of its mission. This would be either to attract FDI by increasing the tariffs charged or reducing the tariffs to attract more usage by shipping lines. A fine balance needs to be struck because excess capacity for TEUs could be lying idle because it is not economically viable to operate additional capacity without adequate returns. This would not be a healthy precedent for other FDIs that are monitoring capital returns after their initial infrastructure outlay and cost for operations.

Apart from the PSA, smaller shipping companies from Singapore such as International Seaport Limited (ISP) are also exploring the Indian market. ISP had signed an MOU with the state government to develop the Dhamra port.[122] However, the new capacity for ports will be ineffective without a parallel network of roads and railways to feed the ports. According to Divay Goel, the director of Drewry in India, "India needs to coordinate port development with inland transport networks. If this is ignored, the price will be an uncompetitive trading nation."[123] The transport logistics into the hinterland from ports in India are also not developed. Upstream and downstream logistics services need to be built in tandem with port development to ensure efficient supply chain management goods for imports and exports.[124] In this context, logistics companies such as Gateway Distriparks look to have done their homework to locate their niche in the Indian market. There are bound to be challenges posed by workers, trade unions, and local inhabitants opposed privatization of ports and its development. Public relations are essential and the community of stakeholders needs to be consulted in the development of ports. With increasing competition in East Asia, especially from China, the PSA has no choice but to venture into emerging markets such as India. India could engage Singapore to establish its logistics hub, which would be needed to service its special economic zones.[125] The next chapter will discuss the movement of people in the Indian civil aviation industry.

10 Civil aviation and airports

Introduction

With a population of over a billion people, India offers a potentially large domestic market for foreign airline companies to establish their operations. Estimates by the National Council of Applied Economic Research in Delhi (NCAER) indicated that if air fares fall by 1 percent and the economy averages 7 percent growth in India, the international passenger market in India may grow 11-fold by 2010 from 3.5 million passengers in 1998. India's air transportation industry offers vast potential for development of air travel because of its immense population, fast-growing middle class, vast physical size (three million sq km), and difficulty in traveling between cities and tourist sites by any form of land transportation.[1] As of March 2005, approximately 16 million domestic plane tickets were sold in India, reflecting a 27 percent increase from 2004.[2] The Confederation of Indian Industries (CII) has also predicted that the total passenger traffic (domestic and international) would grow by 8 to 10 percent annually until 2010, which would result in air traffic rising to between 70 and100 million passengers as against 36 million passengers in 2000[3] and 59.2 million by the end of 2004. In 2005, Indian airports handled 61 million passengers and this increased to 90.4 million passengers by the end of 2006.[4]

Executive Director of KPMG Consultancy in India, Mr. Raajeev Batra, commented, "The government has realized that the 8–9 percent gross domestic product growth which the country has been experiencing for the last two to three years will not be sustainable if the gateway to the international world is not opened, which is the airports."[5] Air travel in India is still considered a luxury because it is beyond the reach of the average Indian and spending government funds to upgrade airports was often viewed as spending scarce resources on the rich elites. The rationale that needs to be understood is that upgrading and expanding airport facilities does not mean disregarding the needs of the poor. Improving airport infrastructure works along the same lines as improving roads to ensure safe transportation and time efficiency. Moreover, airports are the gateways into India for most inbound tourists, and the tourism sector holds enormous promise for India. The Indian civil aviation sector is wrestling with rapid growth and congestion because the domestic sector has grown from 4 percent to 18 percent per year and the international traffic is expanding at 13 percent.[6] The airport infrastructure in India requires huge amounts of investments and the government is unable to provide this due to its resources constraints. India's Civil Aviation Minister, Sharad Yadav, had admitted in parliament that Indian airports were in a poor shape, "Our airports are not definitely up to the market. Facilities in our airports cannot vie with that available in airports in the United Kingdom or Malaysia."[7] Yadav added that lack of funding is the main reason for India's airport predicament, he said; "With so much poverty around, how can we match the facility provided in foreign airports like Singapore."[8]

In 2005, 3.9 million foreign tourists visited India, a jump of 14 percent from 2004 and India earned U.S. $ 6.9 billion from these inbound tourists.[9] On average these foreign tourists spend U.S. $ 1470 per person against the global average of U.S. $ 844.[10] In 2006, the number of inbound foreign visitors to India reached four million. Advertising campaigns such as "Incredible India" could be one of the reasons India is attracting more foreign tourists. The growing numbers of inbound foreign tourists are met with an increasing outflow of Indian tourists. In 2004, about six million Indians traveled abroad. There are several reasons that prompted the increase of Indians traveling overseas; these are attributed to rising incomes of the upper middle class and more awareness about overseas travel through the media such as in Bollywood films.[11] This indicated that the state has to attract more resources into upgrading and expanding infrastructure and facilities in the civil aviation sector. Attracting foreign investments into the civil aviation sector has become critical for India because its airports are saddled with inadequate and antiquated facilities that contribute to the congestion and poor safety records in Indian aviation. The Indian government is aware that it could benchmark itself against leading airports such as Changi airport and Dubai airport, both in developing countries. Changi airport in Singapore spent U.S. $ 1.75 billion on a third terminal and similarly Dubai airport has spent U.S. $ 4.1 billion on its own expansion.

The Indian government was planning to spend U.S. $ 20 billion until 2010 to upgrade its airports in order to compete with the regional air hubs of Dubai and Singapore.[12] This problem has to be addressed urgently because international airports also represent an opportunity for India to showcase and promote itself to the world.[13] Changi airport handles about 30 million passengers every year, Dubai international handles about 22 million passengers annually but Mumbai airport (India) only handles 13 million passengers. The Indian government will also sell stakes in Mumbai and New Delhi airports and are seeking as much as U.S. $ 3.5 billion foreign direct investment (FDI) to improve its civil aviation infrastructure. Approximately 80 percent of India's overseas traffic is carried by nonIndian airlines that use better equipped hubs outside of India. India's Aviation Minister, Praful Patel, commented that, "We (India) lost out on the opportunity to be a truly international hub . . . we have to correct that."[14] To compete with the nonIndian carriers, India's government-owned airlines are purchasing 68 Airbus and Boeing planes to increase flights to Asian countries, Europe, and the United States. The primary motivation for Singapore to look at emerging markets such as India to expand its aviation sector is the increasing competition that it faces from regional airports in Southeast Asia. The Singapore government has urged Singapore companies such as Singapore Airlines (SIA) and the Civil Aviation Authority of Singapore (CAAS) to invest overseas and enter into joint ventures with foreign companies as part of Singapore's regionalization policy to create an external economic wing.

Open skies policy

At the Second India—ASEAN Summit in Bali, Indonesia in October 2003, Indian Prime Minister Atal Bihari Vajpayee made the offer of an "open sky policy" for all airlines of ASEAN's 10 members.[15] Vajpayee said, "There is a need for increased connectivity between India and ASEAN. How would the Indian government meet the challenge of increasing demand for air travel both domestic and international? The central Indian government and various states will need to work on the development of airport infrastructure to handle the increased numbers of tourists.[16] The open skies arrangement was a unilateral move by India and likely was not a consensus decision by the relevant Indian authorities." Indian Foreign Secretary Kanwal Sibal added that, the various airlines from ASEAN countries would be allowed to fly to all metropolitan cities in India without any bilateral arrangement".[17] India's aviation policy has depended on the principle of reciprocity in negotiating for increased air connectivity. This approach curtailed negotiations when its state owned air carriers, Indian Airlines and AI were unable to reciprocate air traffic access offered by their negotiating partners. India's proposal to have an open skies pact with ASEAN has heightened the interest of air carriers from the region like Malaysian Airways System (MAS), Singapore Airlines (SIA) and Thai Airways (Thai) to increase their flights to Indian destinations. Airport infrastructure and services represents another area where India and Association of Southeast Asian Nations (ASEAN) members could explore joint venture opportunities. From India's perspective, foreign investments and joint ventures with ASEAN has the potential to upgrade and expand its airport infrastructure and increase its air connectivity to various parts of the world.

The preliminary assumption of India's open skies offer was that the Indian government was convinced that it could not provide the international class services necessary for passengers by running airlines and airports on its own.[18] Nonetheless, doubts remain whether the "open skies policy" will be implemented because having made the offer at the political level, Indian Prime Minister Vajpayee was unable to translate this into action through the relevant Indian authorities. The liberalization of India's civil aviation sector will be difficult because of the monopoly enjoyed by India's state-owned airlines, which are Indian Airlines and Air India. Indian private air carriers such as Jet Airways and Sahara are allowed into the domestic sector but denied the international routes.[19] Moreover, airlines and airport infrastructure are often seen as symbols of a nation's sovereignty and pride and is reinforced by the nature of bilateral negotiations for air traffic rights in the International Civil Aviation Organization (ICAO). Once successfully negotiated, air rights are then given to a member's respective "national airline" to commence operations between the host and designated country. However, the emerging trend of private and foreign investments in state-owned airlines as well as airlines purchasing shares in each others' companies will complicate the deregulation of global civil aviation.

Singapore and India have been discussing an Open Skies policy as early as 2003 that would enable tourists to fly direct from Singapore to popular destinations such as Jaipur, Goa, and Agra but exclude the four major metros of New Delhi, Mumbai, Chennai, and Kolkatta.[20] However, there was no consensus on this issue[21] and the Comprehensive Economic Cooperation Agreement did not include the Open Skies issue. Nonetheless, PM Lee Hsien Loong of Singapore commented that between China and Singapore there were unlimited flights but between Singapore and India, travelers faced great difficulty acquiring tickets.[22] PM Lee hoped that, "We will be able to liberalize air services between India and Singapore, so that we can generate further spin-offs throughout our economies."[23] In addition, it would also be to India's advantage if it could tie up air access agreements with key nations such as the United States and Europe, especially a key air hub such as London.[24] Moreover, a lot of traffic from the United States also arrives in Singapore en route to other destinations in the region. The main strength of Singapore's Changi airport is its air connectivity with more than 80 airlines which links Singapore to more than 180 cities in 60 countries.[25] This traffic may also fly from Singapore to India given the air connectivity between India and Singapore. Therefore, more direct air connectivity between India and the United States will impact on Singapore. India and the United States concluded an Open Skies agreement in January 2005. The agreement provided for open routes, capacity, frequencies, destinations based on consumer demand, and pricing.[26] Other collaborations could include cooperative marketing arrangements, bilateral code sharing with domestic Indian carriers, and permission for cargo carriers to operate in either country without directly connecting to their homeland.[27]

Bilateral air agreements

In 1997, Singapore and India held official discussions to expand the existing bilateral air agreements between the two countries. The high-level Indian delegation was led by Civil Aviation Secretary M.K. Kaw and comprising Civil Aviation director general H.S. Khosla, Civil Aviation Deputy Secretary

V.K. Sandhu, and senior officials from Air India and Indian Airlines. The Singapore delegation was led by Permanent Secretary of Communications Teo Ming Kian and included officials from the Civil Aviation Authority of Singapore, the Attorney-General's Chambers, and SIA's director of corporate affairs Mathew Samuel.[28] Singapore and India have concluded an air services pact that would enable SIA's subsidiary airline Silk Air to fly to Trivandrum in the south of India. Indian Civil Aviation Secretary Kaw mentioned that both parties are happy with the agreement because SIA was able to increase its flights to India and India received code-sharing rights from SIA.[29] In terms of bilateral consultations, this was the largest single increase in capacity since the Singapore–India Air Services agreement was signed in 1958. SIA stands to gain significantly from the new agreement because it has been using up to 85 percent of its capacity compared to 66 percent combined for Air India and Indian Airlines.[30] SIA views India as an important market in the airlines global network. Another significant development from Indian aviation authorities was their approval of Indian domestic airlines such as Air Sahara and Jet Airways to use India's unutilized bilateral slots to mount flights all over the world except for the Gulf region.[31] Jet and Sahara have started flying overseas to other South Asian countries and to Southeast Asia. They will then extend their operations to the U.K. and United States. If other domestic airlines are able to operate for more than five years, they too will be entitled to fly overseas by using unutilized entitlements to Indian carriers.[32]

On enhancing air connectivity between India and Singapore, both countries have also signed a new agreement to enable SIA to fly to Hyderabad, Bangalore, Mumbai, Delhi, Chennai, and Kolkatta.[33] While upgrading its fleet of aircraft to India from Airbus 310 to the latest generation of Boeing 777s, SIA started operating tri-weekly flights to Bangalore as of February 2003. In August 2005, India and Singapore concluded an air services agreement which gives airlines from Singapore permission to operate up to seven flights a week with a Boeing 777 aircraft to Bangalore.[34] In 2005, Singapore Airlines operated 41 flights weekly to India, while its subsidiary Silk Air operates four weekly flights to Hyderabad. In July 2006, India and Singapore signed an MOU to enhance air connectivity but the unresolved issue of "fifth freedom" will be taken up at a later stage.[35] India is keen to operate passenger flights to Australia and New Zealand through Singapore.[36] Under the new MOU, on a reciprocal basis, Singapore's air carriers are able to fly to 18 identified destinations in India without restrictions. Furthermore, India and Singapore could operate unlimited cargo flights into each other's territory and to destinations beyond.[37] In terms of new destinations, Silk Air is considering direct air connectivity between Coimbatore in Tamil Nadu state, India, and Singapore for leisure travelers.[38] Apart from Hyderabad, Silk Air also operates daily flights to Kochi and four flights a week to Thiruvananthapuram.[39] By the end of 2007, SIA will have 55 flights a week to eight cities in India.[40] SIA is also hoping to double its daily flight to capital Delhi from seven flights a week by mid-2008 but this is subject to approval from India's Directorate General of

Civil Aviation (DGCA). SIA's subsidiary Silk Air also flies 14 times a week on the smaller aircraft the A320s to Kochi, Coimbatore and Thiruvananthapuram. In addition, SIA's budget carrier, Tiger Airways, operates four flights a week to Chennai. SIA is also keen on investing in India's airport services. These airport services refer to upgrading engineering, maintenance, and ramp-handling facilities at Indian airports.[41]

Airport expansion

By international standards India's aviation sector was considered small with less than 200 planes flown by 12 airlines. However, the volume of Indian air traffic looked set to increase when Air India purchased 50 Boeing planes worth U.S. $ 7 billion in early 2005.[42]

Kingfisher Airlines and Jet Airways are rapidly expanding their respective fleets. Kingfisher has plans to firm up 50 aircraft worth U.S. $ 2 billion at the Dubai Air Show on top of the 15 Airbuses worth U.S. $ 3 billion that it bought in Paris in June 2005.[43] Jet Airways has bought ten Airbuses with an option to purchase another ten. India's rapidly expanding air travel industry indicated that it needs to invest at least U.S. $ 50 billion on planes and infrastructure until 2015. State-run Indian Airlines has about 480 aircraft for delivery by 2012 against its fleet of 310 at the beginning of 2007. K.V Kamath, chief executive officer of one of India's leading banks, the ICICI Bank, said that, "You have the peculiar problem where the infrastructure on the ground is not fully in place but the infrastructure in the air is there in terms of flights."

Analysts said that India's major airports such as Delhi and Mumbai are overloaded and at peak times are operating at 20 to 25 percent overcapacity. Furthermore, the imperative need for safety should compel the Indian government to provide more resources for airports development. For example, Indian Airlines pilots had refused to fly to Patna (state capital of Bihar) because of unsafe conditions. The runway at Patna was 6900 feet long but the operational length has been reduced to 5500 feet due to tall trees and high-tension wires.[44] After an air crash in Patna in July 2000, an inquiry committee recommended urgent plans to extend the runway and trees had to be pruned but no action has been taken. However, under the threat of closure by the central government, the state government of Bihar finally acted on the committee's recommendations. The central government has purchased land for the runway extension and a modern terminal has been built.[45]

Air transportation in India comes under the purview of the Department of Civil Aviation under the auspices of the Ministry of Civil Aviation and Tourism. All airports in India are owned and administered by the government except in the southern city of Cochin.[46] India has some 449 airports and air strips but only five international airports located in the cities of Delhi (federal capital), Mumbai, Chennai, Kolkata, and Trivandrum. Most of India's airports are under the purview of the Airports Authority of India (AAI) that was formed by the merger of International Airports Authority of

India and National Airports Authority. The AAI manages 11 international airports, 86 domestic airports, and 28 civil enclaves. The AAI focuses on five key functions: airport development and construction services, air traffic management services, communication, navigation and surveillance services, and ground support and safety services. In this context, the AAI undertakes assignments such as airport feasibility studies, airport design project implementation and project supervision, manpower training, airport management, and operation on a turnkey basis. India's Civil Aviation Minister, Ananth Kumar, had led a delegation of senior aviation officials to other Asian countries that had successfully corporatized their respective airports.[47] The team visited Hong Kong, Malaysia, and Singapore airports to seek more information on privatization models and to attract potential foreign investors.[48]

The lack of funding had prompted the Indian government to corporatize India's five major airports in a bid to attract foreign investments. The five corporatized airports are New Delhi, Mumbai, Kolkatta, Chennai, and Bangalore.[49] Furthermore, the government has also decided to lease the airports out.[50] From the perspective of Singapore, the need to invest in India's airport infrastructure would bring mutual benefit because the regional competition to become air hubs has become more intense. Joint ventures with Indian companies to upgrade and export airport facilities in India will enable Singapore companies and airport authorities to expand their business overseas. A key priority for the development of India's airports would be to increase the "non-aero" income from activities such as cargo handling to sales of duty-free goods. Cargo handling has increased from 800,000 tonnes in 2001 to 1.4 million tonnes in the first quarter of 2006.[51] This would assist airport operators to reduce landing and other related aero charges. For Indian airports this is critical because their aero and related charges are 25 to 30 percent higher than other overseas airports. Non-aero business is an area in which Singapore has a lot of experience. For example, one area in which Singapore's Changi airport has experience is retail. More than 322,000 square feet of space at Changi airport's first two terminals is dedicated to retail, food, and beverage concessions.[52] In 2005, about a third of Changi airport's more than U.S. $ 500 million revenue was derived from shop rentals and beverage concessions. According to the Civil Aviation Authority of Singapore (CAAS), 60 percent of its revenue was derived from nonaeronautical sources, which include retail and beverage earnings.[53] This is the opposite of the usual revenue stream for major airports, which earn most of their income from airline-linked services.[54] In this context, the CAAS could also afford to provide incentives for foreign airlines to use Changi airport such as lower landing and parking fees, which will contribute toward maintaining and increasing its connectivity with cities worldwide.

Since the early 1990s, the civil aviation sector in India has grown by 8 to 10 percent per year and this has created a strain on the existing resources of the sector. In the late 1990s, the recurrence of near fatal collisions between aircrafts at international and domestic airports caused great concern among air travelers and highlighted the need to modernize and improve most airports' infrastructure, especially those contributing to safety such as more sophisticated radar devices and ground tracking systems to monitor aircraft movements. Indian airports serviced 36 million passengers in 2000 and by 2010 this number is projected to increase to at least 70 million passengers. The financial strain this caused on existing public sector budgetary resources had prompted the government to liberalize this sector by privatization and inviting foreign collaboration and investment.

The trends indicate that international air traffic at India's airports in major cities such as Delhi and Mumbai are likely to "choke" as they are not able to handle the projected increase of 7 percent growth in the civil aviation sector. This has increased the pressure to expedite the process of modernizing India's aviation infrastructure in critical areas such as airport terminals and parking bays.[55] Other areas such as comfort in airport lounges for waiting passengers also needs urgent attention. On the issue of safety, slums have encroached close to airports and this highlights the need for safety in terms of airport planning and the need for Instrument Landing Systems systems at airports to tackle hazardous weather conditions such as fog.[56] Apart from the issue of comfort and safety, important and world famous landmarks in Jaipur and Agra are not serviced by domestic airports and tourists have to travel an entire day by road to reach the Taj Mahal.[57] The CII outlined its strategy to revive the civil aviation industry and emphasized that three or four international airports must be brought up to international standards by privatization. The CII also urged the government to permit FDI of 49 percent by a foreign airline in domestic carriers and 74 percent for domestic airports.[58]

Competing air hubs

A number of airports in Asian countries including those in Southeast Asia are competing to be regional air hubs. From 1995 to 2000 ASEAN member countries spent approximately U.S. $ 20 billion on their respective airport upgrading and expansion. ASEAN members such as Malaysia, Thailand, Indonesia, Philippines, Singapore, and Vietnam were all modernizing and expanding their airports.[59] The strong performance of Asian airlines in the early 1990s bucked the trend of poor performance of other airlines in various parts of the world. Several factors contributed to the growth and profitability of Asian airlines. These included strong economic growth in East and Southeast Asia, creating more demands for international travel and the emergence of more private airlines to meet growing demands. East and Southeast Asian countries began to relax restrictions on foreign travel and established flag air carriers were cautiously privatized with new airlines being established to service the domestic market.[60] Civil aviation is also not immune to the more general trend toward liberalization and consolidation of the world's economies.[61]

Thailand built and opened its new international airport Suvarnabhumi at a cost of U.S. $ 4 billion in September 2006 to replace its over crowded 92-year-old Don Muang airport, which was operating at beyond full capacity.[62] Don Muang was the busiest airport in Southeast Asia and was designed to service a maximum of 30 million passengers but by end 2004 it was handling 37 million passengers.[63] The targeted opening of the new airport was around 2005 but the project has encountered several problems such as alleged corruption involving a cabinet minister and misreporting about defects by the *Bangkok Post*.[64] Suvarnabhumi could handle 45 million passengers per year and increase this up to 100 million per year with the opening of additional runways and terminals over a decade.[65] According to the DCA Director General, Chaisak Angsuwan, "The lack of certification could affect international confidence in the kingdom's brand new infrastructure".[66]

Malaysia completed its new Kuala Lumpur International Airport (KLIA) in 1998 at a cost of U.S. $ 2.4 billion.[67] KLIA was built as a matter of pride and prestige to replace its predecessor in Subang in Kuala Lumpur because of constraints. However, Malaysia airports saw profits fall by more than half in the second quarter of 2003 as the SARS outbreak and the war in Iraq sent passenger figures plunging. Operator Malaysia Airport Holdings reported that quarterly earnings for the country's 37 airports decreased by 59 percent to U.S. $ 4.1 million.[68] KLIA's location (70 km from Kuala Lumpur) may have adversely impacted on its operations but the opening of Light Transit Train (LRT) to and from the Kuala Lumpur city center may improve its appeal.

In early 1999, the Indian government agreed to increase the number of flights between India and Malaysia and to liberalize new destinations in India for Malaysian Airlines (MAS).[69] Then Indian Civil Aviation and Tourism Minister Ananth Kumar said that the Malaysian government and business chambers had requested more landing rights and better linkages between India and Malaysia. During his visit to Malaysia in February 1999, India's Minister Kumar visited KLIA and held talks with Malaysia's Works Minister, S. Samy Velu, Malaysia's Transport Minister, Ling Liong Sik, and the National Chamber of Commerce and Industry.[70] Included in Minister Kumar's delegation were senior officials from the AAI and Civil Aviation Ministry. Kumar added that he hoped his visit would lead the way for more participation by the Malaysian government and entrepreneurs in the improvement of air linkages between the two countries and the modernization of Indian airports. Malaysian companies had been invited to bid for tenders on a joint venture basis for Indian airports that were corporatized. These included airports in New Delhi, Mumbai, Kolkatta, Chennai, and Bangalore.

In June 2001, a consortium comprising Malaysian Airport Holdings Berhad (MAHB) was chosen among other bidders for the proposed construction of a greenfield airport at the southern Indian city of Hyderabad in the state of Andhra Pradesh.[71] The proposed airport will be operational by 2008 and be constructed in four phases. The first phase of development will include a 3733 meter runway and terminal building to handle about ten million passengers annually. The airport will also have nine aero bridges, a car park for 2500 cars and connectivity to the city by road and rail.[72] MAHB will operate the new airport once it is completed and will have an 11 percent stake in the new company Hyderabad International Airport Limited, established to develop and operate the new Hyderabad airport.[73] Other partners in the project include GMR Infrastructure Limited, which has 63 percent, the Indian and Andhra Pradesh state governments, each with 13 percent.[74] The funding of the U.S. $ 252.3 million airport project will be drawn from a U.S. $ 91.57 million share sale, U.S. $ 92.2 million from government reserves and U.S. $ 68.53 million from local bank loans.[75] Work on the project is expected to start in the third quarter of 2004 and to be completed by the end of 2007.

Singapore's Changi airport has responded to the competition by spending U.S. $ 833 million to build a third terminal as well as undertaking major improvements and expansion of existing airport facilities. However, due to its small size, Singapore has to depend on essentially acquiring sixth freedom[76] air traffic rights to expand its civil aviation sector.[77] To complement Singapore Airlines' sixth freedom strategy, it was imperative that Singapore's Changi international airport provided a range of facilities for transit passengers on stopovers between their final destinations. Changi airport also leverages on the hub strategy to provide connectivity to other destinations in ASEAN and beyond. Changi is heavily reliant on maintaining its air connectivity in terms of the number of aircraft that call there as well as its connections to as many cities as possible. The third terminal is also designed to handle the first services by the 550 passenger-carrying Airbus A380s which Singapore Airlines plans to introduce in 2006.[78] Despite its size constraints, Singapore has chosen not to bid for airport projects in India because of problems that it had encountered in the bid for the Bangalore (southern India) airport project in 1997. Instead Singapore is trying to collaborate with Indian partners in specific airport services such as ground handling. The potential of developing better linkages between ASEAN members with India will also have other spill-over effects especially in the tourism, hospitality, and retail sectors.

The difficulty with liberalizing India's airports to private and foreign competition is similar to the problems of liberalizing a government-owned air carrier such as Air India and Indian Airlines. As air transport becomes globalized with the emergence of more privately owned air carriers, the concept of "nationality" of an air carrier appears archaic. However, the "concept" of nationality in air transportation is not about to be retired soon because of the bilateral regimes governing ICAO air agreements between member countries.[79] The potential for Indian airports to showcase the diverse culture of India to symbolize its national character and pride could be achieved by exhibitions and shops displaying and retailing local handicrafts and artifacts.[80] Encouragingly, investors from the private sector as well foreign sources are invited to participate in the upgrading and expansion of airport infrastructure at both international airports and some domestic airports. For two of India's busiest international airports, namely Delhi and Mumbai, the ground-handling services have been privatized to ease congestion and to improve the turn around times for aircraft.[81] To encourage private investment in civil aviation, the Indian government established a competitive regulatory framework with minimal regulations and will gradually reduce its equity stake. Private sector investments are also encouraged in the upgrading and construction of new and existing airports. In order to generate a nonaeronautical revenue stream, private investments are encouraged in golf courses, entertainment parks, shopping complexes, and aero-sports centers near airports.

The move toward liberalization of the India's civil aviation sector began with the deregulation in domestic services in April 1993. This was followed in March 1994 with the repeal of the 1953 Air Corporation Act. This effectively ended the monopoly of both state carriers, Indian Airlines and Air India.[82] By 1996, the share of private investments in the sector increased to 40 percent. In September 2003, the federal government decided that AAI could enter into joint ventures with private companies and investors, who would be allowed to own a 74 percent stake in the airports. The AAI could also lease out large tracts of land under its control to foreign partners. Plans to privatize two of India's international airports in Delhi and Mumbai have met with increasing opposition. Employees of the AAI who were represented by the Airports Authority Employees Union (AAEU) threatened disruptive demonstrations and hunger strikes as they feared the spectacle of job losses.

