Chapter 1

Socio-economic trends in Guangdong

This chapter provides an overview of demographic and economic trends of the province within its national context and as compared with OECD member countries. The first section highlights the rapid and deep urbanisation process of the last three decades which is unprecedented in human history. It shows how rapid industrialisation has generated a model featuring strong spatial concentration of people and firms, and the emergence of the Pearl River Delta, a cluster of nine cities, that concentrates more than half of the total population of the province and which has acquired the recognition of "the World's Factory", since it has the world's largest concentration of low and medium value-added manufacturing. The second part of this chapter highlights the position of Guangdong as the largest economy of China. It shows the remarkable progress experienced in the past 30 years, transforming Guangdong from a backward agricultural economy to a dynamic industrial-based manufacturing economy, by making full use of its geographic proximity to Hong Kong, China, and positioning itself as the largest exporter in the country as well as its main FDI recipient. A review of the different phases of economic development shows how Guangdong has benefited from a privileged position in China, since it was chosen as a test bed for a wide range of economic reforms when China introduced the "Open Door" policy in 1978.

Introduction

Guangdong has long been a key pillar of China's development. Today it is the country's most populous province and its largest economy. With 95.4 million inhabitants, its population size is larger than all OECD member countries, except Japan, the United States and Mexico. The size of its economy is comparable to that of Australia and Turkey. This chapter provides an overview of demographic and economic trends of the province within its national context and as compared with OECD member countries. The first section highlights the rapid and deep urbanisation process of the last three decades which is unprecedented in human history. It shows how rapid industrialisation has generated a model featuring strong spatial concentration of people and firms, and the emergence of the Pearl River Delta, a cluster of nine cities, that concentrates more than half of the total population of the province and which has acquired the recognition of "the World's Factory", since it has the world's largest concentration of low and medium value-added manufacturing. The second part of the chapter highlights the position of Guangdong as the largest economy of China. It shows the remarkable progress experienced in the past 30 years, transforming Guangdong from a backward agricultural economy to a dynamic industrial-based manufacturing economy, by making full use of its geographic proximity to Hong Kong, China, and positioning itself as the largest exporter in the country as well as its main FDI recipient. A review of the different phases of economic development shows how Guangdong has benefited from a privileged position in China, since it was chosen as a test bed for a wide range of economic reforms when China introduced the "Open Door" policy in 1978.

1.1. Overview of the dynamic Guangdong province

Demographics and geography

What is today the Guangdong province has a long history of interacting with the world outside China. With a long coastal line forming China's southern gate, it neighbours five provinces and two special administrative regions – Hong Kong, China and Macao, China (Box 1.1 and Figure 1.1). Guangdong is one of the most southern provinces in China. In a regional context, Guangdong is located right in the centre of China and Southeast Asia, in close proximity to Vietnam, Laos, the Philippines and Malaysia. Guangdong's geography has played a critical role in determining the current distribution of settlements and population across the province (Box 1.1). Its largest habitable area is the Pearl River Delta (PRD) with extensive bodies of water and rivers.

Box 1.1. **Guangdong's topography**

The topography of Guangdong is generally high in the north and low in the south. Mountains make up about 33% of the total land area, hills and smaller mountains 25%, plains make up about 23% and the tablelands make up roughly 19%. There are five major topographic zones: the Northern Guangdong Mountain Area, the Zhujiang Delta, the Western Guangdong Mountainous Tableland, the Eastern Guangdong Mountain Area, and the Chaoshan Plain. The Northern Guangdong Mountain Area rises to an average of 1 000 metres in elevation with the highest peak topping 1 902 metres above sea level. The Zhujiang Delta, or Pearl River Delta, is the general name for the conflation of the Xijiang, Beijiang, and Dongjiang river deltas, where approximately 100 rivers form a dense network of waterways. Many of the rivers and streams empty out into the South China Sea directly through smaller deltas. The Pearl River Delta is composed of these smaller deltas and is the largest plain in Guangdong, occupying a total area of 11 000 square kilometres. The Western Guangdong Mountainous Tableland reaches about 1 000 metres above sea level, and covers the areas west of the Zhujiang Delta and the Leizhou Peninsula. The mountainous areas are filled with open basin areas and river valleys while the Leizhou Peninsula is mostly tablelands and terraces. The Eastern Guangdong Mountain Area rises to 1 300 meters in elevation and includes the Qingyun, Jiulian, Luofu, and Lianhua mountain ranges. The province's principal water source is the Zhujiang River, or Pearl River, the second largest in China, after the Changjiang (Yangtze River). Since most of the province has good access to water, the principal determinant of habitability is its topography. Much of the province's land area has a slope greater than 8° and is therefore unsuitable for extensive habitation or cultivation (Food and Agriculture Organisation of the United Nations – FAO, 1988).

Figure 1.1. **Map of Guangdong's location**

Source: Author's calculations based on data from the OECD *GIS database*, internal database.

The most populated and densest region in China

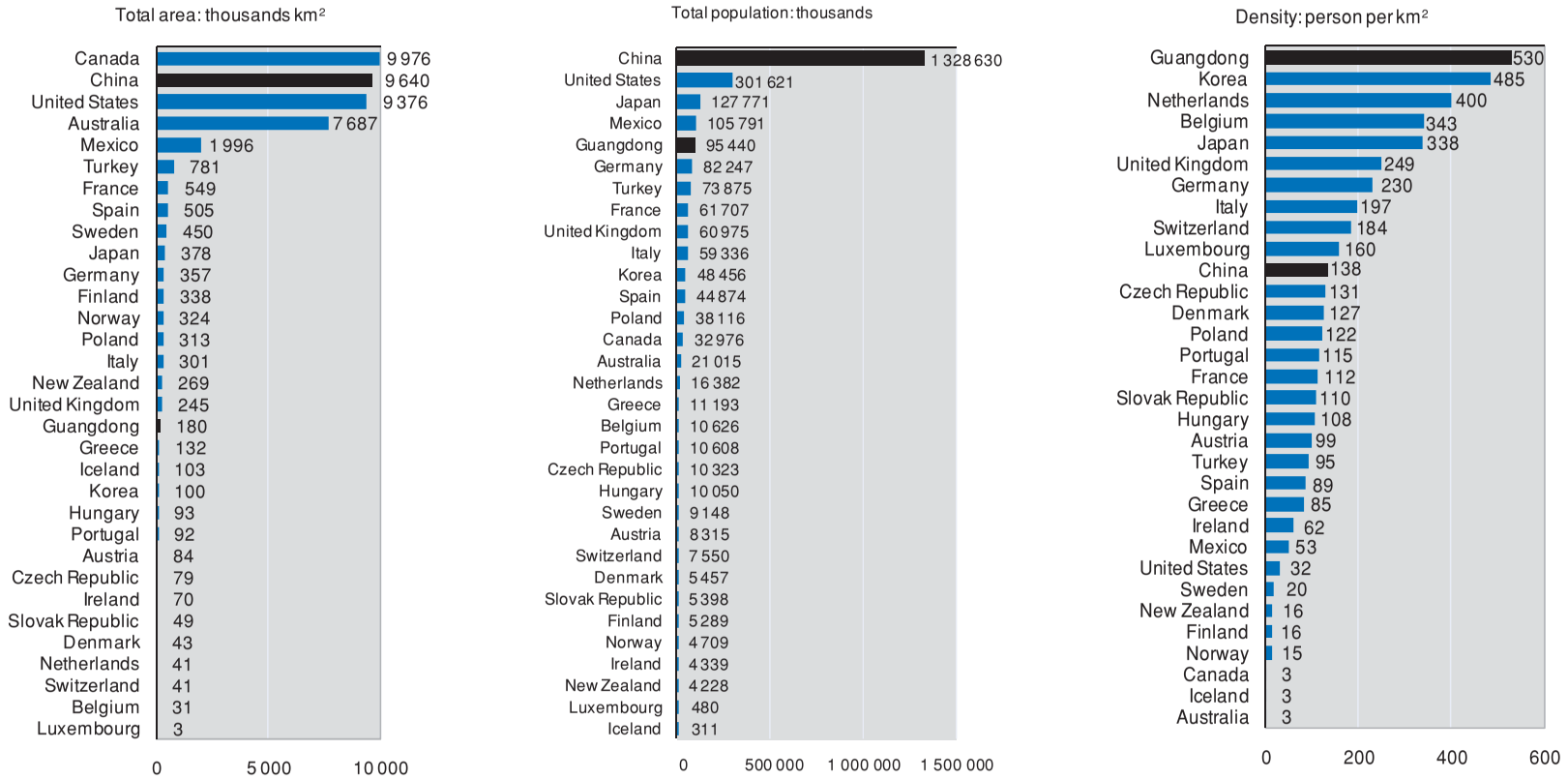
Guangdong is the most populous and densest province in China, with a population exceeding that of many OECD member countries. The landmass, in comparison to other provinces in China, is small – 179 812 square kilometres – totalling just 1.9% of China's total area. However, compared with the size of OECD member countries, Guangdong is slightly smaller than the United Kingdom and larger than Greece and Korea. Guangdong's total population was 95.4 million in 2008, corresponding to 1.6 times the population of Italy, 74% that of Japan, almost one-third the population of the United States, and more than that of almost every other OECD member country (Figure 1.2). It is no surprise, then, that the population density in Guangdong is strikingly high. The 2008 data on population density in Guangdong is 530 inhabitants per square kilometre, higher than the average level of China and that of all OECD member countries.

There are two ways to map the size and location of the actual population in Guangdong: *i)* according to the official administrative sub-units; and *ii)* using the geographical information system (GIS) for a smaller spatial scale.

i) **According to the official administrative definition,** the province can be divided into four major regions: the Pearl River Delta (PRD), the Eastern Region (ER) extending to Fujian and Jiangxi, the Western Region (WR) extending to Guangxi, and the Northern Region (NR) that borders Guangxi, Hunan, and Jiangxi (Figure 1.3). These four regions are the principal territories for which regional development policies are set by the Guangdong provincial government. All four regions could be further broken down by population density and grouping of cities (or prefecture-level cities – PLCs – of which there are 21 in Guangdong) and large towns (Figure 1.4). Both cities and towns are sub-provincial administrative entities in China (Box 1.2).

- **The Pearl River Delta** (PRD) is comprised of an Inner Delta area including Shenzhen, Dongguan, Guangzhou, Foshan, Zhongshan, and Zhuhai PLCs. It also includes an Outer Delta area comprising Jiangmen, part of Zhaoqing and Huizhou PLCs. [1] With the two special administrative regions (SARs) of Hong Kong, China and Macao, China, the region could be considered as the Greater Pearl River Delta (GPRD) (Figure 1.5).
- **The Eastern Region** is anchored by a large cluster of coastal cities and towns, principally Shantou, Jieyang, Chaozhou and Shanwei.
- **The Western Region** is similarly anchored by a coastal corridor of three cities, including Maoming, Yangjiang, and Zhanjiang.
- **The Northern Region** contains five PLCs – Shaoguan, Qingyuan, Meizhou, Heyuan and Yunfu. Given its comparatively low population density and scattered settlements, a core area does not appear to exist in the Northern Region.

