The Pearl River Delta Mega Urban-region

Internal Dynamics and External Linkages

Yue-man Yeung

Shanghai-Hong Kong Development Institute

Hong Kong Institute of Asia-Pacific Studies

November 2005

Shanghai-Hong Kong Development Institute
Occasional Paper No. 12

About the Author

Yue-man Yeung is Research Professor; Director of the Hong Kong Institute of Asia-Pacific Studies; and Director of the Shanghai-Hong Kong Development Institute, The Chinese University of Hong Kong.

Keynote address presented at the 8th Asian Urbanization Conference, University of Marketing and Distribution Sciences, Kobe, 21 August 2005.

ISBN 962-441-812-8

The Pearl River Delta Mega Urban-region

Internal Dynamics and External Linkages

After China adopted a bold policy initiative of economic reforms and openness in 1978, Guangdong and Fujian were the two provinces designated for their experimental implementation. The Pearl River Delta (PRD) region in Guangdong seized the opportunities offered by the gradual decentralization of authority and by the region's proximity to Hong Kong to launch a process of rapid economic and social transformation. By the end of the 1980s, I was among several scholars who observed the beginnings of the establishment of a megalopolis, of which Hong Kong and Macau was to be a part (Chu et al., 1990). By the 1990s, the rapid changes in Guangdong had consolidated across a broad spectrum of life, with the PRD paving the way. At the time of Hong Kong's handover in 1997, I highlighted the increasing integration of the territory with its natural hinterland in the PRD (Yeung, 1997). It was becoming clear that Hong Kong's integration with the PRD was being increasingly subject to the forces of globalization, and that the economic development taking place in the Greater PRD (GPRD, i.e., the PRD plus Hong Kong and Macau) was integrated with the global economy (Yeung, 1999; also Yeung, 2003). As Hong Kong has celebrated the eighth anniversary of its handover in July 2005, it is opportune to revisit the issue of the evolution of the PRD into a mega urban-region. What have been the recent drivers of change and what prospects does the future hold for the region?

This paper attempts to approach the subject by, first, examining the internal dynamics that have furthered the integration of the different jurisdictions of the region. They include spatial and economic

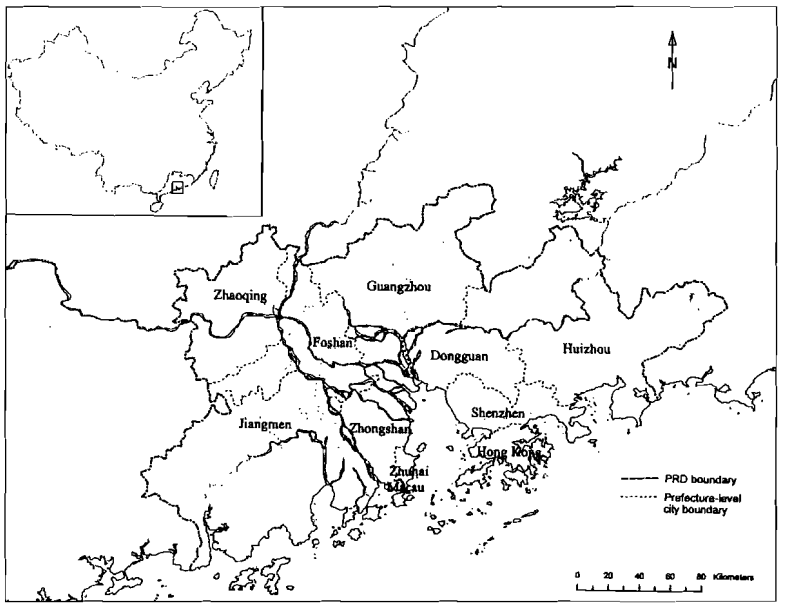
changes, urban and regional reorganization, Hong Kong and Macau as catalysts of change, and investments in infrastructure. Second, along with the rapid internal integration, the external linkages of the GPRD are scrutinized. The external orientation was established with China's accession to the World Trade Organization (WTO) in late 2001, with vital implications for the region. In the same year, China also entered a trade pact with ASEAN, offering new economic and social links to the region. The formation of the Pan-Pearl River Delta (Pan-PRD) framework in 2004 is further accentuating the internal cohesiveness and external links of the GPRD. A short concluding section will assess the prognosis for the region by 2020.

Internal Dynamics

The PRD, consisting of nine prefecture-level cities, namely Guangzhou, Shenzhen, Zhuhai, Foshan, Jiangmen, Dongguan, Zhongshan, and part of Huizhou and Zhaoqing (Figure 1), accounts for 23 per cent of Guangdong's area but 80 per cent of its gross domestic product (GDP), or one-tenth of the nation's. It has achieved a level of urbanization of 72.7 per cent (*Ta Kung Pao*, 18 January 2005). After 25 years of creativity and hard work, coupled with a dose of luck, the PRD has helped spearhead China's modernization and development programme that has so caught the world's attention. It has now become one of the richest regions in China and one of the most competitive in the world.

The luck that was on the side of the PRD in its passage to rapid growth was one of timing. Its pursuit of industrialization from a low base, with the infusion of capital, market information, and management skills from Hong Kong in the early 1980s coincided, fortuitously, with the onset of a phase of accelerated globalization that came with an enhanced demand for manufactured goods (Yeung, 2000). By 2000, the electronics and communications industries constituted within the delta a cluster of the most spectacular growth, with a concentration level of 32.1 per cent, ranking first in China. They also accounted for over 19 per cent of China's production in these industries. Of

Figure 1 The PRD and Its Constituent Cities



China's 100 strong enterprises in these sectors, 24 were located in the PRD, with two even among the top 10. Information technology is well developed in the region, with national-level IT parks having been established in Shenzhen, Guangzhou, Zhongshan, Foshan, Huizhou, and Zhuhai; and provincial-level IT parks in Jiangmen, Shantou and Dongguan, providing a sound base for the development of hi-tech in the PRD (Chen et al., 2003:98). In 2001, the value of hi-tech products produced in the PRD reached RMB325.5 billion, accounting for Guangdong's 93 per cent of the value of similar goods produced and making the PRD China's top production area (Chen et al., 2003:116). Similarly, the PRD accounted for the lion's share of the IT, electronics, and electrical appliances manufactured in China, with telephones reaching 78.8 per cent, electrical fans 88.2 per cent and hi-fi equipment 80.4 per cent (Enright et al., 2003:40; also Enright et al., 2005). Not surprisingly, therefore, the PRD has earned

the sobriquet of China's "global factory", since approximately 40 per cent of China's exports is traceable to the PRD.

Spatial and Economic Changes

Anyone travelling by train between Hong Kong and Guangzhou during the past two decades would have noted the drastic transformation of the physical landscape. Fish ponds, farms, and agricultural land have given way to industrial and residential developments, to such an extent that new towns, industrial parks, and urban landmarks have completely changed the character of this most travelled corridor of the PRD. Indeed, the countryside has been urbanized and globalized, with capital largely flowing, at least initially, from Hong Kong, which has long been a focal point of global capitalism in Asia (Meyer, 2000). The delta has been known for its ability to be innovative and for being ahead of the rest of China in its ability to attract foreign investment, largely from small firms. Many Hong Kong firms have invested in infrastructure and property (Wu, 1997).