Airport privatization

The Indian domestic air transport industry experienced a 9 percent growth during 2000. Table 10.1 shows the shares or aircraft traffic among India's six leading international airports. Mumbai and New Delhi airports have the

Table 10.1 Shares of aircraft movement traffic during 1998–99 at top six airports in India

		Aircraft movements (in numbers)					
Nos	*Airports*	*International*	*% share*	*Domestic*	*% share*	*Total*	*% Share*
1	Mumbai	33095	33.24	66088	20.33	99183	23.35
2	Delhi	30007	30.14	44662	13.74	74669	17.58
3	Chennai	11170	11.22	20653	6.35	31823	7.49
4	Kolkatta	6735	6.76	17646	5.43	24381	5.74
5	Bangalore	2818	2.83	25066	7.71	27884	6.57
6	Hyderabad	2049	2.83	25066	7.71	27884	6.57

Source: Aviation Authority of India (http://civilaviation.nic.in/).

most air traffic and need to be privatized to upgrade and expand their infrastructure. The Bangalore international airport project also offers an example as to how critical infrastructure projects in India have been delayed because of political and bureaucratic interference. In 1994, the Karnataka state government invited tenders from the private sector to construct an airport on a Build–Own–Operate (BOO) basis. Changi Airport Enterprise, a fully owned subsidiary of the Civil Aviation Authority of Singapore, had specialized in airport design, development, operations, and maintenance, and was interested.[83] During the official visit of Indian PM Narasimha Rao to Singapore in September 1994, it was expected that India and Singapore would sign a number of trade deals, including the construction of a new convention center and airport in Bangalore.[84] In January 1996 a Singapore consortium[85] led by L&M Group investments and the Tata Group of India signed a MOU with the Karnataka state government to build a new international airport in Bangalore.[86] Besides the Singapore consortium and Tata, a leading American manufacturer of air traffic control equipment, Raytheon Engineers and Constructors Inc, was included in the project.[87]

The Karnataka State Industrial Development Corporation is the overseeing authority and will hold between 11 and 26 percent of the joint venture to undertake the project.[88] The Singapore consortium had a 24.5 percent stake in the proposed U.S. $ 400 million project but subsequent additions to the airport were expected to considerably raise the infrastructure costs.[89] Another problem that emerged was pressure from India's Civil Aviation Minister to change the Build–Own–Operate (BOO) model of the project to a Build–Own–Transfer (BOT) model.[90] After two years of negotiations, the Singapore consortium and its partners including the Tata conglomerate withdrew from the Bangalore airport project in July 1998.[91] A Tata official said that the slow progress of the project and the slow pace of decisions emanating from the Civil Aviation Ministry at the central government contributed to the pull out. Reportedly, aviation sources also mentioned that the Singapore consortium was unhappy with the Indian federal government's reluctance to end commercial flight operations at the airport managed by Hindustan Aeronautics Limited, which was a clear breach of the MOUs signed with the Karnataka state government.[92] A spokes person for the Tata Group later confirmed that complications arose when the Indian government insisted that the proposed Bangalore airport share air traffic with a nearby airport operated by Hindustan Aeronautics Limited.[93] However, the Tata Group appreciated the position taken and support given by the Karnataka state government over the proposed Bangalore airport.

In 1999, after a time lapse of three years from the original plan to develop Bangalore's new airport at Devanahalli, the central government and the AAI agreed to the original concept plan of the Tata–Raytheon–Singapore consortium.[94] However, the need for a round of rebidding coincided with a caretaker government at the center and state assembly elections in Karnataka. Investors looked for guarantees and commitments by the central and state governments to remove bottlenecks and to cooperate with private investors. While delays continued over the development of the new airport, the chairmen of India's premier computer software companies such as Infosys and Wipro advocated the need for a new airport to ease the heavy flow of software engineers heading by air to service their foreign-based clients. The Karnataka state government continued to languish under the sluggish progress to develop a new airport that would facilitate tourism to India's Garden City (Bangalore). By 2001, the Tata–Singapore–Raytheon team did not make another bid for the Devanahalli airport project but two companies had competed to the end for the tender—Hochtief Airport Gmbh (lead bidder) with Flughafen Dusseldorf Gmbh, Germany (airport operator), and Siemens AG, Germany (lead bidder), with Unique Airport (airport operators) and India's Larsen and Toubro (L&T) Limited.[95]

The Karnataka state government tried to remain upbeat about developing a new airport by indicating that the commissioning of the new airport will be no later than December 2004.[96] The Karnataka state government also looked at other options to enhance the air connectivity of its state by increasing international flights to existing airports. In May 2001, the Karnataka state government floated a new company with Infosys chairman called Bangalore International Airport Limited to facilitate the completion of pre-project activities.[97] The IT sector was concerned that that overseas investments may chose alternative sites such as Hyderabad in Andhra Pradesh, which was also building an international airport.[98] By June 2001, international airlines such as Lufthansa, Malaysia and Singapore airlines were already running scheduled international flights from the existing Bangalore airport. The Federal Civil Aviation Minister, Ananth Kumar, said that a new runway and taxiing area would also be built at the existing Bangalore airport to accommodate the landing of ten aircrafts simultaneously.[99] The total cost of the additional runway is 100 million Rupees. Kumar added that his ministry intends to spend another two billion Rupees to modernize and upgrade other domestic airports in Karnataka. The Devanahalli airport bid was won by the Siemens group. The U.S. $ 250 million greenfield airport project is one that will be set up from scratch. While Singapore companies did not make a rebid for the project, the winning consortium had acknowledged that Singapore companies such as Singapore Airport Terminal services, SIA Engineering, and SATS Cargo could play a role in the development and operations of the new airport.[100] Singapore's then Transport Minister, Mr. Yeo Cheow Tong, believed that a consortium approach would serve Singapore companies well in competing for projects overseas. In this context, the Singapore Changi Airport Enterprise, a wholly owned subsidiary of the Civil Aviation Authority of Singapore, was formed together with 11 other companies to comprise the airport consortium to explore business opportunities in the region.[101]

Air travel services

Singapore Airlines (SIA) has two other business interests in India besides its core business of air services: flight catering and application development for airlines.[102] Singapore Airport and Terminal Services (SATS) (a subsidiary of SIA) and Air India (AI) have plans to exploit their mutual synergy in terms of cargo, passenger handling, and catering.[103] SATS is keen to spread its wings to overseas markets because profits are reduced in Singapore due to increasing competition. SATS' yearly earnings have fallen by 5.5 percent in 2006 to S $ 178.2 million compared to the previous year. The chief executive of SATS, Ng Chin Hwee, commented that SATS and Air India had learnt a great deal by working together.[104] Food catering for in-flight meals is a vital component of air travel. SATS and another Indian company, the Tata Group of Companies, have formed a joint venture company to handle the requirements of the Indian Hotels Company Limited and its affiliates (Taj Group). The joint venture company called Taj SATS Air Catering will assume the existing airline catering business of the Taj Group at Mumbai, Delhi, Chennai, Kolkata, Bangalore, Hyderabad, and Goa. The average daily production for airline meals is around 40,000 meals a day and the Taj Group has approximately 55 percent of the market share in the business. The Taj Group sees the joint venture in terms of exploiting the growth opportunities presented by a liberalized aviation sector, while SATS hopes that the joint venture will expand its in-flight catering presence at key airports in India and enhance its position as a major player in the business.

The other company that SIA has in India is the Aviation Software Development Consultancy (ASDC), an application development and maintenance company located at Elnet City in Chennai in partnership with Tata Consultancy Services.[105] Nearly 90 percent of the application software developed by ASDC is used by SIA itself but the company also undertook projects for some European airlines.[106] A team from SATS also examined Indian Airlines' ground-handling capabilities and operations at various airports. Indian Airlines and SIA are looking into a joint venture proposal to tap the ground-handling business at Indian airports.[107] Both SIA and IA will benefit from joint venture proposals because IA is the second largest player in the ground handling business at Indian airports. For IA, collaboration with SIA will mean access to more capital, modern equipment, and expertise from SIA.[108]

Despite nationalist sentiments, how could Singapore's expertise in civil aviation be useful for India? Singapore's expertise in a number of areas such as good service at its airport lounges, aircraft maintenance, cargo handling, and catering among others will be beneficial for India. For example, Singapore was invited to participate in the development of the new Bangalore airport.[109] Singapore Airport Changi Enterprise was also looking to participating in the development and management of Mumbai and Delhi airports.[110] In this regard, Singapore's Changi Airport Managers and Partners (Champs), India's Bharti Enterprises, and India's DLF Group (a real estate company) had bid for Mumbai airport. However, Champs withdrew its bid in September 2005 and another international consortium involving German airport operator Hochtief also withdrew.[111] There were several problems which triggered the withdrawal of bids, including placing excessive performance obligations exclusively on the foreign partners in the project. This would have meant that foreign companies would have to agree to a deadline but be prepared to loose their credibility by requesting for extensions in an environment known for project delays. Moreover, India's Left parties, partners in the ruling coalition, had opposed the privatization of airports all along and suggested alternative measures.

Disappointment and future expansion

Singapore Changi Airport Enterprises (the investment arm of the Civil Aviation Authority of Singapore) formed a consortium with the Bharti Group that bid for the development and management of Delhi and Mumbai airports.[112] The consortium later added Delhi-based DLF Universal Limited but Changi Airport International (CAI) remained the only airport operator, which was one of the conditions of the bid. The consortium was competing with eight other teams for a 74 percent stake of the two airports.[113] The Indian Airport Authorities then imposed a performance guarantee that will be borne by the foreign partners of the eight consortiums. The Changi airport consortium was shortlisted by the Indian authorities to acquire stakes in India's two biggest airports in Delhi and Mumbai.[114] At the eleventh hour, CAI pulled out of the bid because it disagreed with Bharti on the time required to complete the upgrade and management of Delhi airport. Working to strict implementation and penalties, Bharti believed that the project could be completed in 50 months but CAI maintained that it needed 70 months to do a good job.[115]

CAI was also unhappy about the U.S. $ 80 million penalty imposed on the foreign partners of the consortium in the event the restructuring and modernization of the two airports failed to meet the Indian government's stipulated standard.[116] The Bharti–Changi consortium wrote to the Indian government seeking a review of the clause but was not successful.[117] Bharti was enthusiastic about the consortiums' bid but was disappointed with the withdrawal of CAI, which meant the consortium had to pull out of the bid because CAI was the only airport operator in the bid by the consortium.[118] SM Goh commenting on the withdrawal of CAI said, "Our side has to be more cautious before rushing in otherwise it will leave behind a trail of disappointments and that could affect economic interests in one another. That is the negative part of this rush in trying to see whether they can have a share in the privatization of India".[119] SM Goh added that, "We have to learn from this because the Indian partner was very disappointed with Changi airport."[120] SM Goh's trip to India in January 2006 was seen by some political analyst as a "fence mending" exercise to contain the damage done by the pull out of Changi airport. What is the long-term effect of this pull out?

India's Commerce and Industry Minister, Kamal Nath, said, "Of course, we were surprised and disappointed at Changi's decision but we hope they will participate in future projects . . . we aren't closing the door to Changi."[121] The CAI has since then revised its overseas investment strategy and has a new Chief Executive, Mr. Chow Kok Fong. The CAI is looking toward building a portfolio of assets in key overseas markets of India, China, Russia, and the Middle East.[122] The CAI has been approached by India's GVK Group and the South African Airport authority, which had garnered the contract to modernize Mumbai's Chattrapati Shivaji Airport.[123] The new chief executive of CAI, Mr. Chow Kok Fong, said that the CAI is reviewing plans for a new terminal building at Mumbai airport. As a result, the CAI has gained a lot in terms of local knowledge and experience which will be useful for future airport projects in India.[124]

Talks are also being held between the CAI and interested parties to form consortiums and bid for India's next phase of airport privatization programs that could likely involve the metro cities of Kolkatta and Chennai.[125] In terms of airport services, SATS is keen on securing ground-handling works at the GMR Hyderabad International Airport.[126] A SATS spokesman had confirmed that they are interested and will be taking part in the bidding process.[127] The CAI for future airport projects in India has teamed up with the Tata Group to bid for airport projects in Chennai and Kolkatta. The CAI and Tata had established a joint venture company with the Tata having the majority share of 51 percent and the CAI with 49 percent share.[128] The Tata Group was comfortable with the CAI as a partner despite the latter pulling out of an airport deal with Bharti. This is because the Tata has several good partnerships with other Singapore companies. According to the Tata Realty and Infrastructure chief executive, Mr. Dinesh Chandiok, the airport infrastructure sector is valued at a total of U.S. $ 16 billion until 2012 and Tata aims to have 20 to 25 percent of this business.[129] Mr. Chandiok remarked that the, "CAI is taking 49 percent stake in the company and that is a serious commitment."[130]

Conclusion

The Civil Aviation Authority of Singapore mentioned that between January and November 2006, there were more than 1.83 million passenger trips between Singapore and India.[131] In early 2007, India and Singapore agreed to double bilateral air links between the metro cities of Chennai, Delhi, and Bangalore. Singapore carriers could now fly twice a day to Chennai, Delhi, and Bangalore instead of once daily. In the run up to the signing of the latest MOU on civil aviation between Singapore and India, the Singapore Ministry of Transport's permanent secretary, Choi Shing Kwok, commented that there was strong growth in demand for air travel between India and Singapore because of the increase in trade, investments, and tourism.[132] The new agreement would also enable Singapore carriers to fly beyond to more Indian cities. For example, previously, SIA could only fly to third destinations from Mumbai and Kolkatta. With the new MOU, SIA could also do likewise from Chennai, Delhi, Hyderabad, and Bangalore.[133] The chief manager of public relations at Indian Airlines, Mr. Sanjay Sharma, commented that it was welcoming news since all flights to Singapore were full.[134] SIA spokesman Stephen Forshaw agreed that opening capacity to cities where caps were applied would be helpful for airlines to meet demand. In addition, air travel fare between Singapore and India, which could reach a peak of S $ 1000 for a round trip from Singapore to Delhi, could also be reduced.[135]

In the area of airport services, Air India and Singapore's SATS are planning a third joint venture to provide ground-handling services at Hyderabad's new international airport. The new joint venture company would likely be 51 percent owned by Air India and 49 percent by Singapore Airlines.[136] Air India's chief executive, Mr. Ranganathan Sundar, said that the consortium had won the contract for passenger and baggage handling at the new Hyderabad airport to open in early 2008. Mr. Sundar added that "Once the ground handling units of the two airlines, Air India and Indian Airlines, are merged, we will proceed with plans to source for a long-term partner for other projects."[137] The total value of projects in this sector until 2012 is estimated to exceed U.S. $ 16 billion. SATS is in a good position to be the long-term partner for the merged Air India and Indian Airlines entity because the companies are already working together in Bangalore in two other joint venture companies.

11 Conclusion: CECA and Singapore projects

The Singapore developmental state with the assistance of its government-linked companies (GLCs) (big business) and Temasek Holdings implemented a strategic economic engagement policy with India. Given the difficult business environment in India in implementing regionalization strategy, Singapore GLCs focused their attention on specific states and sectors where conditions were more favorable toward foreign investments and collaboration. To foster its own MNCs, the Singapore government had used the flagship investment strategy to encourage its GLCs and small and medium enterprises (SMEs) to venture overseas and create an external economic wing for Singapore. Using its strengths in infrastructure development, Singapore used the Bangalore IT Park (ITPB) as its flagship investment project. Using a consortium approach because of the size of the project, the ITPB was built and provided India with a platform to market its human capital potential to foreign IT companies.

There is immense potential for Singapore to invest in the upgrading and expansion of India's infrastructure but economies of scale will be one of the key challenges in most projects. In March 2006, the trade ministers of both India and Singapore reviewed the Comprehensive Economic Cooperation Agreement (CECA) amidst reports that the agreement could have delivered better results.[1] India's Trade and Commerce Minister, Kamal Nath, expressed disappointment over investment flows from Singapore despite the city state being the third largest foreign investor, investing U.S. $ 321 million in India in 2005. The Singapore Deputy Secretary at the Ministry for Trade and Industry, Loh Wai Keong, said, "We have made some good progress in a few fields but there has not been enough movement in some professions."[2] However, Indian officials conceded that Singapore has done a better job than India in conveying the benefits of the CECA to its business community. Senior Minister Goh Chok Tong added that, given Singapore's experience with other trade agreements, it was premature to expect a sudden jump in economic activity from the CECA. Mr. Goh said, "Give it two years," but, "we must see some results in the things that we want to do under CECA beyond what would naturally have happened."[3] The positive results are happening because Singapore became India's third largest FDI partner with investments of U.S. $ 600 million in 2006.[4]

The uncertain business environment in India remains a key concern for Singapore companies and investors. The stability of the business environment is being undermined by the influence of policymakers in the bureaucracy, ruling political parties, trade unions, and vested interest groups that support economic nationalism through protectionist measures. How could Singapore Incorporated raise the investment flows to India especially in infrastructure projects? Singapore GLCs could either be on their own or form consortiums to undertake projects but SMEs do not have the capacity, knowledge, or networks to undertake projects in India on their own, especially if they are exploring the Indian market for the first time. In general, SMEs have a perceptible bias against investing in India because of the fear of potential problems that could emerge. The Singapore government and authorities have tried to portray a more positive image of business opportunities in India for SMEs. For example, the building of IT parks in India has showcased to Singapore companies including SMEs that they could be successful in India.

The investment and development of IT and hi-tech parks will continue to remain the main investment projects for Singapore in India. However, the telecommunications, seaports, and civil aviation sectors also hold promise for Singapore investors. Some Singapore companies could tap into the current boom in India such as the attraction of mobile hand phones and the shopping craze. However, for the telecommunications sector, the issue of monopoly and ownership of foreign firms has been highlighted because of the GLCs. Singapore needs to take note of this and Temasek could dilute their stakes in GLCs to comply with India's anti-monopoly legislation. Singapore Minister for Transport and Second Minister for Foreign Affairs, Raymond Lim, said that, "While business development is encouraging, we believe much more can be done in partnership with India."[5] As this monograph has argued, infrastructure development has great economic convergence for both Singapore and Indian. Minister Lim had also highlighted the infrastructure sector as an area where the Singapore economy can make more contributions. Business opportunities in infrastructure development in India is likely to increase because the government had pledged to double its infrastructure budget to U.S. $ 320 billion by 2012.[6] Nonetheless, problems have also emerged for Singapore companies in the ports sector. As discussed, the Port of Singapore Authority (PSA) sought to discuss the reduction of tariff charges for port services with Indian authorities but without success. While the lowering of tariff rates at ports could encourage more usage of port facilities, it will become economically unviable for foreign companies such as the PSA. The cost of operating port facilities such as cranes for moving the twenty-foot equivalent units (TEUs) could not be covered by lowering port tariffs.

The "bottom–up" approach to investing and undertaking business ventures in India will also be disconcerting for most Singapore companies because of the level of uncertainty in the business environment. For example, the trade unions in India continue to remain very influential as shown in the airport workers' strike against the privatization of Indian airports. In this regard, Singapore institutions and trade federations such as the IE Singapore, IDA, SICCI, and others could also work in conjunction with their Indian counterparts such as FICCI, CII and the ASSOCHAM to facilitate trade linkages between Singapore SMEs and Indian companies. Would the CECA influence Singapore's investments in India, especially in infrastructure? The CECA is the Indian government's first free trade agreement (FTA) plus trade deal with any country and for Singapore it is the first with a South Asian and developing country. The CECA combined the essence of liberalized commercial transactions in goods and services together with two-way investment flow into untapped areas.[7]

The CECA has a bilateral investment promotion component, double taxation avoidance agreement, and an air services agreement.[8] Under the CECA agreement the only chapter that would refer to infrastructure would be "Air Services" in chapter 8 in terms of facilitating air connectivity and tourism between the two countries. Trade between India and Singapore has reached S $ 18.34 billion by the end of 2006 and the target was to increase this to U.S. $ 50 billion by 2010.[9] The target for Singapore's cumulative investments in India of approximately U.S. $ 1 3 billion at the end of 2006 would be to increase to U.S. $ 5 billion by 2010 and U.S. $ 10 billion by 2015.[10] The key areas that Singapore's investments could be aimed at in India would be airports, hi-tech parks, telecommunications, seaports, and logistics services for the building of urban infrastructure. Besides this the potential for cooperative investments could be in the area of biotechnology, healthcare, food processing, animation, entertainment, and tourism.[11] At a post-CECA seminar held in Singapore, the expectations from the Indian sides was voiced by the Additional Secretary, Ministry of Commerce and Industry, Mr. Gopal Pillai, "From the Government of India's perspective, investments from Singapore especially infrastructure and services sector are keenly awaited. Two other areas of high interest are the tourism and transport sectors where both countries could benefit from significant expansion of these sectors."[12]

Special economic zones

One another area that Singapore investors would be interested to develop in India would be the special economic zones (SEZs). According to Additional Secretary, Ministry of Commerce and Industry of India, Mr. Gopal Pillai, "The new legislation for the special economic zone (SEZ) has recently been enacted. It is hoped that investors from Singapore would come forward to develop new SEZs in India with world class infrastructure."[13] There are SEZs being developed in several parts of India and Singapore's involvement could be in the form of its investment at the Batam Industrial Park of Indonesia or the Singapore–Vietnam Industrial Park.[14] Singapore could leverage on the consortium approach which it used to develop its IT parks in India. For the SEZ, a Singapore consortium could develop an area of about 1000 hectares. At least 15 of the 148 SEZs that have gained approval involve an area over

1010 hectares. SEZ are attractive to foreign investors because they are free from regulatory framework of the Indian system. For example, individual states have the discretion to waive strict labor laws which prevented companies from hiring and firing at will.[15]

Are there challenges in developing the SEZs in India? One of the main challenges in developing the SEZs is the bureaucratic hurdles that had to be cleared. This is because two of the ministries involved in developing the SEZs, namely, the finance and the commerce and trade ministries do not agree on the privileges extended to the companies investing in the SEZs. While the commerce ministry is delighted over the foreign investments being attracted, the finance ministry is concerned over the S $ 25 billion that the government may stand to lose in direct taxes until 2012 because the SEZ developers are given ten-year tax holidays on profits.[16] Moreover, tenants do not need to pay tax for the next five years and ten years thereafter they need to pay tax on only half of their export earnings. According to Singapore's Senior Minister of Foreign Affairs, Dr. Balaji Sadasivan, Singapore may build as many as three SEZs in India.[17] However, Dr. Balaji said that "Every SEZ that we build will have to ensure that everyone is happy with it, the central government, the states and local people too must agree."[18] Dr. Balaji also commented that a Singapore-type industrial park would also find favor with third investors such as Japanese companies.[19] In this regard, Singapore is in the process of wooing other foreign companies such as those from Japan to invest in India.

Another concern that has come to light in the development of SEZs is that fertile agricultural land maybe be acquired to establish the SEZs. India needs to develop its manufacturing sector to employ the millions that migrate from the farms to work in the services sector. While the Congress Party has backed the creation of SEZs, its president, Mrs Sonia Gandhi, urged caution so that prime agricultural land not be acquired for industrial purposes.[20] Rural hostility and resentment appeared to be developing against the establishment of giant industrial zones on agricultural land. For example, Posco, a large South Korean steel company, was permitted to establish a 1600 hectare SEZ in the mineral-rich state of Orissa.[21] The commerce ministry stated that in the latest round of SEZ approvals, the zones declared for SEZ were either waste land, barren land or single crop land.[22] In mid-2006, the Indian government had approved 150 SEZs, covering a total area of 26,800 hectares.

India is reviewing its policy on the special economic zones as opposition to them grows. According to commerce secretary, G.K. Pillai, a panel of senior ministers will now examine new plans for the SEZs. Commerce Secretary Pillai added that "It is most likely that those cases would be then reconsidered, perhaps only after the new rehabilitation policy is finalized by the central government."[23] He added that, "We propose to make it mandatory on developers to compete all formalities for notification of their zones within six months of getting final approval, failing which their clearances will be cancelled."[24] Another bureaucratic problem looming is the disagreement between the commerce and finance ministries over the implementation process of the

SEZs. The commerce ministry expected the SEZs to attract about U.S. $20 billion in investment by 2009 and create 890,000 jobs. In order to achieve this, the commerce ministry is prepared to change the fiscal laws and provide tax concessions for co-developers, contractors and sub-contractors.[25] However, the Finance Minister, Palaniappan Chidambaram, believes that tax exemptions could lead to huge revenue losses for the government. He said, "I am not against the SEZs, but I am against the proliferation of SEZs."[26]

With controversy surrounding the establishment of the SEZs, would Singapore companies and investors decide to divert their attention away from India or would India be too important to ignore? Singapore's Foreign Minister, George Yeo, said that, "There is bound to be some trouble about these zones because they are new and civil servants have different instincts."[27] He added that, "Every park you create will have to involve a difficult process of lobbying, bargaining and making compromises but each subsequent one will be easier than the earlier one. After a while, provided they work, it becomes an example for the next one."[28] Singapore is committed to building three SEZs and they are likely to be in the states of Tamil Nadu and Maharashtra. The SEZs has the potential to be as iconic as the ITPB which is Singapore's flagship investment in India.[29] It might be useful to recall that the ITPB also encountered difficulties during its construction but produced a positive outcome and model which is readily replicated in other parts of India. Despite the difficulties, Singapore investors and companies are likely to push ahead with the SEZ projects.

Is the CECA significant?

For Singapore, according to Minister for Trade and Industry, Lim Hng Kiang, the CECA levels the playing field for Singapore investors. Singapore companies will be able to enjoy tax exemption on capital gains from their investments and India has agreed to bind its new liberalized rules for real estate. This would lend greater certainty and boost confidence among Singapore investors because they will be able to take disputes with the Indian government to the arbitration tribunal.[30] India's real estate is poised to grow at a pace of 300 percent per year and Singapore GLCs, such as Ascendas Land have done well in India.[31] In the area of biotechnology, in the state of Karnataka, the state government has appointed Singapore GLC RSP Architects to plan, design, and execute projects to build a biotech park.[32] RSP was involved in the Singapore consortium that designed and built the ITPB. The biotech park consisted of 50 acres, 35 acres of which have been earmarked for allotment to buyers. The government of Karnataka will develop five acres to establish common facilities and 15 acres have been set aside for infrastructure development such as roads and public utilities.

Overall, from Singapore's perspective, its state-led development where the government initiates new ventures may not be sustaining if Singapore companies themselves do not venture overseas to explore emerging markets such as India. Some economists argued that Singapore has to foster "guerilla capitalists."[33] These companies are able to respond quickly to external market signals and clients' needs. The challenge for Singapore will be to foster the SMEs in Singapore to venture into India. Singapore SMEs should not leverage on low cost when venturing into India because Indian wages are relatively lower than those in Singapore. Singapore SMEs should instead leverage on their branding and niche markets.[34] The Singapore brand is becoming more known in India as efficient, reliable, and transparent. Several small firms in architecture and design, building and construction have tasted success in India. The chief executive of SICCI, Predeep K. Menon, commented that there has been a marked shift in attitudes toward India among Singapore SMEs.[35]

Another change of mindset about undertaking business in India is happening among Chinese Singapore businesses. SMEs owned by Chinese Singaporeans are exploring a range of business opportunities in India from vegetables and organic food to printing and packaging. The president of the Singapore Chinese Chambers of Commerce and Industry, Chua Thian Poh, said that, "Within our chamber, most members are quite forward-looking, they recognize India's big market and its young population. They know we cannot ignore it."[36] In some cases, the main clients of Singapore firms have urged them to look at India. For example, Singapore company Tekwah Industrial Corp provides printing, packaging, and supply chain solutions for U.S. companies in Southeast Asia such as Motorola. Many of Tekwah's clients have business in India and would like Tekwah to continue servicing them rather than outsource jobs to unfamiliar Indian companies. Tekwah's executive director, Mai Ah Ngo, said that they have found a joint venture partner in Mumbai, India.[37]

What advantages would accrue to India and Singapore after the signing of the CECA? Indian negotiators would admit that most of the initial advantages of the CECA would accrue to Singapore. The gains to India would be more intangible in terms of closer integration with East Asia and the stimulation of business activity. According to Mr. Deepak Chatterjee, who led the Indian CECA negotiating team before his retirement, the benefits of the CECA to India, "Is neither easily quantifiable nor immediate."[38] Singapore is a major transportation and logistics hub and India could use its international network of air, sea, and telecommunications linkages.[39] Singapore is also prepared to establish a U.S. $ 1 billion fund to invest in Indian businesses and infrastructure after the CECA comes into force. To increase people-to-people contact, Singapore would launch the Asian Business Fellowship for India. This would sponsor Singaporeans to work as interns in Indian companies or Singapore companies that are based in India. It would offer full-time postgraduate programs in prestigious academic institutions such as the Indian Institutes of Management (IIM). Singapore has the necessary infrastructure to expand India's brand of education overseas.

The CECA was first reviewed in April 2006, several months before the time fixed for this exercise by Singapore's Minister for Trade and Industry, Lim Hng Kiang, and India's Union Commerce Minister, Kamal Nath. Minister Lim commented that, "We must put some more mass in this agreement" and they had now "set timelines and directions" for exploring the feasibility to expand the CECA.[40] Minister Nath had mentioned that more tariff lines and amendments of existing provisions to the CECA were up for discussion. Both ministers had also commented on the need to "iron out glitches" in several sectors.