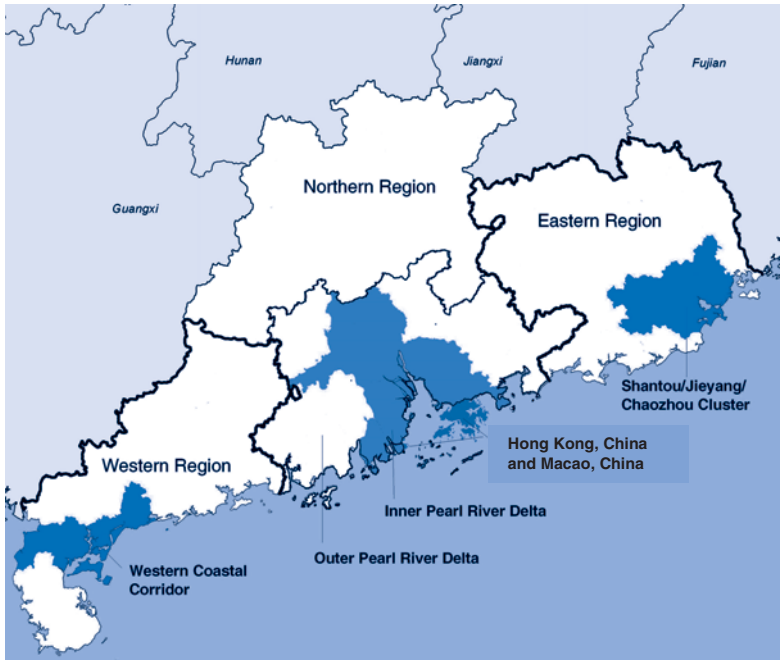
Figure 1.2. **Total area, population and density compared to OECD member countries, 2007**



Note: Data for Guangdong's population and density are from 2008.

Source: OECD (2009), *OECD Factbook 2009*, OECD Publishing, Paris; *National Bureau of Statistics of China database*, *www.stats.gov.cn/english/statisticaldata/yearlydata.*

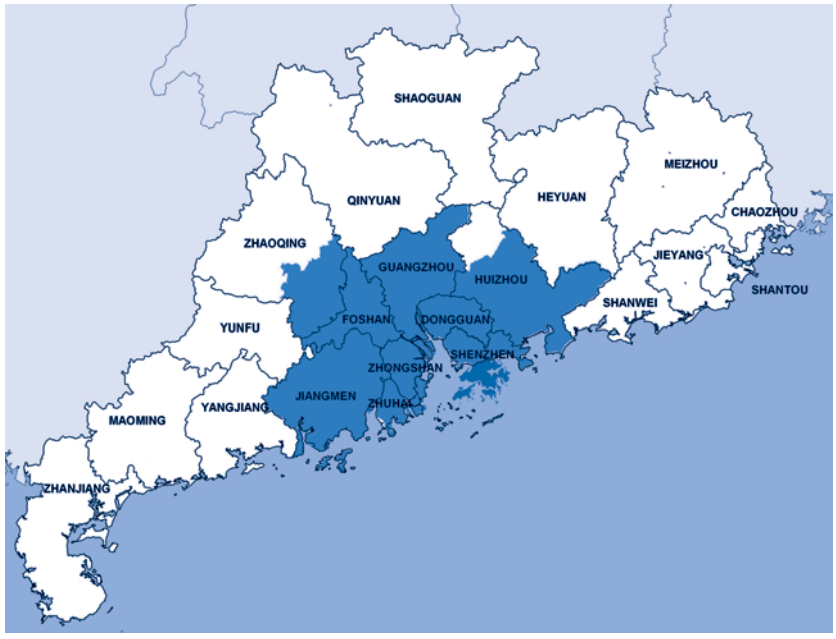
Figure 1.3. **Regions and sub-regions in Guangdong province**



Note: Since 2009, the Outer Pearl River Delta has included the full prefectures of Zhaoqing and Huizhou, following a change in the definition by the Guangdong Provincial government.

Source: Calculations based on data from the OECD *GIS database*, internal database.

Figure 1.4. **The 21 prefecture-level cities in Guangdong province**



Note: The light-blue shaded area is the Pearl River Delta. Since 2009, the Outer Pearl River Delta has included the full prefectures of Zhaoqing and Huizhou, following a change in the definition by the Guangdong Provincial government.

Source: Calculations based on data from the OECD *GIS database*, internal database.

Box 1.2. **Types of sub-provincial administrative entities in China**

China's unitary structure of governance is a hierarchical system through which functional responsibilities are delegated from the central to provincial governments (second tier); followed by a third tier of prefectures and prefecture-level cities (PLCs); a fourth tier of districts (only PLCs are permitted to have district governments), counties, and county-level cities (CLCs); and finally a fifth tier of towns, townships, and street committees in cities.

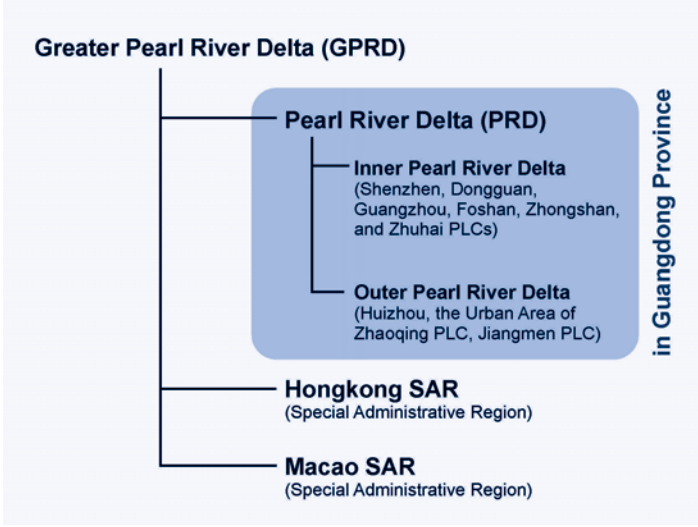
Prefectures are quasi-administrative units dating back to the sub-provincial "Circuits" of the Qing Dynasty. Abolished in 1928, they were resurrected under the "city controlling county" (shi guan xian) system in the late 1950s. In this system, a single city, the prefecture-level city or PLC, administers an entire prefecture, including all counties (and later on, county-level cities). Prefectures have legislated functional responsibilities, but are not defined in the Constitution as a unit of government, and there is no prefecture-level people's congress, the legislative arm of government. PLCs already had demarcated boundaries (roughly equivalent to the size of counties) and municipal governments, including people's congresses. The "city controlling county" system essentially elevated the authority and expanded the functional responsibilities of these municipal governments to the prefecture scale. In prefectures where there is not a city of sufficient size to warrant designation of a PLC, they come under the authority of a prefecture commissioner who reports directly to the provincial government. Although this level of governance appears to have eroded, at least in a functional sense, in many provinces – especially Guangdong – the administrative hierarchy has been maintained since the 1980s. Most PLCs report to provincial governments.

CLCs are towns that serve as county administrative seats. To obtain the designation, CLCs must meet statutory benchmarks established by the State Council. CLCs report to PLCs. With rapid economic growth, particularly at the county level, the formerly prefecture-wide responsibilities of PLCs have been absorbed by constituent counties and CLCs. Sub-municipal structures differ between PLCs and CLCs even though they cover similar spatial territories and, in many cases today, have similar population sizes.

Counties are amalgams of administrative towns that have not met the State Council's criteria for designation as a CLC or district. Districts are sub-municipal administrative entities in urban areas of PLCs; they are at the same administrative level in the Chinese hierarchy as rural counties. Most suburban counties in metropolitan regions in China have been upgraded to districts during the last few years. Districts are allowed only in PLCs. Therefore, PLCs have a de facto two-tiered administrative structure of districts in their municipal government. CLCs are single-tier administrations.

Source: Kamal-Chaoui, L., E. Leman and R. Zhang (2009), "Urban Trends and Policies in China", *OECD Regional Development Working Paper*, 2009/1, OECD Publishing, Paris.

Figure 1.5. **Administrative structure of the Greater Pearl River Delta**



Source: Guangdong Provincial Government (GDPG) (2009), "Background Report of Guangdong", internal background report submitted to the OECD, Guangdong Development and Reform Commission, 29 April 2009, in Chinese.

Almost half of the total population of the Guangdong province live in the Pearl River Delta, illustrating that the PRD is the largest habitable area (Table 1.1). The total population of the Greater PRD is 52 million. The Inner PRD and the SARs are home to 41.2 million people; the Outer PRD has a population of 10.8 million, less than 25% of the PRD as a whole. The Eastern Region (ER) has less than half the population of the Greater PRD (23 million); almost half of the ER's population lives in the Shantou/Jieyang/Chaozhou urban cluster. In the Western Region, the Coastal Corridor holds 4.7 million inhabitants, just over 25% of the WR's 23 million residents. The Northern Region has the largest area of the four major regions, but only 9 million residents, clearly reflecting its mountainous terrain and distance from the coast.