Recent studies have shown that capital investment in the delta from Hong Kong has been characterized by a preference for the hometowns of the investors. The bamboo network is very much at work, underlining locality as being of critical importance in linking the identity of a place and the mobility of capital. This explains why, for instance, Dongguan has developed so rapidly since the 1980s. Many Hong Kong investors have originated from that city and it is geographically close to Hong Kong (Lin, 1997, 2002a).

With the urbanization of the countryside and the simultaneous growth of new towns and cities, the delta has witnessed a dual-track process of urbanization. On the one hand, the number of designated towns mushroomed from 32 to 392 during the period 1978-1994. On the other hand, invisible rural urbanization has been fueled by the presence of countless town and village enterprises (TVEs), often known as *sanlai yibu* 三來一補 firms. Most people involved in the process of spontaneous urbanization are still registered as belonging to the agricultural population, and are not recognized as being part of the official urban population (Lin, 2002b; Shen et al., 2002). The picture of the urban population is further complicated by a large

population of temporary residents who, not having a household registration or *hukou* 戶口, are not included in the official count of the population. Many migrants prefer to move to towns and smaller cities first, avoiding large cities because of stringent government regulations and high living costs. Almost invariably, the population of large cities is heavily underreported, as even up to one-quarter or more of their population consisting of temporary residents without a *hukou* registration are left out of official statistics.

With the nine cities within the PRD accounting for the bulk of the provincial economy, the relationship among them has changed markedly over the past two decades. Despite its traditional and historical role as the dominant city in the province, Guangzhou's relative importance in the delta has declined. Table 1 shows the rise of Shenzhen and Zhuhai as new cities because of their ability to attract non-local or foreign investment. Since 1980, the proportion of non-local capital going to these two cities has exceeded that to Guangzhou, although Guangzhou has recently narrowed the gap. In terms of the relative share of GDP in the PRD, Shenzhen started off in 1980 by accounting for only 1.82 per cent versus Guangzhou's 42.80 per cent. By 1998, Shenzhen had fully caught up: Guangzhou accounted for 22.20 per cent as opposed to Shenzhen's 22.04 per cent (Wong and

Table 1 Share of Non-local Capital in Total Investment in the PRD Region 1980-1998 (%)

Area	1980	1985	1990	1991	1993	1994	1998
Guangzhou	3.04	5.97	8.69	12.97	13.61	23.69	25.28
Shenzhen	16.05	13.78	23.67	22.40	25.19	34.63	30.83
Zhuhai	24.88	14.53	23.09	28.66	27.29	34.43	49.95*
Pearl River Delta	5.50	8.01	18.46	20.96	20.95	30.71	35.00

Note: * Zhuhai Special Economic Zone in 1998 only.
Sources: Shenzhen Planning Bureau (1999); Guangdong Statistical Bureau (1999). From Wong and Shen (2002:120).

Shen, 2002:116). The two cities were equal in their contribution to the GDP of the PRD.

However, this does not imply that Guangzhou stagnated. On the contrary, Guangzhou has been actively planning for a heightened role in leading regional growth. It has adopted a new spatial policy typified as "expansion in the south, optimization in the north, advancement in the east, and linkage in the west". Priority has been given to developing three functions that would make the city more of a hub: the opening of the mammoth new Baiyun airport in 2004; the construction of the new Nansha deep-water port; and the establishment of an "information port" supported by the gigantic, newly opened Convention and Exhibition Centre, Bio-island, and University Town. Guangzhou envisages itself as becoming a transport hub, a logistics centre, and a regional focus for industry and commerce (Xu and Yeh, 2003). The city has invested heavily in building for its future. For instance, by 2020, 10,000 km of new rail tracks will have been completed at the cost of RMB200 billion to consolidate Guangzhou's central role in linking Dongguan, Shunde, Jiangmen, and other cities by light rail. By that time, its rail links to 13 cities will rival those in the Yangzi delta (*Hong Kong Economic Times*, 8 November 2002, p. A17). In just the four years to 2000, Guangzhou invested RMB60.5 billion in urban construction, more than twice the total amount the city had invested in 47 years prior to 1996 (Chen et al., 2003:108).

While the delta has grown rapidly as a whole, differential spatial relations and economic outcomes have characterized the jurisdictions on the two wings of the delta. A recent study has found that cities like Shenzhen and Dongguan in the eastern wing, having been able to reap the advantage of geographic proximity to Hong Kong, have grown more rapidly than cities in the western wing, represented by Zhongshan, Zhuhai, and others. Ironically, this is a reversal of the former economic, social, and general conditions that, prior to 1978, favoured the areas in the western wing (Yeung et al., 2005). New hope is now resting on the impending decision to construct a bridge to connect Hong Kong to Zhuhai and Macau. When the new bridge project comes to fruition in a few years, the spatial relations of the constituent parts of the delta will undoubtedly be realigned.

Urban and Regional Reorganization

Along with rapid industrial and economic development, the PRD has undergone numerous urban reorganizations for the purpose of rationalizing land use and development in the search for greater efficiency. Urban reorganization has also been motivated by the administrative authority that comes with a higher level of urban status. Under normal circumstances, the progression has been for towns to be merged, as Guangzhou's 16 towns (or sub-offices) in Zengcheng were merged into 9 in 2004; and the 17 towns in Foshan's Nanhai were merged into 8 in 2005. At a higher level, a county-level city becomes an urban district within a larger city. For example, Guangzhou's annexation of Panyu and Huadu in 2000; Foshan's annexation of Nanhai, Shunde, Sanshui, and Gaoming in 2003; Zhuhai's annexation of Doumen in 2001; and Huizhou's annexation of Huiyang in 2003. The result of these annexations can be a spectacular expansion of territory, as was the case with Foshan and Jiangmen, shown in Table 2. Some benefits have resulted from the annexations. It has been reported that, for example, that the Foshan annexations eliminated, much to the relief of residents, the need to call long distance to different towns in the same area. The Guangzhou annexation allowed the city direct access to the sea via Nansha in Panyu, with Nansha being developed into a deep-water port. Huizhou's annexation of Huiyang brought access to the coast, allowing the city to launch petro-chemical development projects. All of these are examples of new opportunities for development and expansion. However, such opportunities have not materially improved inter-city cooperation, with the issue of regional governance still very much at stake (Wong and Shen, 2002). Cities in the PRD enjoy a high degree of autonomy and have exhibited a tendency to pursue their own development, often at the cost of costly redundancy and overlapping, unlike the situation that apparently prevails in the Yangzi delta.

In order to bring a semblance of order to urban development over the long term, the central and provincial governments have stepped in. After more than a year of preparation, "A Pearl River Delta Urban Cluster Cooperative Development Plan 2004-2020" was endorsed in

Table 2 Territorial Expansion of Selected Cities Resulting from Annexation, PRD

	Original area (urban area) (A)	New districts area (B)	B/A	Total area (urban area)
Guangzhou	1443.6km²	(Panyu & Huadu) 2274.9km²	1.58 times	3718.5km²
Foshan	153.7km²	(4 districts*) 3713.8km²	24.16 times	3867.5km²
Jiangmen†	179.8km²	(Xinhui) 1638.3km²	9.11 times	1818.1km²
Huizhou	1465.4km²	(Huiyang) 1184.0km²	0.81 times	2649.4km²
Zhuhai	723.6km²	(Doumen) 674.8km²	0.93 times	1653.0km²‡

Notes: * The four districts are Nanhai, Shunde, Sanshui, and Gaoming.

