DOMESTICATING GLOBALISATION, NEW ECONOMIC SPACES AND REGIONAL POLARISATION IN GUANGDONG PROVINCE, CHINA

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ABSTRACT

Concerns over the effects of globalisation and liberalisation have intensified the debates over the trajectories and underlying sources of regional inequality. This paper attempts to link macro studies of regional inequality to micro studies of local development and to expand the research on intraprovincial inequality in China to Guangdong Province. First, substantial evidence has been provided to illustrate the extent of polarisation between the Pearl River Delta (PRD) and the periphery, especially since the early 1990s. Second, it has been found that new economic spaces centred on exoproduction centres, high-tech zones, university clusters, and entrepreneurial spaces driven by the domestication of globalisation and the growth of the knowledge economy have emerged as new engines of regional growth. The orthodox notion of the PRD development as externally driven has become obsolete, and a new conceptualisation centred on the knowledge economy and integrated development better explains regional development and polarisation in Guangdong. Finally, the theoretical and policy implications of the research are discussed. The emerging form of regional development in the PRD represents an effort to make the knowledge economy the new engine of regional development and indicates that developing countries such as China are attempting to move beyond being a manufacturing assembler. The emergence of the knowledge economy in the PRD also has important implications for the recent efforts to develop the Greater Pearl River Delta, which needs to pay more attention to global networks for innovation and creativity. Moreover, the emergence of the knowledge economy makes the development of the periphery even more challenging due to the effects of self-reinforcing agglomeration and the constraints of geographical barriers.

Key words: Globalisation, regional inequality, polarisation, Pearl River Delta, China

INTRODUCTION

A renewed multidisciplinary interest in regional inequality has emerged since the early 1990s. Such efforts are fuelled by, first, the concern over the effects of globalisation and liberalisation on economy, society and space, and second, the rediscovery of regions, clusters and geography in social sciences. While some maintain that globalisation and liberalisation have brought global convergence and wealth to the poorer regions, others argue for the localisation of multinational enterprises, the survival of regions and places, and the marginalisation of poorer

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regions. Third, the rediscovery of geography and the emergence of new economic geography have revived the study of space economy by economists, and the literature on regional inequality has mushroomed in recent years (e.g. Barro & Sala-I-Martin 1995; Kanbur & Venables 2005). Finally, regional inequality has been at the core of academic enquiry in geography and regional science. The institutional turn in economic geography and the developments in geographic information systems (GIS) have empowered the research theoretically and methodologically (Clark *et al.* 2000; Goodchild & Janelle 2004), although theoretical turn and policy distance have also generated new concerns over the failure of economic geography and regional studies in addressing the key concerns of development and inequality (Hamnett 2003). On the other hand, there is a large body of literature on regional development at local scales, mainly studying the 'winning' regions. Macro studies of regional inequality and micro studies of local development, however, are often disconnected from each other.

Concerns over the effects of globalisation and liberalisation have also intensified the debates over the trajectories of regional inequality in developing countries and the former socialist countries (e.g. Petrakos 2001; Bradshaw & Vartapetov 2003). Although largely escaping the attention of Western economic geographers, regional inequality in China is a key component of the national policies of the Government and has generated substantial scholarly debates (Wei 1999). While the early work attempted to uncover and interpret the real picture of regional inequality (e.g. Fan 1995; Wei & Ma 1996; Zhao 1996), recent research has expanded the literature through theorising, scaling down, broadening scope and using more rigorous methods such as GIS (e.g. Wei 2000; Lu & Wang 2002; Ma & Cui 2002; Ying 2003; Yu & Wei 2003; Ye & Wei 2005), reflecting expanding scopes and increasing depth of empirical studies and the theoretical and methodological turns in economic geography. Recent studies of intraprovinical inequality, however, largely focus on Jiangsu and Zhejiang Provinces, and the emerging forms of regional polarisation in Guangdong have not been thoroughly investigated.

This paper examines the process of regional polarisation and the effects of emerging forms of economic spaces and regional development in the Pearl River Delta (PRD), which has been at the forefront of China's economic reforms and is becoming the fifth dragon of Asia (Sung *et al.* 1996). First, the recent trends of regional inequality are updated, and particularly, evidence will be provided to illustrate the extent of polarisation between the PRD and the periphery. Second, through micro studies of emerging mechanisms underlying regional development and polarisation, the research is scaled down to investigate emerging forms of regional development in the PRD, which is critical to regional polarisation. In contrast to the orthodox notion that the development of PRD is externally driven, it is argued that while foreign investment remains an important force in regional transformation, the development of the PRD is no longer externally driven, with the emergence of new economic spaces driven by the domestication of globalisation and the growth of the knowledge economy. Finally, the effects of regional polarisation and policies for regional integration in Guangdong are discussed. The authors are concerned that the power of marketisation and globalisation in producing uneven economic landscapes is overshadowing the efforts of local governments to reduce regional polarisation.

REGIONAL DEVELOPMENT, INEQUALITY AND POLARISATION

Orthodox regional inequality theories, such as the neoclassical growth theory, the cumulative causation thesis, and the neo-Marxist school, disagree over trajectories and sources of regional inequality, especially trends of convergence or divergence. The neoclassical growth theory emphasises equilibrium conditions and the importance of the market in resource allocation and considers regional inequality as a transitory phenomenon (e.g. Borts & Stein 1964). The inverted-U theory holds that regional inequality tends to rise during the early stages of development and then fall as the economy matures (e.g. Williamson 1965). The empirical work conducted in the late 1960s and the 1970s to test the neoclassical convergence theories found the lack of convergence and the persistence of poverty, which prompted alternative thinking on development and inequality. Divergence and structural theories, particularly cumulative causation, dependency and structural schools, argue that backwash effects

and capital accumulation tend to reinforce regional inequality (e.g. Slater 1975; Smith 1984). A renewed interest on regional inequality has emerged since the early 1990s, fuelled by dissatisfaction with the orthodox neoclassical doctrine and concerns over the effects of globalisation and liberalisation, with an explosion of theoretical and empirical studies (e.g. Barro & Sala-I-Martin 1995; Wei 1999; Kanbur & Venables 2005; Rey & Janikas 2005). The new convergence theory developed by Barro & Sala-I-Martin has been particularly influential, and recent work has tested the notions of absolute convergence, conditional convergence and club convergence. Much of the work of institutional geography and new economic geography highlights agglomeration, externalities, and regional divergence, in contrast to neoclassical notions of long-term convergence.

The debate on regional inequality in China started in the early 1970s and has intensified since the late 1980s, with the deepening of China's economic reform and further integration with the global economy. Convergence schools find evidence of regional convergence (e.g. Denny 1991; Zhang *et al.* 2001), while divergence schools also find evidence of regional divergence (e.g. Hu & Kang 1995; Chai 1996). The paradox regarding China's regional inequality is partly caused by the problem of empirical observation (Wei 1999). Since the mid-1990s, new evidence has uncovered the rise of the coast-interior gap, and the initial decline of interprovincial inequality due to the emergence of a group of coastal provinces, especially Guangdong, Jiangsu, Shandong, Zhejiang and Fujian as new growth centres, and the relative decline of traditional leading industrial provinces with struggling state-owned enterprises (Fan 1995; Wei & Ma 1996; Wei 2000). Economic transition led to the rise of the coast-interior divide and the decline and recent rebound of interprovincial inequality. Western theories of regional inequality have never placed the process of transition from state socialism at the heart of regional inequality and are therefore limited in predicting the trajectories of regional inequality in China. Furthermore, scale, which is largely ignored in theories of regional inequality, has caused much confusion among scholars working on China (Wei 1999).