The second review of the CECA was in March 2007 to examine areas that could be improved in terms of bilateral trade and investment flows. India and Singapore authorities were encouraged by the progress made on the mutual recognition agreement (MRA) on architectural services.[41] Professional MRAs in other sectors such as accountancy and health were to be concluded. India has agree to improve the coverage of goods and the general Rules of Origin under the CECA to be in compliance with that agreed under the ASEAN India Free Trade Agreement (AIFTA) in Goods when AIFTA comes into effect.[42]

The Deputy Secretary for Singapore's Ministry for Trade and Industry, Loh Wai Keong, said of the CECA, "Both countries are committed to reviewing and updating CECA so that the edge it provides can be further sharpened and it remains relevant to the business communities from both countries."[43] Special Secretary Gopal Pillai of the Indian Ministry of Commerce and Industry remarked that one area in which CECA could improve bilateral trade would be to reduce transaction costs and simplify procedures for trade. Mr. Pillai said that, "A number of studies have been done on how to simplify the procedure so that a lot of the unnecessary work can be avoided. It is being done under the Special Economic Zones Act and the government's effort is to move this initiative across the entire business sector."[44] Mr. Pillai added that Indian businessmen should make an effort to remove the apprehensions of foreign businessmen in order to attract investments from overseas. This is because India needed investments in infrastructure and would gain from the experiences of companies in Singapore.[45]

In terms of CECA chapter 10 (education and collaboration in science and technology) and chapter 9 (movement of natural persons), there have been problems of implementation. For example, Singapore had proposed to Indian Institute of Management–Bangalore (IIM-B) to establish an overseas center in Singapore. The IIM was interested but its proposal was not approved by the ministry of human resources development (HRD), which was not keen on the idea for fear of diluting the IIM brand. Senior Minister Goh had mentioned this to Congress President Mrs Sonia Gandhi on his trip to India in January 2006. Mr. Goh said that he was surprised at the HRD ministry's decision because going abroad would only have enhanced the IIM-B's reputation.[46] Mrs Gandhi was surprised as well by the HRD ministry's stand and this reaction was quickly conveyed to the HRD Minister, Arjun Singh. Minister Arjun Singh then issued a statement to say that the ban on IIM's going abroad was not for all time and could be reconsidered.

On the part of the IIM-B, Mukesh Ambani (Reliance) in his capacity as the new chairman of the board of IIM-B suggested that the institute rework its proposal to the HRD ministry to indicate the benefits that would accrue to IIM-B and India if it sets up a branch in Singapore.[47] Mukesh Ambani also suggested to IIM-B to undertake the necessary change to its Memorandum of Assistance to enable it to establish a campus overseas. The HRD ministry has approved IIM-B's proposal to establish a campus in Singapore.[48] The IIM-B is an impressive business school and has been listed on *The Wall Street Journal*'s list of the top 100 business schools globally in 2003. The IIM-B has tied up with the Indian International School managed by the Bharatiya Vidya Bhavan in Singapore (Bhavan's Indian International School). Bhavan's school which provides a one-stop kindergarten to Standard 12 education has provided IIM-B with a building in its complex. Apart from the invitation by the Singapore government and provisions under the CECA, why should the IIM-B locate in Singapore? The IIM-B Director, Prakash G. Apte, explained that the tie-up with Bhavan's school is tactical in nature. This is because Singapore has a large Indian diaspora community and a large number of Indian students who complete schooling and college in Singapore had been asking for admission to IIM-B. According to a survey conducted by IIM-B, a large number of Indian professionals working in Singapore are eager to join the variety of courses IIM-B will offer. IIM-B's branch in Singapore would basically be its Research and Management Education Center and will be offering courses after November 2006.[49] The IIM-B will be competing with other overseas business school such as INSEAD and the Graduate Business School of Chicago in Singapore but they believe that they are able to hold their own because of their reputation and the competitive tuition fees that they will be charging. The IIM-B also plans to target its executive education programs at the Singapore campus for managers not only from Singapore but also Malaysia, Thailand, Japan, and Hong Kong. Apart from IIM-B, another prestigious Indian school, IIT-Bombay, has signed a Memorandum of Understanding (MOU) with the National University of Singapore. This paves the way for IIT-Bombay to offer Masters in Technology courses to students in Singapore. Furthermore, under the MOU, students will be permitted to be attached to major Indian companies and Indian students will be allowed to work for Singapore-based MNCs.

The CECA could also be advantageous to Indian companies in a number of ways: raising capital, connectivity, capability, and comfort or the four C's according to Singapore's Minister of State for Trade & Industry and Foreign Affairs.[50] In terms of connectivity, telecommunications provided a good example how India and Singapore could work together. Tata–VSNL has chosen to locate in Singapore to service its network in Southeast Asia. In terms of capital, why the buzz over Singapore investments in India? Since 9/11, it is believed that a large chunk of West Asian oil money has moved from the United States to Singapore in search of investment opportunities in the fast-growing Asian economies.[51] With the CECA, India hopes that some of this money will move to India and Singapore could be a more successful channel of investment than Mauritius because it is a financial hub hosting 7000 multinational companies and 600 financial institutions. Indian companies are now able to raise cheaper funds by issuing Singapore Depository Receipts (SDRs). In turn, Singapore companies will also be able to issue Indian SDRs in Indian bourses to raise funds.

Singapore Minister for Higher Education and second Minister for Finance, Tharman Shanmugaratnam, views another role that Singapore could play for the advancement of Indian companies. Commercial disputes are likely to rise along with globalization and the increase in global business partnerships. Given there are 2600 Indian companies in Singapore with several hundred in the IT sector alone, Singapore could become a neutral venue for dispute resolution.[52] According to the assistant chief executive, Singapore Academy of Law (SAL), Ms Teh Hwee Hwee, some Indian companies have started taking legal assistance for neutral arbitration of disputes. Moreover, apart from corporate houses, legal houses and lawyers' syndicates could establish tie ups with their Singapore counterparts through SAL.[53] Concurring with this assessment, the executive director and CEO of SICCI, Predeep K. Menon, said that, "There are a good number of Indian companies who have preferred Singapore Law for arbitrations in disputes arising out of their tie ups with global firms."[54]

With regards to capabilities, Singapore's infrastructure in R&D, manufacturing, and logistics network could provide an advantage for Indian companies to penetrate into the East Asian and Southeast Asian markets. Indian manufacturers are growing in competitiveness and looking to expand abroad. While Singapore may not be able to house an automotive assembly plant and its wages are relatively more expensive, it may have other advantages over its regional rivals. For example, Singapore could be an ideal place to set up an R&D arm in pharmaceuticals because of its strong patent laws and supporting infrastructure. An Indian pharmaceutical company called Bilcare has already committed to constructing an S $ 25 million plant in Singapore. Bilcare will also use Singapore as its Asia Pacific base for the manufacture of pharmaceutical packaging and establish an R&D center to develop new packaging products.

Singapore also offers comfort and not only a base for Indian professionals and companies to explore business opportunities but also a conducive cultural and social environment. Singapore's "little India" in Serangoon Road maybe a tourist spot for some but for Indian expatriates it offers some familiarity if they are homesick. The "little India" in Singapore is the largest in Southeast and East Asia and also attracts Indian diaspora from the surrounding region. There are temples, social organizations such as SINDA and the India Club for Indian expatriates to be comfortable. In terms of education, Union Human Resource Minister for India, Arjun Singh, believed India posses a lot of knowledge and that the "sky is the limit" for education-driven cooperation between India and Singapore.[55]

As mentioned, there is the Bhavan International School and the Delhi Public School in Singapore. With the entry of IIM-B and IIT-Bombay to provide Indian tertiary education in Singapore, the environment seems to keep on improving for Indian expatriates in Singapore in terms of educational collaboration. However, India does not wish to make "inroads" into Singapore's knowledge-related domains.[56] How about increased expectations from both India and Singapore after the signing of the CECA? Would the CECA indicate a dramatic rise of bilateral trade and investment between India and Singapore? Senior Minister Goh Chok Tong in his visit to India in January 2006 commented that it would be unrealistic for India to expect a sudden spurt in economic activity and to give CECA two years to iron out the problems of implementation.[57]

SM Goh also said that as Singapore's resources are being committed to China and with the Middle East coming up on Singapore's economic scope, a sudden flourish of interests between India and Singapore may be too much to expect. The CECA is also a step toward an India–ASEAN FTA as mentioned in the preamble of the CECA agreement. Singapore's Prime Minister, Lee Hsien Loong, said that the CECA was a significant step toward an India–ASEAN FTA and deeper engagement between India and Southeast Asia.[58] A number of problems have emerged with the CECA and both governments have taken forward the schedule to review the agreement in August 2006, four months ahead of the review schedule.[59] The review reflects the vital importance of bilateral trade which is growing at a brisk pace. India's Commerce Minister, Mr. Kamal Nath, commented that, "There is a need to constantly re-align and balance the CECA to take India–Singapore ties to the next level."[60]

In post-CECA developments, some changes and trends are becoming more noticeable. In a visit to India in April 2007, Singapore's Second Finance Minister observed that the following cities in India are receiving the largest share of investments from Singapore: Chennai, Hyderabad, Bangalore in the south, and the bigger cities of Delhi and Mumbai.[61] Another encouraging trend was the change of mindsets among Singaporeans about working in India. Minister Tharman said, "Just five years ago, things were different. Now, many young Singaporeans are coming over to India for internships and appear to enjoy it immensely."[62] Singapore companies have grown more familiar with the Indian market and India has a better appreciation of Singapore's strengths. New areas of bilateral economic ties are emerging. For example, Hyflux of Singapore has managed to secure land in Bangalore to supply clean industrial water to industries in the city.[63] Karnataka state is also playing host to some Singapore firms that are involved in manufacturing activities, which disproves the myth that India is only good at the service sector and China is more suited for manufacturing activities.

When India's Defence Minister, Pranab Mukherjee, visited Singapore in June 2007, both countries also agreed to establish a Joint Ministerial Committee (JMC). The JMC will be the highest level official channel for discussion of mutual interests and will establish the broad framework and direction for the expansion of India and Singapore relations. Minister Mukherjee also commented that Singapore was at the heart of its Look East Policy.[64] The investments flow both ways because in 2006, there were 2600 Indian firms in Singapor,e more than double the figure of 1100 in 2001.[65] A think-tank aimed at deepening links between India and Singapore called the Indian business forum (IBF) was also launched by Singapore's Trade and Industry Minister, Lim Hng Kiang, and India's Minister Mukherjee. The IBF will also consist of 25 companies that would form the corporate voice of India in Singapore.[66]

With regards to investments projects in India, the venture of Singapore Inc into India has complemented well the emergence of India Inc that seeks to invest and collaborate with foreign companies. The monograph has shown the potential of trade relations between India and Singapore and their complementary strengths. There is a confluence of national interests because India needs huge amounts of foreign investments and expertise in infrastructure projects. In contrast, Singapore GLCs have the expertise and financial ability to undertake infrastructure projects in India. Ascendas, through the issue of its AREMs and Reits strategy, was also able to accumulate financial resources to invest in various parts of India. However, this is subject to the policies of regional state governments as well. Ascendas would be hesitant to invest in a state such as West Bengal that questions policies such as the SEZs because even though Ascendas could complete its IT Parks in Kolkatta, state politics will drive away Ascendas' potential tenants or buyers of its IT parks. Across the various economic sectors, respective Singapore GLCs have and continue to face challenges operating in different Indian states but overtime they may become more experienced in dealing with the Indian market and realize the potential of investing in India.

Notes

1 Singapore and Asian giants

1 Atul Kohli, "Introduction," in Atul Kohli, Chung-in Moon, and George Sorensen (eds), *States, Markets, and Just Growth: Development in the Twenty-first Century*, United Nations University Press, Tokyo, 2003, p. 2.
2 Ibid., p. 5.
3 J. Johnson, "A tether that keeps potential in check," Indian Infrastructure Report, *Financial Times*, 8 May 2007.
4 Ibid.
5 S. Baru, *Strategic Consequences of India's Economic Performance*, Academic Foundation, Delhi, 2006, pp. 220–9
6 Ibid., pp. 228–57.
7 Speech by Singapore Prime Minister Lee Hsien Loong, "Asean: Still attractive at 40," *The Straits Times*, 8 August 2007 and Ceong Suk-Wai, "Draft charter for Asean will be ready next month," *The Straits Times*, 7 August 2007.
8 M.S. Ahluwalia, "Financing Private Infrastructure: Lessons from India," in Harinder Kohli, Ashoka Mody and M. Walton (eds), *Choices for Efficient Private Provision of Infrastructure in East Asia*, World Bank, Washington, 1997.
9 International: "India—Singapore Economic Relations," Federation of Indian Chambers of Commerce and Industry (FICCI), India.
10 S.N. Goh, "China gobbles up $ 87 billion in investments," *The Straits Times*, 28 December 2002.
11 S.M. Shafaeddin, "Is China's accession to WTO threatening exports of developing countries?" *China Economic Review*, 2003.
12 Jehangir S. Pocha, "Pacts signal new era for India, China," *Boston Globe*, 13 April 2005.
13 S. Prasad, "Feasting On The Chinese Fare," *Business Today*, India, 25 November 2001.
14 V. Sanghvi, "China policy: Vajpayee falls back on Nehru's Panchsheel," *Hindustan Times*, 23 June 2003.
15 I. Basu, "Move over Japan, China beckons Indians," *Asia Times*, 29 October 2003.
16 "China pledges $ 500 mn for infrastructure in India," *China Daily*, 23 June 2003.
17 Address by Shri Kalam Nath, Minister for Commerce and Industry of India, India–China Business Cooperation Conference, FICCI, New Delhi, India, 11 April 2005.
18 Speech by Prime Minister of Singapore, Lee Hsien Loong, "Asean: Still attractive at 40," *The Straits Times*, 8 August 2007.
19 Ibid.
20 K. Kesavapany and D. Hew, "Revisiting blueprint for Asean Community," *The Straits Times*, 12 January 2007.

21 Cheong Suk-Wai, “Draft charter for Asean will be ready for next month,” *The Straits Times*, 7 August 2007.
22 Ibid.
23 M. Kindo, “Japan and an Asian Economic Community,” RIS-DP # 106, January 2006, p. 10.
24 Ibid., p. 11.
25 N. Kumar, “Towards an East Asian economic unit,” *Financial Express*, 20 June 2006.
26 Ibid.
27 Speech by Mr. Goh Chok Tong, Senior Minister of Singapore, At Official Launch of the Institute of South Asian Studies (ISAS), 27 January 2005, Singapore, Orchard Hotel.
28 “Relevance of an Asian Economic Community,” *RIS Policy Briefs* # 1, No. 1, May 2003.
29 L. Xueying, “PM Lee urges faster regional integration,” *The Straits Times*, 12 December 2005.
30 Jaya Prakash, “Trade agreements key strategy for Singapore,” *Asia Times*, 14 February 2006.
31 Ibid.
32 Alastair McIndoe, “Landmark blueprint for an Asean Economic Community,” *The Straits Times*, 25 August 2007.
33 Ibid.
34 Mr. Khaw Boon Wan, Singapore Senior Minister of State for Transport and Information, Communications and the Arts, “Singapore FTAs: Why we are so promiscuous,” 9 July 2002, SIIA Ministerial Series Tête-à-tête.
35 Ibid.
36 Takashi Inoguchi and Purnendra C. Jain, “Introduction,” in Purnendra Jain and Takashi Inoguchi (eds), *Japanese Politics*, Macmillan, Australia, 1997, p. 3.
37 M. Gupta, “Higher FDI caps for Singapore,” *Business Standard*, 28 August 2005.
38 “Singapore-India: Roadmap to the Future,” Speech by Minister for Foreign Affairs, George Yeo, at the Confederation of Indian Industry Partnership Summit on 18 January 2007.
39 Charan Singh, “Should India Use Foreign Exchange Reserves for Financing Infrastructure?” Stanford Institute for Economic Policy Research Policy Brief, Stanford University, September 2005.
40 M. Asher and S. Srivastava, “India and the Asian Economic Community,” *RIS*, May 2003.
41 Barbara Stallings, “Globalization and liberalization: The impact on developing countries,” in Atul Kohli, Chung-in Moon, and George Sorensen (eds), *States, Markets, and Just Growth: Development in the Twenty-first Century*, United Nations University Press, Tokyo, 2003, p. 29
42 Ibid.
43 A. Giridhas, “India’s mini-multinationals make waves in Western markets,” *International Herald Tribune*, 1 September 2005.
44 L. Doig, “India is worth the effort,” *Business Day* (South Africa), 3 October 2005.
45 P. Montagnon, “Red tape blackens the picture,” *Financial Times*, London, 19 November 1996.
46 “Indian report paves way for infrastructure spending boost,” *Financial Times*, London, 17 January 1997.
47 D. Gardner, “Survey: Indian Infrastructure,” *Financial Times*, London, 17 March 2000.
48 “The India Connection,” *Business Times*, Singapore, 23 July 2003.
49 B.S. Kapur, Managing Director, IRCON International Ltd, India, “Developments and Opportunities in Infrastructure—Indian Scenario.”

50 WEF Global Competitiveness Index rankings and 2005 Comparisons table, WEF Global Competitiveness Report 2006–2007.
51 M.G. Srinath, “Infrastructure reforms holding back India’s economic progress,” *Deutsche Presse Agentur*, 6 August 1997.
52 P. Montagnon, “Red tape blackens the picture,” *Financial Times*, London, 19 November 1996.
53 M.S. Ahluwalia, “Financing Private Infrastructure: Lessons from India,” in H. Kohli, A. Mody and M. Walton (eds), *Choices for Efficient Private Provision of Infrastructure in East Asia*, World Bank, 1997.
54 A. Ravishankar and M.V. Srinivasa Gowda, “Infrastructure Development: A Crisis of Commitment,” in M.V. Srinivasa Gowda and S. Subrahmanya (eds), *Infrastructure Development for Economic Growth*, Sage, Delhi, 1997, p. 23.
55 Second India-ASEAN Business Summit, Confederation of Indian Industries (CII).
56 C. Naidu, “Alignment of Political Parties and Its Implications On The Future Of India,” Public Lecture, Lee Kuan Yew Exchange Fellow, Singapore
57 Ibid.
58 Ibid.
59 S. Aiyar, “Interview with Prime Minister Atal Bihari Vajpayee,” *Channel Newsasia*, Singapore, 9 April 2002.
60 “Trade between India, Singapore to grow by 10%,” *Chennai News Service*, 20 November 2004.
61 “The promise of CECA,” *The Business Times*, Singapore, 27 April 2005.
62 “Whither Singapore Inc?” *The Economist*, 28 November 2002.
63 V. Khanna, “Services: key to tapping India’s boom,” *Business Times*, Singapore, 28 August 2000.
64 V. Khanna, “India to tap Singapore’s expertise in developing infrastructure,” *Business Times*, Singapore, 29 June 1994.
65 “Singapore to tie-up with India on infrastructure development,” Press Trust of India, 18 April 2005.
66 Temasek Review 2006, *Managing Value*, Temasek Holdings, Singapore, 2006, p. 45.
67 Joe Leahy, “India’s private sector poised to shore up infrastructure,” *Financial Times*, 27 April 2007.
68 Ibid.
69 Ibid.
70 S. Mittal, Chairman, Bharti Enterprises, “India and Singapore,” India Economic Summit 2002, World Economic Forum, 25 November 2002.
71 N. Aggarwal, “India’s infrastructure industry ripe for the picking,” *The Straits Times*, 14 January 2006.
72 “Funding India’s Infrastructure Development,” Connexions, National Council of Applied Economic Research, Vol. 2, No.1, January 2006.
73 N. Aggarwal, “India’s infrastructure industry ripe for the picking,” *The Straits Times*, 14 January 2006.
74 V.K. Raghunathan, “Indian states jockey for slice of investment pie,” *The Straits Times*, 21 January 2005.
75 Ibid.
76 D. Ghosh and P. De, “Investigating the linkage between infrastructure and regional development in India: era of planning to globalization,” *Journal of Asian Economics*, 15, 2005, p. 1032.
77 R. Velloor, “S’pore committed to building SEZs in India,” *The Straits Times*, 22 January 2007.
78 Ibid.
79 V. Khanna, “India: Asia’s surprise economy of 2003,” *Business Times*, Singapore, 5 January 2004.

80 *Economic Development in India: Achievements and Challenges*, A World Bank Country Study, 1995, pp. 75–108 and interview with EDB Regional Director South Asia, EDB, 20 May 1997.
81 E. Luce, "Modest dream is crucial for future infrastructure," *Financial Times*, London, 22 March 2005.
82 Ibid.
83 P. Reina, "Fast Growth Propels India to the Top of the World's Hot Markets," *Engineering News Record*, 28 November 2005.
84 "Imported," *The Economist*, U.S. Edition, 1 March 1997.
85 E. Luce, "Modest dream is crucial for future infrastructure," *Financial Times*, London, 22 March 2005.
86 A.R. Choudhury, "Improve Indian infrastructure—and mindsets," *Business Times*, Singapore, 24 April 2003.
87 "Democracy's drawbacks—Reform in India," *The Economist*, 29 October 2005.
88 S. Baldauf, "Sluggish start for India's leader," *Christian Science Monitor*, 23 May 2005.

2 Developmental states and big business

1 U. Haley, L. Low and M.H. Toh, "Singapore Incorporated: reinterpreting Singapore's business environments through a corporate metaphor," in Usha Haley (ed.), *Strategic Management in the Asia Pacific*, Butterworth/Heinemann, New Delhi, 2000, p. 187.
2 Chalmers Johnson, "The Developmental State: Odyssey of a Concept," in Meredith Woo-Cummings (ed.), *The Developmental State*, Cornell University Press, Ithaca and London, 1999, pp. 33–4.
3 Robert Wade, *Governing the Market*, Princeton University Press, Princeton, New Jersey, 1990, p. 27.
4 Ankie Hoogvelt, *Globalization and the Postcolonial World*, Second Edition, Palgrave, Houndmills, Basingstoke, Hampshire, 2001, p. 219.
5 S. Javed Maswood, "Developmental States in Crisis," in Mark Beeson (ed.), *Reconfiguring East Asia: Regional Institutions and Organisations After the Crisis*, Routledge Curzon, London, pp. 36–7.
6 Mark Robinson and Gordon White, "Introduction," in Mark Robinson and Gordon White (eds), *The Democratic Developmental State*, Oxford University Press, Oxford, 1998, p. 2.
7 Peter Evans, *Embedded Autonomy, States and Industrial Transformation*, Princeton University Press, Princeton, New Jersey, 1995, p. 12.
8 Steve Chan, Cal Clark and Danny Lam, "Looking beyond the Developmental State," in Steve Chan, Cal Clark and Danny Lam (eds), *Beyond the Developmental State*, Macmillan Press, Basingstoke, UK, 1998, p. 2.
9 Peter Evans, *Embedded Autonomy, States and Industrial Transformation*, Princeton University Press, Princeton, New Jersey, 1995, p. 12.
10 Ibid., p. 13.
11 Vibha Pingle, *Rethinking the Developmental State*, St. Martins Press, New York, 1999, pp. 6–9.
12 Ronald J. Herring, "Embedded Particularism: India's Failed Developmental State," in Meredith Woo-Cummings (ed.), *The Developmental State*, Cornell University Press, Ithaca and London, 1999, pp. 306–7.
13 "Embedded particularism" implies persistence of state–society relations inimical to application of universalistic rules across cases. Ronald J. Herring, "Embedded Particularism: India's Failed Developmental State," in Meredith Woo-Cummings (ed.), *The Developmental State*, Cornell University Press, Ithaca and London, 1999, p. 322.

14 Yun-han Chu, “East Asia: Development Challenges in the twenty-first century,” in Atul Kohli, “Introduction,” in Atul Kohli, Chung-in Moon, and George Sorensen (eds), *States, Markets, and Just Growth: Development in the Twenty-first century*, United Nations University Press, Tokyo, 2003, p. 133.
15 “The Future of East Asian Co-operation,” speech by Singapore Prime Minister Lee Hsien Loong at the eleventh International Conference on “The Future of Asia,” 25 May 2005, Tokyo, Japan.
16 C.M. Dent, *The Foreign Economic Policies of Singapore, South Korea and Taiwan*, Cheltenham, UK, Edward Elgar, 2002, pp. 61–8.
17 Ibid., p. 68.
18 Robert Wade, *Governing the Market*, Princeton University Press, Princeton, New Jersey, 1990, pp. 12–13.
19 Peter Dickens, *Society & Nature*, Polity Press, Cambridge, 2004, pp. 30–1.
20 “Singapore plans future in science,” *Taipei Times*, 25 August 2005.
21 Chua Mui Hoong and Aaron Low, “Sweet and sour points in immigrants debate,” *The Straits Times*, 26 August 2006.
22 David C. McClelland, “The Achievement Motive in Economic Growth,” in Mitchell A. Selgson and John T. Passe-Smith (eds), *Development and Underdevelopment, The Global Political Economy of Global Inequality*, Lynne Rienner Publishers, Boulder and London, 2003, pp. 226–7.
23 Ibid.
24 *Twenty Five Years of Below Replacement Fertility: Implications for Singapore*, Department of Statistics, 1 April 2002.
25 Peh Shing Huei, “Foreign Talent critical to S’pore: DPM,” *Sunday Times*, 6 August 2006.
26 Ibid.
27 Ibid.
28 Peh Shing Huei, “Foreign talent: See whole picture, says MM,” *The Straits Times*, 7 September 2006.
29 Ibid.
30 “Foreign talent boosted GDP by 20% in last decade: SM Lee,” *The Straits Times*, 30 October 2001.
31 “Singapore to pursue policy on foreign talent despite unemployment,” *Agence France Presse*, 28 March 2002.
32 Ibid.
33 Ibid.
34 “Foreign talent policy here to stay: SM,” *Business Times*, 22 October 2003.
35 Richard Florida, *The Flight of the Creative Class*, 2005, Harper Collins, New York, pp. 37–41.
36 Connie Levett, “Singapore—the new mecca for Asia’s pink dollar,” *The Age*, 14 August 2004.
37 Wayne Arnold, “Quietly, Singapore lifts its ban on hiring gays,” *International Herald Tribune*, 5 July 2003.
38 Senior Minister of Singapore, Goh Chok Tong, “Investment in people pays off for the country,” Jeddah Economic Forum, *The Straits Times*, 22 February 2005.
39 Ha-Joon Chang, “The Economic Theory of the Developmental State,” in Meredith Woo-Cummings (ed.), *The Developmental State*, Cornell University Press, Ithaca and London, 1991, p. 191.
40 Alice H. Amsden, “South Korea: Enterprising groups and entrepreneurial government,” in Alfred Chandler, Francon Amatori and Takashi Hikano (eds), *Big Business and the Wealth of Nations*, Cambridge University Press, Cambridge, 1997, p. 336.
41 Ibid., p. 194.

42 These institutions included the Ministry of Trade and Industry, International Enterprises Singapore, Singapore Business Federation, Singapore Indian Chambers of Commerce and Industry, and the Institute of South Asian Studies.
43 These MNCs also exercise control over their subsidiaries, strive to design and execute corporate strategies in marketing, production, finance and other functions from an international perspective that transcends national and regional boundaries. Franklin R. Root, *Entry Strategies for International Markets*, Maxwell Macmillan International, New York, 2004, pp. 252–3.
44 Youssef Cassis, *Big Business*, Oxford University Press, Oxford, 1997, pp. 3–5.
45 Akira Kubota, "Big business and politics in Japan, 1993–95," Purnendra Jain and Takashi Inoguchi (eds), *Japanese Politics Today*, Macmillan, Australia, 1997, p. 125.
46 Robert Sobel, *The Age of Giant Corporations*, Greenwood Press, Westport, 1993, p. 210.
47 Akira Kubota, "Big business and politics in Japan, 1993–95," Purnendra Jain and Takashi Inoguchi (eds), *Japanese Politics Today*, Macmillan, Australia, 1997, pp. 134–5.
48 Eun Mee Kim, *Big Business, Strong State*, State University of New York Press, U.S., 1997, pp. 216–17.
49 Peter A. Hall and David Soskice, "An introduction to Varieties of Capitalism," in Peter A. Hall and David Soskice (eds), *Varieties of Capitalism*, Oxford University Press, Oxford, 2001, pp. 6–7.
50 Ibid., p. 8.
51 Lorraine Eden, "Bringing the Firm Back In: Multinationals in International Political Economy," in Lorraine Eden and Evan H. Potter (eds), *Multinationals in the Global Political Economy*, UK, 1993, pp. 26–7.
52 Ibid., pp. 42–4.
53 John H. Dunning, "Governments and Multinational Enterprises: From Confrontation to Co-operation," in Lorraine Eden and Evan H. Potter (eds), *Multinationals in the Global Political Economy*, UK, 1993, pp. 68–9.
54 Sanjaya Lall, "Multinational Enterprises and Developing Countries: Some Issues for Research in the 1990s," in Lorraine Eden and Evan H. Potter (eds), *Multinationals in the Global Political Economy*, Macmillan, London, 1993, pp. 122–3.
55 Barbara Stallings "Globalization and liberalization: The impact on developing countries," in Atul Kohli, Chung-in Moon and George Sorensen (eds), *States, Markets and Just Growth: Development in the Twenty-first Century*, United Nations University Press, Tokyo, 2003, p. 12.
56 Susan Strange, "Territory, State, Authority and Economy: a new realist ontology of global political economy," in Robert W. Cox (ed.), *The New Realism. Perspectives on Multilateralism and World Order*, United Nations University Press, New York, 1997, p. 9.
57 Ibid., p. 13.
58 Prime Minister Goh Chok Tong's National day rally speech, Singapore, 19 August 2001.
59 Speech by Mr. Lee Hsien Loong, Chairman Monetary Authority of Singapore and Deputy Prime Minister, Singapore, 26 October 1999.
60 Robert Wade, *Governing the Market*, Princeton University Press, Princeton, New Jersey, 1990, p. 12.
61 Ibid., p. 297.
62 T.D. Ngiam, *A Mandarin and the Making of Public Policy*, NUS Press, Singapore, 2006, pp. 162–3.
63 Ibid.
64 John Burton, "Temasek relishes the role of active investor," *Financial Times*, 16 May 2007, p. 21.