† 251.3km² lands were acquired from Xinhui to Pengjiang district, therefore the area of two districts (Pengjiang and Jianghai) in Jiangmen expanded from 179.8 to 431.1km².

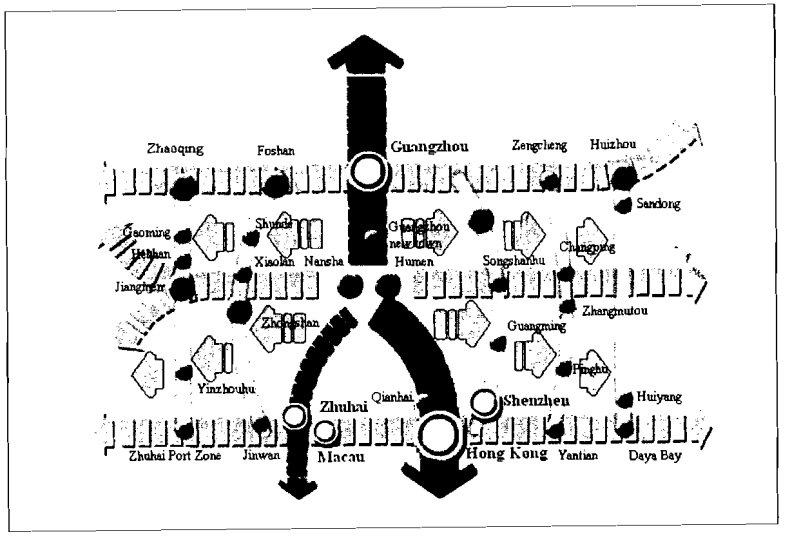
‡ Some development zones are included.

Sources: Homepages of the Guangzhou, Foshan, Jiangmen, Huizhou, and Zhuhai governments.

early 2005 by the Guangdong People's Assembly. The urban trajectory of the delta has now been projected for the next 15 years.

According to the plan, up to the year 2020, the PRD will limit its developed area to around 7,800 km², its population to about 65 million, and engage in regional infrastructure planning for the needs of a population target of 80 million. The guiding principle of planning for coordinated development is to "strengthen development centres and create spines and corridors". More specifically, "one spine, three corridors and five belts" will be the broad spatial framework for coordinating and maximizing the urban and regional strengths of the delta in forging a strong network (Figure 2). The basic philosophy in choosing this planning strategy is manifold: to develop the interior areas, to nurture the coastal zones, to elevate the status of the western wing, to further improve the eastern wing, and to reorganize development in the inner ring. The ultimate objective is to rationalize the use of limited resources for the collective good,

Figure 2 Urban Cluster Coordinated Development Plan of the PRD, 2020



so that the competitive edge of the region can be enhanced (China Economic Net, 22 February 2005, http://www.ce.cn/new_hgjj/guonei/dqjj/200502/22/t20050222_3128432.shtml).

The delta urban/regional development plan has, to a degree, answered the oft-voiced plea that the problem of planning is not with any one city or town, but how, through reorganization, to raise the collective urban profile of the PRD by the coordinated and improved utilization of land and water resources to tackle problems stemming from environmental pollution, urban traffic congestion, and flows of information. Only through an appreciation of the varied strengths and positioning of each city will it be possible to rationalize the utilization of resources. A new spark of vitality may even be discovered.

The plan has seemingly settled the question of the "dragon head" leading development in the delta. By positioning Guangzhou-Foshan, Shenzhen-Hong Kong, and Zhuhai-Macau on the "spine", the implication is that all major cities have important roles to play

in driving the regional economy forward. In particular, Hong Kong-Shenzhen-Dongguan-Guangzhou should be viewed as an international urban cluster, despite their separate roles, whose influence on the delta will continue to be strong.

It is therefore clear that the forwarding-looking urban cluster plan for the PRD to 2020 is a crucial step forward for cities in the region, which can use this as a platform to build a strong regional economy in the next decade and a half. What sets the plan apart from past efforts is the fact that Hong Kong and Macau have finally figured in the planning for the future of the delta — a breakthrough from previous practices. This is another step forward from the notion of the GPRD region, which was touted in 2003 at the elevated Sixth Guangdong-Hong Kong Cooperation Joint Meeting. In the Policy Address of 2003 in Hong Kong, the main theme was to seek closer integration with the mainland through the four economic pillars of Hong Kong (Yeung, 2003).

An even more momentous regional framework was established in June 2004, when top leaders from Guangdong and the surrounding eight provinces, together with Hong Kong and Macau, met and signed a landmark agreement to seek closer cooperation and development for the benefit of all. While Guangdong had been a prime mover in this regional initiative, as full players it is expected that Hong Kong and Macau will contribute and benefit from the cooperative venture (Yeung, 2005).

"One country, Two systems" as a Catalyst for Change

With the return of Hong Kong and Macau to China in 1997 and 1999, respectively, both special administrative regions (SARs) have provided new catalysts for the integration of the PRD, and the basis for contributing to a stronger delta of which they are a part. The Basic Law of both SARs guarantees their autonomy and the maintenance of their way of life for 50 years. Both Hong Kong and Macau have played critical roles in the modern history of China and, with their proven strengths and their historical links to the Western world, are being justifiably looked to as key players to boost the competitiveness

of the delta in the world market and improve the well-being of its citizens.

Yeung and Shen (2004) have reviewed the troubles and progress of Hong Kong since 1997. It has to be recognized that in the years immediately after Hong Kong's handover in 1997, the transition to the "one country, two systems" mode of governance proved to be unexpectedly challenging and difficult. Over reliance on the notion of two systems with "a high degree of autonomy" and "Hong Kong people ruling Hong Kong" proved to be a mental block for a smooth transition to close integration with Guangdong, especially the PRD. External shocks such as the Asian financial crisis and the SARS epidemic added further stumbling blocks to the process of integration.

In the initial years after the handover, Hong Kong's economy went from bad to worse and social disharmony almost tore the urban fabric apart. The economy was in the doldrums for an extended period, as a result of a conjunction of unfavourable internal and external factors. Only in late 2003, after the passing of the SARS nightmare and the introduction of favourable polices with the blessing of the central government, such as the Closer Economic Partnership Arrangement (CEPA) and the Individual Visit Scheme allowing citizens of some mainland cities to visit Hong Kong individually rather than in groups, did the economy and the social climate begin to turn around. By the end of 2004, the economy had fully recovered; and by mid-2005, the economic barometer again revealed a high degree of confidence. In a global consumer survey, Hong Kong was third in the world, after India and mainland China, with 70 per cent of its people confident about their future (*Wen Wei Po*, 10 June 2005, p. A01).