The debate on regional inequality in China points to disagreements over sources and observation scales of regional inequality. First, scale as a measurement is known as the modifiable areal unit problem (MAUP), i.e. the findings of geographical phenomenon are sensitive to geographical scale, which is reflected in the coast-interior scale versus the interprovincial scale. Scholars have also found that intraprovincial inequalities, as manifested by interregional, intercounty and interrural inequalities, are sensitive to geographical scale as well (Wei 2000). Second, closely related to scale is the interpretation of sources of regional inequality. At the macro scale, the policy of the Central Government and the impacts of globalisation are often highlighted, while for regional development at micro levels, scholars are more concerned with local forces and effects, such as local states, geographical proximity and agglomeration. Globalisation and economic transition in China have empowered local states and agents who are increasingly playing more significant roles in regional and local development (e.g. Lin 1997; Wei 2000; Ma 2005), although as criticised by Mansfield (2005) the scale literature tends to exaggerate the demise of the nation states. Sources of regional inequality are therefore sensitive to scale as well, and it is inadequate to study regional inequality at either the macro or micro scales only. The approach of multiscale and multi-mechanisms has significant value as a framework for studying regional inequality in China (Wei 1999). Third, studies of regional inequality based on administrative units deal with overall patterns of regional inequality, such as interprovincial and intercounty inequalities. Other studies are concerned with the core-peripheral inequality grouping administrative units, such as the coast-interior divide or within provinces, the north-south divide in Jiangsu Province. These two scales of observation involve quite different measurements and mechanisms and therefore confusing them can often cause problematic findings.

Finally, while regional inequality has long been a major concern of governments, recent geographical work on regional development has been increasingly scaling down to local level studies of 'winning' regions. Tremendous attention has been drawn to the 'buzz' regions, not only in developed countries, for example the Silicon Valley, but also in Asia, such as Bangalore, India's 'Silicon Valley.' Studies of winning regions are extremely important, but with the decline

of macro-level and comparative studies of overall regional development patterns, a danger of policy distance has risen since such studies do not really address the issue of regional inequality. These studies examine the growth and transformation of a few winning regions, but not the change of inequalities across regions and policies to address inequalities. A region that is getting richer itself is not really a problem. It becomes a potential problem if the overall inequality, or the gap between rich and poor regions, generates social conflicts, economic inefficiency and persistent poverty. Studying the rich regions alone, as so much focused on by geographers, is insufficient. Economists, on the other hand, have been preoccupied with the study of overall inequalities across administrative units. Both are inadequate, and there is a need to link the micro studies of regional development to the broad, overall understanding of regional inequality.

This paper, therefore, attempts to link the macro study of overall patterns of regional inequality to micro studies of mechanisms of regional development and to expand the study of intraprovincial inequality in China through a study of Guangdong Province. Studies on Jiangsu Province have found that the long existing gap between the richer southern Jiangsu (Sunan) and the poorer northern Jiangsu (Subei) has been rising since reform due to the development of township and village enterprises in Sunan in the 1980s, followed by the transformation of the region towards globalisation and the massive infusion of foreign direct investment (FDI) since the early 1990s (Wei & Fan 2000; Wei 2004). Thus in this case, the core-peripheral gap has been intensified during the reform period, although overall intercounty inequality declined due to the declining status of leading cities troubled by state-owned enterprises (SOEs). Jiangsu presents a case of the intensification of the core-peripheral gap due to globalisation and market transition, which is consistent with the findings of the rise of the coast-interior gap in China. The findings on rising core-peripheral gaps in China are consistent with the research on other Asian countries, which has identified the existence of substantial regional differences within countries and the intensification of core-peripheral inequalities (e.g. Sjoholm 2002; Akita 2003).

Studies on Zhejiang Province, however, have found that the traditional gap between northeast Zhejiang (the core) and southwest Zhejiang (the periphery) has been replaced by a new core-periphery structure of the emerging coast-interior divide (Wei & Ye 2004; Ye & Wei 2005). Scholars argue that the emergence of Wenzhou, known as the capital of capitalism in China for its booming private enterprises, and the spreading Wenzhou Model to nearby regions, especially Taizhou, have contributed to the rise of southern coastal Zhejiang, leaving interior Zhejiang behind. Therefore, in the case of Zhejiang, the core-periphery structure of socialist China does change with the revival of capitalism and the process of globalisation, by example of the emerging coast-interior gap, just like the rising coast-interior gap in China. Thus the conclusion that can be drawn from China is that regions, not necessarily the richer regions under state socialism, but those better positioned for marketisation and globalisation, are moving ahead in economic growth, and their gaps with the rest of the country or the provinces have been rising. Such research has uncovered the dynamic and multi-scalar nature of regional inequality and the significance of regions in understanding uneven development. The findings, in a way, challenge theories of regional development, since existing theories emphasise the continuation of patterns but are weak in predicting changing patterns, especially the emergence of new growth centres and new core-peripheral structures. China, therefore, provides a ground to enrich and test Western theories of regional inequality.

Guangdong is traditionally divided into the core (PRD) and the periphery (the rest of province including North, East and West Guangdong). Since the late 1970s, the PRD has been 'one step ahead' in reform and has led China in economic growth, which has widened its gap with the periphery. As in Jiangsu and Zhejiang, the rising gap has prompted scholars and the governments to examine the sources of regional inequality and debate over policies for regionally integrated development. Fan (1995) has found that regional inequality in Guangdong declined in the 1990–93 period because of the expansion of locally-based township enterprises and the weakening polarising effects of foreign investment. Previous studies have also reported the decrease of urban primacy and polarisation within the PRD (Xu & Li 1990). Furthermore, Gu *et al.* (2001) revealed that during the period 1980 to 1995,

more developed areas achieved rapid growth, which spread to other areas in the PRD but not the periphery. Those studies, however, focus on patterns of regional development in the 1980s and early 1990s, and therefore the issue of regional polarisation since the 1990s has not been thoroughly examined. More significantly, studies tend to emphasise the role of foreign investment, particularly FDI from Hong Kong in the development of the PRD, which has been conceptualised as externally-driven development (Eng 1997; Sit and Yang, 1997). The role of the PRD is often viewed as a manufacturing assembler, reflecting the influence of the new international division of labour theory. Patterns and sources of regional development since the early 1990s, when China launched more radical economic reforms, have yet to be fully investigated. In the following sections, the study investigates whether the core-peripheral gap in Guangdong has been further intensified since the early 1990s and whether foreign investment remains the dominant agent of regional development and polarisation.

GUANGDONG: REGIONAL POLARISATION IN THE TRANSITION FROM STATE SOCIALISM

The PRD includes central and southern Guangdong, with a land area of 41,698 km^2 and a population of 23.99 million in 2003 (Figure 1 and Table 1). The region is the core of Guangdong and one of the most developed in China. In 2003, with a land area of 26.7 per cent of Guangdong and 0.5 per cent of China, it produced 80 per cent of the GDP in Guangdong and 9.71 per cent of the GDP of China respectively (GSB 2004; SSB 2004). Its exports accounted for 95 per cent of Guangdong's and 33.1 per cent of China's total, and its FDI accounted for 90.6 per cent of Guangdong's total and 31.8 per cent of China's respectively (Table 1).