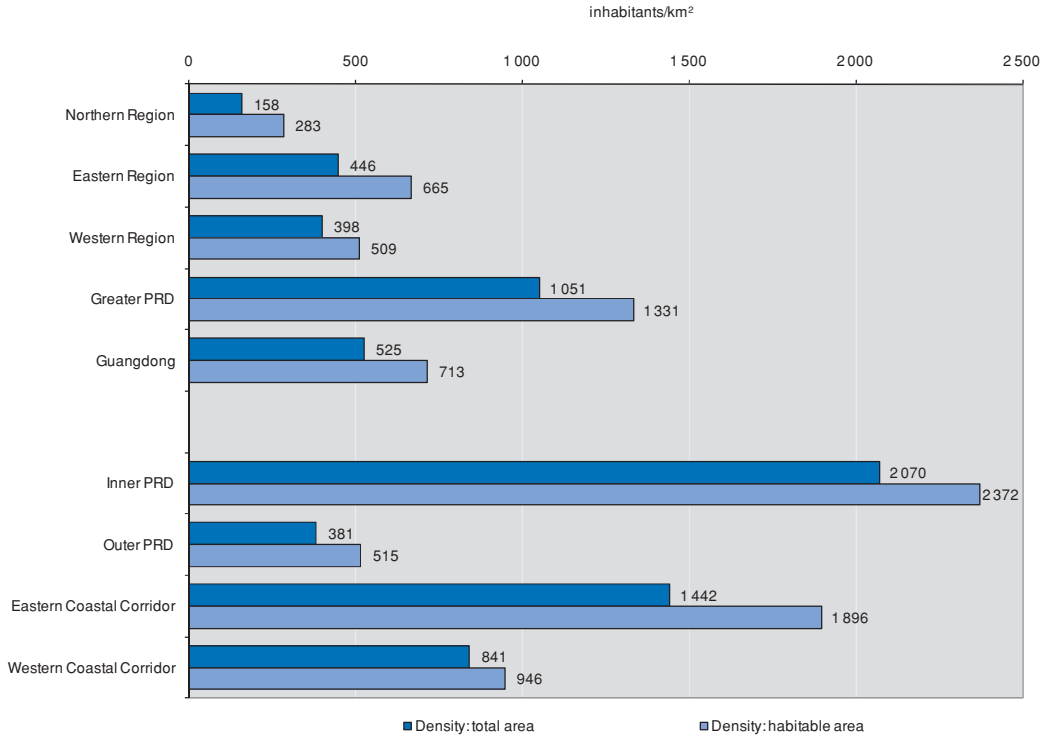
Table 1.1. **Population of administrative regions and sub-regions, 2000 and 2007**

	Population				
	2000	% total	2007 (est.)	% total	% change
Greater Pearl River Delta	47 406 912	51.69	52 030 693	51.2	9.8
Hong Kong, China and Macao, China	6 641 615	7.24	7 155 900	7.04	7.7
Inner PRD	30 939 034	33.74	34 087 455	33.54	10.2
Outer PRD	9 826 263	10.72	10 787 338	10.61	9.8
Eastern Region	20 747 729	22.62	23 043 843	22.67	11.1
Shantou/Jieyang/Chaozhou	10 344 586	11.28	11 185 129	11.01	8.1
Remainder	10 403 143	11.34	11 858 714	11.67	14
Western Region	15 570 535	16.98	17 586 008	17.3	12.9
Coastal Corridor	4 124 831	4.5	4 681 949	4.61	13.5
Remainder	11 445 704	12.48	12 904 059	12.7	12.7
Northern Region	7 980 431	8.7	8 966 638	8.82	12.4
Total: Guangdong + two SARs	91 705 607		101 627 182		10.8
Guangdong province	85 063 992	92.76	94 471 282	92.96	11.1

Source: Guangdong Bureau of Statistics database, *www.gdstats.gov.cn/tjnj/ml_e.htm*; *Hong Kong Census and Statistics Department database*, *www.censtatd.gov.hk*; *Macao Statistics and Census Service database*, *www.dsec.gov.mo*.

To understand Guangdong's high population density in detail, it is useful to explore two types of density in each region (Figure 1.6). The first type of density is based on the entire land area of the region. The second density is for the habitable area of each region and sub-region, defined as land with a slope equal to or less than 8°. The latter is a more accurate measure of the actual density of usable space. Following the latter approach, the Greater PRD is the densest region in Guangdong, and within it, the Inner PRD is even denser; the Northern Region has a population density almost one-fifth that of the Greater PRD; the Western Region's density is 38% of the Greater PRD's, and the Eastern Region is about half as dense as the GPRD. At the sub-regional scale, the Outer PRD is 22% as dense as the Inner PRD, despite its immediate close proximity. The Eastern Coastal Corridor (Shantou-Jieyang-Chaozhou urban cluster) is quite dense, almost 80% as dense as the Inner PRD. The Western Coastal Corridor is 40% as dense as the Inner PRD.

Figure 1.6. **Population densities by administrative region and sub-region, 2007**

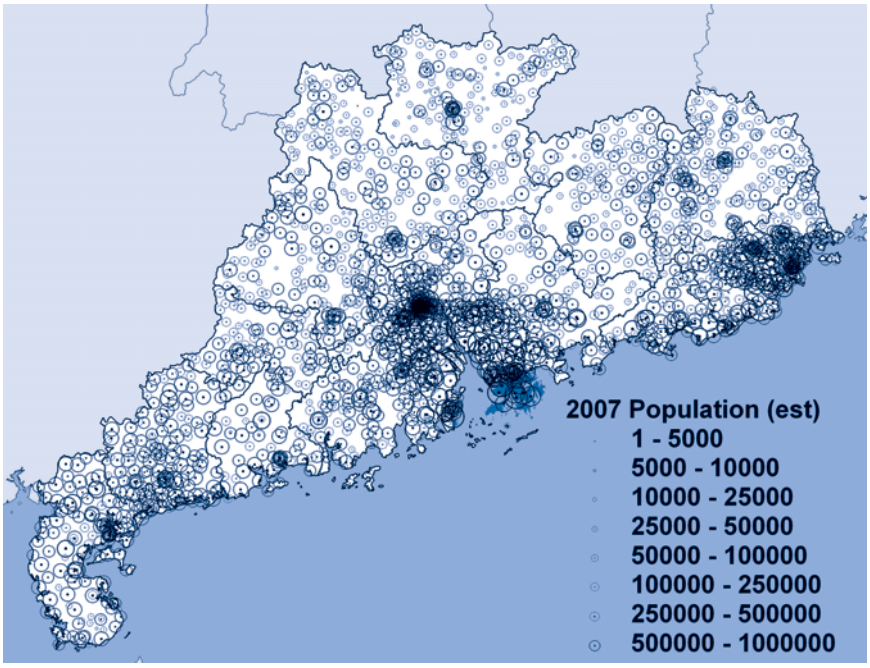


Source: Guangdong Bureau of Statistics database, www.gdstats.gov.cn/tjnj/ml_e.htm; Hong Kong Census and Statistics Department database, www.censtatd.gov.hk; Macao Statistics and Census Service database, www.dsec.gov.mo.

ii) **Adopting a smaller spatial scale with GIS-based analysis** provides a more accurate picture of human settlement densities. While the official approach gives a general picture of the settlement structure, this review adopts another approach to sketch population distribution at the smallest spatial scale possible, in order to understand in detail the territorial dimension of the large, diverse and complex province. Using available data, sub-municipal population size and distribution have been estimated (at the scale of Nomenclature of Territorial Units for Statistics-NUTS 5 in Europe, and the

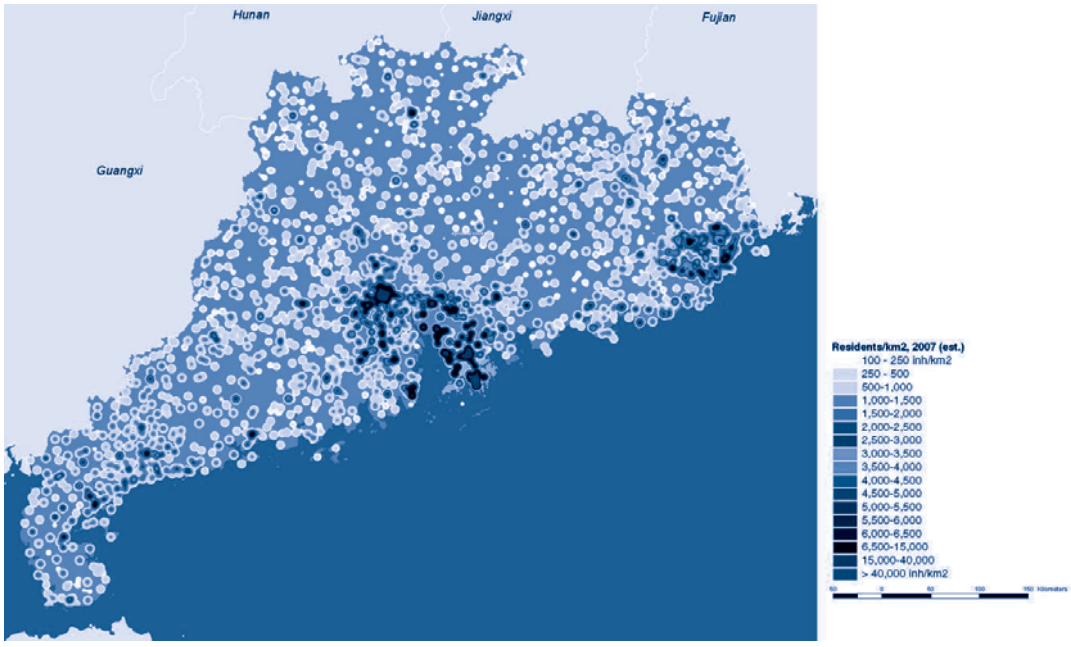
Census Tract level in both the United States and Canada) by combining the small-area data from the 2000 National Census with the similarly derived PLC-level sample survey data from 2007.[2] The 2000 data were plotted spatially on GIS for all 330 street committees, 1 640 statutory towns, and 41 statutory townships in Guangdong.[3] The population growth rates in each of the 21 PLCs from 2000 to 2007, derived from Guangdong official data, were calculated and uniformly applied to all of the small-area units within each PLC to obtain sub-municipal estimates for 2007 that were added to the GIS data (Figure 1.7). While this approach admittedly masks population dynamics within PLCs, it is the only reliable way to derive relatively current estimates, given data constraints. Sub-municipal population data for 2007 for both Hong Kong, China and Macao, China were obtained from their respective statistical agencies, and added to the GIS database. This enabled a consistent, GIS-based calculation of population densities to be estimated for all of Guangdong and the two SARs for 2007 using a small-area spatial base (Figure 1.8).[4]

Figure 1.7. **Prefecture-level cities and statutory towns, townships and street committees in Guangdong province, 2007**



Source: Author's calculations based on data from the OECD *GIS database*, internal database and using geo-referenced data from the 2000 National Census of China, *www.stats.gov.cn/tjsj/pcsj/rkpc/dwcrkpc* and prefecture-level city data from the population survey by the Guangdong Provincial Statistical Bureau, *www.gdstats.gov.cn/tjnj/ml_e.htm.*

Figure 1.8. **Estimated population densities in Guangdong and Hong Kong, China and Macao, China, 2007**



Source: Calculations based on data from the OECD *GIS database* (internal database), using GIS interpolation of data from the 2000 National Census of China, *www.stats.gov.cn/tjsj/pcsj/rkpc/dwcrkpc* and prefecture-level city data from the population survey by the Guangdong Provincial Statistical Bureau, *www.gdstats.gov.cn/tjnj/ml_e.htm.*

This finely tuned approach to mapping population distribution in Guangdong shows how concentrated population is within the PRD. For example, a large portion of the population resides in an area even smaller than the Inner PRD, especially in some parts of Guangzhou, Shenzhen and Hong Kong, China. The most densely populated area could reach 40 000 inhabitants per square kilometre, even higher than the densest municipality in Korea (Yangcheon-gu with 28 809 inhabitants per square kilometre using 2009 data). Large populations also reside on the prefectural boundaries of Guangzhou and Foshan PLCs, as well as Chaozhou/Shantou/Jieyang PLCs.