Despite Hong Kong's sagging economy in the early years after 1997, the physical as well as psychological connectivity between Hong Kong and the delta continues to grow rapidly (Enright and Scott, 2005). The nature of this connectivity can be revealed in the dramatic increase in cross-border flows between Hong Kong and Shenzhen at the land crossings. Table 3 shows that pedestrian flows in either direction increased by more than four times between 1990 and 2004. Although Lowu remained the main point of crossing by rail, the

Table 3 Cross-border Passenger Flows, 1990-2004 (in millions)

		1990	1995	1997	2000	2002	2004
Lowu	Arrival	13.97	21.93	28.43	43.84	48.52	45.30
	Departure	13.17	21.37	27.86	42.63	47.19	44.37
Lok Ma Chau	Arrival	n.a.	1.25	2.43	5.17	8.22	19.27
	Departure	n.a.	1.26	2.61	5.78	8.50	18.84
Man Kam To	Arrival	0.52	0.49	0.45	0.48	0.54	1.41
	Departure	0.70	0.52	0.48	0.54	0.60	1.56
Sha Tau Kok	Arrival	0.36	0.47	0.54	0.60	0.79	0.96
	Departure	0.44	0.45	0.56	0.64	0.91	1.11
Total	Arrival	14.85	24.14	31.86	50.09	58.08	66.94
	Departure	14.31	23.59	31.51	49.60	57.20	65.88

Note: Lok Ma Chau was opened in August 1991 for cross-border passenger flows.

Sources: Census and Statistics Department (1990, 1994, 1998, 2001, 2003, 2005).

rise in the number of people crossing in Lok Ma Chau has been the most striking, with a more than seven-fold increase between 1997 and 2004. Hong Kong has also expanded other ways, by connecting itself to the delta via water transport. In 2004, two new routes from Chek Lap Kok airport to Lianhuashan and Zhongshan were added to the previous four by ferry. Every month, about 100,000 passengers travel directly from the Hong Kong airport to six ports in the PRD, saving much time and offering convenience (*SCMP*, 1 November 2004, p. S2).

In the Thematic Household Survey in the fourth quarter of 2004 conducted by the Census and Statistics Department, it was revealed that of Hong Kong's population of 6.8 million, 290,000 had resided or stayed for a substantial amount of time in the mainland in the past six months. They were largely (45.8 per cent) there to engage in work, having resided in the mainland for less than three years (42.3 per cent), had not encountered any major difficulties in settling down (85.8 per cent), had a spouse living in their current place of residence in Hong Kong (79.3 per cent), and had children living in their current place of residence in Hong Kong (85.9 per cent) (MSA, 2005). Even from this thumbnail set of data, it is easy to deduce that quite a sizeable number of people from Hong Kong are working across the border and have settled down to life there rather easily. However, most of their family members (spouse and children) have remained in Hong Kong, giving rise to cross-border families and the attendant problems (So, 2002). The evidence shown here, together with cross-border traffic data indicated above, points to a growing momentum of integration between Hong Kong and the mainland, with obvious policy implications for governments on both sides of the border.

Macau is a tiny SAR comprising only 27.3 km^2 and fewer than half a million inhabitants. Yet it has entered a golden era of development and prosperity since its handover in 1999. Under the new SAR government, it has ventured to expand on its long-established entertainment-gambling business by reaching out to the world and inviting foreign players to participate. In liberating itself from the system of monopoly over gambling franchises that had previously been in place, the plan is to go up-market with an emphasis on family entertainment and a broader base of entertainment generally, along the model of Las Vegas. Indeed, experienced Las Vegas entrepreneurs have stepped in with their projects and glamour. This has seemingly worked wonders, with investment and people flooding in. Macau is building feverishly, plunging into development projects, erecting housing and infrastructure, engaging in reclamation, and so on. It has become one of the hottest destinations in Asia to invest in and visit, but Macau has its eyes on an even brighter future. With its traditional links to Portugal and, hence, to the European Union; and the favourable policies it enjoys under the "one country, two systems" formula, Macau is ready to ascend the ladder of affluence. Its GDP has been growing at double digits in the past few years. In the second

quarter of 2004, it grew at an astonishing 47.5 per cent (*SCMP*, 1 November 2004, p. S6).

Infrastructure Development

In order to prepare the PRD to become an efficient and competitive mega urban-region, urban and provincial governments have spared no pains to upgrade the infrastructure within and between cities. Such efforts have concentrated along many fronts.

In road transport, one problem that has surfaced in recent years is the rapid rise of automobile use, an outcome of the quickening income growth. The highest rate of ownership of automobiles in the mainland has been in Shunde and Zhongshan, both on the western wing of the delta, with 19 out of 100 families in 2002 owning an automobile (Wong, 2003). Cars are not only causing traffic jams within cities and contributing to a worsening problem of air pollution, but also stalling some superhighways. The 122.8 km Guangzhou-Shenzhen superhighway that was opened 10 years ago has become saturated. A plan to spend RMB7 billion to widen the three lanes in either direction to five lanes is afoot (*SCMP*, 1 November 2004, p. S2). Guangdong now has a total of 2,303 km of superhighway, most of it in the PRD. Guangzhou is the hub of many of these superhighways, which is reinforcing the city's bid to become a leading urban centre.

Although some 70 per cent of the people choose to cross over to Shenzhen by train at Lowu, the other land-crossings by road have become increasingly congested, notwithstanding continual schemes for improvement. The Lok Ma Chau crossing to Shenzhen's Huanggang is connected to superhighway 107, but the crossings at Man Kam To and Sha Tau Kok are met with lower-grade highways. The decision on the construction of a new bridge to connect Hong Kong with Macau and Zuhai is expected to be announced within 2005. Equally, the Western Corridor, the 5-km highway linking Shekou and Hong Kong, is scheduled to open in mid-2006, as the fourth vehicular crossing between the two cities. Since the round-the-clock opening of the crossing at Lok Ma Chau on 27 January 2003, road traffic has continued to climb. There is also the need to consider the call from certain quarters for drivers to be able to drive freely

across the border, with a host of implications that would flow from this possibility (Yeung and Kee, 2005a).

Despite its being the traditional mode of land transport, rail transport has lagged behind superhighways in terms of investment and connectivity in China in recent years. In the delta, however, railways have not been neglected, as the demand for the movement of goods and passengers continues to rise. At present, plans exist to fill in some vital gaps in rail connectivity, such as in the linking of Guangzhou and Zhuhai on the western wing. To complement the access by superhighways, a pattern of rail links, using light rail or subway extensions, among major cities in the delta has been conceived. The development plans are set to centralize around Guangzhou and a trunk linking Guangzhou and Shenzhen, as noted earlier (Figure 3). With a view to providing high-speed connectivity, designs for bullet trains linking Hong Kong and Guangzhou are in an advanced stage of development, with a seeming inclination towards the adoption of traditional technology rather than magnetic train technology. The goal is to shorten the time of access between the two cities to within one hour from the present two. It was reported that a dedicated 104.6-km rail link to the west of the existing Guangzhou-Shenzhen line will be constructed as an additional conduit. The whole line has only five stops, i.e., Guangzhou, Dongchong, Humen, Gongming, and Shenzhen, in a travel time of one hour at a speed of 300 km/h. It is scheduled to be opened in 2010, with construction to begin in late 2005 (*Wen Wei Po*, 19 June 2005, p. A3). At present, a standard high-speed train along this sector can go up to 200 km/h, representing the only section within the delta of rail transport capable of reaching high speeds, which is still far below the 200 to 300 km/h commonly found in developed countries. There is considerable room for more railway development within the delta (Yeung and Kee, 2005b).