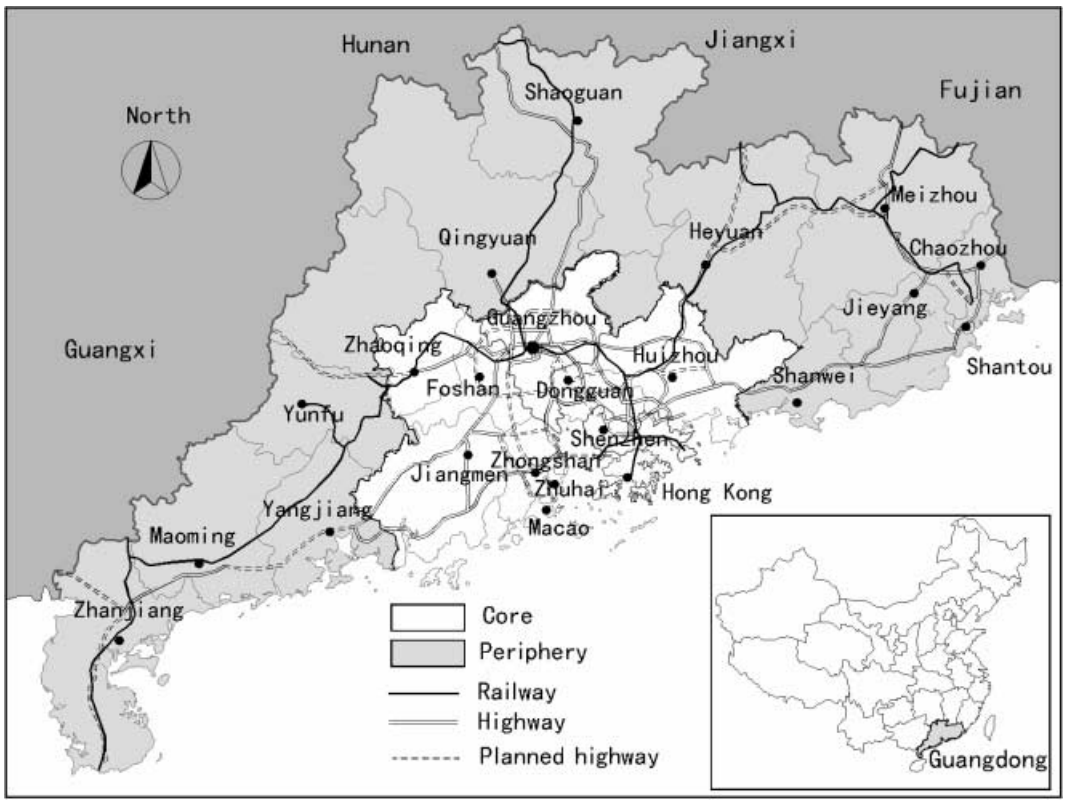


Figure 1. *Location of the Pearl River Delta and Guangdong Province.*

Table 1. *Rising significance of the Pearl River Delta, 2003.*

	Pearl River Delta		As percentage of Guangdong		As percentage of China	
	1985	2003	1985	2003	1985	2003
Population (million)	1.76	23.99	31.6	30.9	1.7	1.9
Land area (sq. km)	4,1698	4,1698	26.7	26.7	0.5	0.5
GDP (billion yuan)	41.8	1134.1	62.1	80	4.9	9.7
Investment in fixed assets (billion yuan)	1.7	374	48.9	82.3	0.7	6.7
Exports (US$ billion)	0.6	145.1	84.3	95	22.8	33.1
FDI (US$ billion)	0.1	17	72.1	90.6	6.1	31.8

Source: GSB 2004.

Historically, the PRD was built with migrants from more developed central and north China, who brought more advanced technology and improved local production. The PRD is also among the earliest areas of China in developing maritime foreign trade. The well-known 'Maritime Silk Road' was opened to overseas traders in the Han Dynasty (220–206 BC), and during the following dynasties, Canton (Guangzhou) was one of China's most important seaports and trading centres. An intensive farming system of silk cocoons and pond fish was developed in the Ming Dynasty, which greatly enhanced agriculture in the region. Despite banning maritime trade in 1757, the Qing Emperor still kept Guangzhou as the only national trading port. After the Opium War (1840–1842), Britain and Portugal established Hong Kong and Macao as free ports and allowed the PRD to use these ports for trading. The opening up of Canton as a concession was followed by the establishment of a number of factories in the delta, including rubber, soap, machinery, etc. By the late 1890s, the Pearl River Delta had become one of the most developed regions in China, second only to the Yangtze Delta.

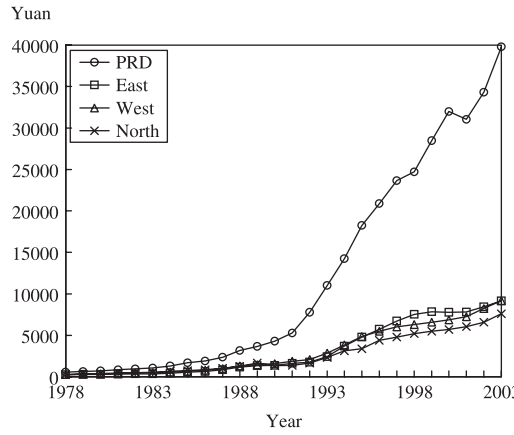
During Mao's regime after 1949, the PRD remained one of the most important agricultural bases of China and enjoyed the most advanced cultivation system in Guangdong. With only one third of Guangdong's arable land, it fulfilled most of the state quotas (50% of grains, 60% of sugar canes, 80% of pond fish, 90% of silk cocoons and 50% of tropical fruits). The PRD specialised in light industry based on local agricultural materials, partly due to the lack of coal, iron ore and other raw materials. The PRD, however, was ignored in industrial allocation because of its coastal location in the defensive First Front. The trade embargo and self-reliance policy deprived the delta of its role as the nation's leading outlet for foreign trade. Moreover, commercial activities were considered 'tails of capitalism' and transformed completely into collective and state working units (Vogel 1989; Lin 1997). Consequently, the economic status of the PRD in China declined, which slowed the growth of Guangdong. During 1952 to 1978, the growth rate of per capita national income in Guangdong was only 3.1 per cent, below the national average of 3.9 per cent (Wei 2000). Its location quotient reflecting relative national status declined from 90 (slightly below the national average) in 1952 to 74 in 1978 (substantially below the average).

In 1978, in response to the failure of Mao's policies and the global pursuit for growth, China launched economic reforms and was opened up for foreign investment and trade. In 1979, the Central Government sanctioned the request to allow Guangdong to go 'one step ahead' in reform, partly due to its remote location in southern China, its connections to overseas, and its central leadership, including the carrying out of financial autonomy, expanding local authorities on foreign trade, allowing flexibility in production and circulation, and most importantly, establishing the three Special Economic Zones of Shenzhen, Zhuhai and Santou. The Central Government designated Guangzhou as an 'open coastal city' in 1984 and the PRD as an 'open economic region'

in 1985 and expanded the scope of open door policies. More drastic reforms were implemented in the early 1990s, with further development of market economies and more integration with the global economy. Since the reform, Guangdong's growth rate is among the fastest, and it has emerged as one of the richest provinces in China. Its annual growth rate of GDP per capita was 10.9 per cent during 1978–1990, ranked the highest in China (Yu & Wei 2003). From 1978 to 2000, its location quotient rose by 60 per cent, second only to Zhejiang. Its annual growth rate of GDP per capita was 13 per cent during 1990–2000. The growth of Guangdong has been led by the phenomenal growth of the PRD.

The PRD has long been the economic core of Guangdong, and its growth rate during the reform period has always been higher than the rest of Guangdong. Influenced by Hong Kong and China's reform policy, Guangdong has experienced a rapid polarisation process, with an increase in concentration of resources, technology, information and capital to the PRD. With an average annual growth rate of 18.5 per cent (1980–2003), the PRD has been one of the fastest growing and most advanced regions in China. Its GDP reached 1,134 billion yuan in 2003, and it has become a model of economic growth. Accompanying this phenomenal growth is regional polarisation, and the gap between the PRD and the periphery has intensified. The extent of rising regional inequality since the 1990s has been substantially larger than the 1980s, approaching the warning threshold of unacceptable regional inequality.

GDP per capita in the PRD has diverged drastically from the periphery regions of Guangdong (Figure 2). In 1978, GDP per capita in the PRD was 570 yuan, which increased to 39,782 yuan in 2003, a rise of 6,880 per cent. The absolute difference between the PRD and the periphery, referring to the difference between the highest and lowest GDP per capita, rose substantially, from 253 yuan in 1978 to 32,178 yuan in 2003, which was 127 times larger than in 1978. Moreover, the ratio of the absolute gap to the average GDP per capita of Guangdong increased from 68.5 per cent in 1978 to 186.9 per cent in 2003, a growth of 118.5 per cent with an average annual growth rate of 4.1 per cent. As shown in Figure 2, the gap increased only slightly from 1978 to 1991, but it grew rapidly in the early 1990s when deeper market reforms were implemented.



Source: GSB 1979–2004.