The most urbanised region in China

The high concentration of population in certain parts of Guangdong results from a deep urbanisation process in the province. In 2008, the official data based on statistical or census-based methodology indicated that the urbanisation rate of the province reached 63.4%, with 60.5 million urban inhabitants, compared to 45.7% nationally (Box 1.3). This is the highest urbanisation level of all Chinese provinces, excluding provincial-level municipalities like Shanghai, Beijing and Tianjin. Nationally, Guangdong is China's largest province in terms of urban population; internationally, the figure is almost equivalent to the entire population of France or the United Kingdom.

Box 1.3. **Official definitions of "urban" and "rural" in China**

In most countries, drawing a line between urban and rural areas is a difficult task, particularly since this line has been blurred in recent decades as the movement of people and the interaction between these areas have increased significantly. For China, this task is even more challenging for a number of reasons. First, China is the world's most populous country so the task must be carried out on a larger scale than in any other country. In fact, China's 2006 rural population of 737 million is nearly twice the size of the rural population in all OECD member countries combined, estimated around 380 million in 2004. Although still a predominantly rural country, with an urbanisation rate just under 20% in the mid-1970s, in absolute numbers, more than 30 years ago China became the world's largest urban nation in human history. In 2008, 606 million urban Chinese constituted 45.7% of the country's population. Second, over the past two decades China has experienced massive urbanisation and cyclical rural to urban migration, which has been characterised by some observers as the largest population migration in peaceful periods of human history. This makes it difficult to determine the extent of the rural population at one given point in time. A third element of complexity is the co-existence of two main official methodologies for measuring the rural population in China: the **administrative or hukou-based** and the **statistical** or **census-based** definition.

The hukou-based methodology is a common source of rural population statistics widely used as a tool by local governments, especially city governments, for population control and management. In the hukou system, people who lived in cities and in the countryside were registered as either non-agricultural hukou or agricultural hukou (sometimes also called **urban hukou** and **rural hukou**). Since the hukou system was set up, the new-born population has been registered according to its parents' hukou status. While at present the system allows for greater flexibility, it has had and continues to have profound social and economic implications given that the hukou identities are attached to social benefits and welfare. Despite its wide dissemination in the various China Population Statistical Yearbooks as a method for quantifying the rural population, the hukou-based methodology has lost much of its meaningfulness as a reference for statistical purposes because many people registered with agricultural hukou no longer carry out this activity and no longer live in rural areas.

Coupled with economic, public finance, and infrastructure indicators, hukou designations are used for the **administrative** designation of urban settlements. Up until 2006, urban settlements in China were administratively defined as statutory cities and statutory towns. From approximately 1950 to the early 1990s, urban residents were those with non-agricultural hukou – regardless of whether they were farmers or dependent on non-farming sources of household income in suburban areas. There are four administrative categories for cities in China: i) provincial-level municipalities (e.g. Shanghai, Beijing, Tianjin, and Chongqing); ii) prefecture-level cities (PLCs); and iii) county-level cities (CLCs). Both PLC and CLC designations are based on population, economic, public finance and infrastructure criteria; iv) a fourth urban designation is used for administrative towns. All territories not defined as urban are considered rural.

It is important to note the limitations of the **administrative** criteria: i) the population base used in calculations excludes migrants and those lacking urban hukou; ii) assessments of urban economic functions are imprecise, for example, gross GDP figures are used, which also include agriculture, mining and forestry; iii) assessments of fiscal capacity are incomplete, as off-budget revenues are not measured; and iv) arbitrary benchmarks are used for infrastructure endowments that have weak functional links to urban economic activity, or to the actual demands of residents for urban infrastructure services. OECD member countries typically do not differentiate between migrants and permanent residents in defining urban populations; similarly, they do not set economic benchmarks in terms of GDP or fiscal capacities in defining cities.

Box 1.3. **Official definitions of "urban" and "rural" in China** (*continued*)

Apart from the **administrative** definition, China has adopted a refined **statistical** definition to bring its definitions of urban and rural more in line with international best practices. First introduced as a draft in 1999 and promulgated in 2006, the "Regulations on Statistical Classification of City and Town Areas" released by the National Bureau of Statistics (NBS) defines urban and rural settlements according to two spatial characteristics: i) contiguity of "urban construction"; and ii) population densities within municipal districts. The latest detailed urban definition is shown in the table below. Non-urban settlements are defined as rural. These regulations formed the basis for defining urban populations in the 2000 National Census, which is considered by many demographers to be the most accurate census conducted since the People's Republic of China was established. For instance, the 2000 National Census for the first time enumerated populations where they actually resided at the time of the census, if they had maintained residence for longer than six months.

Final regulations for the definition of urban settlements, 2006

Administrative area type		Abbreviation	Condition for determining urban classification	Area affected by classification
City area	1	PLC/CLC	Statutory "resident committee" under PLC/CLC	Only the statutory resident committees are "urban"
	2	PLC/CLC	If urban infrastructure and urban public services are **directly** extended to fringe villages in townships	Connected villages are "urban"
Town area	3	Town	Statutory "resident committees" under statutory towns	Only statutory resident committees are "urban"
	4	Town	If urban infrastructure and urban public services are **directly** extended to fringe villages in townships	Connected villages are "urban"
Special settlement	5		Independent settlement (mining fields, development zones, tourist areas, university cities, etc.) with a total population over 3 000 people	Settlement is considered as "urban"

Notes: Resident committee is the smallest territorial unit in China. Total population refers to long-stay population (registered population + migrants over six months).

Although the new statistical definition provides for a more precise calculation of urban residents at finer spatial/administrative scales, the underlying premise of the definition is still supply driven, e.g. based on public services available. Even if non-farming residents of suburban villages and towns have become part of urban labour and supply chains, they are not counted as urban if municipal services have not yet been extended to serve them. China's current supply-driven approach contrasts with the demand-driven approach followed in most OECD member countries where non-farming residents, most of whom are integrated into urban labour and housing markets and therefore have needs for urban-type public services, are generally counted as urban.

Source: Kamal-Chaoui, L., E. Leman and R. Zhang (2009), "Urban Trends and Policies in China", *OECD Regional Development Working Paper*, 2009/1, OECD Publishing, Paris; National Bureau of Statistics of China, *www.stats.gov.cn/tjbz/t20061018_402603208.htm*, in Chinese; OECD (2009), *OECD Rural Policy Review: China*, OECD Publishing, Paris.

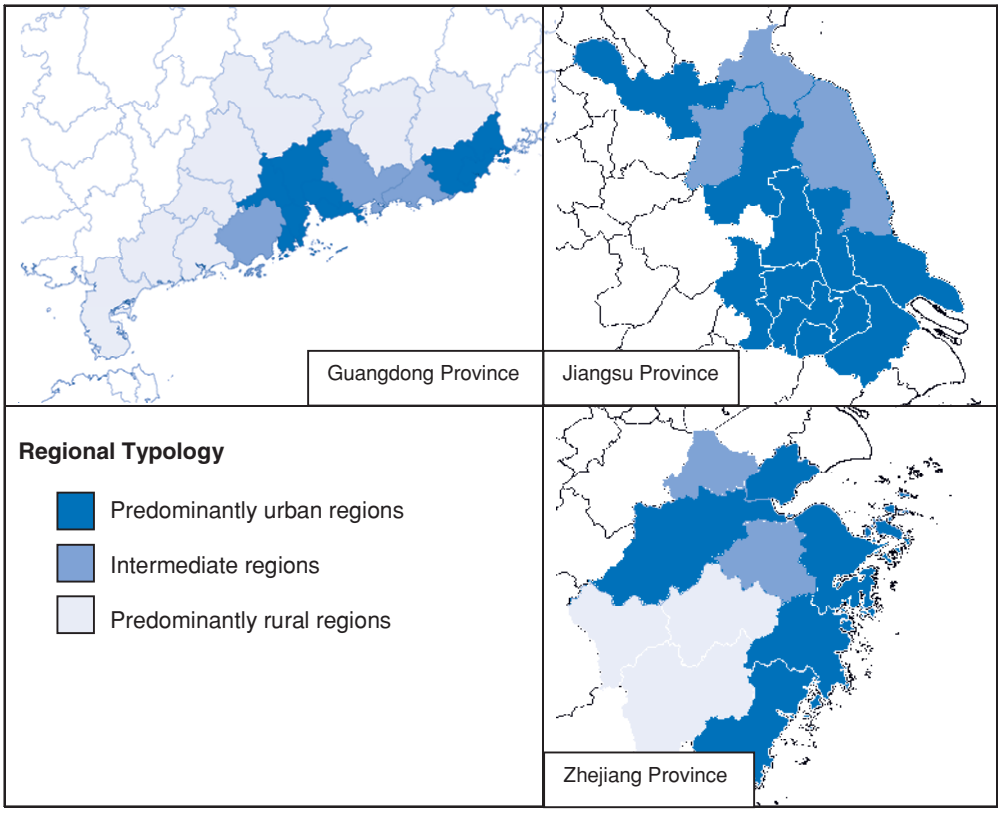
The rapid rate of urbanisation and industrialisation in parts of the province over the last two decades is probably unprecedented in human history. A large portion of these changes have occurred in rural towns – mostly in suburban areas of four metropolitan regions (Hong Kong, China/Shenzhen, Guangzhou/Foshan, Dongguan, and Shantou/Chaozhou/Jieyang) and not within the city proper. Urbanisation in China has

been driven mainly by two factors: *i*) rural-urban migration, of which around 45% comes from the same prefecture-level municipality (PLC), and 25% from other parts of the same province; and *ii*) most importantly, suburbanisation or town-based urbanisation, i.e. transformation of towns and villages into integral parts of urban economies in its original situation (Kamal-Chaoui *et al.*, 2009).[5] This second driving force has been more present in Guangdong than anywhere else in China since the mid-1980s.