65 "Temasek to invest $ 100 million in small Asian companies," *Business Times*, 8 March 2004.
66 "Temasek Holdings and Standard Chartered Private Equity Launch US D100 Million Merlion India Fund," Press Release, *Temasek Holdings*, 26 August 2003.
67 Narendra Aggarwal, "Temasek and Sabre Capital team up for $8.5b India fund," *The Straits Times*, 5 July 2005.
68 Alice H. Amsden, "South Korea: Enterprising groups and entrepreneurial government," in Alfred Chandler, Francon Amatori and Takashi Hikano (eds), *Big Business and the Wealth of Nations*, Cambridge University Press, Cambridge, 1997, p. 348.

3 Incorporating economic development

1 T. Saywell, "Singapore's New India Play," *Far Eastern Economic Review*, 1 February 2001.
2 L. Lee, "Public sector sprouts a wing," *The Straits Times*, 27 April 2007.
3 Alice H. Amsden, "South Korea: Enterprising groups and entrepreneurial government," in Alfred Chandler, Francon Amatori and Takashi Hikano (eds), *Big Business and the Wealth of Nations*, Cambridge University Press, Cambridge, 1997, p. 365.
4 L. Lee, "Public sector sprouts a wing," *The Straits Times*, 27 April 2007.
5 L. Lee, "19 civil service teams' task: Ideas to spark S'pore growth," *The Straits Times*, 20 April 2007.
6 L. Lee, "Public sector sprouts a wing," *The Straits Times*, 27 April 2007.
7 PM Goh Chok Tong, "Staying competitive through regionalisation," *Speeches*, May–June 1993, Vol. 17, No. 3.
8 Ibid., pp. 20–1 and "Share benefits with hosts: PM," *The Straits Times*, 22 May 1993.
9 Ibid.
10 S. Dhanabalan, Minister for Trade and Industry, "Go Regional Push Must Bring Spin-Offs for Singapore," *The Straits Times*, 23 May 1993, p. 1.
11 Interview with Regional Director South Asia, Economic Development Board, Singapore, 20 May 1997 and "Share benefits with hosts: PM," *The Straits Times*, 22 May 1993, p. 1.
12 PM Goh, "Staying competitive through regionalisation," *Speeches*, May–June 1993, Vol. 17, No. 3, pp. 20–1.
13 "Singapore businessmen eye India," *The Straits Times*, 22 September 1993.
14 A. Ahuja (ed.), *Manmohan Singh CEO, India Inc*, Pentagon Press, Delhi, 2004, p. 22.
15 Country fact sheet India, World Investment Report 2006, UNCTAD, Division on Investment, Technology and Enterprise Development.
16 *The New Global Challengers*, The Boston Consulting Group, May 2006.
17 Ibid.
18 Anthony P. D'Costa, "The International Mobility of Technical Talent," Research Paper No. 2006/143, United Nations University, November 2006, pp. 2–5.
19 A. Giridhas, "India's mini-multinationals make waves in Western markets," *International Herald Tribune*, 1 September 2005.
20 M. Blackman and C. Butler, *Big in Asia*, Palgrave Macmillan, New York, 2004, pp. 76–8.
21 R. Tata, "Changing India's corporate culture," *Outlook*, No. 1, 2000.
22 Anthony P. D'Costa, "Flexible practices for mass production goals: economic governance in the Indian automobile industry," *Industrial and Corporate Change*, 13, 2, 2004, p. 335.
23 M. Blackman and C. Butler, *Big in Asia*, Palgrave Macmillan, New York, 2004, p. 81.

24 C. Laurie, "India reaps benefits of economic boom," *CNN News*, 1 November 2006.
25 A. Giridhas, "India's mini-multinationals make waves in Western markets," *International Herald Tribune*, 1 September 2005.
26 "Ambitious Indian firms set sights abroad," *Reuters*, 31 October 2006.
27 "Ambitious Indian companies set sights far and wide," *Gulf Times*, 5 November 2006.
28 "India's Tata Group is on a buying spree," *International Herald Tribune*, 6 October 2006.
29 "Corporate India: going global," *New Economist*, 4 October 2006.
30 A. Giridhas, "India's mini-multinationals make waves in Western markets," *International Herald Tribune*, 1 September 2005.
31 R. Bist, "India's great global takeover game," *Asia Times*, 22 June 2004.
32 Ibid.
33 "RBI to spur India Inc's foreign takeover drive," *Economic Times*, 20 January 2007.
34 R. Bist, "India's great global takeover game," *Asia Times*, 22 June 2004.
35 "Ambitious Indian firms set sights abroad," *Reuters*, 31 October 2006.
36 "Ambitious Indian companies sets sights far and wide," *Gulf Times*, 5 November 2006.
37 Interview with Indian IT companies in June and August 2004.
38 C. Chandler, "India's Bumpy Ride," *Fortune Magazine*, 31 October 2005.
39 "Global Green acquires Belgium co," *Business Line*, 30 August 2006.
40 Ibid.
41 S. Robinson, "India takes on the World," *Time*, 20 November 2006.
42 C. Laurie, "India reaps benefits of economic boom," *CNN News*, 1 November 2006.
43 Ibid.
44 Raghuvir Srinivasan, "Corporate India goes shopping—and lands smart deals on foreign shores," *Business Line*, 14 January 2007.
45 "Ambitious Indian firms set sights abroad," *Indian Express*, 23 January 2007.
46 S. Robinson, "India takes on the World," *Time*, 20 November 2006.
47 "Ambitious Indian firms set sights abroad," *Reuters*, 31 October 2006.
48 T.C.A. Ramanujam, "India Inc must foray abroad with caution," *Business Line*, 24 November 2006.
49 "Cultural issue hinder global M&A by Indian cos: Expert," *The Hindu*, 5 February 2006.
50 Ibid.
51 A. Giridhas, "India's mini-multinationals make waves in Western markets," *International Herald Tribune*, 1 September 2005.
52 T.C.A. Ramanujam, "India Inc must foray abroad with caution," *Business Line*, 24 November 2006.
53 K. Basu, "New plans please for India Incorporated," *BBC News*, 14 October 2004.
54 S. Srivastava, "More steel for emerging India," *Asia Times*, 25 October 2006.
55 R. Tata, Chairman, Tata Sons, "Changing India's corporate culture," *Outlook*, No. 1, 2000.
56 Ibid.
57 "Can Indian Brands Make Brand India Global," *Financial Express*, 20 August 2005.
58 S. Bhatnagar, "Made in India phones set to tap global markets," *Reuters*, 27 May 2006.
59 "Manufacturing sector set to reach 25% of GDP, Ashwani Kumar Tells Audience," Ministry of Commerce and Industry, India, 19 June 2006.
60 Our Bureau, "Indian auto exports go into overdrive," *Business Line*, 14 December 2003.

61 M. Kripalani, “The Factories Are Humming in India,” *BusinessWeek*, 18 October 2004.
62 S. Srivastava, “Indian cars: The road less traveled,” *Asia Times*, 12 December 2003.
63 R. Chandran, “Indian auto makers look abroad for growth, branding,” *Reuters*, 23 May 2006.
64 Ibid.
65 J. Johnson, “India Gains Credibility as an Emergent Export Titan,” *The Financial Times*, 1 December 2005.

4 Business challenges

1 Interview with Trade Officer, Trade and Development Board, Singapore, 30 June 1997.
2 Editorials, “Work with other nations to tap business openings,” *The Straits Times*, 22 May 1993.
3 Prime Minister Goh Chok Tong, “Singapore Must Plug Into Thriving Regional Economies and Grow With Them,” *The Straits Times*, 22 May 1993.
4 F.K. Han, “India hopes co-operation with S’pore will help to boost its ties with region,” *The Straits Times*, 26 January 1994.
5 B. O’Reilly, “Your New Global Work Force,” *Fortune*, 14 December 1992.
6 Basic industry in this case means heavy industry such as the steel industry, mineral extraction, power generation and others.
7 N. Aggarwal, “Right go-between can ease the way,” *The Straits Times*, 17 February 2004.
8 W.K. Kwan, “Seek Business Openings Throughout Region: PM Urges S’pore Investors,” *The Straits Times*, 10 May 1993.
9 Ibid., p.33.
10 G. Cua, “Goh urges S’pore companies to spread regional investments,” *Business Times* 22–23 May 1993.
11 J. Sikes, “Singapore: Making The Indian Connection,” *Asian Business*, May 1993.
12 Z. Abdoolcarim, “India’s Power Unleashed,” *Asian Business*, February 1994.
13 Prime Minister Goh Chok Tong, “Singapore Must Plug Into Thriving Economies And Grow With Them,” *The Straits Times*, 22 May 1993.
14 “S’pore needs to tap region, go offshore and stay competitive,” *The Straits Times*, 29 October 1992.
15 “S’pore firms should focus on region: BG Lee,” *Business Times*, 29 October 1992, p. 1.
16 I. Basu, “Singapore’s $ 680 million visiting card in India,” *Asia Times*, 4 September 2004.
17 Ibid.
18 Ibid.
19 Ibid.
20 Ibid.
21 “S’pore needs to tap region, go offshore and stay competitive,” *The Straits Times*, 29 October 1992, p. 7.
22 Chua Peck Ming, “Government can help companies go regional,” *Business Times*, 25 September 1992, p. 1.
23 Ibid.
24 Creating an “external wing” to its domestic economy by investing in the surrounding region.
25 S. Sharma, “Role of Technology In Market Integration In The Asia-Pacific Region,” in Joseph L.H. Tan (ed.), *Regional Economic Integration In The Asia-Pacific*, 1993, pp. 64–71.

26 Y.P. Chiang, "SM: S'poreans Must Now Build Up External Economy," *The Straits Times*, 16 November, 1992.
27 Ibid.
28 Ibid.
29 Prime Minister Goh Chok Tong, "Staying competitive through regionalisation," *Speeches*, May–June 1993, Vol. 17, No. 3.
30 Ibid.
31 Ibid.
32 Ibid.
33 Ibid.
34 Ibid.
35 "Singapore Must Plug Into Thriving Regional Economies and Grow With Them," *The Straits Times*, 22 May 1993.
36 PM Goh Chok Tong, "Prospects for India in the New World Economic Order," *Speeches*, 1995, January–February, Vol. 19, No. 1.
37 Discussion with Prof. Ajit Rangnekar, Deputy Dean, Indian School of Business (ISB), "Connecting India," Asia Pacific Business Summit, 12–13 April, 2006, Singapore.
38 BM, "Deepening Reliance on Foreign Capital," *Economic and Political Weekly* (EPW), 6 March 1993, p. 372. BM, "Toward Neo-Colonial Dependency," *EPW*, 3–10 August 1993, p. 1837. A.K. Bagchi, "Colonialism and the Nature of 'Capitalist' Enterprise in India," *EPW*, 30 July 1988.
39 Interview with Dr. Pranab Sen, Advisor with the Planning Commission, New Delhi, 18–19 October 1995.
40 Economic nationalists are a diverse coalition of interest groups that form alliances to hinder the entry of MNCs and foreign investors in India. For example in the case of Enron, it was the Shiv-Sena that made it problematic for the project to continue even though it was eventually given the "go-ahead" by the Shiv-Sena/BJP government of Maharashtra. Another example is the problems faced by Kentucky Fried Chicken (KFC) in Bangalore. "Asia's Economic Nationalist," *The Economist*, 12 August 1995, p. 25 and "How to Keep Investors out," *The Economist*, 11 June 1994, p. 27.
41 "An India that still says No," *The Economist*, 12 August 1995, p. 11.
42 "KFC to expand operations in India," *Business Times*, 17 February 2006.
43 "Chicken and more," *The Hindu*, 15 June 2004.
44 "India to test Coca-Cola sludge," *BBC News*, 7 August 2003.
45 "Pepsi India to expand portfolio, foray into breakfast segment—$ 300–500m investment planned," *Business Line*, 30 March 2005.
46 PM Goh Chok Tong, "Staying competitive through regionalisation," *Speeches*, Vol. 17, No. 3, p. 19.
47 R. Velloor, "S'pore committed to building SEZs in India," *The Straits Times*, 22 January 2007.
48 H. Chen, "India needs strong admin system to grow fast: MM Lee," *The Business Times*, Weekend Edition, 26–27 November 2005.
49 Ibid.
50 R. Dossani and M. Kenney, "Creating an Environment for Venture Capital in India," *World Development*, 30, 2, 2002, p. 234.
51 M. Backman, *The Asian Insider*, Palgrave Macmillan, New York, 2004, p. 222.
52 A. Zoher, "India's power unleashed," *Asian Business*, 30, 2, 1994, p 18.
53 Discussion with Dr. William Chong and comments from his presentation on "Healthcare Opportunities: Taking on the World Together," at Connecting India Conference, 12–13 April 2006, Singapore.
54 Ibid.
55 A. Zoher, "India's power unleashed," *Asian Business*, 30, 2, 1994, p. 20.

56 D. Bullis, *Doing Business in Today's India*, Quorum Books, Westport, Connecticut, 1998.
57 S. Kumar, and L. Thacker-Kumar, "Investing in India: Strategies for tackling bureaucratic hurdles," *Business Horizons*, (January–February), 1996, pp. 12–15.
58 Ibid., p. 14.
59 Narendra Aggarwal, "Right go-between can ease the way," *The Straits Times*, 17 February 2004.
60 Ibid.
61 R. Velloor, "S'pore committed to building SEZs in India," *The Straits Times*, 22 January 2007.
62 Acceptance Address by Singapore Prime Minister Goh Chok Tong for the Jawaharlal Nehru Award for International Understanding, at Rashtrapati Bhavan, India, 9 July 2004.
63 F. Yahya, "India–Singapore Trade Relations: Beyond IT," in N.N. Vohra (ed.), *Emerging Asia*, Manohar Publishers, New Delhi, 2003, pp. 73–89.
64 Rafiq Dossani and Martin Kenney, "Creating an Environment for Venture Capital in India," *World Development*, 30, 2, 2002, p. 234.
65 Kanekar, S. and L. Vaz, "Effects of gender and status upon punctuality norms," *Journal of Social Psychology*, 133, 1993, p. 377.
66 K. Basu and J.W. Weibull, *Punctuality—A Cultural Trait as Equilibrium*, The Research Institute of Industrial Economics, Stockholm, 10 June 2002, p. 3.
67 Bardhan, N. and Patwardhan, P., "Multinational corporations and public relations in a historically resistant host culture," *Journal of Communication Management*, 8, 3, 2003, p. 247.
68 *Venture India*, International Enterprise (IE), Singapore, 2003.
69 *India–Singapore: Moving on*, Sun Media PTE Ltd, Singapore, High Commission of India, 2003.
70 A.B. Seligman, *The Problem of Trust*, Princeton University Press, Princeton, NJ, 1997, pp. 81–2.
71 A. Zoher, "India's power unleashed," *Asian Business*, 30, 2, 1994, p. 19.
72 N. Aggarwal, "Right go-between can ease the way," *The Straits Times*, 17 February 2004.
73 Ibid.
74 S. Sanu, "Beyond English," *Siliconindia*, June 8, 5, 2004, p. 14.
75 Li, F. and N.H. Shooshtari, "Brand Naming in China: Sociolinguistic Implications," *Multinational Business Review*, 11, 3, 2003, p. 3.
76 N. Aggarwal, "Right go-between can ease the way," *The Straits Times*, 17 February 2004.
77 R. Velloor, "S'pore committed to building SEZ's in India," *The Straits Times*, 22 January 2007.
78 Ibid.
79 R. Ramachandran, "Understanding the market environment of India," *Business Horizons*, January–February, 2000, p. 49.
80 Ibid.
81 V. Ratnam, "Multinational companies in India," *The International Journal of Human Resource Management*, 9, 4, 1998, p. 567.
82 Asher S., Ramachandran M. and Mehta S. "Foreign Direct Investment: Recent policies and procedures," in A. Shaw and M. Manglani (eds), *Doing Business with India*, Asia Law and Practice, Hong Kong, 2004, p. 7.
83 Banks, P. and G. Natarajan, "India: The New Asian Tiger?" *Business Horizons*, May–June, 1995, p. 48.
84 Ibid.
85 *India Abroad*, 13 January 1995.

86 P. Ganguli, "Intellectual property rights. Imperatives for the knowledge industry," *World Patent Information*, 22, 2000, p. 167.
87 Banks, P. and G. Natarajan, "India: The New Asian Tiger?" *Business Horizons*, May–June, 1995, p. 49.
88 Discussion with Mr. V. Sukumar Iyer, at the "Connecting India" Asia Pacific Business Summit, 12–13 April 2006, Singapore.
89 Mr. Kamal Nath was speaking at a Q & A as the guest of honour for the "Connecting India" Asia Pacific Business Summit, organized by the Singapore Indian Chambers of Commerce & Industry and other sponsors, 12–13 April, Grand Hyatt, Singapore.
90 Presentation Notes, "Singapore Calling—All Indian Businesses Seminar," Singapore Law Academy and SICCI, Supreme Court Singapore, 20 January 2006.
91 P. Jayaram, "Indian firms to use Singapore as venue for dispute talks," *The Straits Times*, 14 April 2007.
92 Ibid.
93 Ibid.
94 P. Engardio, *Chindia: How China and India are Revolutionizing Global Business*, McGraw-Hill, New York, 2006; and R.D. Rahman and J.M. Andreu, *China and India, Toward Global Economic Supremacy*, Academic Foundation, New Delhi, 2006.
95 V. Sushil, "Economic Liberalization's Effect on Sources of Competitive Advantage of Different Groups of Companies: the Case of India," *International Business Review*, 6, 2, 2000, p. 191.
96 Pucher, John, Nisha Korattyswaropam, *et al.*, "Urban transport crisis in India," *Transport Policy*, 12, 2005, p. 185.
97 S. Kumar, and L. Thacker-Kumar, "Investing in India: Strategies for tackling bureaucratic hurdles," *Business Horizons*, January–February, 11, 1996.
98 E. Low, "Come, do business in new India," *Business Times*, 9 October 2001.
99 Ibid.
100 Ibid.

5 Singapore and software clusters in indian cities

1 M. Porter, "Clusters and the New Economic of Competition," *Harvard Business Review*, 76, 6, Nov/Dec 1998, p. 77.
2 M. Porter, "The determinants and dynamics of national advantage," in J. Drew (ed.), *Readings in International Enterprise*, Routledge, London and New York, 1995, p. 39.
3 S. Liyanage, "Breeding innovation clusters through collaborative networks," *Technovation*, 15, 9, 1995, pp. 553–67.
4 Murali Patibandla and Bent Petersen, "Role of Transnational Corporations in the Evolution of a High-Tech Industry: The Case of India's Software Industry," *World Development*, 30, 9, 2002, pp. 1561–77.
5 M. Porter, "Clusters and the New Economics of Competition," *Harvard Business Review*, 76, 6, Nov/Dec 1998.
6 Clusters affect competition in three main ways: first, by increasing the productivity of companies located in a specific area; second, by driving the direction and pace of innovation; third, by stimulating the formation of new businesses within the cluster. Clusters within a certain geographic area benefit from greater flexibility, closer relationships, better information, and powerful incentives. Porter Michael E., "Clusters and the New Economics of Competition," *Harvard Business Review*, 76, 6, Nov/Dec 1998.

7 Balasubramanyam *et al.*, "The Software Cluster in Bangalore," in John H. Dunning (ed.), *Regions, Globalization, and the Knowledge Based Economy*, Oxford University Press, Oxford, U.K., 2000.
8 J. Stremlau, "Bangalore: India's silicon city," *Monthly Labor Review*, November 1996; and J. Stremlau, "Dateline Bangalore: Third World Technopolis," *Journal of Foreign Policy*, March, 1996, pp. 152–68.
9 A. Saxenian, "Bangalore: The Silicon Valley of Asia?" in Anne O. Krueger (ed.), *Economic Policy Reforms and the Indian Economy*, Oxford University Press, New Delhi, 2002.
10 A. Patni, "Silicon Valley of the East," *Harvard Business Review*, Cambridge, Fall, 1999.
11 M. Holmstrom, "Bangalore as an industrial district: Flexible specialisation in a labour surplus economy," in Philip Cadene and Nark Holstrom (eds), *Decentralized Production in India*, Sage Publications, New Delhi, 1998.
12 D. Rosenberg, *Cloning Silicon Valley, The Next Generation High-tech Hotspots*, Reuters, Pearson Education, London, New York, Singapore, 2002.
13 Ibid., pp. 32–7.
14 C.S. Galbraith and A.F. De Noble, "Competitive Strategy and Flexible Manufacturing: New Dimensions in High-Technology Venture-Based Economic Development," *Journal of Business Venturing*, 7, 1992, pp. 387–404.
15 A. Lateef, "Linking up with the global economy: A case study of the Bangalore software industry," International Institute for Labour Studies, www.ilo.int/public/english/bureau/inst/papers/1997/dp96/index.htm.
16 J. Millar, "Software Teletrade in Bangalore: the case study for sustainability," United Nations University, Mumbai, November 1999.
17 R. Bajpai, "Tata-led group pulls out of Indian airport project," *Business Times*, Singapore, 17 July 1998 and "Tata pulls out from airport project," *The Statesman*, India, 16 July 1998.
18 "The Bangalore paradox," *The Economist*, 21 April 2005.
19 Ibid.
20 Ibid.
21 A. Saxenian, "Bangalore: The Silicon Valley of Asia?" in Anne O.Krueger (ed.), *Economic Policy Reforms and the Indian Economy*, Oxford University Press, Oxford, 2002, p. 173.
22 Ibid.
23 The STPI is also a licensed International Communications service provider and a Category A Internet Service Provider (ISP). The STPI has carrier relations with major telcos in the world including Concer, Worldcom, KDD, Teleglobe, C&W and others.
24 Tony Allison, "Software—the arrowhead of India's IT weaponry," *Asia Times*, 7 December 2000.
25 "Survey—India: Information Technology," *Financial Times*, London, 1 December 1999.
26 Software is a term used to refer to the instructions that direct the operation of computer equipment and information content that computers manipulate.
27 Craig S. Galbraith and Alex F. De Noble, "Competitive Strategy and Flexible Manufacturing: New Dimensions in High-Technology Venture-Based Economic Development," *Journal of Business Venturing*, 7, 1992, p. 390.
28 T. Allison, "Software—the arrowhead of India's IT weaponry," *Asia Times*, 7 December 2000.
29 G. Moore and K. Davis, "Learning the Silicon Valley Way," in Timothy Bresnahan and Alfonso Gambardella (eds), *Building High-Tech Clusters*, 2004, Cambridge University Press, Cambridge, p. 27.
30 M. Patibandla and B. Petersen, "Role of Transnational Corporations in the

Evolution of a High-Tech Industry: The Case of India's Software Industry," *World Development*, 30, 9, 2002, pp. 1561–77.
31 B. Wetzler, "Boomgalore: India's tech superpower is acting more like Silicon Valley every day," *Wired Magazine*, 8 March 2000.
32 C.S. Galbraith and A.F. De Noble, "Competitive Strategy and Flexible Manufacturing: New Dimensions in High-Technology Venture-Based Economic Development," *Journal of Business Venturing*, 7, 1992, pp. 387-404.
33 "India: Market Strategy," *Merrill Lynch*, Sub-continent Snapshot, 17 April 2000.
34 "India firms now free to tap funds overseas," *Business Times*, Singapore, 21 January 2000.
35 Ibid.
36 "Global investors meet in Bangalore," *The Hindu*, 7 May 2000.
37 "Venture capital funds embrace India's tech toddlers," *Business Times*, 21 November 2000.
38 Ibid.
39 A. Patni, "Silicon Valley of the East," *Harvard International Review*, 21, 4, Fall 1999, pp. 8–9.
40 "U.S. experts to study traffic problems," *The Times of India*, 7 January 2006.
41 A.R. Choudhury, "Is India's IT just a bubble?" *Business Times*, 23 August 2000.
42 "Indian IT firms not quite there yet," *Economic Times*, 26 September 2002.
43 "Bangalore leader ousted," *The Straits Times*, 14 May 2004.
44 T. Allison, "Software-the arrowhead of India's IT weaponry," *Asia Times*, 7 December 2000.
45 M. Shekar, "High-tech Bangalore also leads in suicides," *The Straits Times*, 11 January 2002.
46 J. Stremlau, "Dateline Bangalore: Third World Technopolis," *Forbes*, 60, 3, 1997, p. 162.
47 V.N. Balasubramanyam and A. Balasubramanyam, "The Software Cluster in Bangalore," in John H. Dunning (ed.), *Regions, Globalization and the Knowledge Based Economy*, Oxford University Press, Oxford, 2000, p. 359.

6 High technology/information technology parks

1 "Tech Parks," *Dataquest*, 17 October 2005.
2 "India software export growth slows," CNN News, 16 August 2001.
3 "Asian Exodus from Silicon Valley," BBC News, 17 April 2001.
4 N. Seshagiri, "The Informatics Policy in India," *Information Systems Frontiers*, 1, 1, 1999, p. 109.
5 Interview with Singapore Consortium official, 13 October 1997.
6 L. Ang, "Focused on taking JTC into a new era," *Business Times*, Singapore, 3 April 2000.
7 Interviews with Singapore consortium members, 18 July 1997.
8 Ibid.
9 *Information Technology Park, Bangalore*, EDB Publication, p. 8.
10 Ibid.
11 B. O'Reilly, "Your New Global Work Force," *Fortune*, 14 December 1992, p. 29.
12 *Information Technology Park, Bangalore*, EDB Publication, p. 8.
13 B. O'Reilly, "Your New Global Work Force," *Fortune*, 14 December 1992, p. 29.
14 Ibid.
15 "New chief takes over at Bangalore IT Park," *The Straits Times*, 13 March 1996, p. 37.
16 Michael Paul Lyons, "Joint-Ventures as Strategic Choice—A Literature Review," *Long Range Planning*, 24, 4, 1991, p. 138.