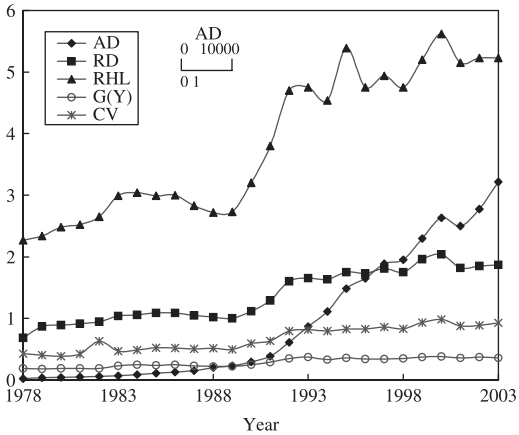
Figure 2. *GDP per capita in the PRD, east, west, and north of Guangdong, 1978–2003.*

Since relative inequality indexes are more often used to measure regional inequality and polarisation, the study has calculated several popular relative inequality indexes. As evident from Table 2 and Figure 3, the relative gaps between the PRD and the rest of Guangdong have risen substantially as well. The Gini coefficient (G(Y)) increased from 0.19 in 1978 to 0.36 in 2003, an increase of 89.5 per cent. Such a level is considered approaching the warning threshold of unacceptable regional inequality. The coefficient

Table 2. *Regional inequality indexes of GDP per capita between the PRD and the periphery regions, 1978–2003.*

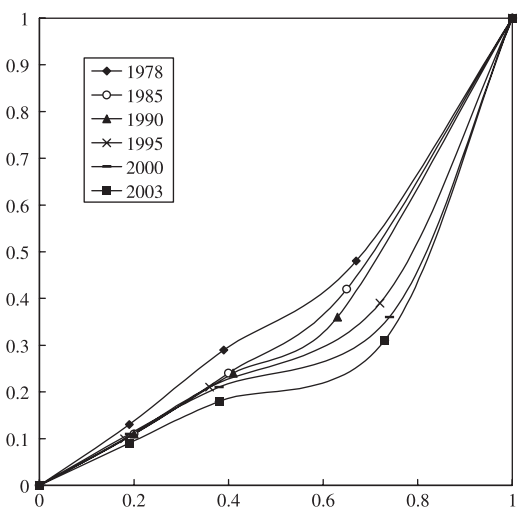
Year	Absolute difference (RD) (yuan)	Relative difference (RD) (%)	G(Y)	CV	RHL
1978	253	68	0.19	0.43	2.3
1984	873	106	0.25	0.49	3.0
1985	1,118	109	0.24	0.52	3.0
1990	2,958	112	0.25	0.59	3.2
1992	6,114	160	0.35	0.79	4.7
1995	14,859	175	0.36	0.83	5.4
2000	26,302	204	0.38	0.98	5.6
2003	32,178	187	0.36	0.93	5.2

Note: G(Y): Gini coefficient; CV: coefficient of variation; RHL: ratio of the highest to the lowest.
Source: Calculated by the authors.



Source: GSB 1979–2004.
Note: AD: Absolute Difference; RD: Relative Difference, G(Y): Gini Coefficient; CV: Coefficient of Variation; RHL: Ratio of the Highest to the Lowest.

Figure 3. *Regional inequality indexes between the PRD and the periphery regions.*



Source: GSB 1979–2004.

Figure 4. *Lorenz curves between the PRD and the periphery regions.*

of variation (CV) increased from 0.43 in 1978 to 0.93 in 2003, an astonishing increase of 117.6 per cent. RHL, ratio of the highest GDP per capita to the lowest GDP per capita, also more than doubled, rising from 2.3 in 1978 to 5.2 in 2003. The Lorenz curve between the PRD and the periphery regions for the 1978–2003 period, taking the horizontal axis as the rate of population accumulation and the vertical axis as the rate of GDP accumulation, is shown in Figure 4. The curve in 2003 was much more bent than that in 1978, and in 2003 the area formed by the Lorenz curve and cater-corner was also much larger than that in 1978. Both indicate substantial regional divergence during the reform period.

Regional inequality indexes have all shown a substantial increase of gaps between the PRD and the periphery regions from 1978 to 2003. More specifically, the increase of regional inequality from 1978 to 1991 was relatively slow, with average Gini of 0.22, average CV of 0.5, and average RHL of 2.8. During the early 1990s, however, the Gini, CV, and RHL all showed substantial increases in inequality when the PRD and Guangdong recorded phenomenal economic growth. From 1992 to 1998, inequality indexes were substantially larger, with average Gini of 0.35, average CV of 0.82, and average RHL of 4.8, respectively. During 1999–2003, regional inequality between the PRD and the periphery rose further, with average Gini of 0.37, average CV of 0.92, and average RHL of 5.29, respectively. The average Gini of 0.37 is approaching the warning threshold of 0.4, indicating the seriousness of regional inequality in Guangdong.

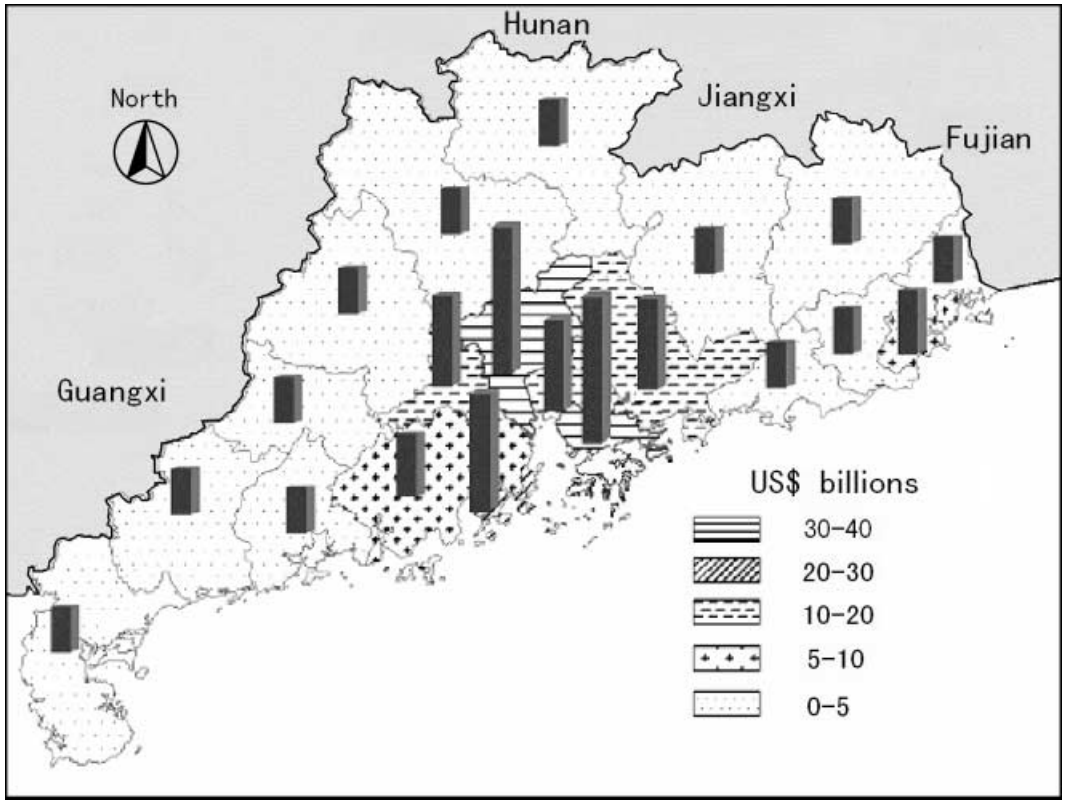
Drastic differentials also exist in terms of economic structure, and the PRD has also experienced rapid urbanisation and regional restructuring, with a declining primary sector and rapidly growing secondary and tertiary sectors. Sectoral structure was changed from 33:41:26 in 1980 to 25:39:36 in 1990, and 4:53:43 in 2003. The PRD engages in the secondary and tertiary sectors, while the periphery still has a large primary sector. The rapid growth and in-migration of the PRD have further centralised light industry and labour-intensive industry there, with the main industries being textiles, food, beverages, electronics, electric equipment, and machinery and building materials. The pillar industries are mechanical, electronics, telecommunications, textiles and chemical industries, and in 2003 their output value accounted for 72.8 per cent of the total industrial output in the PRD.