In order to capture the exact trends of urbanisation in the Guangdong province, two approaches are adopted to analyse settlement structure: *i*) the first one is based on the OECD regional classification which has been applied to OECD member countries within the context of the work of the OECD Territorial Development Policy Committee; and *ii*) the second one is based on a functional definition of urban areas.

i) **Applying the OECD typology to Guangdong** shows that the province has a higher rate of people living in urban areas than the average for OECD member countries. For the purpose of international comparison, China would benefit from applying such a typology. The process constructs a rural and urban typology at the county/district level based on population density and at the sub-regional (PLC) level following the classification used by the OECD (Box 1.4). PLCs have been classified accordingly into predominantly rural (PR), intermediate (IN) and predominantly urban regions (PU). The method identifies nine PU regions (e.g. Guangzhou prefecture), nine PR regions (e.g. Qingyuan prefecture) and three IN regions (e.g. Huizhou prefecture). A similar process has also been applied to Zhejiang and Jiangsu provinces to facilitate the comparison (Figure 1.9). This analysis shows that at the prefecture level in 2005, over half of the total population lived in predominantly urban (PU) regions (51.2%), which accounted for 16.5% of the total landmass. Guangdong's PU concentration is higher than the OECD average (46%), including such countries as the United States, France, Korea and Mexico, but lower than the Netherlands, Belgium, the United Kingdom, Australia, Japan, Italy, and Canada. PR regions extended to over 69% of the provincial landmass and accounted for 37.3% of the total population, which is a percentage almost equivalent to the PR population share in the United States (37.2%), and higher than the OECD average (24.4%). This highlights the fact that the share of the total population living in intermediate regions (generally characterised by networks of small and medium-sized-cities), is very low – actually lower than all OECD member countries (Figure 1.10). This trend of a comparatively low share of medium-sized cities, which characterises China as a whole, is particularly acute in the case of the Guangdong province (OECD, 2010b).

Figure 1.9. **Applying the OECD Regional Classification in Guangdong, Zhejiang and Jiangsu provinces, China**



Source: Author's calculations based on data from the OECD *GIS database*, internal database and the methodology from OECD (2010), "Regional Typology", OECD, Paris.

ii) A second approach to assess urbanisation trends in the Guangdong province relies on **functional definitions**. While the OECD regional typology permits a meaningful international comparison, it is still based on administrative boundaries. Guangdong's dramatic industrialisation and urbanisation over the past 30 years has subverted the delineation of administrative boundaries (and hence, hierarchies of governance). Therefore another approach based on functional definitions is adopted to derive a more accurate estimate of: *ii/a)* functional "urban" zones, comparable to "cities" in OECD member countries; and *ii/b)* functional metropolitan regions. At a higher scale, the Greater Pearl River Delta could be considered as a *ii/c* functional urban system or urban cluster.

Box 1.4. **OECD regional classification in China**

To take into account the differences and establish meaningful comparisons among regions belonging to the same type and level, the OECD has established a definition of rural which is applied at the "local level". Then, a regional typology is used to classify regions as predominantly urban (PU), predominantly rural (PR) and intermediate (IN) using three steps.

The first step consists of classifying the lowest possible geographical level or "local units" (municipalities/counties) as rural or urban according to the "OECD rural definition". That is, depending on whether their population density is below or above 150 inhabitants per square kilometre (500 inhabitants for Japan and Korea, to account for the fact that their national population density exceeds 300 inhabitants per square kilometre. This higher threshold is also used for China). This step already provides a first definition of rural areas at the "local level".

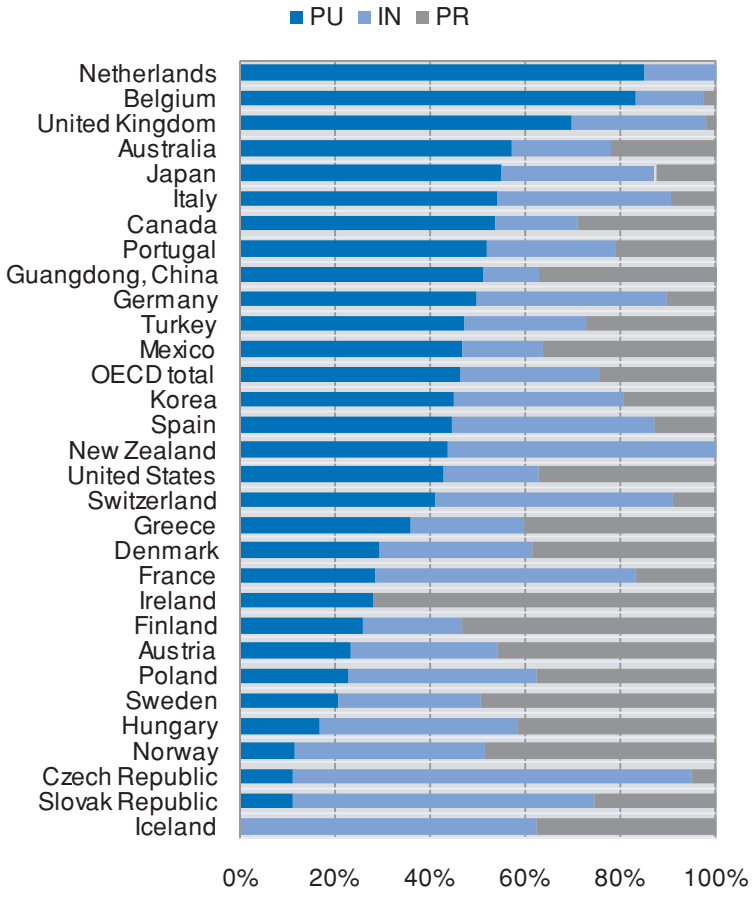
The second step involves aggregating this lower level into regions at the Territorial Level 3 (TL3), and classifying the latter according to the percentage of the population living in local units classified as rural, sometimes called "degree of rurality". TL3 corresponds in most countries to sub-regions and the prefecture-level in China. A TL3 is classified according to the share of population living in local units that is classified as rural. Predominantly urban (PU) is used when it is below 15%; intermediate (IN) if it is between 15% and 50%; predominantly rural (PR) if it is higher than 50%.

The third step is based on the size of the urban centres contained in the TL3 regions. This step adjusts the classification from steps 1 and 2 according to the size of urban centres and the percentage of total population that lives in those urban centres. A region that would be classified as predominantly rural (PR) on the basis of steps 1 and 2, becomes intermediate (IN) if it contains an urban centre of more than 200 000 inhabitants (500 000 for Japan and Korea) representing at least 25% of the regional population. It becomes predominantly urban (PU) if it contains an urban centre of more than 500 000 inhabitants (1 000 000 for Japan and Korea) representing at least 25% of the regional population. For China, a number of regions were reclassified during this step.

According to the OECD regional classification, Guangdong is one of China's Territorial Level 2 (TL2) regions (or provinces), and is divided into 21 TL3 regions, which represent the prefectures. A number of adaptations were made to the standard OECD methodology, not without possible controversy (OECD, 2009f). For example, for the first criterion, it might be argued that for China a threshold higher than 500 inhabitants per square kilometre could be used. However, this threshold, which is already used for Japan and Korea, was kept. It could also be argued that many rural areas in China have densities that in some other countries would be considered as urban, which are not easily identifiable under this methodology. The third step was not strictly applied since it would change many predominantly rural regions to urban. A last caveat from this exercise is related to the availability of information. While for the vast majority of counties and districts, information was available from the 2000 census, for a few of them a population estimate for 2005 or 2006 was used, assuming that the population density would not have varied enough over the period to change the local unit from urban to rural.

Source: OECD (2010), "Regional Typology", OECD, Paris; OECD (2009), *OECD Rural Policy Reviews: China*, OECD Publishing, Paris.

Figure 1.10. **Distribution of population across predominantly urban, intermediate and predominantly rural regions in OECD member countries and in Guangdong, 2005**



Source: OECD (2009), *Regions at a Glance*, OECD Publishing, Paris; *Guangdong Bureau of Statistics database*, *www.gdstats.gov.cn/tjnj/ml_e.htm*.

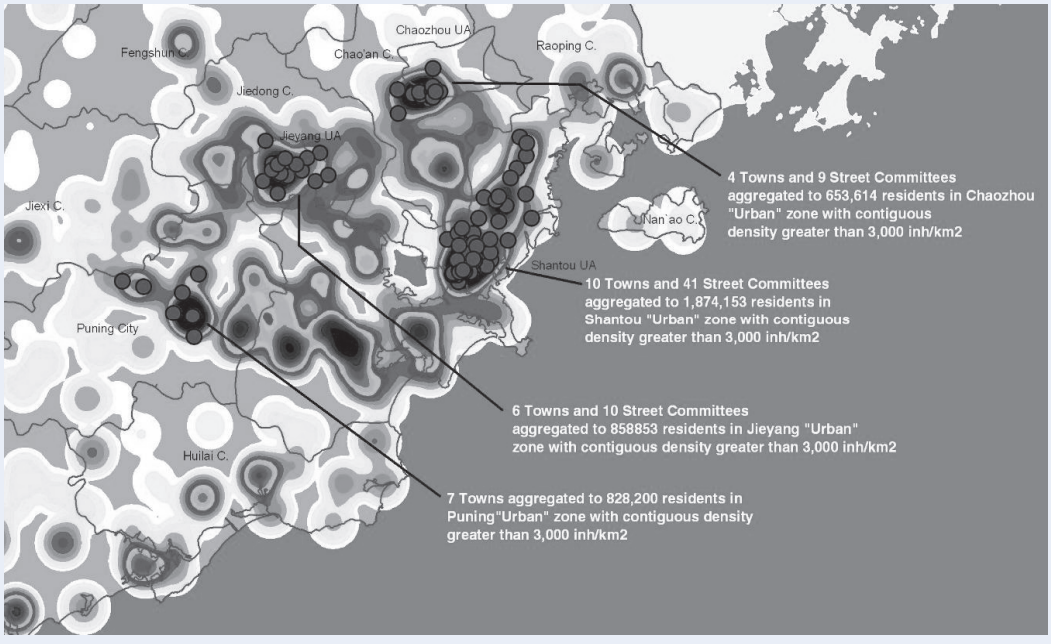
ii/a) Following a specific GIS-based methodology for aggregating towns, townships and street committees anchored in a statutory city with a population over 100 000 (Box 1.5), we can identify 145 **urban functional zones** in Guangdong province with 62 million people (Figure 1.11). These approximate the functional urban labour, input, and output markets in Guangdong and the two SARs. In comparative terms, Guangdong's urban market system (including 7.5 million in the two SARs) is twice the size of the urban population of Canada.

Box 1.5. **Urban functional zones**

To build urban functional zones, towns, townships, and street committees were overlaid with the population density data. Those that fell within zones of more than 3 000 inhabitants per square kilometre and were anchored in a statutory city were aggregated to define a functional urban zone around each city. Population data from 2007 for these small areas were added to define an urban population for cities. The results of this process are illustrated for the Shantou/Chaozhou/Jieyang cluster in the Eastern Region of Guangdong in the figure below. The resulting estimates of urban populations of statutory cities for Guangdong and Hong Kong, China/Macao, China are shown in Figure 1.11. To account for Guangdong's rapid and extensive town-based urbanisation, and possible lags in administrative re-designations of statutory towns into official cities, statutory towns with over 100 000 residents (in 2007) were also identified and plotted in the GIS (Figure 1.11). These "towns" would all be defined as "cities" in most OECD member countries. For example, 51 of the l00 largest cities in Canada had populations less than 100 000 in 2006. In Japan, a city has a minimum of 50 000 residents. There are 85 "towns" in Guangdong with over 100 000 residents, for a total of 15.6 million people. Three of them (Shajing Town in Shenzhen PLC, and Humen and Changan Towns in Dongguan PLC) have populations, including migrants, of over 500 000 residents.