17 Interview with Anthony Khoo, Projects Manager L&M, 18 July 1997 and Interview with Zubin Kabraji, CII Director for Southeast Asia, 10 June 1997.
18 Ibid.
19 Interview with Singapore Consortium official, 18 July 1997.
20 A.J. Leow, "Group plans to expand IT park project in Bangalore," *The Straits Times*, 26 November 1993, p. 26.
21 The consortium of six Singapore companies are: L&M Corporation Private Limited, RSP Architects Private Limited, Technology Parks Private Limited (now Ascendas Land Private Limited), Singapore Technologies Industrial Corporation, Sembawang Construction Private Limited, and Parameswara Holdings. Ibid.
22 Ibid and interview with senior Singapore consortium official, 12 August 1997.
23 Ibid.
24 "30% of Bangalore IT Park taken up," *The Straits Times*, Singapore, 14 September, 1995, p. 39.
25 DPM Lee Hsien Loong, "Global Indian Entrepreneurs Conference," *The Straits Times*, 20 June 1996.
26 Ibid.
27 Interview with Singapore consortium official 13 October 1997.
28 Ibid.
29 Ibid.
30 Ibid.
31 S. Vachani, "Economic Liberalisation's Effect on Sources of Competitive Advantage of Different Groups of Companies: The Case of India," *International Business Review*, 6, 2, 1997, p. 171.
32 L&M won an NPB award for setting a new benchmark in soil improvement for an airport runway on Pulau Sudong in Singapore. *Business Times* (Singapore), 8 November, 1994, p. 13. The research arm of L and M was also awarded two research grants by the National Science and Technology Board (NSTB) and the CIDB, *Business Times* (Singapore), 11 February, 1992, p. 1.
33 Ibid.
34 Some of the major China projects included the management of an airport project in Fujian province and development of infrastructure for an industrial estate in Shandong. Tan Sung, "L&M Group Investments poised to be full-fledged MNC," *The Straits Times*, 14 January 1993. L&M projects in Vietnam include the renovation of a seven-storey hotel with 200 rooms and have submitted plans to develop a U.S. $ 7 million office block in Ho Chi Minh City and are in the running to build a U.S. $ 65 million commercial complex. "L&M clinches another building job in Vietnam," *The Straits Times*, 27 June 1992, p. 12 and Elaine Koh, "S'pore's L&M pushing into Viet market," *Business Times*, 11 February 1992, p. 2. L&M built a column-free concrete roof at the Chien Tan station in Taipei that is a 200-meter-long suspension roof for a Mass Rapid Transit System station in Taipei. "L&M completes suspended roof for Taiwan MRT station," *The Straits Times*, 19 April, 1993. L&M also beat ten foreign companies to win a $ 23 million ground treatment project in Taipei. "L&M wins $ 23m Taipei grouting project," *The Straits Times*, 8 March 1993, p. 3. L&M undertook the construction of the S $ 68 million Prestige Condominium comprising six blocks of 16-storey buildings in Thana City Bangkok, *L&M Group Publications*, 1996, p. 17. L&M's interests in the Philippines are represented by L&M-Maxco. L&M owns 40 percent of L&M Maxco, while a Philippine firm, Maxco Co, owns 60 percent. L&M-Maxco has $ 11 million worth of infrastructure projects under its belt excluding projects located within the Carmelray Industrial Park. Al Labita, *Business Times*, 11 October 1995. L&M's interests in Malaysia are substantial. L&M had built Malaysia's largest stadium in Shah

Alam and was involved in the foundation laying for K.L. Tower in Kuala Lumpur one of the highest structures in the world. L&M has also reconstructed the Sibu Wharves in Sarawak, East Malaysia and involved in the building of the Metroplex Mall in Kuala Lumpur*, L&M Group Publications*, 1996, pp. 12–14.

35 L&M has established regional offices in the towns of Karachi, Nawab Shah, and Sakrand in 1993. L&M has won the bid to build a highway in Pakistan—the bid was the largest single highway construction awarded by the Pakistan government. Patricia Adversario, "L&M international to bid for more civil engineering projects in Pakistan," *The Straits Times*, 21 January 1994. The road-building contract was worth an estimated total of U.S. $ 56 million. "L&M wins Pakistani deals worth U.S. $56m," *The Straits Times*, 13 October 1992.

36 L&M together with a Sri Lankan firm secured a U.S. $ 4.2 million deal to repair the New Kelani bridge, the largest in Sri Lanka. "L&M gets $ 4.2m Sri Lanka job to repair bridge," *The Straits Times*, 26 April 1993.

37 Sylvia Wong, "L&M unit wins tender for Indian river project," *Business Times*, 17 October 1991.

38 Interview with Singapore consortium officials on 18 July 1997 and 13 October 1997.

39 Sylvia Wong, "New L&M chief restructuring company," *The Straits Times*, 24 May 1992.

40 William Chia, "Many reasons why L&M is gaining popularity among investors," *Business Times*, 17 March 1993, p. 5.

41 "National Science and Technology head to join RSP Architects," *Business Times*, 1 July 1993.

42 Tan Sung (Finance Director L&M), "L&M Group Investments poised to be full-fledged MNC," *The Straits Times*, 14 January 1993.

43 Ibid.

44 The loan was arranged by ABN Amro Bank and the Singapore branch of Berliner Handels und Frankfurter Bank. The lenders are the arrangers, Overseas Union Bank, Tat Lee Bank and the Singapore branches of Malayan Banking, Bangkok Bank, Bayerische Landesbank Gironsentalc, Chiao Tung Bank and Societe Generale. Soh Tiang Keng, "L&M taps S'pore market for $ 40m to finance deals abroad," *Business Times*, 29 July 1992.

45 Sylvia Wong, "L&M Group to tap market for $ 10.6 m through 6.6m share placement," *Business Times*, (Singapore), 12 March 1993, p. 4 and Soh Tiang Keng, "L&M taps S'pore market for $ 40m to finance deals abroad," *Business Times*, 29 July 1992.

46 Ibid.

47 Alvin Tay, "Guthrie's proposed takeover of L&M," *Business Times*, 18 February, 1992.

48 Tan Sung, "L&M Group Investments poised to be full-fledged MNC," *The Straits Times*, 14 January 1993.

49 Sim Wai Chew, "L&M eyes another residential cum industrial project in India," *The Straits Times* 25 September 1995 and Ven Sreenivasan, "L&M overseas business grows rapidly but returns still small," *Business Times*, 5 June 1995.

50 "Two firms carving new frontiers," *The Straits Times*, 9 May 1995.

51 Interview with consortium official 18 July 1997 and Eddie Toh, "L&M and RSP Architects to vie for China projects," *The Straits Times*, 9 January 1993.

52 Albert Hong experienced some bad business dealings with Indian partners before his involvement in the Bangalore IT Park project. This was why he was chosen to lead L&M and in turn the consortium in their business venture in India because he would know the potential mistakes that could be avoided. Interview with Singapore consortium member.

53 Eddie Toh, "L&M and RSP Architects to vie for China projects," *The Straits Times*, 9 January 1993.
54 Lilian Ang, "National Science and Technology head to join RSP Architects," *Business Times*, 1 July 1993.
55 "Two firms carving new frontier," *The Straits Times*, 9 May 1995.
56 Ibid.
57 "Sembawang, L&M form building firm in India," *The Straits Times*, 18 January 1995.
58 Interview with Singapore Consortium official 18 July 1997.
59 "Go abroad under one banner, S'pore Technologies firms told," *The Straits Times*, 1 November 1994.
60 Russel Baker, "Singapore Technologies Industrial Corporation: Positioned to reap regional rewards," *The Straits Times*, 9 January 1994.
61 Ibid.
62 Interview with Singapore consortium official 20 July 1997.
63 Lim Siong Guan was a former permanent secretary in the Ministry of Defence and Eddie Teo was the permanent secretary in the Ministry of Home Affairs, "Lim Siong Guan appointed chairman of Singapore Tech," *The Straits Times*, 23 July 1994.
64 The involvement of Singapore Technologies and Sembawang although crucial as a marketing strategy was largely symbolic in operational terms. They were not active in the construction phase of the IT park project but the private companies (nongovernment linked) wanted them in so that the government would have a stake in a potentially new and uncertain market. Interview with Singapore consortium official.
65 "Sembawang Corp forms joint venture with L&M," *The Straits Times* 18 January 1995.
66 Ibid.
67 Felisa Batacan, "SembCorp and Ascendas swap stakes," *The Straits Times*, 7 April 2001.
68 Ibid.
69 "Sembawang Corp forms joint venture with L&M," *The Straits Times*, 18 January 1995.
70 Ibid.
71 "Technology Parks poised to export expertise to region," *The Straits Times*, 7 April, 1993.
72 Interview with Ms Chong Siak Ching, Managing Director Arcasia Pte Ltd, 12 August 1997.
73 Interviews with Ms. Chong Siak Ching, Managing Director of Arcasia Pte Ltd, 12 August 1997 and Mr. Cheong Kok Kheong, former CEO of ITPL 13 October 1997.
74 Larsen and Toubro is a multi-dimensional engineering company founded in 1938. Its range of manufacturing covers diverse fields, such as dairy, chemicals, cement, steel, paper, nuclear power, and space exploration. Other lines of manufacture included bottle closures, hydraulic excavators, switchgear, electronic controls, valves, wielding, computer peripherals, and testing and measuring instruments. P.N. Agarwala, *The Role and Impact of Multinationals*, Allied Publishers, Bombay, 1991, p. 188.
75 Interviews with senior consortium officials on 12 August 1997 and 13 October 1997.
76 Ibid.
77 Ibid.
78 Ibid.
79 Ibid.

80 Interview with senior Singapore consortium member, 12 August 1997.
81 Ibid.
82 Interview with Singapore consortium officials, July 1997.
83 Ibid.
84 Ibid.
85 Helen Chang, "Indian Chamber incorporates holding company for investments in India," *Business Times*, 15 April 1993, p. 3.
86 Interviews with Singapore consortium officials, July 1997.
87 Ibid.
88 Ibid.
89 Ibid.
90 Ibid.
91 A. Mahizhnan, "Corporate networking: where to next?" *Business Times*, 27–8 February 1993.
92 Interview with Singapore consortium official, 13 October 1997.
93 Interview Singapore consortium official, 29 July 1997.
94 Interview with Singapore consortium official, 13 October 1997.
95 Sumila Gulyani, "Innovating with Infrastructure: How India's Largest Carmaker Copes with Poor Electricity Supply," *World Development*, 27, 10, 1999, p. 1751.
96 Ibid., p. 1763.
97 Interview with EDB official, 20 May 1997.
98 Interview with Singapore consortium members, 18 July 1997.
99 Ravi Vellor, "Bangalore Tech Park ready for operations in September," *The Straits Times*, 18 July 1997.
100 Ibid.
101 Ibid.
102 Ibid.
103 Ibid.
104 Ibid.
105 "Delay in launch of IT Park," *The Hindu*, 3 November 1998.
106 Information Technology Park Investment Pte Ltd is a company incorporated in the Republic of Singapore and has its registered office at 4 Second Chin Bee Road, Singapore 2261. Joint Venture Agreement, 28 January 1994.
107 These Singapore companies have among them considerable experience and expertise in the business of establishing, developing, operating, and managing information technology business parks in Singapore and the Southeast Asian region. Ibid., p. 2.
108 Parameswara Holdings Ltd, *Shareholders Report*, 10 July 1997.
109 Ibid.
110 Interview with Singapore consortium official, August 2007.
111 Ibid.
112 Ibid.
113 N. Aggarwal, "30% of space sold for IT Park's first phase," *The Straits Times*, 14 April 1996.
114 N. Aggarwal, "Big corporate names in the bag for Bangalore IT Park," *The Straits Times*, 25 January 1996.
115 Ibid.
116 Interview with Singapore consortium official, August 2007.
117 Ibid.
118 N. Aggarwal, "Big corporate names in the bag for Bangalore IT Park," *The Straits Times*, 25 January 1996.
119 Interviews with Singapore consortium officials, July to August 1997.
120 Ibid.
121 Ibid.

122 N. Aggarwal, "Investors take up 30% of Bangalore IT Park's first phase development," *The Straits Times*, 24 January 1997.
123 Interview with Singapore consortium officials, July 1997.
124 Ibid.
125 Ibid.
126 N. Ghosh, "Singapore, India set high-tech tie-up in motion," *The Straits Times*, 22 January 2000.
127 "Ascendas to embark on S $270 million expansion of International Tech Park Bangalore (ITPB)," *Ascendas Press Release*, 10 April 2007.
128 "Singapore's tech park sets the benchmark," *The Straits Times*, 12 April 2007.
129 "Ascendas to embark on S $270 million expansion of International Tech Park Bangalore (ITPB)," *Ascendas Press Release*, 10 April 2007.
130 "Cyber city gears up," *BBC News*, 17 March 2000.
131 Yasheng Huang and Tarun Khanna, "Can India Overtake China?" *Foreign Policy*, July/August 2003.
132 Anshu Tandaon and R. Sridharan, "Infotech & Telecom," *Business India*, 27 July 1998.
133 T.R. Gopalakrishnan, L. Iyer and S. Murthy, "Man With A Dream," *The Week*, 2 August 1998.
134 "Use technology to uplift people: CM," *The Hindu*, 5 October 2001.
135 "India—Andhra Pradesh guarantees against project cancellations," *Business Line*, 25 January 1999.
136 O. Farooq, "World: South Asia Surprise performance in Andhra Pradesh," *BBC News*, 7 October 1999.
137 E. Low, "S'pore can tap Hyderabad's Internet talent pool: PM," *Business Times*, 21 January 2000.
138 "India: Panel On IT Showers Praise on Naidu," *The Hindu*, 16 November 2000.
139 Editorial—Development—Naidu's mantra," *The Hindu*, 13 September 1998.
140 "MNCs occupy 95 p. c. in HITEC City phase-II," *The Hindu*, 25 June 2001.
141 R.J.R. Prasad, "Another Silicon Valley," *The Hindu*, 27 October 1997.
142 "India: Over 90 PC of Cyber Towers Space Sold Out," *Business Line*, 29 October 1999.
143 "Second Phase of Hitec City Begins," *India Business Insight*, 11 September 2000.
144 "Andhra Pradesh launches third phase of Hitec City," *Express Computer*, 8 November 2004.
145 Interview with Ascendas operations manager, Chennai, India, 7 October 2005.
146 Vince Chong, "Ascendas buys Vanenberg IT Park in India," *Business Times*, 24 December 2004.
147 "Singapore firm to acquire Vanenberg IT," *Business Line*, 21 December 2004.
148 "Ascendas renames IT park at Madhapur: begins work on phase V," *Business Line*, 23 January 2006.
149 Ibid.
150 "Andhra Pradesh Hitec City Phase I Set to Take Off," *Business Line*, 19 November 1998.
151 A. Tandon and R. Sridharan, "Infotech & Telecom," *Business Today*, 27 July 1998.
152 "TCS for Software Centre At Hitec City," *India Business Insight*, 3 April 2000.
153 "Singapore firms eyes India IT Market," *Daily Times*, 6 August 2004.
154 Pucher, J., Korattyswaporam, N. *et al*., "Urban transport crisis in India," *Transport Policy* 12, 2005, p. 187.
155 "EDS opens centre at Chennai Tidel Park, *Business Line*, 29 April 2001.
156 "Tidel Park still awaits Tidco, Ascendas JV," *The Economic Times*, 17 October 2004.
157 "Tidco in pact with JTC arm for software park," *Business Line*, 4 July 2002.

158 N. Ramakrishnan, "Ascendas to market space to ITES firms," *Business Line*, 14 November 2002.
159 "Ascendas signs pact with TIDCO for IT complex," *Business Line*, 18 June 2003.
160 N. Ramakrishnan, "Ascendas to market space to ITES firms," *Business Line*, 14 November 2002.
161 K. Ramachandran, "IT infrastructure boom in Chennai," *The Hindu*, 4 October 2004.
162 "Ascendas, MIPL to develop 1 mn sq ft for IT, BPO sector," *Economic Times*, 13 October 2004.
163 "Ascendas to expand further in India, mulls IT park in Pune," *Channel News Asia*, 29 August 2005.
164 "Ascendas to build IT park in Kolkatta," *The Economic Times*, 24 August 2005.
165 Ibid.
166 "Ascendas to develop S $ 150m IT park in Kolkatta," *Channel News Asia*, 23 August 2005.
167 Ibid.
168 "IT realtor eyes more acres—400,000 sq ft office space ready by 2007," *The Telegraph*, 6 December 2005.
169 Ibid.
170 R. Velloor, "Ascendas to build two more IT parks in India," *The Straits Times*, 9 April 2007.
171 Ibid.
172 Ibid.

7 Telecommunications

1 "Funding India's Infrastructure Development," *Connexions, National Council of Applied Economic Research*, 2, 1, January 2006.
2 Speech by SingTel Chief Executive, Lee Hsien Yang, "Growing Out of Singapore—The SingTel Experience," Fullerton Hotel, Singapore, 20 February 2002.
3 J. Hansen and A. Shameen, "SingTel Blues, Singapore's top telco needs to win soon to become regional power," *Asiaweek*, 16 February 2001.
4 W. Arnold, "SingTel profits by casting a wide net," *International Herald Tribune*, 5 July 2005.
5 "SingTel is Soaring beyond Singapore," *Businessweek*, 3 December 2001.
6 T. Saywell, "Stoking SingTel's regional ambitions," *Far Eastern Economic Review*, 10 October 2002.
7 A. Singhal and E.M. Rogers, *India's Communication Revolution: From Bullock Carts to Cyber Marts*, Sage Publications, New Delhi, 2001.
8 Lee Hsien Yang interview, "Provider of Choice," *Far Eastern Economic Review*, 15 February 2001.
9 A. Yee, "Success story faces the rural challenge," *Financial Times*, 8 May 2007.
10 "Telecoms changes set alarm bells ringing," *Asia Review*, October 1994.
11 A. Aparna, "Untangling a Telecoms Revolution," *Telecommunications International Edition*, 33, 10 October 1999.
12 "Here come the regulators," *Business India*, May 19–June 1, 1997.
13 A. Aparna, "Untangling a Telecoms Revolution," *Telecommunications International Edition*, 33, 10 October 1999.
14 A. Virmani, "Telecommunications Reforms in India," *Indian Council for Research on International Economic Relations Report* (ICRIER), June 2004.
15 Ibid.
16 P.M. Sarmah, "Telecom markets—Ringing in effective regulations," *Business Line*, December 12, 2002.

17 Ibid.
18 G. Rambabu, "Smoke signals," *Business Line*, 6 August, 2003.
19 Ibid.
20 "Cell Phone Cars Spell Uncertainty for Foreign Investors in India," *Asia Pacific Bulletin*, 8 August, 2003.
21 Ibid.
22 Ibid.
23 *TRAI Press Release*, No. 36, 6 November 2003.
24 K. Thiagarajan, "Unified license—Level playing field, the great leveler," *Business Line*, 21 August, 2003.
25 G. Rambabu, "On the right track," *Business Line*, 9 January, 2004.
26 A. Jayaram and R. Dhawan, "Frequency mismatch. GSM vs CDMA: Spectrum Allocation," *Businessworld*, September 2004.
27 Ibid.
28 "DoT unveils Rs 1000—cr optical fibre cable project," *The Hindu*, 20 April 2006.
29 Ibid.
30 V. Sridhar, "Public Sector Enterprises: Challenges of Change," *Frontline*, 15, 1, 10–23 January, 1998.
31 A. Katakam, "Corporate Affairs: VSNL's worries," *Frontline*, 19, 15, 20 July–2 August, 2002.
32 Ibid.
33 A.R. Choudhury, "Infrastructure Challenge," *Business Times*, 16 August 2003.
34 "Systema Eyes India's Reliance Telecom," *Communications & Electronics Report*, 12 September 2005.
35 B.P. Oh, "SingTel group's mobile phone users top 112m," *Business Times*, 8 February 2007.
36 H.L. Teo, "SingTel and Bharti to build U.S. $650m fibre-optic link to India," *Business Times*, 25 October, 2000.
37 G. Rambabu, "Bharti makes an international call," *Business Line*, 9 April 2002.
38 T. Saywell, "Stoking SingTel's regional ambitions," *Far Eastern Economic Review*, 10 October 2002.
39 H.L. Teo, "SingTel and Bharti to build U.S. $650m fibre-optic link to India," *Business Times*, 25 October, 2000.
40 Ibid.
41 A.R. Choudhury, "SingTel shows the way," *Business Times*, 10 September 2003.
42 Ibid.
43 "SingTel's C2C undersea cable unit up for sale," *The Straits Times*, 18 October 2005.
44 D. Divyanathan, "SingTel in $1.1b India cable venture," *The Straits Times*, 25 October 2000.
45 B. Lee, "$ 1.7 billion bet," *The Straits Times*, 13 January 2004.
46 "SingTel's C2C undersea cable unit up for sale," *The Straits Times*, 18 October 2005.
47 B. Lee, "$ 1.7 billion bet," *The Straits Times*, 13 January 2004.
48 "SingTel favours increase in FDI limit in Telecom," *Press Trust of India*, 14 January 2003.
49 "Systema Eyes India's Reliance Telecom," *Communications & Electronics Report*, 12 September 2005.
50 J. Puliyenthuruthel, "Essar to buy BPL for $ 1b," *Daily Deal*, 21 July 2005.
51 Ibid.
52 K. Parbat, "Hutch, Essar to merge licenses under single co." *Economic Times*, India, 24 February 2003.
53 A.R. Choudhury, "Indian telecoms pie lies waiting," *Business Times*, 26 April 2003.

54 Ibid.
55 "Singapore Telecom invests $252 million to hold 32% of Bharti Telecom," *India Daily*, 20 May 2005.
56 Ibid.
57 G. Ng, "Indian telecoms firm to build $318m underwater cable network," *The Straits Times*, 29 August 2006.
58 Ibid.
59 Ibid.
60 "No major impact seen from SingTel CEO's departure: analysts," *Channel News Asia*, 24 July 2006.
61 "SingTel CEO Lee Hsien Yang to call it quits," *Economic Times*, 22 July 2006.
62 Ibid.
63 "SingTel CEO Lee Hsien Yang to step down, no reason given," *The Star*, 21 July 2006.
64 E. Ellis and G. Elliot, "Gone with the wind," *The Australian*, 9 February 2002.
65 "SingTel CEO Lee Hsien Yang to call it quits," *Economic Times*, 22 July 2006.
66 H.L.Teo, "ST Telemedia buys 20% of Indian firm for $ 47m," *Business Times*, 16 August 2000.
67 B. Lee, "Indian minister dashes hopes of ST Telemedia," *The Straits Times*, 25 May 2005.
68 B. Lee, "ST Telemedia's bid for Indian telco hits snag," *The Straits Times*, 1 April 2005.
69 A. Tan, "Temasek maybe in a spot with stakes in 2 cellular players," *The Straits Times*, 23 April 2005.
70 The FIPB comprises representatives from various government bodies and is part of the office of the Indian prime minister. Its approval is required for all major foreign investments.
71 Ibid.
72 "Temasek only an investor in ST Telemedia," *The Straits Times*, 22 April 2005.
73 E. Ellis, "Singapore Stumbles," *Fortune Magazine*, 15 March 2006.
74 L. Tan, "SingTel Chairman Any to retire next month," *The Straits Times*, 5 July 2003.
75 Ibid.
76 B. Lee, "Growing pains for SingTel's growth strategy," *The Straits Times*, 14 November 2005.
77 "Vodafone buys 10% in Bharti for $ 1.5 bn," *Economic Times*, 28 October 2005.
78 B. Lee, "ST Telemedia's bid for Indian telco hits snag," *The Straits Times*, 1 April 2005.
79 B. Lee, "Vodafone gets green light for bigger stake in Bharti," *The Straits Times*, 26 November 2005.
80 A. Shameen, "Corporate: SingTel's India conundrum," *The Edge*, Singapore, 22 January 2007.
81 A. Parker, "Vodafone vests hopes in Indian regulator," *Financial Times*, 27 April 2007.
82 M. Kleinman and J. Garside, "Hinduja brothers seek local allies to join bid for Hutchinson Essar," *The Sunday Telegraph*, 4 February 2007.
83 L.S. Siow, "Stream of good news driving SingTel up," *Business Times*, 31 January 2007.
84 A. Shameen, "Corporate: SingTel's India conundrum," *The Edge*, Singapore, 22 January 2007.
85 Ibid.
86 Ibid.
87 "Vodafone buys Indian mobile firms," *BBC News*, 11 February 2007.
88 "Indian rivals hail Vodafone deal," *BBC News*, 12 February 2007.

89 P.M. Indulal and M. Rajendran, "SingTel interested in Vodafone's Bharti stake: Sunil Mittal," *Hindustan Times*, 12 February 2007.
90 Ibid.
91 A. Parker, "Vodafone vests hopes in Indian regulator," *Financial Times*, 27 April 2007.
92 Ibid.
93 Ibid.
94 A. Yee, "Success story faces the rural challenge," *Financial Times*, 8 May 2007.
95 N. Aggarwal, "Economic growth spurs India's mobile phone boom," *The Straits Times*, 1 November 2004.
96 Ibid.
97 A. R. Choudhury, "Infrastructure Challenge," *Business Times*, 16 August 2003.
98 T. Anderson, "India seeks mobiles for the masses," *BBC News*, 12 February 2007.
99 I. Basu, "India's new telecom callers," *United Press International*, 25 June 2005.
100 B. Lee, "SingTel appoints 17-year veteran as chief exec," *The Straits Times*, 22 September 2006.
101 G. Ng, "SingTel chief looks to Central Asia, Middle East," *The Straits Times*, 24 April 2007.
102 G. Ng, "Will SingTel chief transform telco," *The Straits Times*, 22 September 2006.
103 B. Lee, "SingTel's $ 994m gain disappoints analysts," *The Straits Times*, 9 February 2007.
104 G. Ng, "SingTel chief looks to Central Asia, Middle East," *The Straits Times*, 24 April 2007.
105 Lee Su Shyan, "Free flow of investment important for growth," *The Straits Times*, 3 August 2007.
106 Lee Su Shyan, "Temasek's portfolio swells beyond U.S. $ 100b for first time," *The Straits Times*, 3 August 2007.
107 Erica Tay, "Tony Tan warns of dark clouds on horizon for markets," *The Straits Times*, 1 August 2007.
108 Grace Ng, "GIC creates 4 new key posts in major revamp," *The Straits Times*, 17 July 2007.

8 Construction and real estate

1 J. Teo, "Building demand to stay steady at $ 12b;" *The Straits Times*, 12 January 2005.
2 Ibid.
3 "Delhi to build taller buildings to house growing population," *The Straits Times*, 14 March 2007.
4 Ibid.
5 "Singapore offers expertise on township living," *Business Line*, 10 October 2002.
6 Ibid.
7 J. Leahy, "Dilemmas haunt the property market," *Financial Times*, 8 May 2007.
8 Ibid.
9 Ibid.
10 "Singapore Brand Gaining Recognition in India," Building and Construction Authority, Joint Media Release, 8 April 2005.
11 Ibid.
12 Ibid.
13 F. Chan, "Changes to Indian property rules attract S'pore developers," *The Straits Times*, 6 February 2006.
14 Ibid.

15 Ibid.
16 S. Biswas, "Revolt against India's industrial changes," *BBC News*, 12 February 2007.
17 R. Velloor, "SEZ project ignites angry backlash," *The Straits Times*, 10 January 2007.
18 N. Varghese, "Looking out for designing buildings," *Business Line*, 8 April 2006.
19 Ibid.
20 Ibid.
21 Ibid.
22 "India to have 358 shopping malls by 2007: Study," *Indo-Asian News Service*, 22 September 2005.
23 Ibid.
24 "India's rich buying into whole new lifestyle concept," *The Straits Times*, 24 September 2004.
25 Ibid.
26 "Property Boom in India," *The Straits Times*, 20 January 2007.
27 Ibid.
28 "Singapore eyes India and Brazil to offset a cooler U.S. market," *The Australian*, 7 February 2006.
29 Ibid.
30 Malls lease floor space out to individual shops. India's largest shopping arcade is Spencar Plaza in Chennai but new malls are being built in various cities across India.
31 Departmental stores are expected to take over the apparel business from exclusive brand showrooms. Among these, the biggest success is K. Raheja's Shoppers Stop.
32 "Indian retail to be worth Rs. 350bn crore by end 2005," *Indo-Asian News Services*, 20 January 2005.
33 Ibid.
34 K. Vijayraghavan and M. Sabarinath, "Market Blitz Sends The Retail Pulse Racing," *Economic Times*, 6 December 2004.
35 Ibid.
36 Ibid.
37 Ibid.
38 "Global corporate giants eye India's booming retail sector," *Channel News Asia*, 18 April 2006.
39 S. Agrawal, "How Large is India's Middle Class?" *The Financial Express*, India, 5 December 2002.
40 "Five more Metro Malls on cards for Delhi shoppers," *Press Trust of India*, 12 September 2005.
41 S. Tata, "Spurring super-shopping," *Tata Press Release*.
42 "Foreign investors keen on developing malls in India," *Business Line*, 1 September 2005.
43 A. Gentleman, "India's malls pull in people who aren't buying," *International Herald Tribune*, 11 May 2005.
44 "India readies for shopping mall boom," *The News*, 10 October 2005.
45 Ibid.
46 "Foreign investors keen on developing malls in India," *Business Line*, 1 September 2005.
47 R. Bist, "The great Indian mall boom," *Asia Times*, 24 July 2004.
48 Ibid.
49 F. Chan, "Changes to Indian property rules attract S'pore developers," *The Straits Times*, 6 February 2006.
50 K.C. Loh, "BCA signs memorandum of cooperation with Indian counterpart," *Channel News Asia*, 12 April 2005.