Industrialisation has also promoted rapid urbanisation, with rapidly increasing numbers of cities and urban populations in the PRD. In 2004, the PRD had 28 cities and 595 towns, and

the density of urban settlements reached 14 per thousand square kilometres, with a rate of urbanisation of 72.7 per cent. It has become one of the most urbanised areas in China. Through its dynamic cities and booming production centres, the PRD has drawn capital and labour from the peripheral region, acting as a powerful centripetal force and creating weak trickle-down effects.

DOMESTICATING GLOBALISATION: EMERGING FORMS OF REGIONAL DEVELOPMENT

Much of the work on the PRD emphasises Hong Kong as the primary driving force of uneven regional development. The development of the PRD and even Guangdong has been conceptualised as externally-driven development, with related notions such as foreign-investment-induced expo-urbanisation (Sit & Yang 1997), externally-driven industrialisation and urban development (Eng 1997), and FDI-trade linkage (Breslin 2000). Gu *et al.* (2001) also regarded FDI and bilateral trade as two key forces of regional development. Pushed by rising production costs at home, Hong Kong has transferred its labour-intensive industries to the PRD since the early 1980s (Leung 1996; Soulard 1997). Also, due to geographical proximity and cultural closeness with Hong Kong, foreign investment and trade are indeed heavily concentrated in the PRD. From 1979 to 2003, accumulative FDI from Hong Kong in Guangdong reached US$859 billion, with 68.8 per cent of the investment going to the PRD (Figure 5). Hong Kong is the third largest trade partner of Mainland China, and in 2002, bilateral trade reached US$509 billion, with Guangdong,



Source: GSB 1980–2004.

Figure 5. *Accumulative FDI in Guangdong, 1979–2003.*

mainly the PRD, accounting for 85 per cent. Hong Kong's influence on the PRD goes far beyond the economy. Its capitalist and materialist cultures have spread all over the PRD, changing people's ideologies and lifestyles and fuelling the pursuit for growth and profits.

However, although the conceptualisation of externally-driven development reflects the development of the PRD in the 1980s, it cannot fully explain the change in the 1990s. In fact, even in the early years of reforms in the 1980s, the PRD attracted domestic capital and resources. The establishment of special economic zones (SEZs) provided favourable policies to the region, which led to the establishment of hundreds of offices and branches of the central and local governments of China as 'windows' for foreign investment and trade, especially in Shenzhen. Consequently, Shenzhen absorbed a considerable amount of domestic capital from other provinces of China. During the early years of development, about 60 per cent of the investment came from the Central Government and other provinces, while foreign investment was still in the stage of observation (Zhao 1993).

Since the early 1990s, with changing domestic circumstances, Guangdong has been facing new challenges and seeking development paths beyond foreign investment. First, with the opening up of other areas of China to the outside world, Guangdong has gradually lost its advantages in preferential policies, which has weakened the policy incentives to FDI and its role in the development of the PRD. Hong Kong has expanded its investment allocation, first to the rest of the coastal region and then to interior China, instead of concentrating in the PRD (Lu 2000). The PRD is facing strong competition from other rapidly growing coastal regions over FDI. Shanghai, with a solid industrial base and the support of the Yangtze Delta, has become the focus of China's open door policy since the early 1990s. Shanghai has attracted a substantial amount of FDI, and the Shanghai-centred Yangtze Delta has become the new centre of foreign investment and economic growth in China (Wei & Leung 2005). The competition from the Yangtze Delta has created pressure for change, exemplified by providing a roadmap for restructuring the car manufacturing sector in Guangdong in 1993 (Thun 2004). In addition, the Beijing-Tianjin region, with the political advantage of being the nation's capital, has also become attractive to foreign capital, technology, expertise, and so on. Both regions have taken shares of FDI from the PRD, and more importantly, they have better conditions than the PRD in hosting company headquarters and R&D facilities, with top state universities and research institutions.

Second, rising costs of labour, land and other production factors have weakened the comparative advantages of the labour-intensive industries, the backbone of the PRD, which has forced Guangdong to seek alternative development paths emphasising institutional reform and development in capital and technology-intensive industries. Meanwhile, industrial equipment introduced in the PRD in the early 1980s when it was first opened is already lagging behind equipment introduced into other provinces in the late 1980s and early 1990s. With initial development through embedding and providing supplies for foreign companies, thousands of domestic firms have emerged in the PRD. Those firms and the local governments of Guangdong have invested heavily in updating industrial equipment and strengthening research capacities, which has further increased the significance of local states and enterprises in economic and regional development of the PRD.

Third, with rapid growth, urbanisation, and the fragile environment of the PRD, labour-intensive industries with more pollution, such as plastics, leather and toys have been restrained from expansion by local governments, which has increased the 'investment threshold' and forced decentralisation of investment in these industries towards surrounding areas. This has consequently reduced the heavy concentration of FDI in a few core areas of the PRD whose developments were largely externally driven, such as Shenzhen, and has increased FDI in other areas of the PRD. The maturing of the investment environment and changing development policies have also attracted foreign companies based in North America and Europe to invest in high-tech industries and establish company headquarters in the PRD, further reducing the dominance of investment from Hong Kong.

Finally, the increasing efforts of local governments to seek new forms of economic and regional development beyond Hong Kong investment reflect changing political economic circumstances and increasing competition since the early 1990s.

Local states in Guangdong, including Guangzhou (Thun 2004), have been conceptualised as laissez-faire states in comparison to the local development state of Shanghai. With increasing global competition and empowerment by decentralisation, the local governments have taken a proactive attitude towards economic and regional development by actively initiating local development policies, effectively transforming the local states into development states like other areas of the Yangtze Delta. With the increasing significance of a knowledge-based economy, the Government has emphasised a combination of external and endogenous development paths based on globalisation, knowledge economy, agglomeration, and hi-tech districts. The notions of industrial clusters and the success of 'Third Italy' convinced the Government that the appropriate approach to regional development is not just engaging in intense regional competition to attract foreign investment, but also domesticating globalisation and giving greater attention to endogenous resources. The Ninth Session of the Second Conference of the Communist Party Committee of Guangdong Province proposed that 'Guangdong should walk the path of combination of external and endogenous development' (Huang 2005). In September 2005, the Provincial Government announced 'the decision to improve the capability of independent innovation and promote industrial competitiveness.' Zhang Dejiang, the General Secretary of the Provincial Party Committee, pointed out that 'promoting the ability of independent innovation is a decisive battle for Guangdong's destiny' (*People's Daily* 2005). The recently drawn up Social and Economic Development Plan of Guangdong Province (2006–2010) accepts the drive for innovation as a core component for the development strategy of Guangdong.

Such drive from the Provincial Government is accompanied by the tremendous efforts of the local governments in the PRD to transform the paths of economical growth. The Guangzhou Municipal Government has accelerated the establishment of 'mechanisms for great openness, co-operation and interaction' to agglomerate resources for innovation and therefore transform from 'Guangzhou made' to 'Guangzhou created' (Lu 2002). Five zones have been developed within Guangzhou Hi-Tech District, including Guangzhou Science City, the Tianhe Software Zone, Huanghuagang Information Zone, Nansha Information Science and Technology Zone, and Nonstate Science and Technical Zone, with initial agglomeration effects, trickle-down effects, and demonstration effects of Guangzhou's creativity. Moreover, Guangzhou also emphasises the development of the intermediary institutions, with more than 900 science and technology intermediary institutions, 17 start-up service centres, and two technology transfer institutions. The municipal government has also strengthened management and improved soft environments such as government affairs, policy, legal system and residential environments, in order to attract domestic and foreign enterprises and talents to agglomerate in Guangzhou.