Example of grouping of sub-municipal units to define "urban zones" of statutory cities

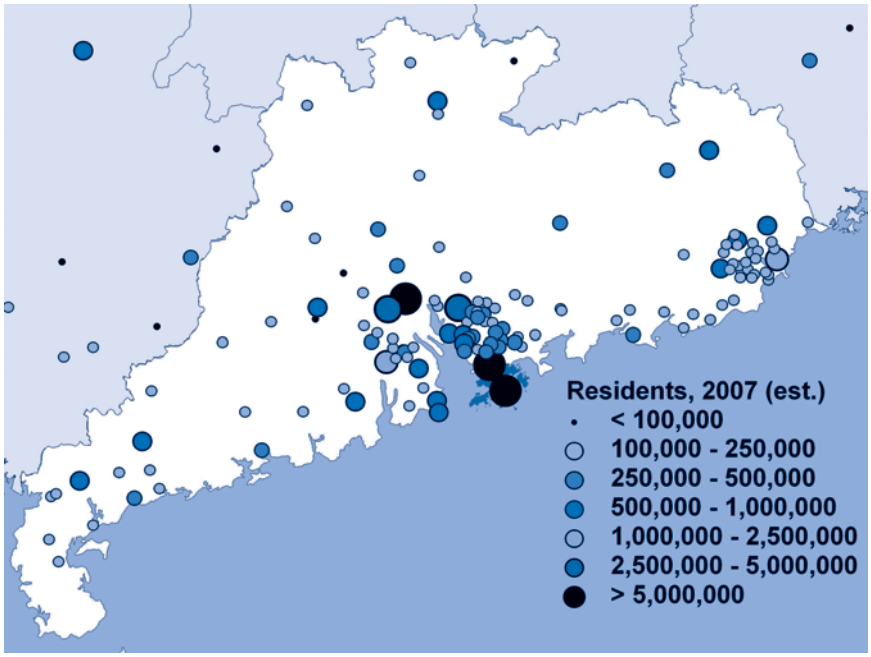
Shantou/Chaozhou/Jievand Cluster



Source: Calculations based on data from the OECD *GIS database,* internal database, using GIS interpolation of data from the 2000 National Census of China, *www.stats.gov.cn/tjsj/pcsj/rkpc/dwcrkpc*; and prefecture-level city data from population survey by the Guangdong Provincial Statistical Bureau, *www.gdstats.gov.cn/tjnj/ml_e.htm.*

Figure 1.11. **Estimated population of all urban settlements in Guangdong, Hong Kong, China and Macao, China, 2007**

Statutory towns and cities over 100 000



Source: Author's calculations based on data from the OECD *GIS database*, internal database, using GIS interpolation of data from the 2000 National Census of China, *www.stats.gov.cn/tjsj/pcsj/rkpc/dwcrkpc*; and prefecture-level city data from the population survey by the Guangdong Provincial Statistical Bureau, *www.gdstats.gov.cn/tjnj/ml_e.htm.*

ii/b) Based on analysis of this spatial pattern of population distribution and the specific **functional metropolitan region** definition for China (which is closest to that generally adopted in OECD member countries) there are four metropolitan regions in Guangdong and the SARs (Box 1.6). They include Guangzhou and Foshan which constitute one large metropolitan region, with a non-farming population over 10 million. Together called the Guangzhou (or GuangFo) metropolitan region, it contains the Guangzhou urban district, as well as Foshan's Nanhai, Chancheng and Shunde districts. Increasingly, Hong Kong, China and Shenzhen can also be viewed as a metropolitan region. Similarly, Shantou, Jieyang, and Chaozhou are a polycentric metropolitan region. Dongguan is the fourth metropolitan region in Guangdong.

Box 1.6. **Defining metropolitan regions**

Metropolitan regions are generally identified as large concentrations of population and economic activity that constitute functional economic areas, typically covering a number of local government authorities. An economic area in this sense denotes a geographical space within which a number of economic links are concentrated: most obviously labour markets, but also networks of firms, important parts of supply chains, and relations between firms and local authorities. The OECD has used a specific methodology to gather and analyse metropolitan data. The database is based on three criteria:

1. **Population size** – a threshold of 1.5 million people is used to identify a region as metropolitan.
2. **Population density** should exceed a critical value set at 150 people per square kilometre. These types of regions are considered predominantly urban; therefore, it is not only important to have a large population, but inhabitants must also be concentrated in a particular place thereby creating higher density rates.
3. **Labour market** – it is fundamental that these regions with large and dense populations constituting urban areas represent a contained labour market. In order to define labour markets, commuting flows are used to calculate net migration rates. Predominantly urban areas at Territorial Level 3 (equivalent to NUTS 3) have been selected and a process of adding and eliminating neighbouring regions based on net commuting rates has been carried out. Hence, metro-regions among predominantly urban areas (large and densely populated) are those for which the net commuting rate does not exceed 10% of the resident population.

Currently, data on commuting flows in metropolitan areas are not collected in China on a consistent, comparable basis. This means that the OECD definition cannot (yet) be applied.

In China, as in other countries, data limitations force the use of proxies to identify the majority of periodic social and economic interactions occurring in metropolitan regions within a reasonable travel time from the centre of China's cities. Research in other countries suggests that a one-hour travel time is generally the limit that households are willing to spend for most journeys to work and that most suppliers to enterprises can effectively travel for daily deliveries. Assuming motorised vehicles as the dominant mode of movement, this equates roughly to a maximum radius of 50 kilometres from the urban core when accounting for lower travel speeds in more congested central areas.

China's urban regions differ significantly from North American and European cases in the distribution of places of residence and places of work. Private vehicular ownership is low, regional commuter transit (such as in Tokyo, Paris and New York) does not yet exist, and distances to work are generally much smaller in China. This is partly due to the development of large, self-contained state-owned enterprise (SOE) complexes that include factories, residences, and public facilities in one location, and the township and village enterprise (TVE) industrialisation model in which places of work and residence are scattered in suburban towns. Therefore, in China more so than in Europe and North America, there is a much stronger correlation between population density and employment density, and hence with production. Constraints to physical mobility mean that the 50 kilometre radius is probably the maximum metropolitan catchment area in China. A one-hour drive time is possible by enterprises, most of which have access to motorised transport. But the majority of urban residents rely on inner-city public buses, bicycles and walking to get to work: their one-hour travel time distance is considerably shorter. While regulatory impediments were until recently the greatest constraints to labour mobility in urban markets, physical accessibility is emerging as the most significant impediment to labour flows within China's emerging metropolitan regions, particularly to and from suburban areas.

Box 1.6. **Defining metropolitan regions** (*continued*)

Given these conditions, the following approach has been used to identify and describe the spatial extent and structure of metropolitan regions in China:[1] i) identify, using GIS technology, areas that are anchored in the urban districts of statutory cities with more than 1 million non-farming residents; ii) identify where these cities appear to spill over by looking at non-farming populations and enterprises in towns and cities in adjacent counties and county-level cities that have: a) population densities over 500 inhabitants per square kilometre; b) non-farming GDP of more than 40% of total GDP; and c) good quality roads (either the National Trunk Highways System – NTHS – or national highway segments with road quality above Class 3); and iii) capture the core city and adjacent counties or CLCs generally within a 50 kilometre radius of the centre of the core city, representing a notional 1-hour travel time. Analysis of traffic volumes along the national highway network suggests that a few metropolitan regions likely spill over to capture selected counties beyond those immediately adjacent to the core city, e.g. that the reach of some is wider than 50 kilometres.

This method differs from the approach followed by the OECD to define metropolitan regions elsewhere. In terms of population thresholds, the OECD uses 1.5 million total residents, e.g. not differentiating between farming and non-farming populations. The OECD definition also uses a population density threshold of 150 inhabitants per square kilometre. China's suburban areas have very high densities – often well over 250 inhabitants per square kilometre – of farming populations on small landholdings in numerous scattered villages and towns. Applying these thresholds to China would essentially capture the majority of China's cities as metropolitan regions. However, the most significant constraint to applying the OECD method in China is the absence of accurate, comprehensive, current, and comparable data on commuting flows. These have not been collected in China since commuting from suburban areas is a very new phenomenon.

The proxy approach used here identifies 53 metropolitan regions in China anchored in cities with over 1 million non-farming residents and encompassing selected adjacent counties. They account for over 380 million people, or almost 30% of the country's population. The biggest metropolitan region in China is Shanghai with an urban population of over 17 million. In addition to Shanghai, Beijing and GuangFo (Guangzhou and Foshan) metropolitan regions have non-farming populations over 10 million. A second tier of 13 metropolitan regions has urban populations ranging from 5 million to 10 million. A third tier with populations ranging from 1 to 5 million comprises 37 regions. While first- and second-tier metropolitan regions are concentrated along the coast, many of China's medium and small size metropolitan regions are located inland.

Note: This method has been developed by Chreod.

Source: Kamal-Chaoui, L., E. Leman and R. Zhang (2009), "Urban Trends and Policies in China", *OECD Regional Development Working Paper*, 2009/1, OECD Publishing, Paris.

iii) Finally, the nine metropolitan cities plus Macao, China and Hong Kong, China which constitute the Greater Pearl River Delta represent an urban cluster or an urban system, often referred to as the PRD Metropolis. An urban system or urban cluster is understood as the geographical agglomeration of a close group of different sized cities that are well interconnected by communication and telecommunication infrastructure. Some examples of urban clusters can be found across OECD member countries. In Europe two urban systems are especially relevant, the Randstad and RhineRuhr. The Randstad region is a polycentric urban cluster in which the four largest cities of the Netherlands can be found (Amsterdam, Rotterdam, The Hague and Utrecht). The

RhineRuhr is another typical example of an urban system characterised by a dense agglomeration of numerous cities at the western edge of Germany along the Rhine (Bonn, Cologne, Düsseldorf, Krefeld and Mönchengladbach), in the east along the Ruhr (Bochum, Duisburg, Essen), north-east (Dortmund) and the Emscherzone in the north. In the United States the Tri-State region is one of the most populous urban systems in the world. This region includes the New York-Northern New Jersey-Long Island, New York-New Jersey-Pennsylvania metropolitan statistical area (MSA).