51 Ibid.
52 "Singapore real estate major to enter India," *Business Standard*, 13 September 2004.
53 Ibid.
54 A. Tan, "GIC Real Estate Exploring India Market, REIT, *Business Times*, 25 February 2005.
55 P.S. Suryanarayana, "Singapore pvt investors promote real estate projects in India," *Business Line*, 14 April 2006.
56 Ibid.
57 K. Wong, "Helping hand for three hard-hit sectors," *The Straits Times*, 30 August 2003.
58 Ibid.
59 S.J. Wong, "What's driving India's bull?" *Business Times*, 30 October 2003.
60 Ibid.
61 N. Aggarwal, "India's township projects offer lucrative openings," *The Straits Times*, 17 March 2003.
62 "India's property rules deter foreigners," *Business Times*, 12 September 2003.
63 N. Aggarwal, "India's township projects offer lucrative openings," *The Straits Times*, 17 March 2003.
64 Ibid.
65 R. Bajpai, "India opens up housing sector," *Business Times*, 23 June 1998.
66 "Wanted: pro-active housing policy," *The Hindu*, 25 July 2003.
67 "India's township projects offer lucrative openings," *The Straits Times*, 17 March 2003.
68 "Singapore offers expertise on township living," *Business Line*, 10 October 2002.
69 Some of the companies in the delegation included Keppel Land, National Parks Board, CPG Consultants, Andrew Tan Architects, Wow Architects, and Jurong consultants, *Business Times*, 4 September 2003.
70 V.K.Raghunathan, "Little S'pore in India," *The Straits Times*, 12 September 2003.
71 N. Aggarwal, "India's township projects offer lucrative openings," *The Straits Times*, 7 March 2003.
72 G. Deshpande and M. Das, "India Real Estate: A Radical Shift," *Global Real Estate Now*, Spring 2003, pp. 20–3.
73 S. Krishnan, "Laying the finance foundation," *Business Line*, India, 27 October 2002.
74 A REIT is a company that owns and operates income producing real estate such as apartments, shopping centers, offices, hotels, and warehouses.
75 S. Krishnan, "Laying the finance foundation," *Business Line*, India, 27 October 2002.
76 V.R. Kumar, "Demand-supply mismatch," *Business Line*, India, 1 July 2002.
77 Ibid.
78 The Pocharam township project is situated on a three million square meter site. The first phase on 20 hectares of land is projected to yield 2080 housing units. Loh, H.Y., *Business Times*, 13 February 2003.
79 Ibid.
80 Ibid.
81 Special Correspondent "Work on Singapore-style township at Ghatkesar to start from June," *The Hindu*, 11 April 2002.
82 Staff Reporter, "Naidu lays stone for Singapore-class township," *The Hindu*, 13 February 2003.
83 R. Velloor, "S'pore firms find design niche in Hyderabad," *The Straits Times*, 30 April 2007.
84 Ibid.

85 "Singapore firm keen on building Kolkatta tower," *Business Line*, 20 November 2002.
86 Ibid.
87 Ibid.
88 "Singapore firm seen in Vizag realty deal," *Business Standard*, 8 March 2006.
89 "Southeast Asian firms bid for Chattisgarh housing project," *Indo-Asian News Services*, 12 October 2004.
90 Ibid.
91 F. Chan, "Changes to Indian property rules attract S'pore developers," *The Straits Times*, 6 February 2006.
92 Ibid.
93 Ibid.
94 R. Velloor, "Singapore firms take big stake in India's property boom," *The Straits Times*, 30 April 2007.
95 Ibid.
96 Ibid.
97 Ibid.
98 R. Velloor, "S'pore firms find design niche in Hyderabad," *The Straits Times*, 30 April 2007.
99 J. Teo, "Building demand to stay at $ 12b," *The Straits Times*, 12 January 2005.
100 "CPG eyeing Jurong Consultants," *Business Times*, 25 December 2003.
101 Ibid.
102 Ibid.
103 "Brokers' Digest," *The Edge Singapore*, 20 December 2004.
104 V.R. Kumar, "APHB venture with Singapore, Malaysian Cos—Two townships coming up near Hyderabad," *Business Line*, 21 May 2002.
105 A. Mukherjee, "GIC to invest in Chennai township via Singapore arm," *Business Line*, 6 May 2003.
106 Ibid.
107 R. Velloor, "S'pore firms find design niche in Hyderabad," *The Straits Times*, 30 April 2007.
108 Ibid.
109 Our Bureau, "Singapore firm keen on building Kolkata tower," *Business Line*, 20 November 2002.
110 Ibid.
111 Ibid.

9 Ports development and logistics services

1 V. Raghuvanshi, "Headed for uncertain waters," *Business Times*, 9 April 1997.
2 K.S. Kumar, "Dock workers plan protest," *The Hindu*, 24 July 2006.
3 R.R. Chaudhury, "The Maritime Dimension: Ports, Shipping and Shipbuilding," *South Asian Survey*, 7, 1, January–June, 2000, pp. 99–112.
4 A. Deshmukh, "Indian Ports—The Current Scenario," *Working Paper No. 14*, Department of Economics, University of Mumbai.
5 A. Marshall, "Waterway To the World," *Time*, Asia, 25 July 2006.
6 Ibid.
7 J. Paul, "Let competition in, full steam," *The Hindu*, 5 August 2006.
8 The total capacity of major ports as of December 2000 was 215 million tones.
9 "PSA Int'l voted best container terminal operator again," *The Straits Times*, 26 April 2007.
10 "New Jakarta port may hive off 10% of PSA volume," *The Straits Times*, 15 November 2006.
11 Ibid.

12 Ibid.
13 "Asian ports lose out to China harbours," *The Straits Times*, 23 December 2006.
14 Ibid.
15 Ibid.
16 H. Timmons, "Dubai set to win port operator, and status as giant," *International Herald Tribune*, 11 February 2006.
17 Ibid.
18 Ibid.
19 S. Husain, "P&O will vote on DP World's offer on Monday," *Gulf News*, 10 February 2006.
20 E. Ellis, "Singapore v Dubai: The Battle of the (Very Hot) City-States," *Fortune*, 6 February 2006.
21 "Dubai, Singapore rush to gain P&O control," *The Telegraph*, 12 January 2006.
22 Ibid.
23 Ibid.
24 J. Bowker, "Dubai sees clear water to P&O deal," *The Scotsman*, 11 February 2006.
25 M. Costello, "Singapore Ports scraps P&O bid interest," *Times*, 10 February 2006.
26 S. Husain, "P&O will vote on DP World's offer on Monday," *Gulf News*, 10 February 2006.
27 Ibid.
28 Speech by Mr. Lim Hng Kiang, Minister for Trade and Industry, at the "Celebrating India in Singapore" inaugural evening, 11 April 2006, 8.15 pm at the Shangri-la Hotel, Singapore.
29 "Policies Programmes and Initiatives: Surface Transport," *Press Information Bureau*, Government of India, March 1999.
30 F. Noronha, "Plans for India's Largest Port Shelved," *Environment News Service*, 9 December 1998.
31 K.S. Kumar, "Dock workers plan protest," *The Hindu*, 24 July 2006.
32 M.K.N. Moorthy, "10 million workers strike across India," *People's Weekly World Newspaper*, 27 April 2002.
33 K.G. Kumar, "Pooling out work," *The Hindu*, 16 January 2006.
34 Ibid.
35 V. Jayanth, "Wage pact for port workers: A trend setter for PSEs," *The Hindu*, 16 August 2000.
36 Ibid.
37 P. Jayaram, "Booming economy drives India to upgrade ports," *The Straits Times*, 20 September 2006.
38 R.R. Chaudhury, "The Maritime Dimension: Ports, Shipping and Shipbuilding," *South Asian Survey*, 7, 1, January–June, 2000, pp. 99–112.
39 Ibid.
40 T.C. Malhotra, "Ports need better transport links," *International Freighting Weekly*, 26 March 2007.
41 R.R. Chaudhury, "The Maritime Dimension: Ports, Shipping and Shipbuilding," *South Asian Survey*, 7, 1, January–June, 2000, pp. 99–112.
42 Ibid.
43 Ibid.
44 P. Jayaram, "Booming economy drives India to upgrade ports," *The Straits Times*, 20 September 2006.
45 Ibid.
46 Ibid.
47 The term containerization was developed by Malcolm Maclean, the owner of a huge trucking company in the United States, and initiated a revolution in the shipping industry. Over the years the industry has created a separate identity in

the shipping world through continuous development by Maersk Lines, P&O Nedlloyd, Sealand services and others. *Business Times*, 8 July 1997.
48 "Plan to Recast Haldia Dock as Major Port," *Business Line*, 19 April 2000.
49 Ibid.
50 "Plan to Recast Haldia Dock as Major Port," *Business Line*, 19 April 2000.
51 Prime Minister's Council, India, September 2001.
52 N.V. Rao, "Plan to boost capacity attracts cash," *Journal of Commerce*, 28 July 1998.
53 Ibid.
54 J. Padmapriya, "Govt for corporatisation of 12 major ports," *Economic Times*, 23 August 2001.
55 Ibid.
56 Ibid.
57 Press Information Bureau, Government of India, 1997–8.
58 A.T. Joseph, "Indian shipping cos brace for a big hit on bottomlines," *Economic Times*, India, 22 October 2001.
59 Ibid.
60 Anto T. Joseph, "Foreign container lines challenge TAMP order," *Economic Times*, 23 July 2001.
61 "Role of tariff regulator for major ports questioned," *The Hindu*, 15 November 2005.
62 Ibid.
63 D.K. Kurien, "Shipping: Competition for state ports," *Financial Times*, India, 17 September 2001.
64 Ibid.
65 Ibid.
66 "Policies Programmes and Initiatives: Surface Transport," Press Information Bureau, Government of India, March 1999.
67 Ibid.
68 Robert Wright, "Ports await shipment of fresh investment," *Financial Times*, 8 May 2007.
69 Conrad Raj, "Invest in India early, urges Indian Minister," *Business Times*, 15 May 2001.
70 Vivek Raghunanishi, "Indian Shipping: What's In Store," *Business Times*, 14 August 1997.
71 Ibid.
72 Ibid.
73 Ibid.
74 David Hughes, "Port players on the move," *Business Times*, 5 June 2001.
75 Ibid.
76 P. Manoj, "PSA quits race for Hazira box terminal project," *Business Line*, 27 November 2004.
77 "PSA Lands India Port Project," *Pacific Shipper*, 17 May 2007.
78 "PSA bags third Indian port project in Hazira," *Lloyd's List*, 2 March 2007.
79 "Chennai port eyeing container hub status," *Financial Express*, 11 April 2007.
80 A. Mitra, "Staying on course," *Frontline*, 22, 23, 18 November 2005.
81 Ibid.
82 Ibid.
83 R. Bajpai, "India plans 5 free ports specializing in different areas," *Shipping Times*, 15 May 1998.
84 Ibid.
85 Ibid.
86 Nicholas Fang, "PSA trims capacity at India's Tuticorin port by 20%," *The Straits Times*, 10 July 2007.

87 Ibid.
88 Nicholas Fang, "PSA's capacity cut at Indian port worries shipping lines," *The Straits Times*, 12 July 2007.
89 R. Wright, "Ports await shipment of fresh investment," *Financial Times*, 8 May 2007.
90 The term logistics is defined as the process of planning, implementing, and controlling the efficient, cost-effective flow and storage of raw material, in process inventory and finished products and related information from the point of origin to the point of consumption as per customer demand.
91 Ibid.
92 "Recognizing the best in logistics industry," speech by Teo Ming Kian, Singapore, Economic Development Board, Asia Logistics Award 2003 Ceremony, 25 September 2003.
93 T.E. Raja Simhan, "Third Party logistics: New movers on the block," *Business Line*, 13 May 2002.
94 Ibid.
95 R. Balaji, "The vital supply chain link," *Business Line*, 13 October 2003.
96 Ibid.
97 Ibid.
98 T.E. Raja Simhan, "Third Party logistics: New movers on the block," *Business Line*, 13 May 2002.
99 Chitra Padmanabhan, "Barcode India sets its focus on logistics companies," *Express Computer*, 7 October 2002.
100 N. Aggarwal, "India's $ 86b logistics market worth looking at," *The Straits Times*, 19 December 2003.
101 Ibid.
102 "42 pc growth seen in Asian logistics outsourcing," *Business Line*, 11 October 2003.
103 Ibid.
104 Narendra Aggarwal, "India's $ 86b logistics market worth looking at," o; *The Straits Times*, 19 December 2003.
105 "India Inc. gets logistics right," *The Economic Times*, 22 October 2004.
106 R. Balaji, "The vital supply chain link," *Business Line*, 13 October 2003.
107 "Thinking global to stay ahead," *Business Times*, 28 February 2002.
108 T.E. Raja Simhan "Third Party logistics: new movers on the block," *Business Line*, 13 May 2002.
109 A. Khalid, "SembLog's net profits rises 16% to $ 79m," *The Straits Times*, 10 November 2004.
110 R. Wright, "Ports await shipment of fresh investment," *Financial Times*, 8 May 2007.
111 Ibid.
112 "Gateway Distriparks," *Economic Times*, 3 January 2006.
113 T.E. Raja Simhan, "Gateway Distriparks buys CWCL's Gurgaon ICD," *Business Line*, 6 June 2004.
114 Ibid.
115 Ibid.
116 S.V. Nathan, "Gateway Distriparks: Hold," *Business Line*, 6 November 2005.
117 Ibid.
118 A. Mitra, "Gateway Distriparks on expansion mode," *Business Line*, 25 August 2005.
119 Ibid.
120 Ibid.
121 G. Joseph, "Ports told to keep pace with growth," *Business Times*, 25 March 2004.
122 "Dhamra Port by 2007," *The Statesman*, 5 March 2005.

123 K. Merchant, "Companies International," *Financial Times*, London, 7 November 2005.
124 G. Joseph, "Ports told to keep pace with growth," *Business Times*, 25 March 2004.
125 "Participation of Global Players To Be Carried Forward," *Business Line*, 28 September 2005.

10 Civil aviation and airports

1 "New India airline plans domestic services by May," *Shipping Times*, 4 April 2001.
2 "India embraces budget air travel," CNN News, 30 June 2005,
3 "Release aviation policy, restructure DGCA: CII," *The Economic Times*, 19 March 2001.
4 J. Leahy, "Airports trail behind high-flying airlines," *Financial Times*, 8 May 2007.
5 Ibid.
6 N.V. Rao, "India Making Plans to Privatize Airports," *Journal of Commerce*, 22 March 1996.
7 Ibid.
8 Ibid.
9 "Honourable Minister of Tourism Mrs Ambika . . . visits Melbourne and Sydney," *India Chronicle*, Issue 11, April 2006.
10 S. Ramachandran, "Tourists see the good side of India," *Asia Times*, 24 January 2007.
11 A. Pasricha, "India's tourism industry booms," *Voice of America*, 20 June 2004.
12 "India to spend U.S. $ 20b to upgrade airports," *Business Times*, 26–7 March 2005.
13 "India: Playing host to the hilt," *Business Line*, 28 May 2001.
14 Ibid.
15 "Talking with Rajiv Pratap Rudy," *Indian Express*, 20 October 2003.
16 V. Jayanth, "Preparing for the Inflow," *The Hindu*, 24 October 2003.
17 "India to open skies for airlines of ASEAN countries," *Sun News*, India, 20 October 2003.
18 "Talking with Rajiv Pratap Rudy," *Indian Express*, 20 October 2003.
19 "Proposal to modernize Delhi, Mumbai airports," *Press Trust of India*, 30 August 2003.
20 L. Lim, "S'pore and India may ink open skies pact this year," *The Straits Times*, 10 April 2003.
21 Ibid.
22 "Singapore pact is a step toward India—Asean FTA," *Business Line*, 1 July 2005.
23 Ibid.
24 R. Velloor, "Access agreements open up India's skies," *The Straits Times*, 16 April 2005.
25 K. Kaur, "Where's Changi's next threat? X marks the spot," *The Straits Times*, 13 January 2007.
26 "India and U.S. reach open-skies pact," *Business Times*, 17 January 2005.
27 Ibid.
28 A.N, "High-level Indian team in town for air traffic talks," *The Straits Times*, 16 July 1997.
29 A.N, S'pore, India sign new air services pact," *Sunday Times*, 20 July 1997.
30 Ibid.
31 P.N. Pandit, "Indian aviation boom—The myth and reality," *Business Line*, 4 July 2005.
32 Ibid.

33 "Fleet planning philosophies—Singapore Airlines," *Airline Fleet & Asset Management*, July/August 2002
34 "India, Singapore agree to increase flights," *The Hindu*, 25 August 2005.
35 The fifth freedom is a right that enables the airlines of any two countries to pick up passengers in each other's territories for destinations in other nations.
36 P.S. Suryanarayana, "India, Singapore to enhance air connectivity," *The Hindu*, 16 July 2006.
37 Ibid.
38 "Singapore, Coimbatore air link planned," *The Hindu*, 4 October 2006.
39 "SIA to increase flights from India," *The Financial Express*, 7 February 2007.
40 Ibid.
41 "Singapore Airlines to invest in airport logistic support," *The Hindu*, 16 December 2002.
42 "Airbus protests Air India deal," *Taipei Times*, 29 April 2005.
43 "Indian Airline Sector To Grow At 25 Percent," *AirWise News*, 18 November 2005.
44 "Now, pilots refuse to fly to Patna," *Economic Times*, 2 October 2002.
45 "Patna airport not to be closed," *Economic Times*, 10 September 2002.
46 "India to lease out four major airports," *Daily Times*, 18 May 2002.
47 "India-Ananth Kumar to lead aviation team to S.E. Asia," *Business Line*, 7 February 1999.
48 Ibid.
49 Ibid.
50 "India to lease out four major airports by year's end," *Daily Times*, 18 May 2002.
51 J. Leahy, "Airports trail behind high-flying airlines," *Financial Times*, 8 May 2007.
52 "Changi Airport is Singapore's premier shopping mall," *USA Today*, 13 October 2005.
53 Ibid.
54 Ibid.
55 "Air India plans to double fleet over 5–7 years," *Shipping Times*, 3 January 2001.
56 Ibid.
57 S. Agrawal, "India needs to privatize aviation sector," *The Straits Times*, 26 October 2000.
58 "Malaysian Airport Holdings In Bid For Indian Airport Construction," *Asia Pulse*, 5 June 2001.
59 S. LaCroix, S. and D.J. Wolff, *The Asia-Pacific Airline Industry: Economic Boom and the Political Conflict*, East-West Center Special Reports, No. 4, October 1995.
60 Ibid.
61 L.V. Hasselt, "The EU/U.S. Relationship," in *Taking Stock of Air Liberalization*, Kluwer Academic Publishers, London, 1999, pp. 143–60.
62 N. Ghosh, "After a year of delays, new Thai airport opens," *The Straits Times*, 26 September 2006.
63 N. Ghosh, "Feverish work on new Thai airport," *The Straits Times*, 24 August 2005.
64 Ibid.
65 N. Ghosh, "High Hopes for Bangkok's New Airport," *The Straits Times*, 26 September 2006.
66 Ibid.
67 "S'pore sees benefits in Malaysia dogfight for aviation hub," *Agence France Presse*, 12 April 2002.
68 "India to open skies for airlines of ASEAN countries," *Sun News*, India, 20 October 2003.

69 "Malaysian Firms Invited To Participate In Indian Airport Projects," *Bernama*, Malaysia, 9 February 1999.
70 Ibid.
71 "Malaysian Airport Holdings In Bid For Indian Airport Construction," *Asia Pulse*, 5 June 2001.
72 "Privatisation of Mumbai, Delhi airports on track," *Economic Times*, 11 November 2003.
73 W. Dennis, "Malaysia Airports Holdings Invests In New Indian Airport," *Aviation Daily*, 354, 8, 10, October 2003, p. 5.
74 L. Messias, "Two Deals Signed For Hyderabad Airport Project," *Gulf News*, 2 October 2003.
75 D. Dennis, "Malaysia Airports Holdings Invests In New Indian Airport," *Aviation Daily*, 354, 8, 10 October 2003, p. 5.
76 The sixth freedom refers to the freedom to fly between two countries other than the country of origin and to make a stopover in the country of origin.
77 *The Future of International Air Transport Policy*, Organisation for Economic Cooperation and Development, OECD, France, 1997.
78 B. Sandilands, "Airports at forefront of battle for business," *Financial Review*, Australia, 7 March 2001.
79 E. Sochor, *The Politics of International Aviation*, Macmillan, London, 1991.
80 "India: Playing host to the hilt," *Business Line*, 28 May 2001.
81 S. Acharya, *Investing in India*, Macmillan Press, London, 1998.
82 Ibid.
83 A. Almazan, "India seeks S'pore investors for new Bangalore airport," *Business Times*, 5 August 1994.
84 S. Taneja, "Deals worth $ 400m expected from Rao's S'pore visit," *Business Times*, 6 September 1994.
85 Besides L&M, the consortium consisted of RSP Architects, Planners and Engineers Pte Ltd, Singapore Technologies Pte Ltd, Parameswara Holdings, Sembawang Industrial Pte Ltd and Technology Parks Pte Ltd, and Changi Airport Enterprise Pte Ltd.
86 N. Aggarwal, "S'pore group wins $ 569m airport deal," *The Straits Times*, 4 January 1996.
87 "Raytheon Joins Venture to Build Indian Airport," *Journal of Commerce*, 2 March 1995.
88 N.V. Rao, "US, Singapore Firms Join in Building Indian Airport," *Journal of Commerce*, 8 January 1996.
89 N. Aggarwal, "India's Tata group may back out of Bangalore airport plan," *The Straits Times*, 1 February 1997.
90 "Indian minister softens opposition toward Bangalore airport venture," *The Straits Times*, 22 February 1997.
91 G. Skaria, "Why is Tata Air Being Grounded?" *Business Today*, 10 July 1998.
92 Ibid.
93 N. Ionides, "Consortium pulls out of Bangalore airport project," *The Straits Times*, 16 July 1998.
94 "India-Airports' development hanging fire?" *The Hindu*, 5 May 1999.
95 "India: New Company for international airport floated," *The Hindu*, 19 May 2001.
96 Ibid.
97 Ibid.
98 "India: Devanahalli airport: crucial talks on cutting down cost this week," *The Hindu*, 13 August 2001.
99 "New Bangalore air terminal ready," *Economic Times*, 26 November 1998.
100 N. Aggarwal, "Wanted: S'pore investors for new Bangalore airport," *The Straits Times*, 8 September 2003.

101 G. Joseph, “Govt keen to push for a maritime consortium,” *Business Times*, 5 April 2004.
102 “Singapore Air keen on airport services,” *Business Line*, 12 December 2002.
103 R. Bajpai, “Air India, Sats identify areas for joint ventures in India / Air India, Singapore Airport Terminal Services, Sats,” *Business Times*, 3 December 1997.
104 K. Kaur, “Sats-Air India in Hyderabad ground-handling venture,” *The Straits Times*, 2 June 2007.
105 “Singapore Air keen on airport services,” *Business Line*, 12 December 2002.
106 Ibid.
107 “SIA, IA Plan Ground-Handling JV,” *Economic Times*, 21 April 2003.
108 Ibid.
109 N. Aggarwal, “Wanted: S’pore investors for new Bangalore airport,” *The Straits Times*, 8 September 2003.
110 “Investors wanted for 2 Indian airports,” *Business Times*, 13 September 2003.
111 R. Vellor, “Why Delhi airport deal went wrong,” *The Straits Times*, 15 September 2005.
112 “Bharti-Changi JV to bid for Delhi, Mumbai airports,” *The Hindu*, 23 March 2004.
113 S. Rai, “Asia: India: Bid For Airports,” *The New York Times*, 23 March 2004.
114 K. Kaur, “CAAS team shortlisted for stake in India airports,” *The Straits Times*, 26 January 2005.
115 K. Kaur, “S’pore firm in talks to develop airport,” *The Straits Times*, 27 October 2006.
116 “Bharti-Changi pulls out of airport project,” *The Hindu*, 13 September 2005.
117 “Airport modernisation project—Bharti–Changi combine to decide on participation,” *The Hindu*, 11 September 2005.
118 “Bharti–Changi pulls out of airport project,” *The Hindu*, 13 September 2005.
119 P.M. Chua, “Withdrawal from India airport bid a disappointment: SM Goh,” *Business Times*, 17 January 2006.
120 Ibid.
121 R. Velloor, “India welcomes Changi for future projects,” *The Straits Times*, 18 January 2006.
122 K. Kaur, “S’pore sets sights on key foreign airports,” *The Straits Times*, 7 November 2006.
123 Ibid.
124 K. Kaur, “Changi Airports partners Tata to bid for Indian deals,” *The Straits Times*, 22 February 2007.
125 Ibid.
126 K.V. Kurmanath, “Singapore co keen to get Hyderabad airport work,” *Business Line*, 30 November 2006.
127 Ibid.
128 K. Kaur, “Changi Airports partners Tata to bid for Indian deals,” *The Straits Times*, 22 February 2007.
129 Ibid.
130 Ibid.
131 K. Kaur, “India allows S’pore carriers more flights to key cities,” *The Straits Times*, 11 January 2007.
132 Ibid.
133 Ibid.
134 Ibid.
135 Ibid.
136 K. Kaur, “Sats-Air India in Hyderabad ground-handling venture,” *The Straits Times*, 2 June 2007.
137 Ibid.

11 Conclusion: CECA and Singapore projects

1 R. Velloor, “Singapore and India ministers to review Ceca deal,” *The Straits Times*, 31 March 2006.
2 Ibid.
3 Ibid.
4 “Opportunities for S’pore firms in India highlighted,” *Business Times*, 6 May 2007.
5 Ibid.
6 Ibid.
7 P.S. Suryanarayana, “A treaty and a message,” *Frontline*, 22, 15, 16–29 July 2005.
8 R. Suryaprakash, “Singapore–India Relations: CECA and Beyond,” South Asia Analysis Group, Paper No: 1493, 10 August 2005.
9 “India, Singapore trade to touch $ 50bn by 2010: Assocham,” *Business Line*, 29 June 2005.
10 Ibid.
11 Ibid.
12 “Singapore Business Federation,” Press Release, 15 July 2005.
13 Ibid.
14 “Singapore exploring possibility of developing SEZ in India,” *Channel News Asia*, 20 January 2006.
15 R. Vellor, “S’pore may build three SEZs in India, says Balaji,” *The Straits Times*, 27 September 2006.
16 R. Velloor, “Turf war over Indian SEZs,” *The Straits Times*, 14 April 2006.
17 Ibid.
18 R. Vellor, “S’pore may build three SEZs in India, says Balaji,” *The Straits Times*, 27 September 2006.
19 Ibid.
20 “Congress Party backs SEZs but warns on land use,” *The Straits Times*, 25 September 2006.
21 R. Vellor, “India forges ahead with SEZ projects,” *The Straits Times*, 3 October 2006.
22 Ibid.
23 “India to review policy on SEZ projects,” *The Straits Times*, 23 January 2007.
24 Ibid.
25 Ibid.
26 Ibid.
27 Ravi Vellor, “S’pore committed to building SEZs in India,” *The Straits Times*, 22 January 2007.
28 Ibid.
29 Ibid.
30 Speech by Mr. Lim Hng Kiang, Minister for Trade and Industry Singapore, CECA Seminar, 15 July 2005.
31 Ibid.
32 “Bangalore Biotech Park Taking Shape,” *India Business Insight*, 19 March 2002.
33 S.B. Lim, “Still Waiting for ‘The One’ to Deliver Zion,” in Arun Mahiznan (ed.), *Singapore Perspectives 2004*, Institute of Policy Studies, Marshall Cavendish, 2004.
34 K.P. Ho, “Big or Small? Foreign or Local? What Really Matters in Business,” in A.H. Lai, (ed.), *Singapore Perspectives 2006*, Institute of Policy Studies, Marshall Cavendish, 2006.
35 Ravi Velloor, “India fever hits Chinese S’porean businessmen,” *The Straits Times*, 18 April 2007.
36 Ibid.