The Shenzhen Municipal Government has proposed to transform the city into an independent, innovative city. The city has formed an innovation system centred on enterprises, with the involvement of financial institutions and R&D intermediary institutions and the guidance of the government. State investment in science and technology has been growing annually and reached 1.4 billion yuan in 2004, accounting for 7.26 per cent of fiscal investment of the city. The total investment in science and technology reached 92.5 billion yuan, with 12.5 billion yuan or 3.65 per cent of GDP in R&D. Foshan City has also promoted innovation ability by establishing innovation centres in 15 towns recognised by the Provincial Government. Moreover, the city is accelerating the construction of incubators of Foshan State High-tech Zone, Shunde High-tech industry and Gaoming new materials industry. Dongguan has taken the cultivation of independent innovation capability as an important part of industrial restructuring and has implemented a series of policies promoting technological innovations, including investing one billion yuan per year over five years starting in 2005 to support the advancement of technology. Seven specialised towns have been designated by the province as the experimental centres of technology innovation, with the establishment of two industrial innovation platforms (Shilong Technical Innovation Center and Houjie Furniture Design Information Center), and the planned establishing of Shijie Electronic Information Center, Humen Clothing Innovation Center and Dalang Woolen Knitwear Innovation Center. Moreover, the city will transform the

Sungshan Lake Science and Technology Industry Park as the 'dragon's head' of its independent innovation system.

A number of enterprises have had tremendous progress in technological advancement and innovation. Shenzhen Huawei Company has applied for 8,000 patents, with more than 800 patent applications in North America, Europe and 20 other countries. In the Shenzhen Zhongxin Company, investment in R&D accounts for more than 10 per cent of the total sales income every year. Zhuhai Juli has become one of the main suppliers of the MP3 chip, making the PRD a major production base of MP3s. Therefore, since the early 1990s, the underlying forces driving the transformation of Guangdong from state socialism and uneven regional development have been broadened, with the increasing significance of local states and domestic forces. A model of regional development driven by both external and internal forces has replaced the earlier form of Hong Kong-based development, and local states and agencies have gradually become the dominant forces in regional development.

NEW ECONOMIC SPACES AND REGIONAL POLARISATION

The new development emphasis, as well as continuous foreign investment, has produced new economic spaces in the PRD representing new forms of regional development. These are underlying the surge of the PRD and the polarisation of regional development in Guangdong, further challenging the notion of Hong Kong-based development of the 1980s. With the reform and opening, a number of new economic spaces have emerged. New economic spaces along the Guangzhou-Shenzhen Highway and Guangzhou-Zhuhai Highway have formed the east and west wings of the PRD. With the rise of Shenzhen, a dual-centre structure centred on Guangzhou and Shenzhen has replaced the former primate-city structure led by Guangzhou. A new triangular spatial pattern centred on Guangzhou, Shenzhen and Zhuhai is emerging in the PRD. The following four types of new economic spaces consist of the core spatial manifestations of the new forms of regional development in the PRD.

Exo-production centres – Since the 1990s, with the deeper reform of China and the intensifying globalisation of the world economy, a number of transnational corporations (TNCs) have invested in Guangdong to take full advantage of emerging China. The Chinese Government has also mapped out a series of policies to absorb the TNCs, and the Ministry of Commerce in particular has relaxed its control over exports and purchase of foreign firms in China. Influenced by the notions of industrial districts and clusters, the local governments encouraged the development of FDI-driven industrial districts to attract and embed foreign investment with the establishment of dozens of exo-production centres in the PRD, especially in Guangzhou, Shenzhen, Dongguang and Zhongshan. These centres vary in location, size, industrial emphasis and governance structures. While some centres in Dongguang and Zhongshan host small investment projects from Taiwan and Hong Kong, others are dominated by large TNCs, such as P&G, Honda, Nissan, Toyota, Siemens and Panasonic in Guangzhou, and GE, Sony, Emerson and Kingfisher in Shenzhen. The PRD has been attractive to TNCs because of the maturing investment environment, which has more globalising local institutions and well-developed suppliers and logistics systems.

Moreover, the Guangdong Government has issued a series of favourable policies to encourage TNCs to establish their headquarters and R&D centres, which are considered keys to embed TNCs, globalise the PRD and transform Guangzhou and Shenzhen into globalising cities. Guangzhou has improved the structures of government departments to better serve TNCs, and Shenzhen has been approved as one of the testing grounds for establishing purchase centres for the State Council (the others are Shanghai and Tianjin). By the end of 2003, 280 of the global 500 TNCs had invested in Guangdong, with a total investment of US$12.6 billion. The PRD has become an important node of the TNCs' global production networks in electronics, information production and appliances. The number of Global 500 TNCs investing in Guangzhou increased to 127 by the end of 2004. Moreover, since the early 1990s the TNCs have been expanding their investment areas, and the establishment of R&D centres in the PRD has made it one of the three major R&D centres in China (the others being Beijing and Shanghai). For instance, Nokia established its first factory in Dongguang in 1995, and Dongguang Nokia has become a main

production base of Nokia, with 80 per cent of its products exported to Western countries. By the end of 2004, 10 TNCs set up R&D centres in Shenzhen and Guangzhou. It is expected that the establishment of TNC R&D centres can generate knowledge and technology spillover effects and promote R&D capabilities in the PRD.

High-tech zones – The economy of Guangdong has mainly relied on light industry and labour-intensive industry, which have experienced fast growth fuelled by foreign investment. This development model, however, has been facing problems and challenges, such as low productivity and low profit margin. Since the early 1990s, Guangdong has intended to transfer its development model from FDI-led extensive growth to intensive growth, centred on science and technology and driven by both domestic and foreign forces. The Provincial Government has mapped out a 'High and New Technical Research and Development Outline' and a 'Scientific and Technical Development Strategy of Guangdong.' In 1991, ratified by the former State Science and Technology Commission, several high-tech zones were established. The overall layout of the high-tech industry in Guangdong is 'three nodes and one belt.' Three nodes mean to make Shenzhen, Guangzhou and Zhongshan the three high-tech centres of Guangdong, and one belt means to form a high-tech belt in the PRD from Guangzhou to Shenzhen. Almost all of the high-tech zones in Guangdong are located in the PRD, including six national level high and new tech development zones, three provincial level high and new tech development zones, two national level software zones, 12 technology transfer bases for China's '863' projects (a national high-tech research and development programme) and five university science and technology parks (Figure 6). All of the high-tech