A migration hub

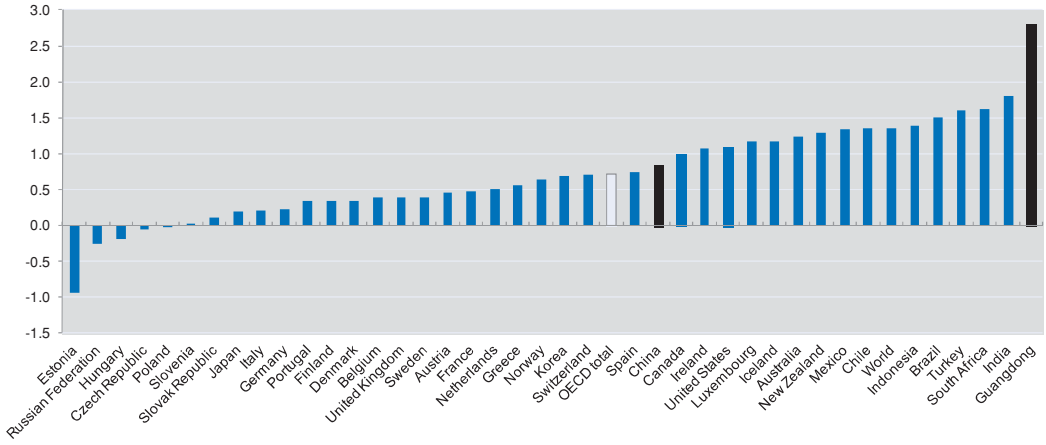
Guangdong's population profile has been heavily influenced by migrants, including those from within Guangdong and other provinces. Provincial governments estimate that there are 27 million rural migrant workers, of which 8 million are from internal migration and 19 million from other provinces (GDPG, 2009b). For both groups, the urbanised PRD region of Guangdong is the main destination thanks to the region's economic expansion, massive job creation in the cities and higher per capita income. Push factors for rural migrants in China include very low income per capita, abundant supply of labour force released from the agricultural sector, and scarce non-agricultural job opportunities as well as low availability of cultivated land, environmental degradation, and natural disasters (OECD, 2009f). In Guangdong, the inflow of rural migrant workers from other provinces is the main reason for the high annual population growth rate of 2.8% from 1990-2008, which is more than three times China's national average for the same period and four times that of the OECD average (Figure 1.12). Since the natural population growth rate over the period is 0.97% in relation to a similar rate of 0.88% for China, Guangdong's high population growth rate is largely captured by the growing difference between the permanent population (census-based) and the registered population (*hukou*-based), which grew from almost 0 in the early 1990s to approximately 13 million in 2008 (Figure 1.13 and Box 1.7).[6]

Box 1.7. **The *hukou* system and migration in China**

The registered population (hukou-based) is defined as the population officially registered with the police bureau. The permanent population (census-based) is defined as the population which has resided in a city for more than six months and figures are obtained from a general survey. Regulations were promulgated in 1958 that strictly limited rural-to-urban migration. According to these regulations, all Chinese citizens are assigned an agricultural or non-agricultural residency designation at birth, based on that held by their parents. This residency registration (hukou) is essentially permanent. Originally, residents with non-agricultural hukou were granted ration cards for a wide range of basic foodstuffs and commodities, and were entitled to employment in cities, largely with state-owned enterprises (SOEs) or government agencies that provided full housing, health care, and education services. Under this two-tier management system, agricultural-registered residents were not entitled to "urban" benefits as they were assumed to be agricultural workers, and hence entitled to farm collectively-owned land as the basis of their livelihoods. While the original rationing entitlements have by now largely disappeared as most commodities and services have been marketised over the last 25 years (including, most recently, housing), hukou is still used to preclude access by agricultural-registered citizens to subsidised health care, unemployment insurance, guaranteed minimum incomes and basic welfare support which are only available in cities.

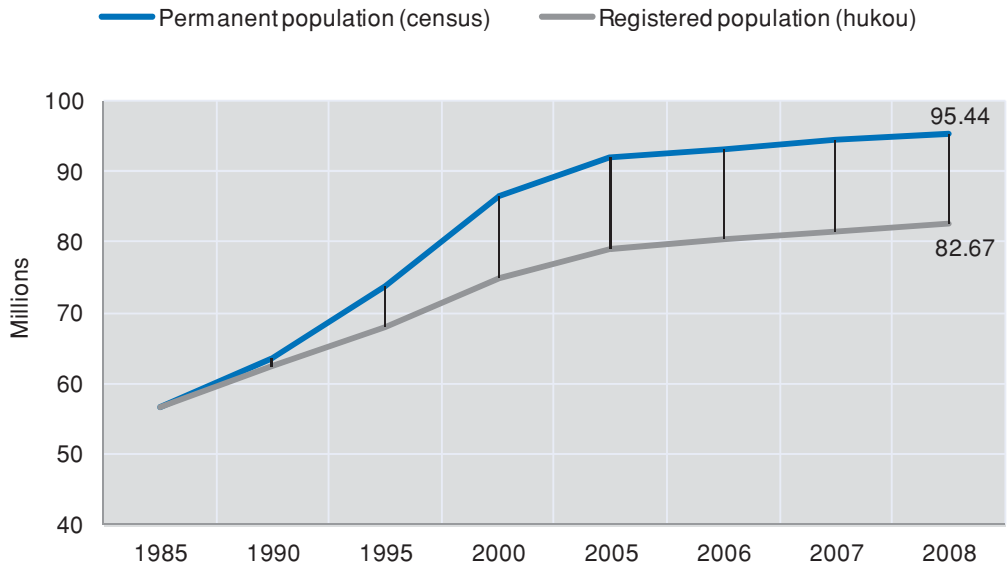
Source: Kamal-Chaoui, L., E. Leman and R. Zhang (2009), "Urban Trends and Policies in China", *OECD Regional Development Working Paper*, 2009/1, OECD Publishing, Paris.

Figure 1.12. **Average annual population growth in Guangdong and selected countries, 1998-2008**



Source: OECD (2009), *OECD Factbook 2009*, OECD Publishing, Paris; *National Bureau of Statistics of China database*, *www.stats.gov.cn/english/statisticaldata/yearlydata.*

Figure 1.13. **Population trends in Guangdong, 1985-2008**



Note: The comparison between the permanent population (census-based) and the registered population (*hukou*-based) reflects net migrant inflow from other provinces.

Source: *Guangdong Bureau of Statistics database*, *www.gdstats.gov.cn/tjnj/ml_e.htm.*

Recent trends show, however, that Guangdong is losing its attractiveness for migrants to the benefit of other Chinese provinces. Considering the relatively higher educational level of migrants coming to Guangdong from other provinces, a recent worrisome trend is that migrant workers, a valuable labour resource, are less attracted to Guangdong, and are starting to prefer the Yangtze River Delta (YRD). The severe problem is masked by the continuing population inflow and the labour shortage of migrant workers in many provinces, including Guangdong, Zhejiang and Jiangsu. In fact, Guangdong's average net population inflow rate has been around 0.5% since 2000, down from over 2% in the 1990s. On the contrary, Zhejiang and Jiangsu have witnessed a higher average rate since 2000, compared to their rate of 10 years ago (Table 1.2). A close examination reveals that since 2004, both Zhejiang and Jiangsu have started to overtake Guangdong in attracting incoming population, of which a large percentage is assumed to be migrant workers (Figure 1.14). A highly probable explanation is that rural migrant labour has started to move from the PRD region to the YRD region (Wang *et al.*, 2006; Study Group of the Ministry of Labour and Social Security, 2004). In 2007, Guangdong's net population inflow picked up, probably as a result of increasing minimum wage in the PRD by the provincial government in late 2006.[7] However, net inflow is still lower than the sum of both Zhejiang and Jiangsu. In 2008, the net population inflow decreased again. The highly possible long-term trend of losing this valuable labour resource is particularly worrisome for Guangdong as it strives to maintain its position as an advanced manufacturing base. Moreover, although the migrant labour shortage phenomenon occurred nationwide, the outflow of labour from PRD to YRD has placed further pressures and aggravated the labour shortage problem in Guangdong. By comparison, factories in the YRD offer higher salaries, a better working environment, and job stability (Wang *et al.*, 2005; Study Group of the Ministry of Labour and Social Security, 2004).

Table 1.2. **Rates of total population growth, natural population growth and net population inflow**

A comparison between Guangdong, Zhejiang and Jiangsu, in %

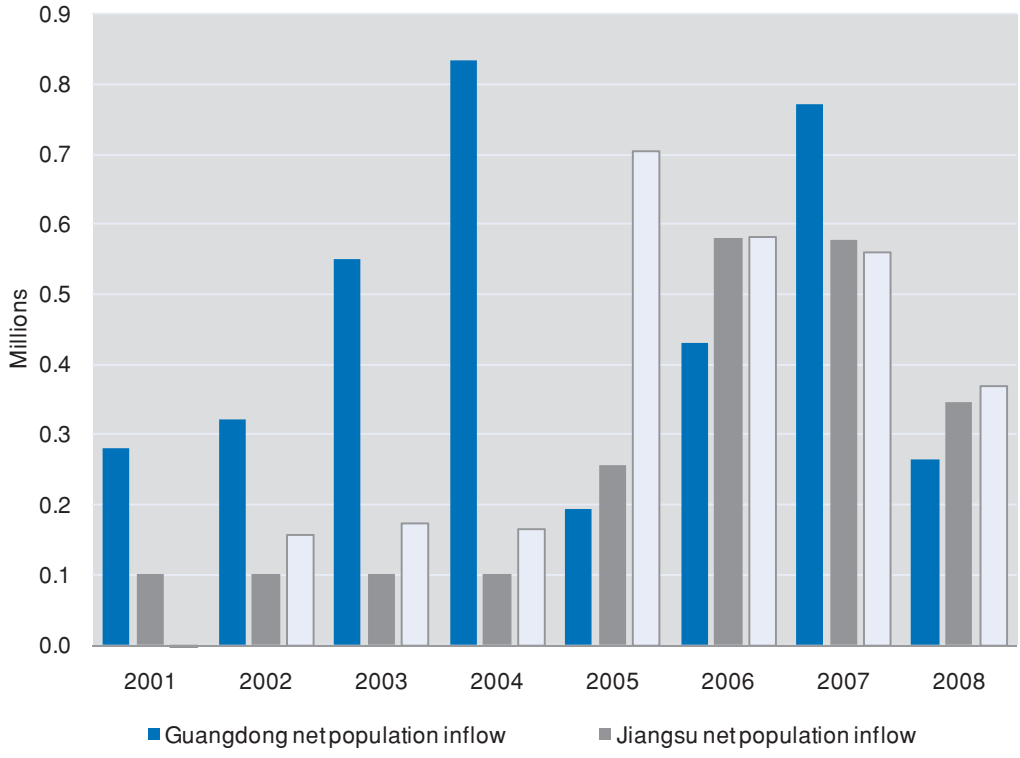
	1990-1995	1995-2000	2000-2005	2005-2008
Total population growth				
China	1.19	0.93	0.63	0.52
Guangdong	3.28	3.42	1.26	1.27
Jiangsu	0.88	0.74	0.40	0.90
Zhejiang	0.71	1.33	0.93	1.51
Natural population growth[1]				
China	1.16	0.91	0.62	0.52
Guangdong	1.25	0.93	0.74	0.73
Jiangsu	0.79	0.41	0.22	0.23
Zhejiang	0.72	0.47	0.42	0.48
Net population inflow[2]				
China	0.03	0.02	0.01	0.00
Guangdong	2.02	2.49	0.52	0.54
Jiangsu	0.09	0.33	0.18	0.67
Zhejiang	0.00	0.85	0.52	1.04

Note 1: Natural growth rate refers to the ratio of natural increase in population (number of births minus number of deaths) during a certain period of time (usually one year) to the average population of the same period.