Many of the plans to seamlessly connect various areas of the PRD focus on Hong Kong. Daily, 12 direct trains link Hong Kong and Guangzhou; and every other day direct trains leave between Hong Kong and Beijing, and Shanghai, respectively. However, the most important rail link is between Hong Kong and Shenzhen, because large numbers of passengers are involved and it is the most

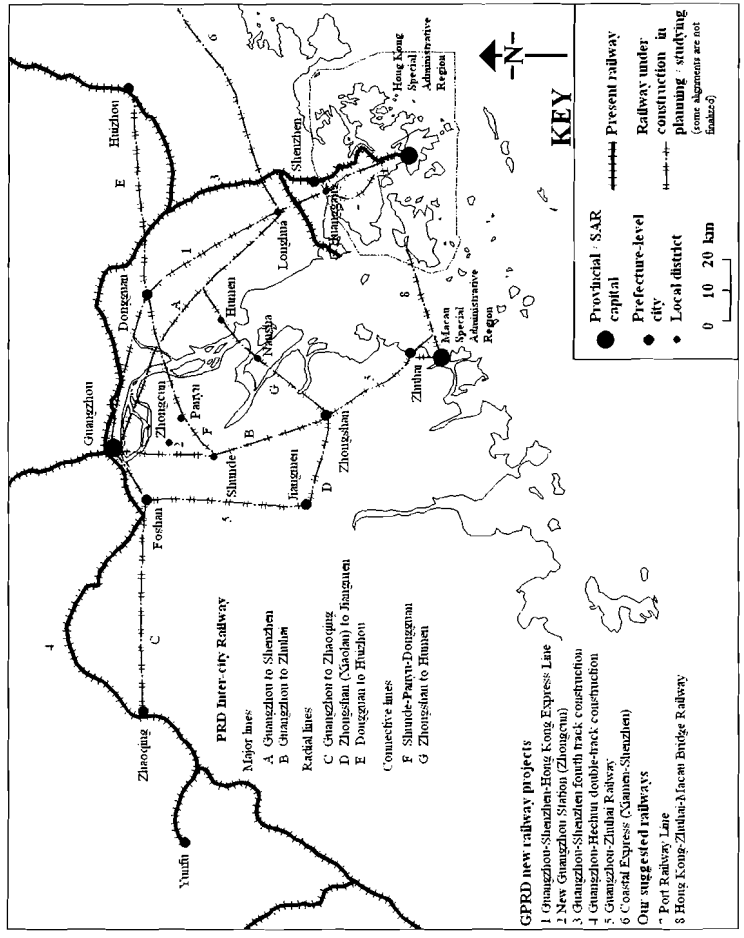


Figure 3 Railway Developments in the Greater PRD

direct and efficient rail crossing. In December 2004, the first and fourth lines of the Shenzhen Metro were opened, with Line 1 starting from Lowu and ending in Nanshan. Lowu provides direct access to Hong Kong. Line 4 will in future link up with the extended Kowloon-Canton Railway Corporation (KCRC) crossing at Lok Ma Chau. Five more lines will be built in Shenzhen to form a comprehensive pattern. Further convenience to Hong Kong passengers will be realized, when the highly popular Octopus stored-value card becomes usable in Shenzhen, probably in late 2005. Hong Kong's MTR Corporation has also successfully acquired the franchise to operate Shenzhen's Line 4 for 30 years, through a BOT mode (*Ta Kung Pao*, 27 May 2005, p. A8). These developments speak of ever closer integration between Hong Kong and Shenzhen as contiguous cities.

In water transport, the dominance of Hong Kong in the PRD as a premier port in a region of many ports is noteworthy. In cargo throughput, Hong Kong was fourth in the world in 2004. In container traffic, Hong Kong topped the world for 12 out of the 13 years to 2004, when it handled 20.45 million TEUs. However, the rise of many ports in the delta has been striking in recent years. Shenzhen's impressive growth has enabled it to become the second busiest port in China, and the fourth in the world in container traffic in 2004. The key operators in Shenzhen also operate the Hong Kong container port, thus posing a severe challenge to Hong Kong, where comparative prices, procedural convenience, and the time factor all come into the picture. Hong Kong's vulnerability is highlighted by the fact that, in 2003, 38.22 per cent of its cargo throughput and 33.94 per cent of its containers originated from the mainland. As a strategic move, Shenzhen has recently signed up with many cities in the Pan-PRD area a "Five Fixed Agreement" with regard to sea and rail movement. Under the agreement, cargoes that have been pre-cleared by customs are loaded on trains at a fixed time, fixed train number, fixed price, fixed line, and fixed station, and will be transferred to container ships immediately after arriving in Shenzhen port. This has greatly reduced handling times and enhanced the predictability of the process. For the many ports in the PRD, especially those on the western wing, there is keen competition because of overlapping hinterlands. Most exist,

nevertheless, as feeder ports of Hong Kong and will thrive as the economy of the delta continues to grow (Yeung and Kee, 2005c).

In terms of passenger traffic, the ports of the delta have historically played an important role. In these days, many of these sea and river ports have been modernized and expanded to cater to modern traffic. In 2004, nearly 20 million passengers used the two sea terminals on Hong Kong Island and Tsim Sha Tsui to travel to Macau and the delta ports, with an almost equal number of passengers passing through them, but approximately 60 per cent of the passengers were destined for Macau. In 2004, more than 2,700 sailings a week were made to Shekou, Zhongshan, Zhuhai, Macau, and other cities in the delta (Yeung and Kee, 2005c). The popularity with passengers of the sea route to cities within the PRD can be explained by what is popularly known as the "magic three hours". From a businessman's perspective, it is highly desirable to reach one's destination within three hours. Then, having completed one's work, it is possible to return to Hong Kong within the same day (Enright et al., 2003). With the increased frequency of scheduled connections, passengers have greater leeway to choose between boat, train, or car. Conducting business in the delta with Hong Kong as the base has become a great deal more common and convenient.

With regard to air travel infrastructure, Hong Kong's airport is again unrivalled in the PRD. In 2004, it was ranked first in the world in terms of air cargo handled, reaching 3.09 million tones; and fifth in the number of international passengers, with 36.28 million. In addition, in 2005, for the fifth year in a row, Skytraz named Hong Kong airport the best airport in the world. Therefore, in terms of the quality and quantity of its air services, Hong Kong has much to offer the cities of the delta.

Taking the delta as a whole, a major problem awaiting resolution is the large number of large airports whose target population and hinterland obviously overlap and are probably redundant. To be specific, there are five large airports within the PRD within a radius of less than 100 km, namely the airports of Hong Kong, Shenzhen, Zhuhai, Macau, and Guangzhou. Guangzhou's new Baiyun airport that opened in August 2004 is gigantic, with an area 3.6 times the

size of the old airport and larger than Hong Kong's airport by 231 hectares. It has the potential to rival Hong Kong and become an airport hub within the region. In the long run and for the benefit of all cities in question, it is essential for the airports to cooperate rather than compete, so that their strengths and weaknesses can be accommodated. Rather than dwelling on why which airport should not have been built in the first place, much benefit can be reaped by all if they can work together. The immediate task, apparently, is how to use the excess capacity of the Zhuhai airport, which, since opening many years ago, is used to less than 10 per cent of its capacity (Yeung and Kee, 2005d).