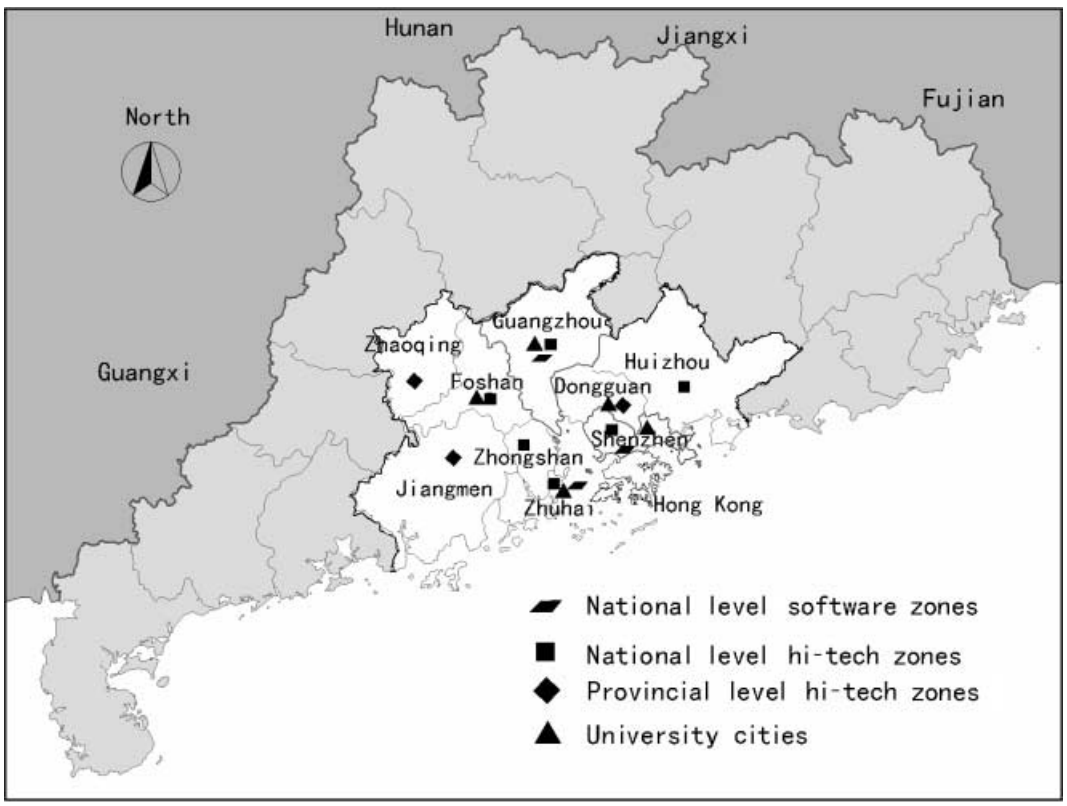


Figure 6. *High-tech zones and university cities in Guangdong.*

Table 3. *High-tech industrial output, 2001.*

Region	Output value		Added value	
	Output (in billion yuan)	Percentage of Guangdong	Output (in billion yuan)	Percentage of Guangdong
	354.2	100	97.1	100
PRD	333.5	94.1	89.7	92.5
Shenzhen	132.1	37.3	41.8	43.0
Guangzhou	61.9	17.5	18.2	18.7
Foshan	47.5	13.4	14.0	14.4
Dongguan	21.6	6.1	2.7	2.7
Huizhou	20.2	5.7	3.6	3.7
Zhuhai	17.8	5.0	3.0	3.1
Zhongshan	15.1	4.3	3.0	3.0
Jiangmen	12.4	3.5	2.7	2.8
Zhaoqing	50.0	1.4	1.0	1.0

Source: Hong Kong Trade Department (2003).

development zones have become bases for industrial innovation and emerging growth engines for the PRD (Table 3).

During 1995–2003, the output value and value added of the high-tech industry in Guangdong had an average annual growth rate of 27 per cent. In 2001, the PRD produced 94.1 per cent of output value and 92.5 per cent of added value in the high-tech industry with a heavy concentration in Shenzhen and Guangzhou (Table 3). By 2003, the total output value of high-tech industry reached 661 billion yuan, and its contribution to the GDP increased from 3.8 per cent in 1995 to 10.5 per cent in 2003 (GSB 2004), led by electronic, information, biotechnology, new materials, optical mechanics and electronics industries. The PRD has become the largest production base of computers, electric equipment and biomedicine in China. The development of the high-tech zones has also attracted human resources, enhanced production and innovation networks, improved the business environment and introduced international standards. To summarise, with the Government emphasising knowledge-based economic development, the establishment and development of high-tech zones have contributed to the development of the PRD and have become an emerging form of regional polarisation in Guangdong.

University clusters – Foray & Lundvall (1996) argue that a knowledge-based economy is more strongly and directly rooted in the production, distribution and use of knowledge than ever before, and that human competence is at the core of contemporary forms of economic development. Cities in the PRD still lack high-quality universities, R&D centres and world-class scientists; even the provincial capital Guangzhou is not in the same league as Beijing and Shanghai. Competition in the knowledge economy has forced the local governments of China to strengthen higher education and provide better access to knowledge resources. Given the importance of the 'intelligence engine' and inspired by the success of Silicon Valley, the Guangdong Government has paid great attention to the networking and agglomeration effects of firms, universities and research institutions. Zhongshan University has embarked on ambitious research projects sponsored by the State, TNCs and local companies. South China University of Science and Technology has led Guangdong in patent application, signing 700 project contracts with enterprises annually since 1999 and receiving four state-level science and technology awards in the past three years. The Guangzhou branch of the Chinese Academy of Sciences and the Guangdong Provincial Academy of Sciences applied for 441 patents domestically from 2001 to 2004, and obtained research contracts worth 201 million yuan during 2002–2004.

The Provincial Government has directed the establishment of university clusters since 1999

and has formed five university clusters located in Guangzhou, Foshan, Zhuhai, Shenzhen and Dongguang in PRD (Figure 6). The Guangzhou University City covers 43.3 km^2 and plans to hold 180,000–200,000 students, with a total planned population of 350,000–400,000 and an estimated investment of 20–30 billion yuan (Guangzhou Urban Planning Bureau 2002). It is designed as a first-class university garden in China and functions as a centre of higher education and scientific research, as well as a new city district integrating learning, research and production. Shenzhen's Municipal Gvernment has also constructed a university cluster aiming at research and graduate education, covering 10 km^2. Since universities in China concentrate heavily in national and provincial capitals, Shenzhen, as a newly established special economic zone, has been lagging behind other major cities in higher education. To remedy such a disadvantage, Shenzhen has relied on preferential policies to lure universities to establish satellite campuses in the city. Several top universities have already established their campuses in Shenzhen, including Qinghua University and Beijing University. Shenzhen has also established the Internet University to promote local training and the use of external resources. In addition, smaller cities have also joined the fever to establish university towns. The university town in Zhuhai is planned to cover more than 10 km^2 and host 13 universities. With 200,000 students, it is also the town in which South China Software Zone and Qinghua Science and Technology Zone have taken shape. Dongguang city invested two billion yuan to construct 'China's best-known universities cluster,' which hosts 2,000 students. Foshan University cluster has been under construction and plans to host 7 universities.

Local entrepreneur spaces – Guangdong has led provincial China in marketisation and ownership restructuring with rapid declining shares of SOE output and growing foreign and private enterprises, supported by government policies and driven by market mechanisms. Since the early 1990s, private enterprises have experienced tremendous growth and have been another new agent of regional development in the PRD. Guangdong was a place where private enterprises concentrated before the founding of the PRC, but in 1977, SOEs made up 98.7 per cent of GDP. In the 1980s, the growth of private enterprises accelerated, but due to heavy reliance on FDI, private enterprises lagged behind Zhejiang province. With the diffusion of FDI, Guangdong changed its externally-driven development path to a development model combing both exogenous and endogenous forces, which provided new incentives for the development of private enterprises. By the end of August of 2003, the number of private enterprises reached 290,300, and registered capital amounted to 394 billion yuan, respectively ranked the second and first in China. In 2002, the industrial-added value of private enterprises accounted for 24.6 per cent of the total, and the amount of retail sales of consumer goods accounted for 58.8 per cent of the total.

Private enterprises play an important role in the development of high-tech industry, paralleling the state and foreign high-tech enterprises. In 2001, the value of new and high-tech industry contributed by private enterprises amounted to 112.6 billion yuan, accounting for 32 per cent of the total, and private enterprise infused 5.9 billion yuan into R&D, accounting for 55 per cent of the total. Private enterprises have also become major players in exports since the Central Government granted them the right to foreign trade in 1999. In 2003, there were 6,490 private enterprises engaging in export and import with a total value of US$22.4 billion. The accelerated development of private enterprises has created numerous job opportunities. In Guangzhou, by the end of 2003, 230,229 individual enterprises had registered capital over 58.6 billion yuan and employed 360,809 workers, and moreover, 78,604 private enterprises had registered capital over 828.4 billion yuan and employed 636,409 workers. Given the heavy concentration of private enterprises in the PRD, their development has become another new engine of regional development and polarisation in Guangdong. In the periphery, however, private enterprises tend to build upon local resources, smaller in scale and less profitable.

THE POLITICAL ECONOMY OF REGIONAL POLARISATION

As analysed in previous sections, the rise of the PRD has generated polarisation effects and increased the gap between the PRD and periphery

regions in Guangdong. The emerging forms of polarisation and regional development have had some negative effects on the periphery. To reduce the negative effects of polarisation, the Provincial Government has been using both state and market forces to develop the poorer regions and integrate the periphery with the PRD. In the 1990s, Guangdong proposed that while stressing the development of the PRD, the Provincial Government should also seriously consider peripheral development. The Government has not only increased fiscal transfer to the periphery but also created preferential policies, such as tax relief, partnership assistance between the PRD and poorer areas and anti-poverty development zones in poorer areas. These measures accelerated the economic growth of 50 poor counties, which recorded double digit growth rates, even higher than the average growth rate of Guangdong during 1991–95.

However, with further globalisation and marketisation, such a trend did not endure. During 1996–2000, the 50 poor countries grew only by 5–9 per cent annually, lower than the average growth rate of Guangdong (11%). Such a trend of rising core-peripheral gap is consistent with the rising coast-interior gap in China, which forced the central government to launch a Western development strategy in 1999 and push for more Government assistance with the development of poorer regions. Since the late 1990s, with the changing political economies, the Government has heightened the efforts of regional integration. In 2001, it proposed regional integrated development as one of the key goals of provincial development with further tilting preferential policies toward the periphery, strengthening fiscal transfer payment and investment in infrastructure and education, and devoting more resources to poverty relief and poor area development. The following are the specific components of policies for peripheral development and regional integration.