37 Ibid.
38 "Initial advantages go to Singapore, say Indian officials," *The Straits Times*, 2 July 2005.
39 "Connecting India and Singapore," Keynote address by Mr. Lee Hsien Loong, Deputy Prime Minister of Singapore and Chairman MAS, Standard Chartered Bank's Singapore Conference, Mumbai, 16 January 2004.
40 P.S. Suryanarayana, "Singapore, India may expand economic pact," *The Hindu*, 9 April 2006.
41 Joint Press Statement on the Mid-term Review of the India–Singapore Comprehensive Economic Cooperation Agreement (CECA), Singapore Ministry of Trade and Industry, 1 April 2006.
42 Ibid.
43 "India, Singapore will revisit economic pact," *Deccan Herald*, 15 March 2006.
44 Ibid.
45 Ibid.
46 R. Vellor, "Frank talk among old friends," *The Straits Times*, 24 January 2006.
47 M. Seshagiri, "IIM in Singapore? Still a long way to go," *Times of India*, 29 December 2005.
48 A. Prayag, "IIM-B Singapore programme not before November," *Business Line*, 4 February 2006.
49 Ibid.
50 Address by Mr. Raymond Lim, Minister of State for Trade & Industry and Foreign Affairs at the Inaugural Session of the Fourth "India Calling" Summit, 9 July 2004, Grand Hyatt, Singapore.
51 "India embraces Singapore," *Asia Times*, 23 June 2005.
52 G. Naga Sridhar, "Singapore right place for neutral disputes resolution," *Business Line*, 14 April 2007.
53 Ibid.
54 Ibid.
55 P.S. Suryanarayana, "No soft power projection by India: Arjun," *The Hindu*, 29 March 2005.
56 Ibid.
57 R. Vellor, "Frank talk among old friends," *The Straits Times*, 24 January 2006.
58 "Singapore pact is a step toward India–ASEAN FTA," *Business Line*, 1 July 2005.
59 N. Aggarwal, "S'pore and India review trade pact ahead of schedule," *The Straits Times*, 13 April 2006.
60 Ibid.
61 R. Velloor, "India a land of opportunities for S'pore firms: Tharman," *The Straits Times*, 12 April 2007.
62 Ibid.
63 Ibid.
64 S.H. Lee, "Fast-growing India seeks to become bigger world player," *The Straits Times*, 21 June 2007.
65 "India, Singapore form business forum," *Press Trust of India*, 20 June 2007.
66 "India trade think-tank launched," *Today News*, 21 June 2007.

Bibliography

"30% of Bangalore IT Park taken up," *The Straits Times*, Singapore, 14 September, 1995.

"42 pc growth seen in Asian logistics outsourcing," *Business Line*, 11 October 2003.

A.N. "High-level Indian team in town for air traffic talks," *The Straits Times*, 16 July 1997.

A.N. "S'pore, India sign new air services pact," *Sunday Times*, 20 July 1997.

Abdoolcarim, Z. "India's power unleashed," *Asian Business*, 30, 2, 1994, 18–22.

Acceptance Address by Singapore Prime Minister, Goh Chok Tong, for the Jawaharlal Nehru Award for International Understanding, at Rashtrapati Bhavan, India, 9 July 2004.

Acharya, S. *Investing in India*, Macmillan Press, London, 1998.

Address by Shri Kalam Nath, Minister for Commerce and Industry of India, India–China Business Cooperation Conference, FICCI, New Delhi, India, 11 April 2005.

Agarwala, P.N. *The Role and Impact of Multinationals*, Allied Publishers Limited, Bombay, 1991.

Aggarwal, N. "S'pore group wins $ 569m airport deal," *The Straits Times*, 4 January 1996.

Aggarwal, N. "Big Corporate names in the bag for Bangalore IT Park," *The Straits Times*, 25 January 1996.

Aggarwal, N. "30% of space sold for IT Park's first phase," *The Straits Times*, 14 April 1996.

Aggarwal, N. "Investors take up 30% of Bangalore IT Park's first phase development," *The Straits Times*, 24 January 1997.

Aggarwal, N. "India's Tata group may back out of Bangalore airport plan," *The Straits Times*, 1 February 1997.

Aggarwal, N. "India's township projects offer lucrative openings," *The Straits Times*, 17 March 2003.

Aggarwal, N. "Wanted: S'pore investors for new Bangalore airport," *The Straits Times*, 8 September 2003.

Aggarwal, N. "India's $ 86b logistics market worth looking at," *The Straits Times*, 19 December 2003.

Aggarwal, N. "Right go-between can ease the way," *The Straits Times*, 17 February 2004.

Aggarwal, N. "Economic growth spurs India's mobile phone boom," *The Straits Times*, 1 November 2004.

Aggarwal, N. "Temasek and Sabre Capital team up for $8.5b India fund," *The Straits Times*, 5 July 2005.

Aggarwal, N. "India's Satyam buys S'pore IT firm in $ 9.2m deal," *The Straits Times*, 22 July 2005.

Aggarwal, N. "India's infrastructure industry ripe for the picking," *The Straits Times*, 14 January 2006.

Agrawal, S. "India needs to privatize aviation sector," *The Straits Times*, 26 October 2000

Agrawal, S. "How Large is India's Middle Class?" *The Financial Express*, India, 5 December 2002.

Ahluwalia, M.S. "India's Quiet Economic Revolution," *The Columbia Journal of World Business,* Spring Issue, 1994, 7–12.

Ahluwalia, M.S. "Financing Private Infrastructure: Lessons from India," in Kohli, H., Mody, A. and Walton M. (eds), *Choices for Efficient Private Provision of Infrastructure in East Asia*, World Bank, 1997.

"Air India plans to double fleet over 5–7 years," *Shipping Times*, 3 January 2001.

"Airbus protests Air India deal," *Taipei Times*, 29 April 2005.

"Airport modernisation project—Bharti–Changi combine to decide on participation," *The Hindu*, 11 September 2005.

Aiyar, S. "Interview with Prime Minister Atal Bihari Vajpayee," *Channel Newsasia*, Singapore, 9 April 2002.

Allison, T. "Software—the arrowhead of India's IT weaponry," *Asia Times*, 7 December 2000.

Almazan, A. "India seeks S'pore investors for new Bangalore airport," *Business Times*, 5 August 1994.

Alon, I. (ed.) *Chinese Economic Transition and Internal Market Strategy.* Connecticut: Praeger Publishers, 2003.

"Ambitious Indian firms set sights abroad," Reuters, 31 October 2006.

"Ambitious Indian companies set sights far and wide," *Gulf Times*, 5 November 2006.

Anderson, T. "India seeks mobiles for the masses," *BBC News*, 12 February 2007.

"Andhra Pradesh Hitec City Phase I Set to Take Off," *Business Line*, 19 November 1998.

"Andhra Pradesh launches third phase of Hitec City," *Express Computer*, 8 November 2004.

Ang, L. "National Science and Technology head to join RSP Architects," *Business Times*, 1 July 1993.

Ang, L. "Focused on taking JTC into a new era," *Business Times*, Singapore, 3 April 2000.

"An India that still says No," *The Economist*, 12 August 1995, p. 11.

Aparna, A. "Untangling a Telecoms Revolution," *Telecommunications International Edition*, 33, 10, October 1999.

Arnold, W. "SingTel profits by casting a wide net," *International Herald Tribune*, 5 July 2005.

"Ascendas signs pact with TIDCO for IT complex," *Business Line*, 18 June 2003.

"Ascendas, MIPL to develop 1 mn sq ft for IT, BPO sector," *Economic Times*, 13 October 2004.

"Ascendas opens IT park in Hyderabad," *Business Times*, 15 October 2004.

"Ascendas to develop S $ 150m IT park in Kolkatta," *Channel News Asia*, 23 August 2005.

"Ascendas to build IT park in Kolkatta," *The Economic Times*, 24 August 2005.

"Ascendas to expand further in India, mulls IT park in Pune," *Channel News Asia*, 29 August 2005.

"Ascendas to embark on S $270 million expansion of International Tech Park Bangalore (ITPB)," *Ascendas Press Release*, 10 April 2007.

"Ascendas renames IT park at Madhapur: begins work on phase V," *Business Line*, 23 January 2006.

Asher S., Ramachandran M. and Mehta S. "Foreign Direct Investment: Recent policies and procedures," in A. Shaw and M. Manglani (eds), *Doing Business with India*, Asia Law and Practice, Hong Kong, 2004, pp. 5–15.

Ashoka, Mody and Walton, Michael (eds) *Choices for Efficient Private Provision of Infrastructure in East Asia*, World Bank, 1997.

"Asia's Economic Nationalist," *The Economist*, 12 August 1995, p. 25

"Asian Exodus from Silicon Valley," 17 April 2001, *BBC News*.

"Asian ports lose out to China harbours," *The Straits Times*, 23 December 2006.

Backman, M. *The Asian Insider*, Palgrave Macmillan, New York, 2004, p. 222.

Bagchi, A.K. "Colonialism and the Nature of 'Capitalist' Enterprise in India", *EPW*, 30 July 1988.

Baghaban, P.O., Ede, F. and Calcich, S. "'American executives' perception of the business climate of the two big emerging markets of India and China," *Asia Pacific Journal of Marketing and Logistics* 14, 1, 2002, pp. 40–58.

Bajpai, R. "Air India, Sats identify areas for joint ventures in India / Air India, Singapore Airport Terminal Services, Sats," *Business Times*, 3 December 1997.

Bajpai, R. "India plans 5 free ports specializing in different areas," *Shipping Times*, 15 May 1998.

Bajpai, R. "India opens up housing sector," *Business Times*, 23 June 1998.

Bajpai, R. "Tata-led group pulls out of Indian airport project," *Business Times*, Singapore, 17 July 1998.

Baker, R. "Singapore Technologies Industrial Corporation: Positioned to reap regional rewards," *The Straits Times*, 9 January 1994.

Balaji, R. "The vital supply chain link," *Business Line*, 13 October 2003.

Balasubramanyam, J. and Balasubramanyam, A. "The Software Cluster in Bangalore," in John H. Dunning (ed.), *Regions, Globalization and the Knowledge Based Economy*, Oxford University Press, Oxford, 2000.

Baldauf, S. "Sluggish start for India's leader," *Christi Christian Science Monitor*, 23 May 2005.

"Bangalore leader ousted," *The Straits Times*, 14 May 2004.

Banks, P. and Natarajan, G. "India: The New Asian Tiger?" *Business Horizons*, May–June, 1995, pp. 47–50.

Bardhan, N. and Patwardhan, P. "Multinational corporations and public relations in a historically resistant host culture," *Journal of Communication Management*, 8, 3, 2003, pp. 246–63.

Baru, S. *Strategic Consequences of India's Economic Performance*, Academic Foundation, 2006, pp. 220–9.

Basu, I. "Move over Japan, China beckons Indians," *Asia Times*, 29 October 2003.

Basu, I. "Singapore's $ 680 million visiting card in India," *Asia Times*, 4 September 2004.

Basu, I. "India's new telecom callers," *United Press International*, 25 June 2005.

Basu K. and Weibull, J.W., *Punctuality—A Cultural Trait as Equilibrium*. The

Research Institute of Industrial Economics, Stockholm, No. 582, 10 June 2002.

Batacan, F. "SembCorp and Ascendas swap stakes," *The Straits Times*, 7 April 2001.

Beeson, M. (ed.) *Reconfiguring East Asia: Regional Institutions and Organisations After the Crisis*, Routledge Curzon, London, 2002.

"Bharti-Changi JV to bid for Delhi, Mumbai airports," *The Hindu*, 23 March 2004.

"Bharti-Changi pulls out of airport project," *The Hindu*, 13 September 2005.

Bist, R. "India's great global takeover game," 22 June 2004.

Bist, R. "The great Indian mall boom," *Asia Times*, 24 July 2004.

Biswas, S. "Revolt against India's industrial changes," *BBC News*, 12 February 2007.

Blackman, C. *China Business: The Rules of the Game*, Allen and Unwin, Australia, 2000.

BM, "Deepening Reliance on Foreign Capital," *Economic and Political Weekly* (EPW), 6 March 1993, p. 372.

BM, "Towards Neo-Colonial Dependency," *EPW*, 3–10 August, 1993, p. 1837.

Bowker, J. "Dubai sees clear water to P&O deal," *The Scotsman*, 11 February 2006.

"Brokers' Digest," *The Edge Singapore*, 20 December 2004.

Bullis, D. *Doing Business in Today's India*, Quorum Books, Westport, Conn., 1998.

Burton, J. "Temasek relishes the role of active investor," *Financial Times*, 16 May 2007.

Carlyle, L. "India reaps benefits of economic boom," *CNN News*, 1 November 2006.

Cassis, Y. *Big Business. The European Experience in the Twentieth Ce*ntury, Oxford University Press, Oxford, 1997.

Chan, F. "Changes to Indian property rules attract S'pore developers," *The Straits Times*, 6 February 2006.

Chan S., Clark, C. and Lam, D. (eds) *Beyond the Developmental State. East Asia's Political Economies Reconsidered*, Macmillan Press, London, 1998.

Chandler Jr., A.D., Amatori, F. and Hikino, T. (eds) *Big Business and the Wealth of Nations*, Cambridge University Press, Cambridge, U.K., 1997.

"Chandrababu Naidu: I've nothing to hide," *The Statesman*, 28 February 2001.

Chang, H. "Indian Chamber incorporates holding company for investments in India," *Business Times,* 15 April 1993, p. 3.

Chaudhury, R.R. "The Maritime Dimension: Ports, Shipping and Shipbuilding," *South Asian Survey*, 7, 1, January–June, 2000, pp. 99–112.

Chen, H. "India needs strong admin system to grow fast: M.M. Lee," *The Business Times*, Weekend Edition, 26–27 November 2005.

"Chennai port eyeing container hub status," *Financial Express*, 11 April 2007.

Cheong, S.W. "Draft charter for Asean will be ready for next month," *The Straits Times*, 7 August 2007.

Cheong, Y.M. and Rao, B. (eds) *Singapore–India relations: A primer*, Singapore University Press, Singapore, 1995, pp. 21–39.

Chew, S.W. "L&M eyes another residential cum industrial project in India," *The Straits Times*, 25 September 1995

Chhibber, P.K. and Majumdar, S.K. "Foreign ownership and profitability: Property rights, Control, and the Performance of Firms in Indian industry," *Journal of Law and Economics*, 42, 1, 1999, pp. 209–38.

Chia, W. "Many Reasons why L&M is gaining popularity among investors," *Business Times*, 17 March 1993, p. 5.

"China pledges $500mn for infrastructure in India," *Asia Pulse News*, 24 June 2003.

Cho, L.J and Kim, Y.H. *Korea's Political Economy. An Institutional Perspective*, Westview Press, Boulder, 1994.

Choudhury, A.R. "Infrastructure Challenge," *Business Times*, 16 August 2003.

Coates D. (ed.) *Varieties of Capitalism, Varieties of Approaches*, Palgrave Macmillan, Hampshire, New York, 2005.

Cox, R.W. *The New Realism. Perspectives on Multilateralism and World Order*, United Nations University Press, New York, 1997.

"CPG eyeing Jurong Consultants," *Business Times*, 25 December 2003.

"Cyber city gears up," *BBC News*, 17 March 2000.

D'Costa, A.P. "The International Mobility of Technical Talent," Research paper No. 2006/143, United Nations University, November 2006, pp. 1–35.

D'Costa, A.P. "Flexible practices for mass production goals: economic governance in the Indian automobile industry," *Industrial and Corporate Change*, 13, 2, 1999, pp 335–67.

Discussion with Dr. William Chong and comments from his presentation on "Health-care Opportunities: Taking on the World Together," at the "Connecting India" *Asia Pacific Business Summit*, 12–13 April, 2006, Singapore.

Discussion with Mr. V. Sukumar Iyer, at the "Connecting India" *Asia Pacific Business Summit*, 12–13 April, 2006, Singapore.

Discussion with Prof. Ajit Rangnekar, Deputy Dean, Indian School of Business (ISB), at the "Connecting India" *Asia Pacific Business Summit*, 12–13 April, 2006, Singapore.

Dossani, R. and Kenney, M. "Creating an Environment for Venture Capital in India," *World Development* , 30, 2, 2002, p. 234.

"Dubai, Singapore rush to gain P&O control," *The Telegraph*, 12 January 2006.

Farooq, O. "World: South Asia Surprise performance in Andhra Pradesh," *BBC News*, 7 October 1999.

"Five more Metro Malls on cards for Delhi shoppers," *Press Trust of India*, 12 September 2005.

Gentleman, A. "India's malls pull in people who aren't buying," *International Herald Tribunal*, 11 May 2005.

Ghosh, N. "Singapore, India set high-tech tie-up in motion," *The Straits Times*, 22 January 2000.

Ghosh, N. "Feverish work on new Thai airport," *The Straits Times*, 24 August 2005.

Ghosh, N. "After a year of delays, new Thai airport opens," *The Straits Times*, 26 September 2006.

Ghosh, N. "High Hopes for Bangkok's New Airport," *The Straits Times*, 26 September 2006.

Giridhas, A. "India's mini-multinationals make waves in Western markets," *International Herald Tribune*, 1 September 2005.

"Global corporate giants eye India's booming retail sector," *Channel News Asia*, 18 April 2006.

Hasselt, L.V. "The EU/US Relationship," in M. Gaudry and R.R. Mayes (eds), *Taking Stock of Air Liberalization,* Kluwer Academic Publishers, London, 1999, pp. 143–60.

Hoogvelt, A. *Globalization and the Postcolonial World*, second edition, Palgrave, Houndmills, Basingstoke, UK, 2001.

"How to Keep Investors out," *The Economist*, June 1994.

"India, Inc. gets logistics right," *The Economic Times*, 22 October 2004.

"India: New Company for international airport floated," *The Hindu*, 19 May 2001.
"India: Playing host to the hilt," *Business Link,* 28 May 2001.
"India: Devanahalli airport: crucial talks on cutting down cost this week," *The Hindu*, 13 August 2001.
"India to open skies for airlines of ASEAN countries," *Sun News*, India, 20 October 2003.
"India and US reach open-skies pact," *Business Times*, 17 January 2005.
"India to have 358 shopping malls by 2007: Study," *Indo–Asian News Service*, 22 September 2005.
"India readies for shopping mall boom," *The News*, 10 October 2005.
"India to spend US $ 20b to upgrade airports," *Business Times*, 26–27 March 2005.
"India-Singapore: Moving on 2006," High Commission of India, Sun Media Pte Ltd, Singapore, 2006.
"Indian report paves way for infrastructure spending boost," *Financial Times*, London, 17 January 1997.
"Indian IT firms not quite there yet," *Economic Times*, 26 September 2002.
"Indian retail to be worth Rs. 350 bn crore by end 2005," *Indo–Asian News Service*, 20 January 2005.
"Indian rivals hail Vodafone deal," *BBC News*, 12 February 2007.
"India's township projects offer lucrative openings," *The Straits Times*, 17 March 2003.
"India's property rules deter foreigners," *Business Times*, 12 September 2003.
"India's rich buying into whole new lifestyle concept," *The Straits Times*, 24 September 2004.
Indulal, P.M. and Rajendran, M. "SingTel interested in Vodafone's Bharti stake: Sunil Mittal," *Hindustan Times*, 12 February 2007.
Information Technology Park, Bangalore, Economic and Development Board, Singapore, 1997.
Interview with Zubin Kabraji, CII Director for Southeast Asia, 10 June 1997.
Interview with Anthony Khoo, Projects Manager L&M, 18 July 1997.
Interview with Mr. Cheong Kok Kheong, former CEO of ITPL, 13 October 1997.
Interview with Ms Chong Siak Ching, Managing Director Arcasia Pte Ltd, 12 August 1997.
Interview with Ascendas Operations Manager, Chennai, India, 7 October 2005.
Interview with EDB official, 20 May 1997.
Interview with Senior Singapore Consortium official, 12 August 1997.
Interviews with Singapore Consortium members, 18 July 1997.
Interview with Singapore Consortium official, 20 July 1997.
Interview Singapore Consortium official, 29 July 1997.
Interview with Senior Singapore Consortium member, 12 August 1997.
Interview with Singapore Consortium official, 13 October 1997.
Interview with Trade Officer, Trade and Development Board, Singapore, 30 June 1997.
Jafri, S.A. "Universal CM sinks AP," *Deccan Chronicle*, 22 February 2003.
Jain, P. and Inoguchi, T. (eds) *Japanese Politics, Beyond Karaoke Democracy?* Macmillan, Australia, 1997.
Jaya, Prakash, "Trade agreements key strategy for Singapore," *Asia Times*, 14 February 2006.
Jayanth, V. "Wage pact for port workers: A trend setter for PSEs," *The Hindu*, 16 August 2000.
Jayanth, V. "Preparing for the Inflow," *The Hindu*, 24 October 2003.

Jayaram, A. and Dhawan, R. "Frequency mismatch. GSM vs CDMA: Spectrum Allocation," *Businessworld,* September 2004.

Jayaram, P. "Booming economy drives India to upgrade ports," *The Straits Times*, 20 September 2006.

Jayaram, P. "Indian firms to use Singapore as venue for dispute talks," *The Straits Times*, 14 April 2007.

Jehangir, S. P. "Pacts signal new era for India, China," *Boston Globe*, 13 April 2005.

Jiang, B. "How international firms are coping with supply chain issues in China," *Supply Chain Management*, 7, 3, 2002, pp. 184–8.

Joseph, A.T. "Foreign container lines challenge TAMP order," *Economic Times*, 23 July 2001.

Joseph, A.T. "Indian shipping cos brace for a big hit on bottom lines," *Economic Times*, India, 22 October 2001.

Joseph, G. "Ports told to keep pace with growth," *Business Times*, 25 March 2004.

Joseph, G. "Govt keen to push for a maritime consortium," *Business Times*, 5 April 2004.

Kanekar, S. and Vaz, L. "Effects of gender and status upon punctuality norms," *Journal of Social Psychology*, 133, 1993, 377–84.

Kapur, B.S. (Managing Director, IRCON International Ltd, India) *Developments and Opportunities in Infrastructure—Indian Scenario*, unpublished paper.

Katakam, K. "Corporate Affairs: VSNL's worries," *Frontline*, 19, 15, July 20–August 2, 2002.

Kaur, K. "CAAS team shortlisted for stake in India airports," *The Straits Times*, 26 January 2005.

Kaur, K. "S'pore firm in talks to develop airport," *The Straits Times*, 27 October 2006.

Kaur, K. "S'pore sets sights on key foreign airports," *The Straits Times*, 7 November 2006.

Kaur, K. "India allows S'pore carriers more flights to key cities," *The Straits Times*, 11 January 2007.

Kaur, K "Where's Changi's next threat? X marks the spot," *The Straits Times*, 13 January 2007.

Kaur, K. "Changi Airports partners Tata to bid for Indian deals," *The Straits Times*, 22 February 2007.

Kaur, K. "Sats-Air India in Hyderabad ground-handling venture," *The Straits Times*, 2 June 2007.

Kemp, L. 1987. *Investing in China—Where, How and Why?* Economist Intelligence Unit, London.

Kesavapany K. and Hew, D. "Revisiting blueprint for Asean Community," *The Straits Times*, 12 January 2007.

"KFC to expand operations in India," *Business Times*, 17 February 2006.

Khalid, A. "SembLog's net profits rises 16% to $ 79m," *The Straits Times*, 10 November 2004.

Khanna, V. "India to tap Singapore's expertise in developing infrastructure," *Business Times*, 29 June 1994.

Khanna, V. "Services: key to tapping India's boom," *Business Times*, 28 August 2000.

Khanna, V. "India: Asia's surprise economy of 2003," *Business Times*, 5 January 2004.

Kim, E.M. *Big Business, Strong State, Collusion and Conflict in South Korean Development*, State University of New York Press, Albany, 1997.

Kindo, M. "Japan and an Asian Economic Community," Working Papers, RIS-DP # 106, January 2006.

Kleinman, M. and Garside, J. "Hinduja brothers seek local allies to join bid for Hutchinson Essar," *The Sunday Telegraph*, 4 February 2007.

Koh, E. "S'pore's L&M pushing into Viet market," *Business Times*, 11 February 1992.

Kohli, A. "Politics of Economic Liberalization in India," *World Development*, 17, 3, 1989, pp. 305–28.

Kohli, A., Moon, C. and Sorensen, G. (eds) *States, Markets and Just Growth: Development in the Twenty-first Century*, United Nations University Press, New York, 2003.

Kohli, H., Mody, A. and Walton M. (eds) *Choices for Efficient Private Provision of Infrastructure in East Asia*, World Bank, 1997.

Krishnan, S. "Laying the finance foundation," *Business Line*, India, 27 October 2002.

Kurien, D.K. "Shipping: Competition for state ports," *Financial Times*, India, 17 September 2001.

Kumar, K.G. "Pooling out work," *The Hindu*, 16 January 2006.

Kumar, K.S. "Dock workers plan protest," *The Hindu*, 24 July 2006.

Kumar, N. "Towards an East Asian economic unit," *Financial Express*, 20 June 2006.

Kumar, S. and Thacker-Kumar, L. "Investing in India: Strategies for tackling bureaucratic hurdles," *Business Horizons*, January–February, 1996, pp. 10–16.

Kumar, V.R. "APHB venture with Singapore, Malaysian Cos—Two townships coming up near Hyderabad," *Business Line*, 21 May 2002.

Kumar, V.R. "Demand-supply mismatch," *Business Line*, India, 1 July 2002.

Kurmanath, K.V. "Singapore co keen to get Hyderabad airport work," *Business Line*, 30 November 2006.

Kwan, W.K. "Seek Business Openings Throughout Region: PM Urges S'pore Investors," *The Straits Times*, 10 May 1993.

"L&M clinches another building job in Vietnam," *The Straits Times*, 27 June 1992.

"L&M taps S'pore market for $ 40m to finance deals abroad," *Business Times,* 29 July 1992.

"L&M wins Pakistani deals worth US $56m," *The Straits Times,* 13 October 1992.

"L&M wins $ 23m Taipei grouting project," *The Straits Times*, 8 March 1993.

"L&M completes suspended roof for Taiwan MRT station," *The Straits Times*, 19 April 1993.

"L&M gets $ 4.2m Sri Lanka job to repair bridge," *The Straits Times*, 26 April 1993.

"L&M International to bid for more civil engineering projects in Pakistan," *The Straits Times*, 21 January 1994.

"L&M won an NPB award for setting a new benchmark in soil improvement for an airport runway on Pulau Sudong in Singapore," *Business Times*, 8 November 1994.

L&M Group Publications, 1996.

LaCroix, S. and Wolff, D.J. *The Asia-Pacific Airline Industry: Economic Boom and the Political Conflict*, East-West Center Special Reports, No. 4, October 1995.

Lall, S. and Mohammad, S. "Multinational in Indian Big Business," *Journal of Development Economics*, 13, 1983, pp. 143–57.

Leahy, J. "Airports trail behind high-flying airlines," *Financial Times*, 8 May 2007.

Leahy, J. "Dilemmas haunt the property market," *Financial Times*, 8 May 2007.

Lee, B. "$ 1.7 billion bet," *The Straits Times*, 13 January 2004.

Lee, B. "ST Telemedia's bid for Indian telco hits snag," *The Straits Times*, 1 April 2005.

Lee, B. "Indian minister dashes hopes of ST Telemedia," *The Straits Times*, 25 May 2005.

Lee, B. "Growing pains for SingTel's growth strategy," *The Straits Times*, 14 November 2005.
Lee, B. "Vodafone gets green light for bigger stake in Bharti," *The Straits Times*, 26 November 2005.
Lee, B. "SingTel appoints 17-year veteran as chief exec," *The Straits Times*, 22 September 2006.
Lee, B. "SingTel's $ 994m gain disappoints analysts," *The Straits Times*, 9 February 2007.
Lee Hsien Yang interview, "Provider of Choice," *Far Eastern Economic Review*, 15 February 2001.
Lee, S.H. "S'pore—India ties get boost with launch of two forums," *The Straits Times*, 20 June 2007.
Lee, S.H. "Fast-growing India seeks to become bigger world player," *The Straits Times*, 21 June 2007.
Lee S.S. "Free flow of investment important for growth," *The Straits Times*, 3 August 2007.
Lee S.S. "Temasek's portfolio swells beyond US $ 100b for first time," *The Straits Times*, 3 August 2007.
Leow, A.J. "Group plans to expand IT park project in Bangalore," *The Straits Times*, 26 November, 1993, p. 26.
Li, F. and Nader, H.S. "*Brand Naming in China: Sociolinguistic Implications*," *Multinational Business Review*, 11, 3, 2003, 3–21.
Li, F. and Shooshtari, N.H. "*Brand Naming in China: Sociolinguistic Implications*," *Multinational Business Review*, 11, 3, 2003, p. 3.
Li, X. "PM Lee urges faster regional integration," *The Straits Times*, 12 December 2005.
Lim, L. "S'pore and India may ink open skies pact this year," *The Straits Times*, 10 April 2003.
"Lim Siong Guan appointed chairman of Singapore Tech," *The Straits Times*, 23 July 1994.
Liyanage, S. "Breeding innovation clusters through collaborative networks," *Technovation*, 15, 9, 1995, pp. 553–67.
Loh, K.C. "BCA signs memorandum of cooperation with Indian counterpart," *Channel News Asia*, 12 April 2005.
Low, E. "S'pore can tap Hyderabad's Internet talent pool: PM," *Business Times*, 21 January 2000.
Low, E. "Come, do business in new India," *Business Times*, 9 October 2001.
Luce, E. "Modest dream is crucial for future infrastructure," *Financial Times*, London, 22 March 2005.
Lyons, M.P. "Joint-Ventures as Strategic Choice—A Literature Review," *Long Range Planning*, 24, 4, 1991, p.138.
Mahizhnan, A. "Corporate networking where to next?" *Business Times*, 27–28 February 1993.
Mahmood, I.P. and Singh, J. 'Technological dynamism in Asia', *Research Policy*, 32, 2003, pp. 1031–54.
"Malaysian Firms Invited To Participate In Indian Airport Projects," *Bernama*, Malaysia, 9 February 1999.
"Malaysian Airport Holdings In Bid For Indian Airport Construction," *Asia Pulse*, 5 June 2001.