Various modes of infrastructure development in the PRD are clearly intertwined. To be able to harmonize and connect the different modes remains a task of a high order if the region's business environment is to be constantly upgraded, the life of the people to be improved, and the attractiveness and competitiveness of the region to be maintained. Recent measures such as forward planning in road and rail links between Hong Kong and Shenzhen; increased ferry links between Hong Kong airport and the ports of the delta; and Guangzhou's heavy investment in its new airport, Nansha port, and in the superhighway and rail network around are examples of investment in the infrastructure of the delta for the realization of its development goals and a brighter regional future.

External Linkages

In late 2001, China was admitted to membership of the WTO. This initiated a process of new openness, with China to be fully integrated with the world trading community with obligations and rights. Guangdong, as the first province to open after China adopted an open policy in 1978, is expected to be the leader in paving the way for another phase of openness. Hong Kong, having become a part of China since 1997, can be expected to play an even more active role in assisting Guangdong, and the PRD in particular, to a smooth passage. With the WTO entry having set the tone, a series of policy formations

is steering Guangdong, including the delta, towards stronger external linkages to complement the forward-looking internal spatial, economic and urban restructurings and reorganizations that have been reviewed above.

China's WTO Accession

After many years of negotiation, China re-entered the WTO in late 2001, with high expectations of itself and from the world trading community. The event was seen as a milestone in China's passage to an open and free market run by WTO rules. The entry is expected to generate wide-ranging transformations in the economic, social, and political sectors, with China likely to become a political show window to the world. For Guangdong, WTO membership will speed up economic reforms by remoulding the enterprise structure and regulating enterprise behaviour, eliminating inferior and selecting superior enterprises through competition, and developing both labour- and technology-intensive industries. Import tariffs will be reduced to 25 per cent in July 2006 and import quotas will be eliminated altogether in 2005 (Leung, 2003).

The first five years following China's admission to the WTO constitute a crucial part of the timetable. Within this period, China is to standardize rules and regulations to prepare for openness and to face foreign competition. In this respect, the opening of the service sector is a major policy objective. Against a background in which the production of services accounted for 61 per cent of the global economy in 2000, at 33.2 per cent China's service sector is surely somewhat small, even compared with economies at similar stages of development as measured by per capita GDP. What is more, 6.2 per cent of the trade in services in China is open, which is much lower than the average of over 10 per cent in developed economies. By contrast, at 42.9 per cent, China's commodity trade is far more open (Feng, 2003). Consequently, with its trade in services ranking tenth globally and second within Asia, it is anticipated that Hong Kong will be able to help China as a whole, and Guangdong including the delta specifically, develop the service industry as a key lever of development. Given that Guangdong has successfully industrialized,

the need for a quality service industry is enormous, particularly as Guangdong searches for a higher quality of economic development. The "front shop, back factory" model has been perfected during the past two decades of cooperation between the delta and Hong Kong. The time has now come to professionalize the "back factory" section by the upgrading of services, production services included. It follows that the service sector will form a new driving force in the new phase of cooperation between Guangdong and Hong Kong under the WTO regime.

China's restricted market access in the service sector has adversely affected even Hong Kong, under the "one country, two systems" formula. Hong Kong firms, in gaining a foothold in the service industry in Guangdong, have had to pay high transaction costs, such as "management fees", "user fees", and so forth. However, since China's accession to the WTO, the service industry in Guangdong has become progressively open, with the application of standardized rules, the gradual elimination of barriers, and much reduced entry fees or transaction costs. The entry of Hong Kong service firms in Guangdong represents an accelerated process of realizing the objectives of the first five years of the timetable with regard to WTO accession, but it did not in any way conflict with the ultimate goal that the WTO would strongly encourage (Feng, 2003).

China's entry to the WTO has also had other effects. Within Guangdong, economic restructuring triggered by tariff reductions is making it necessary for the agricultural, industrial, and tertiary sectors to adjust. All quotas will be abolished by 2005. When China fully fulfils its WTO commitments by 2005, it is estimated that its GDP will have increased by RMB195 billion (Ng, 2003). Also, as Guangdong has been struggling with a deteriorating environment, such problems relating to water and air pollution and solid waste management will prompt the province to take more stringent measures and adopt more efficient technologies. Even at the city level, China's entry to the WTO has spurred Guangzhou to develop its logistics industry. The city plans to build or expand three logistics bases and five commodities wholesale markets, i.e., the Baiyun International Airport, the Guangzhou port (Huangpu), and the Nansha port,

together with an aquatic products wholesale centre (in Huangsha), a wholesale market for toys (in Nankang), a flowers trading centre (in Fangcun district), an international leather goods trading centre (in Shiling area, Huadu district), and a tea wholesale centre serving South China (Cheng, 2003:14).

CEPA and Related Policies

With the WTO entry leading the way, a number of allied policies have been formulated that are designed to extend China's openness, and which are at the same time highly favourable to Hong Kong and Macau. Foremost among these is the CEPA designed to integrate the two SARs with the mainland ahead of the five-year transitional timetable arising from the WTO entry. Towards this end, the CEPA with Hong Kong was signed in June 2003 for implementation on 1 January 2004, with a second stage of implementation with many extended provisions to be carried out a year later. With Macau, the CEPA was signed in October 2004. CEPA may be viewed as a new mechanism of regional transaction built on the principle of free trade, not unlike that operating in a free trade bloc. It is a specific form of facilitating trade between the two SARs and the mainland, removing hurdles of establishing cooperation in the process. It is a way of concretely expressing the formula of "one country, two systems". With the second stage of implementation, Hong Kong faces a situation in which many service sectors can enter the mainland more readily. The sectors with the highest potential for collaboration are airports, finance, logistics, tourism, exhibition, and professional services. Even banking is being encouraged, with the minimum global assessment required for Hong Kong banks having been lowered to US$6 billion from US$20 billion (*SCMP*, 1 November 2004, p. S5). By mid-2005, it has been reported that CEPA, together with the Individual Visit Scheme, has earned Hong Kong HK$5.5 billion and 29,000 new jobs in two years (*Wen Wei Po*, 13 May 2004, p. A23).

The policy of the Individual Visit Scheme was introduced in 2003. It started off with the residents of a few cities in the PRD, but the scheme was later extended to include the residents of more cities and provinces. By mid-2005, it was being reported that the State Council has been asked to consider extending the scheme to all nine provinces within the Pan-PRD, or about one-third of the mainland (*SCMP*, 15 June 2005, p. A2). The mainland has increasingly become a chief source of tourists to Hong Kong, and they have shown themselves to be generous spenders. An average mainland tourist would spend HK$6,000 per trip in 2003. In 2004, mainland tourists spent a total of RMB90 billion, or about US$10.9 billion. The Tourism Board was working with a target of 23.5 million visitors to Hong Kong in 2004, with 11.2 million from the mainland (*SCMP*, 1 November 2004, p. S7; Tam, 2005).