First, anti-poverty and poverty-area development have been a priority of government policy in economic and regional development. During the 1980s and 1990s, with the tremendous growth of the PRD, the war on poverty in the periphery never stopped and continuously intensified. However, due to the lack of targeting at those in poverty and the dispersed use and misuse of the anti-poverty funds, this kind of assistance did not produce effective results. In 1998, the Provincial Government set up an ambitious goal that residents in the poor areas would live a comfortable life by the end of 2000. In mid-2000, the Provincial Government determined to concentrate political will and fiscal power to fight the anti-poverty war, and in 2001, the Outline for Anti-Poverty Development for Rural Guangdong during the Tenth-Five Year Plan (2001–2005) was launched with a series of goals and measures. The province provided total funds of 1.65 billion yuan and built 5,093 kilometres of village highways, which provided 905 administrative villages with access to motor vehicles. In addition, now every administrative village has access to TVs and radios. According to the Director of the Provincial Department of Finance, the province was planning to raise 30 billion yuan to aid the development of the mountain areas and reduce their financial burdens.

Second, the Provincial Government is using institutional and market mechanisms to integrate the periphery with the PRD. Since the 1990s, with the reform of property rights and under the pressure of increasing production costs in the PRD, some labour-intensive industries have been diffused to the periphery through investment and acquisition. The inflow of capital and technology from the PRD has helped the periphery to use resources more effectively and provide job opportunities for local people. To attract external investment, the local governments have also implemented a series of regional development policies. For example, in 1992, the first anti-poverty development zone in China was established in Qingyuan, a remote area of Guangdong, which has since attracted a substantial amount of investment from other regions and even overseas.

Third, the Provincial Government has also made substantial efforts to enhance peripheral urbanisation and improve transportation networks between the PRD and the periphery. Before the 1990s, the emphasis of transportation construction was in the PRD. Since the 1990s, the transportation networks of Guangdong have been extended from the PRD to the periphery. New railways built in the periphery include Shan-Mao, Guang-Mei-Shan, Yue-Hai, Jing-Jiu, and Mei-Yan Railways with the upgrading of the Jing-Guang Railway. Numerous highways have been constructed, such as Jing-Zhu, Guang-Zhan,

and Guang-Shan. Twelve prefecture-level cities have been newly established, and eight, or two-thirds of them, are located outside the PRD. These cities have become the backbone of the urban networks in Guangdong, extending the urban network of Guangdong from the PRD to the periphery, which helps to make these cities local growth poles and to better integrate them with the PRD. All of these new developments have improved the accessibility of the periphery and the integration of the periphery with the PRD, although major transportation development has concentrated in Guangzhou and Shenzhen (and to a lesser extent in Zhuhai, Foshan and Huizhou) and along the traffic corridors linking these spacing cities in the PRD (Loo 1999).

Finally, since regional policies often fail to improve the development of areas with extremely poor natural conditions, Guangdong has adopted a policy of 'people to jobs' by encouraging the resettlement of the residents to more developed areas with relocation assistance and job opportunities. During 1993–1996, the province invested 150 million yuan to resettle 160,000 residents and channelled more than two million workers from the Karst mountain areas to more developed coastal areas. Such a practice of ecological migration has also been used to reduce development burdens and poverty traps in other poor areas of China, although problems of inadequate preparation, willingness and participation of migrants, inadequate funds and social integration exist (Yan & Qian 2004). Nevertheless, the living conditions in these areas have been improved somewhat, and almost all poverty counties in Guangdong have removed their 'poverty caps.'

While the Central Government is preoccupied with the development of the western region, the Provincial Government of Guangdong has been concerned that the PRD is likely to continuously attract natural and human resources from the periphery. They have been making tremendous efforts to reduce the polarisation effects and to develop the poorer periphery. Those policies, to a certain extent, have constrained the intensification of the core-periphery gap, and more significantly, helped millions of people out of poverty. However, the gap between the PRD and the periphery has been intensified since the early 1990s, which is evidence of the power of marketisation and globalisation in producing uneven economic landscapes.

CONCLUSION

This study has shown that Guangdong Province has been experiencing increasing regional polarisation during the reform period with the phenomenal growth of the PRD. The rising core-peripheral gap found in Guangdong is consistent with rising gaps found in Jiangsu (South vs North) and Zhejiang (Coastal vs Interior) provinces, as well as the rise of the coastal-interior divide in China. These findings can be extended in China, Jiangsu, Zhejiang and Guangdong to a testable hypothesis that economic reforms and globalisation have intensified core-peripheral gaps, although more empirical work is needed to investigate changing patterns and forms in the rest of the provinces.

This study has found that in Guangdong during 1978 and the 1980s, the polarisation process was driven by foreign investment and exports with a concentration on labour-intensive industries; since the early 1990s, however, a new form of regional polarisation has emerged, which is characterised by the knowledge economy and increasing importance of internal forces in the development of the PRD. The local governments in the PRD have attempted to improve development environments and promote knowledge economy and geographic agglomeration to embed foreign investment and stimulate local innovation. The PRD is capitalising from its economic base, infrastructures, and human resources to improve renovation and develop high-tech industry, making new economic spaces centred on exo-production centres, high-tech zones, university clusters, and entrepreneurial spaces that have emerged as new engines of regional growth, which has increased the gap between the PRD and the periphery, and effectively transformed the externally-driven development path of the 1980s to integrate external and internal forces in regional development. The mechanism of regional polarisation is knowledge economy and local renovation, instead of the open policy and manufacturing assembly of the 1980s. Consequently, the orthodox notion of the PRD development as externally driven has become obsolete, and a new conceptualisation centred on the knowledge economy and

integrated development can better explain the recent regional development and polarisation in Guangdong.

The new form of regional development centred on the knowledge economy and innovation also have important implications for the theories and empirics of regional development. First, the knowledge economy is also becoming a powerful agent of regional transformation in China. This study's findings on the emergence of the knowledge economy in the PRD shows that the 'winning' regions in developing countries such as China are joining the global favour in promoting the knowledge economy and innovation, indicating a global convergence towards the leading sectors and new engines of regional development. Developing countries such as China are no longer willing to serve simply as a manufacturing assembler or a manufacturing floor. The new international division of labour (NIDL) theory in particular exaggerates the importance of labour costs in production, and the experiences of the PRD undermines the fundamental assumptions of the NIDL. China is determined to become a major player in the knowledge economy and the global production of knowledge and innovation.

Second, the emergence of the knowledge economy in the PRD also has important implications for the recent efforts to develop the Greater Pearl River Delta (GPRD). Enright *et al.* (2005) argue that the GPRD region combines the international orientation, business experience, and financial muscle of Hong Kong and Macao with the land, labour and skills of the Chinese Mainland. The knowledge economy is driven by R&D and innovation, which requires embracing both internal and external innovation capacities. The GPRD, however, has an emphasis on regional integration between Hong Kong, the PRD and neighbouring provinces. While Hong Kong and the PRD are making efforts to develop the high-tech industry, the GPRD is not the leader in China in terms of R&D, and more energy and resources should be channelled to nurture global networks for innovation and creativity.

Finally, the changing forms of regional polarisation make the development of the periphery even more challenging. Despite the efforts of the Provincial Government in recent years to improve the conditions of the poorer regions, the gap between the PRD and the periphery has been further intensified. Overwhelming evidence has found spatial agglomeration and stickiness of the knowledge economy, and the rising knowledge and digital divides between the core and the periphery are even more difficult to overcome than the traditional manufacturing divide. With the effects of self-reinforcing agglomeration, the constraints of geographical barriers, and the further integration of the PRD with the global economy and the global space of flows, we are not optimistic regarding the future of regional polarisation. Given the poor geographical conditions of peripheral areas, the tasks of developing the periphery and integrating it with the PRD remain challenging and require the long-term commitment of the Government.

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