Malhotra, T.C. "Ports need better transport links," *International Freighting Weekly*, 26 March 2007.

Manoj, P. "PSA quits race for Hazira box terminal project," *Business Line*, 27 November 2004.

Marshall, A. "Waterway To the World," *Time*, Asia, 25 July 2006.

McHardy, R.D. and Walsh J. "Market entry decisions in China," *Thunderbird International Business Review*, 45, 3, 2003, pp. 289–92.

McIndoe, A. "Landmark blueprint for an Asean Economic Community," *The Straits Times*, 25 August 2007.

Merchant, K. "Companies International," *Financial Times*, London, 7 November 2005.

Messias, L. "Two Deals Signed For Hyderabad Airport Project," *Gulf News*, 2 October 2003.

Millar, J. *Software Teletrade in Bangalore: the case study for sustainability*, United Nations University, Mumbai, November 1999.

Mitra, A. "Staying on course," *Frontline*, 22, 23, 18 November 2005.

Mitra, R. "Gateway Distriparks on expansion mode," *Business Line*, 25 August 2005.

Mittal, S. (Chairman, Bharti Enterprises) "India and Singapore," India Economic Summit 2002, World Economic Forum, 25 November 2002.

"MNCs occupy 95 p.c. in HITEC City phase-II," *The Hindu*, 25 June 2001.

Moeran, B. "The Business of Anthropology: Communication, Culture and Japan," *The Copenhagen Journal of Asian Studies*, 17, 2003, pp. 87–109.

Montagnon, P. "Red tape blackens the picture," *Financial Times*, London, 19 November 1996.

Moore, G. and Davis, K. "Learning the Silicon Valley Way," in Bresnahan, T. and Gambardella, A. (eds), *Building High-Tech Clusters*, Cambridge University Press, Cambridge, U.K., 2004, p. 27.

Moorthy, M.K.N. "10 million workers strike across India," *People's Weekly World Newspaper*, 27 April 2002.

Mukherjee, A. "GIC to invest in Chennai township via Singapore arm," *Business Line,* 6 May 2003.

Naidu, C. *Alignment of Political Parties and Its Implications On The Future Of India*, Public Lecture, Lee Kuan Yew Exchange Fellow, Singapore

Nathan, S.V. "Gateway Distriparks: Hold," *Business Line*, 6 November 2005.

"National Science and Technology head to join RSP Architects," *Business Times*, 1 July 1993.

"New Bangalore air terminal ready," *Economic Times*, 26 November 1998.

"New chief takes over at Bangalore IT Park," *The Straits Times,* 13 March 1996.

"New India airline plans domestic services by May," *Shipping Times*, 4 April 2001.

"New Jakarta port may hive off 10% of PSA volume," *The Straits Times*, 15 November 2006.

"New Philosophy of Development Stressed," *The Hindu*, 17 February 1999.

Ng, G. "Indian telecoms firm to build $318m underwater cable network," *The Straits Times*, 29 August 2006.

Ng, G. "Will SingTel chief transform telco," *The Straits Times*, 22 September 2006.

Ng, G. "SingTel chief looks to Central Asia, Middle East," *The Straits Times*, 24 April 2007.

Ng, G. "GIC creates 4 new key posts in major revamp," *The Straits Times*, 17 July 2007.

Ngiam, T.D. *A Mandarin and the Making of Public Policy*, NUS Press, Singapore, 2006, pp.162–3.

"No major impact seen from SingTel CEO's departure: analysts," *Channel News Asia*, 24 July 2006.

Noronha, F. "Plans for India's Largest Port Shelved*," Environment News Service*, 9 December 1998

"Now, pilots refuse to fly to Patna," *Economic Times*, 2 October 2002.

Oh, P.M. "SingTel group's mobile phone users top 112m," *Business Times*, 8 February 2007.

O'Reilly, B. "Your New Global Work Force," *Fortune*, 14 December 1992, p. 29.

Our Bureau "Singapore firm keen on building Kolkata tower," *Business Line*, 20 November 2002.

Padmanabhan, C. "Barcode India sets its focus on logistics companies," *Express Computer*, 7 October 2002.

Padmapriya, J. "Govt for corporatisation of 12 major ports," *Economic Times*, 23 August 2001

Pandit, P.N. "Indian aviation boom—The myth and reality," *Business Line*, 4 July 2005.

Parameswara Holdings Ltd, *Shareholders Report*, 10 July 1997.

Parbat, K. "Hutch, Essar to merge licenses under single co," *Economic Times*, India, 24 February 2003.

Parker, A. "Vodafone vests hopes in Indian regulator," *Financial Times*, 27 April 2007.

Parnell, M.F. "Doing business in China—the modern German experience," *European Business Review*, 14, 5, 2002, pp. 351–63.

"Participation of Global Players To Be Carried Forward," *Business Line*, 28 September 2005.

Pasricha, A. "India's tourism industry booms," *Voice of America*, 20 June 2004.

Patibandla, M. and Petersen, B. "Role of Transnational Corporations in the Evolution of a High-Tech Industry: The Case of India's Software Industry," *World Development*, 30, 9, 2002, pp. 1561–77.

"Patna airport not to be closed," *Economic Times*, 10 September 2002.

Patni, A. "Silicon Valley of the East," *Harvard International Review*, 21, 4, Fall 1999, pp. 8–9.

Paul, J. "Let competition in, full steam," *The Hindu*, 5 August 2006.

Pedersen, J.D. "Explaining Economic Liberalization in India: State and Society Perspectives," *World Development*, 28, 1, 2000, pp. 265–82.

"Pepsi India to expand portfolio, foray into breakfast segment—$ 300–500m investment planned," *Business Line*, 30 March 2005.

Pingle, V. *Rethinking the Developmental State*, St. Martins Press, New York, 1999.

Pitelis, C.N. and Sugden, R. (eds) *The Nature of the Transnational Firm*, Routledge, London and New York, 1991.

"Plan to Recast Haldia Dock as Major Port," *Business Line*, 19 April 2000

PM Goh Chok Tong, "Singapore Must Plug Into Thriving Economies," *The Straits Times,* 22 May 1993.

PM Goh Chok Tong, "Staying competitive through regionalisation," *Speeches,* 17, 3, May–June 1993.

PM Goh Chok Tong, "Prospects for India in the New World Economic Order," *Speeches*, 19, 1, Jan–Feb 1995.

PM Goh Chok Tong's National day rally speech, Singapore, 19 August 2001.

Policies Programmes and Initiatives: Surface Transport, Press Information Bureau, Government of India, March 1999.

Porter, M. "The determinants and dynamics of national advantage," in J. Drew (ed.), *Readings in International Enterprise*, Routledge, London and New York, 1995, p. 39.

Porter, M. "Clusters and the New Economic of Competition," *Harvard Business Review*, 76, 6, Nov/Dec 1998, p. 77.

Prasad, R.J.R. "Another Silicon Valley," *The Hindu*, 27 October 1997.

Prasad, R.J.R. "Congress Assertive, TDP Confident," *The Hindu*, 18 November 1999.

Prasad, S. "Feasting On The Chinese Fare," *Business Today*, India, 25 November 2001.

Presentation Notes, "Singapore Calling—All Indian Businesses Seminar," Singapore Law Academy and SICCI, Supreme Court Singapore, 20 January 2006.

Press Information Bureau, Government of India, 1997–98.

Prime Minister's Council, India, September 2001.

"Privatisation of Mumbai, Delhi airports on track," *Economic Times*, 11 November 2003.

"Property Boom in India," *The Straits Times*, 20 January 2007.

"Proposal to modernize Delhi, Mumbai airports," *Press Trust of India*, 30 August 2003.

"PSA bags third Indian port project in Hazira," *Lloyd's List*, 2 March 2007.

"PSA Int'l voted best container terminal operator again," *The Straits Times*, 26 April 2007.

"PSA Lands India Port Project," *Pacific Shipper*, 17 May 2007.

Pucher, J., Korattyswaropam, N., Mittal, N. and Ittyerah, N. "Urban transport crisis in India," *Transport Policy*, 12, 2005, pp.185–7.

Puliyenthuruthel, J. "Essar to buy BPL for $ 1b," *Daily Deal*, 21 July 2005.

Raghunathan, V.K. "Little S'pore in India," *The Straits Times*, 12 September 2003.

Raghunathan, V.K., "Indian states jockey for slice of investment pie," *The Straits Times,* 21 January 2005.

Raghuvanshi, V. "Headed for uncertain waters," *Business Times*, 9 April 1997.

Raghunanishi, V. "Indian Shipping: What's In Store," *Business Times*, 14 August 1997.

Rahman, R.D. and Andreu, J.M. *China and India, Towards Global Economic Supremacy*, Academic Foundation, New Delhi, 2006.

Rai, S. "Asia: India: Bid For Airports," *The New York Times*, 23 March 2004.

Raj, C. "Invest in India early, urges Indian Minister," *Business Times*, 15 May 2001.

Raja Simhan, T.E. "Third Party logistics: New movers on the block," *Business Line*, 13 May 2002.

Raja Simhan, T.E. "Gateway Distriparks buys CWCL's Gurgaon ICD," *Business Line*, 6 June 2004.

Ramachandran, K. "IT infrastructure boom in Chennai," *The Hindu*, 4 October 2004.

Ramachandran, R. "Understanding the market environment of India," *Business Horizons*, 44–52, January–February 2000.

Ramachandran, S. "Tourists see the good side of India," *Asia Times*, 24 January 2007.

Ramakrishnan, N. "Ascendas to market space to ITES firms," *Business Line*, 14 November 2002.

Ramanujam, T.C.A. "India Inc must foray abroad with caution," *Business Line*, 24 November 2006.

Rambabu, G. “Bharti makes an international call,” *Business Line*, 9 April 2002.

Rambabu, G. “Smoke signals,” *Business Line*, August 6, 2003.

Rambabu, G. “On the right track,” *Business Line*, January 9, 2004.

Rao, N.V. “US, Singapore Firms Join in Building Indian Airport,” *Journal of Commerce*, 8 January 1996.

Rao, N.V. “India Making Plans to Privatize Airports,” *Journal of Commerce*, 22 March 1996.

Rao, N.V, “Plan to boost capacity attracts cash,” *Journal of Commerce*, 28 July 1998.

Ratnam, V. “Multinational companies in India,” *The International Journal of Human Resource Management*, 9, 4, 1998, pp. 567–89.

“Raytheon Joins Venture to Build Indian Airport,” *Journal of Commerce*, 2 March 1995.

“RBI to spur India Inc’s foreign takeover drive,” *Economic Times*, 20 January 2007.

“Recognising the best in logistics industry,” Speech by Teo Ming Kian, Singapore, Economic Development Board, Asia Logistics Award 2003 Ceremony, 25 September 2003.

Reina, P. “Fast Growth Propels India to the Top of the World’s Hot Markets,” *Engineering News Record*, 28 November 2005.

“Release aviation policy, restructure DGCA: CII,” *The Economic Times*, 19 March 2001.

“Relevance of an Asian Economic Community,” RIS Policy Briefs # 1, No. 1 May 2003.

Robinson M. and White, G. (eds) *The Democratic Developmental State. Politics and Institutional Design,* Oxford University Press, Oxford, 1998.

“Role of tariff regulator for major ports questioned,” *The Hindu*, 15 November 2005.

Root, F.R. *Entry Strategies for International Markets*, Lexington Books, New York, 1994.

Rosenberg, D. *Cloning Silicon Valley, The Next Generation High-tech Hotspots*, Reuters, Pearson Education, London, New York, Singapore, 2002.

Sadri, S. and Williamson, C. “Management and Industrial Relations Strategies of Multinational Corporations in Developing Countries,” *Journal of Business Research*, 18, 1989, pp. 179–93.

Sandilands, B. “Airports at forefront of battle for business,” *Financial Review*, Australia, 7 March 2001

Sanghvi, V. “China policy: Vajpayee falls back on Nehru’s Panchsheel,” *Hindustan Times*, 23 June 2003.

Sanu, S. “Beyond English,” *Siliconindia*, 8, 5, June 2004, p. 14.

Sarmah, P.M. “Telecom markets—Ringing in effective regulations,” *Business Line*, 12 December 2002.

Saxenian, A. “Bangalore: The Silicon Valley of Asia?” in Anne O. Krueger (ed.), *Economic Policy Reforms and the Indian Economy*, Oxford University Press, New Delhi, India, 2002.

Saywell, T. “Singapore’s New India Play,” *Far Eastern Economic Review*, 1 February 2001.

Saywell, T. “Stoking SingTel’s regional ambitions,” *Far Eastern Economic Review*, 10 October 2002.

“Second Phase of Hitec City Begins,” *India Business Insight*, 11 September 2000.

Seligman, A.B. *The Problem of Trust*. Princeton University Press, Princeton, NJ, 1997.

Seligson M.A. and Passe-Smith, J.T. *Development and Underdevelopment. The*

Political Economy of Global Inequality, Lynne Rienner Publishers, Boulder, London, 2003.
"Sembawang Corp forms joint venture with L&M," *The Straits Times*, 18 January 1995.
"Sembawang, L&M form building firm in India," *The Straits Times*, 18 January 1995.
Seshagiri, N. "India has a depth of human talent skilled in IT work, 'The Informatics Policy in India'," *Information Systems Frontier*, 1, 1, 1999, p. 109.
Shafaeddin, S.M. "Is China's accession to WTO threatening exports of developing countries?" *China Economic Review*, 2003.
Shameen, A. "Corporate: SingTel's India conundrum," *The Edge*, Singapore, 22 January 2007.
"Share benefits with hosts: PM," *The Straits Times*, 22 May 1993.
Sharma, S. "Role of Technology In Market Integration In The Asia-Pacific Region," in Joseph L.H. Tan (ed.), *Regional Economic Integration In The Asia-Pacific,* 1993, pp. 64–71.
Shekar, M. "High-tech Bangalore also leads in suicides," *The Straits Times*, 11 January 2002.
"SIA, IA Plan Ground-Handling JV," *Economic Times*, 21 April 2003.
"SIA to increase flights from India," *The Financial Express*, 7 February 2007.
Siddharthan, N.S. and Pandit, B.L. "Liberalisation and investment: behaviour of MNEs and large corporate firms in India," *International Business Review*, 7, 1998, pp. 535–48.
Sikes, J. "Singapore: Making The Indian Connection," *Asian Business*, May 1993.
"Singapore Air keen on airport services," *Business Line*, 12 December 2002.
"Singapore Airlines to invest in airport logistic support," *The Hindu*, 16 December 2002.
"Singapore Brand Gaining Recognition in India," Building and Construction Authority, Joint Media Release, 8 April 2005.
"Singapore businessmen eye India," *The Straits Times*, 22 September 1993.
"Singapore, Coimbatore air link planned," *The Hindu*, 4 October 2006.
"Singapore eyes India and Brazil to offset a cooler US market," *The Australian*, 7 February 2006.
"Singapore firms eye India IT Market," *Daily Times*, 6 August 2004.
"Singapore firm keen on building Kolkatta tower," *Business Line*, 20 November 2002.
"Singapore firm to acquire Vanenberg IT," *Business Line*, 21 December 2004.
"Singapore firm seen in Vizag realty deal," *Business Standard*, 8 March 2006.
"Singapore Must Plug Into Thriving Regional Economies and Grow With Them," *The Straits Times*, 22 May 1993.
"Singapore offers expertise on township living," *Business Line*, 10 October 2002.
"Singapore pact is a step towards India—Asean FTA," *Business Line*, 1 July 2005.
"Singapore plans future in science," *Taipei Times*, 25 August 2005.
"Singapore real estate major to enter India," *Business Standard*, 13 September 2004.
"Singapore's tech park sets the benchmark," *The Straits Times*, 12 April 2007.
"Singapore Telecom invests $252 million to hold 32% of Bharti Telecom," *India Daily*, 20 May 2005.
"Singapore to tie-up with India on infrastructure development," Press Trust of India, 18 April 2005.
Singhal, A. and Rogers, E.M. *India's Communication Revolution, From Bullock Carts to Cyber Marts*, Sage Publications, New Delhi, 2001.

"SingTel favours increase in FDI limit in Telecom," *Press Trust of India*, 14 January 2003.

"SingTel's C2C undersea cable unit up for sale," *The Straits Times*, 18 October 2005.

"SingTel CEO Lee Hsien Yang to step down, no reason given," *The Star*, 21 July 2006.

"SingTel CEO Lee Hsien Yang to call it quits," *Economic Times*, 22 July 2006.

"SingTel is Soaring beyond Singapore," *Businessweek,* 3 December 2001.

Siow, L.S. "Stream of good news driving SingTel up," *Business Times*, 31 January 2007.

Skaria, G. "Why is Tata Air Being Grounded?" *Business Today*, 10 July 1998.

Sobel R. *The Age of Giant Corporations, A Macroeconomic History of American Business, 1914–1992*, third edition, Greenwood Press, Westport, Conn., London, 1993.

Sochor, E. *The Politics of International Aviation*, MacMillan, London, 1991.

Soh, T.K. "L&M taps S'pore market for $ 40m to finance deals abroad," *Business Times*, 29 July 1992.

"Southeast Asian firms bid for Chattisgarh housing project," *Indo-Asian News Services*, 12 October 2004.

Speech by Mr. Goh Chok Tong, Senior Minister of Singapore, At Official Launch of the Institute of South Asian Studies (ISAS), 27 January 2005, Singapore, Orchard Hotel.

Speech by Mr. Lee Hsien Loong, Chairman Monetary Authority of Singapore and Deputy Prime Minister, Singapore, 26 October 1999.

Speech by Singapore Prime Minister Lee Hsien Loong, "The Future of East Asian Co-operation" at the 11th International Conference on "The Future of Asia," 25 May 2005, Tokyo, Japan.

Speech by Singapore Prime Minister Lee Hsien Loong, "Asean: Still attractive at 40," *The Straits Times*, 8 August 2007.

Speech by SingTel Chief Executive, Lee Hsien Yang, "Growing Out of Singapore—The Singtel Experience," Fullerton Hotel, Singapore, 20 February 2002.

Speech by Mr. Lim Hng Kiang, Minister for Trade and Industry, at the "Celebrating India in Singapore" inaugural evening, 11 April 2006, 8.15pm at the Shangri-la Hotel, Singapore.

Special Correspondent "Work on Singapore-style township at Ghatkesar to start from June," *The Hindu*, 11 April 2002.

"S'pore firms should focus on region: BG Lee," *Business Times,* 29 October 1992.

"S'pore needs to tap region, go offshore and stay competitive," *The Straits Times,* 29 October 1992.

"S'pore sees benefits in Malaysia dogfight for aviation hub," *Agence France Presse*, 12 April 2002.

Sreenivasan, V. "L&M overseas business grows rapidly but returns still small," *Business Times,* 5 June 1995.

Sridhar, V. "Public Sector Enterprises; Challenges of Change," *Frontline*, 15, 1, 10–23 January 1998.

Sridharan, K. *The ASEAN Region in India's Foreign Policy*, Dartmouth Publishing, Aldershot, U.K., 1996.

Srinath, M.G. "Infrastructure reforms holding back India's economic progress," *Deutsche Presse Agentur*, 6 August 1997.

Srinivasan, R. "Corporate India goes shopping—And lands smart deals on foreign shores," *Business Line*, 14 January 2007.

Srivastava, S. "More steel for emerging India," *Asia Times*, 25 October 2006.
Staff Reporter, "Naidu lays stone for Singapore-class township," *The Hindu*, 13 February 2003.
Stremlau, J. "Bangalore: India's silicon city," *Monthly Labor Review*, November 1996.
Stremlau, J. "Dateline Bangalore: Third World Technopolis," *Forbes*, 60, 3, 1997, p.162.
Sung, T. "L&M Group Investments poised to be full-fledged MNC," *The Straits Times*, 14 January 1993.
"Survey—India: Information Technology," *Financial Times*, London, 1 December 1999.
Suryanarayana, P.S. "Singapore pvt investors promote real estate projects in India," *Business Line*, 14 April 2006.
Suryanarayana, P.S. "India, Singapore to enhance air connectivity," *The Hindu*, 16 July 2006.
Sushil, V. "Economic Liberalization's Effect on Sources of Competitive Advantage of Different Groups of Companies: the Case of India," *International Business Review*, 6, 2, 2000, p. 191.
"Systema Eyes India's Reliance Telecom," *Communications & Electronics Report*, 12 September 2005.
"Talking with Rajiv Pratap Rudy," *Indian Express*, 20 October 2003.
Tata, R. "Changing India's corporate culture," *Outlook*, No.1, 2000.
Tata, S. "Spurring super-shopping," *Tata Press Release.*
"Tata's pull out from airport project," *The Statesman*, India, 16 July 1998.
Tan, A. "GIC Real Estate Exploring India Market, REIT, *Business Times*, 25 February 2005.
Tan, A. "Temasek maybe in a spot with stakes in 2 cellular players," *The Straits Times*, 23 April 2005.
Tan, C.H. *Venturing Overseas, Singapore's External Wing*, MaGraw-Hill Book Co., Singapore, 1995.
Tan, L. "SingTel Chairman Any to retire next month," *The Straits Times*, 5 July 2003.
Tan, S. "L&M Group Investments poised to be full-fledged MNC," *The Straits Times*, 14 January 1993.
Tandon, A. and Sridharan, R. "Infotech & Telecom," *Business Today*, 27 July 1998.
Taneja, S. "Deals worth $ 400m expected from Rao's S'pore visit," *Business Times*, 6 September 1994.
Tay, A. "Guthrie's proposed takeover of L&M," *Business Times*, 18 February, 1992.
Tay, E. "Tony Tan warns of dark clouds on horizon for markets," *The Straits Times*, 1 August 2007.
"TCS for Software Centre At Hitec City," *India Business Insight*, 3 April 2000.
"TCS initial S $ 6.2 million investment into Singapore Caps Successful 20-year Track Record in the Republic," *TCS Press Release*, 9 December 2003.
"Tech Parks," Dataquest, 17 October 2005.
"Technology Parks poised to export expertise to region," *The Straits Times,* 7 April, 1993.
"Telecoms changes set alarm bells ringing," *Asia Review*, October 1994.
"Temasek Holdings and Standard Chartered Private Equity Launch US $100 Million Merlion India Fund," Press Release, *Temasek Holdings*, 26 August 2003.
"Temasek to invest $ 100 million in small Asian companies," *Business Times*, 8 March 2004.

"Temasek only an investor in ST Telemedia," *The Straits Times*, 22 April 2005.

Teo, H.L. "ST Telemedia buys 20% of Indian firm for $ 47m," *Business Times*, 16 August 2000.

Teo, H.L. "SingTel and Bharti to build US $650m fibre-optic link to India," *Business Times*, 25 October, 2000.

Teo, J. "Building demand to stay steady at $ 12bn" *The Straits Times*, 12 January 2005.

Teo, J. "Ascendas sets up $ 500m fund for Indian properties," *The Straits Times*, 14 June 2007.

"The Bangalore paradox," *The Economist*, 21 April 2005.

The Future of International Air Transport Policy, Organisation for Economic Co-operation and Development, OECD, France, 1997.

"The Hindi—Editorial: Riding two Horses," *The Hindu*, 4 June 2000.

"The India Connection," *Business Times*, 23 July 2003.

"The promise of CECA," *The Business Times*, 27 April 2005.

"The research arm of L&M was also awarded two research grants by the National Science and Technology Board (NSTB) and the CIDB," *Business Times* (Singapore), 11 February, 1992, p.1.

"The Tata Group's IT division targets a place among the world's top 10 consulting firms," *Asia Market Review*, 12, 14, 1–15 August, Tokyo.

Thiagarajan, K. "Unified license—Level playing field, the great leveler," *Business Line*, August 21, 2003.

"Thinking global to stay ahead," *Business Times*, 28 February 2002.

Thorn, J. "India Rocks!" *The International Economy*, (Spring) 2004, pp. 67–9.

"Tidco in pact with JTC arm for software park," *Business Line*, 4 July 2002.

"Tidel Park still awaits Tidco, Ascendas JV," *The Economic Times*, 17 October 2004.

Timmons, H. "Dubai set to win port operator, and status as giant," *International Herald Tribune*, 11 February 2006.

Toh, E. "L&M and RSP Architects to vie for China projects," *The Straits Times*, 9 January 1993.

"Trade between India, Singapore to grow by 10%," *Chennai News Service*, 20 November 2004.

TRAI Press Release, No. 36, 6 November 2003.

"Two firms carving new frontiers," *The Straits Times*, 9 May 1995.

"US experts to study traffic problems," *The Times of India,* 7 January 2006.

"Use technology to uplift people: CM," *The Hindu*, 5 October 2001.

Vachani, S., "Economic Liberalization's Effect on Sources of Competitive Advantage of Different Groups of Companies: the Case of India," *International Business Review*, 6, 2, 1997, pp. 165–84.

Varghese, N. "Looking out for designing buildings," *Business Line*, 8 April 2006.

Velloor, R. "Bangalore Tech Park ready for operations in September," *The Straits Times*, 18 July 1997.

Velloor, R. "Access agreements open up India's skies," *The Straits Times*, 16 April 2005.

Velloor, R. "Why Delhi airport deal went wrong," *The Straits Times*, 15 September 2005.

Velloor, R. "India welcomes Changi for future projects," *The Straits Times*, 18 January 2006.

Velloor, R. "SEZ project ignites angry backlash," *The Straits Times*, 10 January 2007.

Velloor, R. "S'pore committed to building SEZs in India," *The Straits Times*, 22 January 2007.

Velloor, R. "Ascendas to build two more IT parks in India," *The Straits Times*, 9 April 2007.

Velloor, R. "Singapore firms take big stake in India's property boom," *The Straits Times*, 30 April 2007.

Velloor, R. "S'pore firms find design niche in Hyderabad," *The Straits Times*, 30 April 2007.

"Venture capital funds embrace India's tech toddlers," *Business Times*, 21 November 2000.

Venture India 2003, International Enterprise (IE) Singapore.

Vijayraghavan, K. and Sabarinath, G. "Market Blitz Sends The Retail Pulse Racing," *Economic Times*, 6 December 2004.

Virmani, A. "Telecommunications Reforms in India," *Indian Council for Research on International Economic Relations Report*, (ICRIER), June 2004.

"Vodafone buys 10% in Bharti for $ 1.5 bn," *Economic Times*, 28 October 2005.

"Vodafone buys Indian mobile firms," *BBC News*, 11 February 2007.

Wade, R. *Governing the Market, Economic Theory and The Role of Government in East Asian Industrialization,* Princeton University Press, Princeton, New Jersey, 1990.

Wan, K. B. (Singapore Senior Minister of State for Transport and Information, Communications and the Arts) "Singapore FTAs: Why we are so promiscuous," 9 July 2002, SIIA Ministerial Series Tete-a-tete.

"Wanted: pro-active housing policy," *The Hindu*, 25 July 2003.

Wetzler, B. "Boomgalore: India's tech superpower is acting more like Silicon Valley every day," *Wired Magazine*, 8 March 2000.

"Whither Singapore Inc?" *The Economist*, 28 November 2002.

Wong, K. "Helping hand for three hard-hit sectors," *The Straits Times*, 30 August 2003.

Wong, S. "L&M unit wins tender for Indian river project," *Business Times*, 17 October 1991.

Wong, S. "New L & M chief restructuring company," *The Straits Times*, 24 May 1992.

Wong, S. "L&M Group to tap market for $ 10.6 m through 6.6m share placement," *Business Times*, 12 March 1993, p.4

Wong, S.J. "What's driving India's bull?" *Business Times*, 30 October 2003.

Woo-Cummings, M. (ed) *The Developmental State*, Cornell University Press, Ithaca and London, 1999.

Wright, R. "Ports await shipment of fresh investment," *Financial Times*, 8 May 2007.

Yahya, F. "Singapore-India: A confluence of National Interests." *Asian Studies Review* 19, 2, 1995, 25–37.

Yahya, F. "India- Singapore Trade Relations: Beyond IT," in N.N. Vohra (ed.), *Emerging Asia*, Manohar Publishers, New Delhi, 2003, 73–89.

Yee, A. "Success story faces the rural challenge," *Financial Times*, 8 May 2007.

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