In November 2003, Hong Kong was allowed to trade in *renminbi*. This policy breakthrough allowed mainland firms to list in Hong Kong's stock market and has had a positive spin-off in terms of investment, trade, professional services, consumer spending, exports, property, exhibitions, and so forth. This contributed to the economic recovery of Hong Kong by the end of that year.

What is expected of Hong Kong as a result of these policy introductions is a heightened expectation that this SAR will play a new role in the emerging regional economy. It is widely anticipated that Hong Kong, with its strengths as a financial market, logistics hub, and in tourism and the provision of services, can help mainland firms "go out" to raise capital and enlist in the Hong Kong stock exchange or even in foreign equity markets. Economic development in the mainland has reached a level at which its firms are now capable of exporting capital. By 2000, mainland companies registered in Hong Kong had cumulative assets in excess of US$220 billion. In 2002, of Hong Kong's total stock of inward direct investment of US$335.6 billion, mainland firms accounted for 22.6 per cent. With new and relaxed regulations for mainland enterprises to invest and set up in Hong Kong, the flow of mainland capital to Hong Kong is expected to increase. By June 2004, 106 regional headquarters and 156 regional offices from the mainland had chosen Hong Kong. In the new regional economy, Hong Kong is widely seen as a springboard for mainland companies to enter the world (*SCMP*, 1 November 2004, p. S5). Conversely, it is widely known that Hong Kong has been a major investor in the mainland, especially in Guangdong. During the period

1979-2001, Hong Kong's realized investment in Guangdong came to US$94.03 billion, 80 per cent of which was in the PRD (Zheng, 2003:184).

Pan-PRD and 10+1

With the momentum established with China's accession to the WTO in 2001, the formation of a couple of frameworks for regionalization is predictably having a positive long-term effect on the development of the delta. In 2002, China signed a trade pact with ASEAN that will link China with the 10 countries in Southeast Asia in a free-trade zone that will materialize in 10 years. Conveniently referred to as 10+1, this regional grouping will have a momentous impact on the development of Asia and the countries involved. The PRD stands a good chance of benefiting from this landmark agreement, given its location straddling the mainland and Southeast Asia.

In June 2004, top leaders of Guangdong, along with its eight surrounding provinces in South and Southeast China, and Hong Kong and Macau, met in Guangdong to put their seal to a ground-breaking regional agreement to work cooperatively and purposefully for their long-term common good. It is the first regional grouping in China of this size, involving one-fifth of China's land area, one-third of its population, 40 per cent of its GDP, and 58 per cent of its foreign direct investment. Named the Pan-Pearl River Delta, or 9+2 for short, it is conceptually focused on the richest and most successful delta in Guangdong, which has been a model of economic transformation over the past quarter century (Yeung, 2005). The less developed areas of the regional framework eagerly anticipate that the PRD will act as a role model and a source of practical experience. In particular, the Hong Kong model is upheld as a source of inspiration and replication.

Conclusion

After more than two decades as the epicentre of a quiet and astonishing socio-economic transformation, the PRD has helped to spearhead China's programme of modernization and development. At the same

time, it has gained for itself a reputation as an economic powerhouse, producing a large variety of high-quality and cheap manufactured goods for the world market. As this paper has made plain, the delta has achieved a high degree of internal cohesion and has drawn up a forward-looking plan for its future to 2020. Coupled with its growing external relations, it has a solid foundation on which to build an even more culturally vibrant and economically robust region in the years ahead.

A recent study has compared the PRD with the metropolitan regions centred in New York, Tokyo, and Los Angeles, noting their comparable geographic and demographic scales (Rohlen, 2000). Indeed, as globalization accelerates during the past three decades, some scholars have contended that city regions such as the ones being cited will loom large in the present information age. Region-states, as Ohmae (1995) has even argued, will take precedence over nation-states in the age of weakening borders. Will the PRD become one such entity in the twenty-first century?

From the evidence presented here, the PRD does possess the prerequisites for it to scale greater heights of success. Its economic competitiveness is grounded on the fact that in terms of logistics, it has one of the largest aviation hubs in Asia. Within a radius of 100 km, the delta has five large airports which, together, offer a daily total of 550 international flights and 600 domestic flights in China. These flights offer good coverage of the emerging markets and cities of China and Asia, and other parts of the world. In ocean transport, container throughput in the three-port cluster of Hong Kong, Shenzhen, and Zhuhai is over 30 million TEUs, surpassing any port cluster in Asia (Chen et al., 2003:165). The internal connectivity of the cities within the delta is continually improving with the massive investment in infrastructure projects in recent years and with more planned for the future. As residents in the delta become more affluent, the 65 million inhabitants that the region is expected to have by 2020 will make it a major market for its own manufactured products, as well as for global industry. With Chinese consumption predicted to expand by 18 per cent a year over the next decade (*TIME*, 16 May 2005, p.18),

the prognosis for the delta in both production and consumption is buoyant.

In a region where the growth is being generated largely by its cities, it is necessary that these cities cooperate rather than compete with each other. The role of Hong Kong is vital and yet special and sensitive (Yeh, 2001). Together with Guangzhou, Shenzhen, and Dongguan, Hong Kong will set the tone and character of development in the new century. About Hong Kong's future, Rohlen (2000) has this to say:

> The potential for Hong Kong to maintain its position as one of the leading two or three centers of East Asia is being shaped just as certainly by the same forces [economic, cultural, and spatial forces]. A disintegrated, debased, and disorganized Delta region, should it turn out that way, could prove to be Hong Kong's Achilles heel in the evolving competition for leadership among cities in China and in the East Asian region. (p. 29)

However, the city region as a whole, has to heed the following note of caution sounded by Rohlen (2000):

> The government of very large metropolitan regions is always complex and messy, but the Pearl River Delta region is on its way to becoming among the most complex and most messy. (p. 28)

References

Census and Statistics Department, HKSAR Government. 1990. *Hong Kong Monthly Digest of Statistics, January 1990.* Hong Kong: Government Printer.

———. 1994. *Hong Kong Monthly Digest of Statistics, January 1994.* Hong Kong: Government Printer.

———. 1998. *Hong Kong Monthly Digest of Statistics, January 1998.* Hong Kong: Printing Department.

———. 2001. *Hong Kong Monthly Digest of Statistics, January* 2001. Hong Kong: Printing Department.

———. 2003. *Hong Kong Monthly Digest of Statistics, March* 2003. Hong Kong: Printing Department.

———. 2005. *Hong Kong Monthly Digest of Statistics, January* 2005. Hong Kong: Government Logistics Department.

Chen, Guanghan, Zhou Yunyun, Ye Jiaan and Xue Fengxuan (eds.). 2003. *Research on Enhancing the International Competitiveness of the Greater Pearl River Delta.* Guangzhou: Zhongshan University Press (in Chinese).

Cheng, Joseph Y. S. (ed.). 2003. *Guangdong: Preparing for the WTO Challenge.* Hong Kong: The Chinese University Press.

Chu, Kim-yee, Y. M. Yeung and Lam Kin-che. 1990. "Guangzhou-Hong Kong Megalopolis: Its Resource Base and Potential," in Leung Chi-leung, Jim Chi-yung and Zuo Dakang (eds.), *Resources, Environment and Regional Development.* Hong Kong: Centre of Asian Studies, University of Hong Kong, pp. 375-84 (in Chinese).

Enright, Michael J., Ka-mun Chang, Edith E. Scott and Wen-hui Zhu. 2003. *Hong Kong and the Pearl River Delta: The Economic Interaction.* Hong Kong: The 2022 Foundation.

Enright, Michael J. and Edith E. Scott. 2005. "China's Quiet Powerhouse," *Far Eastern Economic Review*, 168(5):27-34.

Enright, Michael J., Edith E. Scott and Ka-mun Chang. 2005. *Regional Powerhouse: The Greater Pearl River Delta and the Rise of China.* Singapore: John Wiley & Sons.

Feng, Xiaoyun. 2003. "Main Policy Propositions for Guangdong-Hong Kong Economic Cooperation under the WTO Framework," in Chen et al. (eds.), *Research on Enhancing the International Competitiveness of the Greater Pearl River Delta.* Guangzhou: Zhongshan University Press, pp. 208-19 (in Chinese).

Leung, K. K. (2003), "The Economic Impact of China's Accession to the WTO on the Political Development of Guangdong," in Joseph Y. S. Cheng (ed.), *Guangdong.* Hong Kong: The Chinese University Press, pp. 35-49.

Lin, George C. S. 1997. *Red Capitalism in South China: Growth and Development of the Pearl River Delta.* Vancouver: UBC Press.

———. 2002a. "Hong Kong and the Globalisation of the Chinese Diaspora: A Geographical Perspective," *Asia Pacific Viewpoint*, 43(1):63-91.

———. 2002b. "Region-based Urbanization in Post-reform China: Spatial Restructuring in the Pearl River Delta," in John R. Logan (ed.), *The New Chinese City: Globalization and Market Reform.* Oxford: Blackwell Publishers, pp. 245-57.

Mercado Solutions Associates (MSA). 2005. "Preliminary Summary Findings: Thematic Household Survey in the Fourth Quarter of 2004." Draft circulation.

Meyer, David R. 2000. *Hong Kong as a Global Metropolis.* Cambridge and New York: Cambridge University Press.

Ng, Sai-leung. 2003. "Guangdong's Environment and China's Accession to the WTO," in Joseph Y. S. Cheng (ed.), *Guangdong.* Hong Kong: The Chinese University Press, pp. 307-25.

Ohmae, Kenichi. 1995. *The End of the Nation State: The Rise of Regional Economies.* New York: The Free Press.

Rohlen, Thomas P. 2000. "Hong Kong and the Pearl River Delta: 'One Country, Two Systems' in the Emerging Metropolitan Context." Stanford: Discussion Paper, Asia/Pacific Research Center, Institute for International Studies, Stanford University.

Shen, Jianfa, Kwan-yiu Wong and Zhiqiang Feng. 2002. "State-sponsored and Spontaneous Urbanization in the Pearl River Delta of South China, 1980-1998," *Urban Geography*, 23(7):274-94.

So, Alvin Y. 2002. "Social Relations between Pearl River Delta and Hong Kong: A Study of Cross-border Families." Hong Kong: Occasional Paper No. 14, Centre for China Urban and Regional Studies, Hong Kong Baptist University.

Tam, Tin-mei. 2005. "Hong Kong's Economy is China's Barometer," *Asia Weekly*, 5 June, pp. 24-26 (in Chinese).

Wong, Kin-man. 2003. "Car Revolution Accelerates Affluence," *Asia Weekly*, 3-9 March, pp. 16-20 (in Chinese).

Wong, Kwan-yiu and Jianfa Shen (eds.). 2002. *Resource Management, Urbanization and Governance.* Hong Kong: The Chinese University Press.

Wu, Chung-tong. 1997. "Globalisation of the Chinese Countryside: International Capital and the Transformation of the Pearl River Delta," in Peter Rimmer (ed.), *Pacific Rim Development.* Sydney: Allen and Unwin, pp. 57-82.

Xu, Jiang and Anthony G. O. Yeh. 2003. "City Profile: Guangzhou," *Cities*, 20(5):361-74.

Yeh, Anthony G. O. 2001. "Hong Kong and the Pearl River Delta: Competition or Cooperation?" *Built Environment*, 27(2):129-45.

Yeung, Yue-man. 1997. "Planning for Pearl City: Hong Kong's Future, 1997 and Beyond," *Cities*, 14(5):475-77.

———. 1999. "The Emergence of Pearl River Delta's Mega Urban-region in a Globalizing Environment." Hong Kong: Occasional Paper No. 90, Hong Kong Institute of Asia-Pacific Studies, The Chinese University of Hong Kong (in Chinese).

———. 2000. *Globalization and Networked Societies: Urban-Regional Change in Pacific Asia.* Honolulu: University of Hawaii Press.

———. 2003. "Integration of the Pearl River Delta," *International Development Planning Review*, 25(3):iii-viii.

———. 2005. "Emergence of the Pan-Pearl River Delta," *Geografiska Annaler*, 87B(1):75-79.

Yeung, Yue-man and Gordon Kee Wai-man. 2005a. "Basic Infrastructure Development in the Pan-Pearl River Delta Research Series: I. Highways." Hong Kong: Occasional Paper No. 153, Hong Kong Institute of Asia-Pacific Studies, The Chinese University of Hong Kong (in Chinese).

———. 2005b. "Basic Infrastructure Development in the Pan-Pearl River Delta Research Series: II. Railways." Hong Kong: Occasional Paper No. 155, Hong Kong Institute of Asia-Pacific Studies, The Chinese University of Hong Kong (in Chinese).

———. 2005c. "Basic Infrastructure Development in the Pan-Pearl River Delta Research Series: III. Ports and Waterways." Hong Kong: Occasional Paper No. 158, Hong Kong Institute of Asia-Pacific Studies, The Chinese University of Hong Kong (in Chinese).

———. 2005d, in press. "Basic Infrastructure Development in the Pan-Pearl River Delta Research Series: IV. Airports and Civil Aviation." Hong Kong: Occasional Paper, Hong Kong Institute of Asia-Pacific Studies, The Chinese University of Hong Kong (in Chinese).

Yeung, Yue-man and Shen Jianfa. 2004. "Opportunities for Hong Kong in the Birth of the Pan-Pearl River Delta." Paper presented at the Pan-Pearl River Delta Development Forum, Hong Kong, 13 December.

Yeung, Y. M., Shen Jianfa and Zhang Li. 2005. *The Western Pearl River Delta: Growth and Opportunities for Cooperative Development with Hong Kong*. Hong Kong: Hong Kong Institute of Asia-Pacific Studies, The Chinese University of Hong Kong.

Zheng, Peiyu. 2003. "Towards Structural Regeneration in Delta-Hong Kong Region and International Competitiveness," in Chen et al. (eds.), *Research on Enhancing the International Competitiveness of the Greater Pearl River Delta*. Guangzhou: Zhongshan University Press, pp. 183-95 (in Chinese).