Note 2: Net population inflow = total population growth – natural population growth.

Source: National Bureau of Statistics of China database, *www.stats.gov.cn/english/statisticaldata/yearlydata*; *CEIC database*, *www.ceicdata.com.*

Figure 1.14. **Comparison of net population inflow in Guangdong, Zhejiang and Jiangsu provinces, 2001-2008**



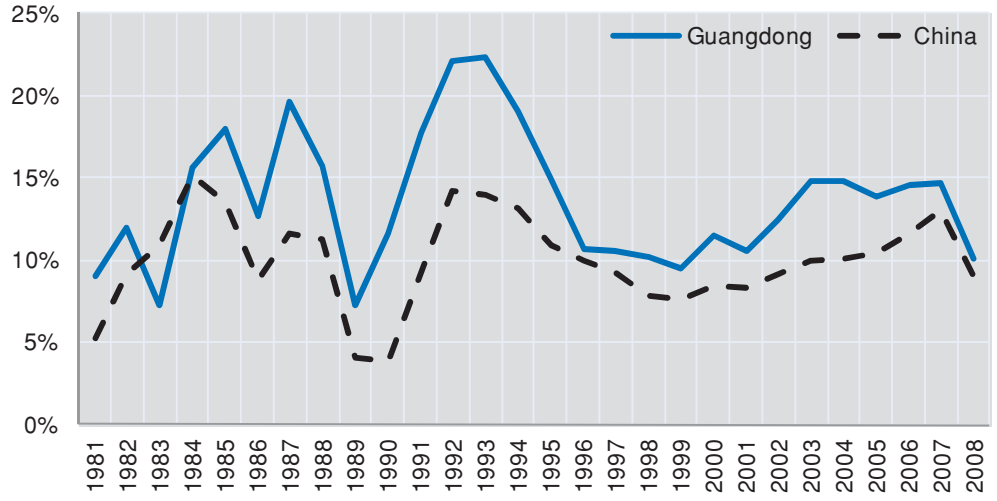
Source: National Bureau of Statistics of China database, *www.stats.gov.cn/english/statisticaldata/yearlydata*; *CEIC database*, *www.ceicdata.com.*

1.2. Guangdong's emergence as a global economic region

The largest economy in China

Guangdong province is the largest economy in China and has been a principal driver of the national economy over the last 30 years. In 2008, the province featured a GDP of CNY 3 569 billion (USD 938.3 billion, PPP), making it the largest economy in China, representing 12% of the country's GDP, up from 10.2% in 1998 (Figure 1.16). The province also registered one of the highest output growth rates in the nation, with an annual average of 13.7% over 1981-2008, in relation to the national level of 10% over the same period (Figure 1.15). It stands among the richest provinces in China with a GDP per capita at CNY 37 589 (USD 9 873, PPP) in 2008. Guangdong's 2008 GDP per capita represents 166% of the national average, up from 159% in 1998. While Guangdong's GDP per capita exceeded that of Jiangsu in 1998, the relative positions were reversed by 2008 (Figure 1.17). On an international scale, the size of the Guangdong economy is almost equivalent to that of Australia and Turkey (Figure 1.18). Like the rest of China, its GDP per capita is lower than all OECD member countries, although not very far below that of Turkey (Figure 1.19).

Figure 1.15. **Annual GDP growth rate of Guangdong and China, 1981-2008**

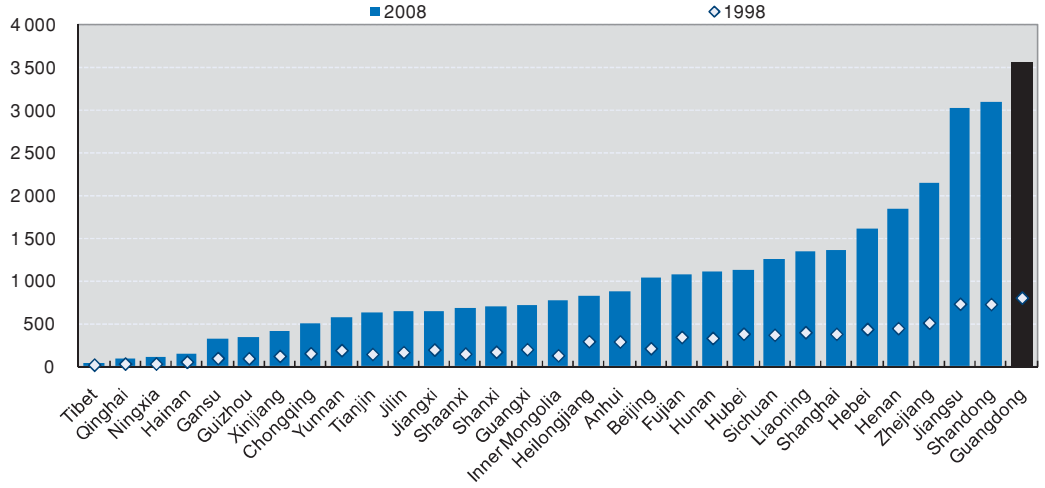


Note: The data are calculated at comparable prices.

Source: National Bureau of Statistics of China database, *www.stats.gov.cn/english/statisticaldata/yearlydata*; *CEIC database*, *www.ceicdata.com*.

Figure 1.16. **GDP of Chinese provinces, 2008 and 1998 (CNY)**

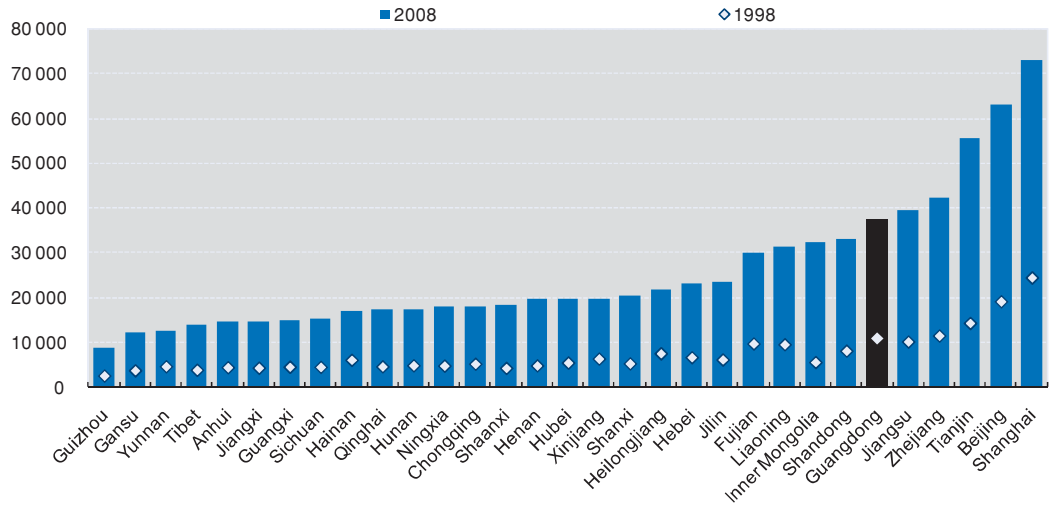
Billion CNY, 1998 and 2008 current prices



Source: National Bureau of Statistics of China database, *www.stats.gov.cn/english/statisticaldata/yearlydata*; *CEIC database*, *www.ceicdata.com.*

Figure 1.17. **GDP per capita of Chinese provinces**

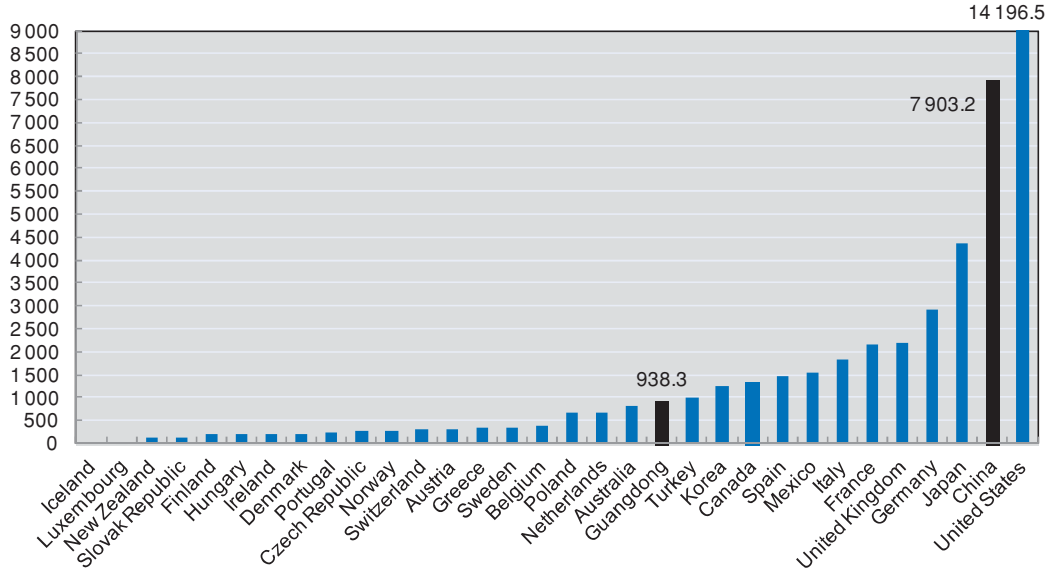
CNY, 1998 and 2008 current prices



Source: National Bureau of Statistics of China database, *www.stats.gov.cn/english/statisticaldata/yearlydata*; *CEIC database*, *www.ceicdata.com*.

Figure 1.18. **GDP international comparison: Guangdong, China and OECD member countries**

Billions USD, current prices and PPPs, 2008

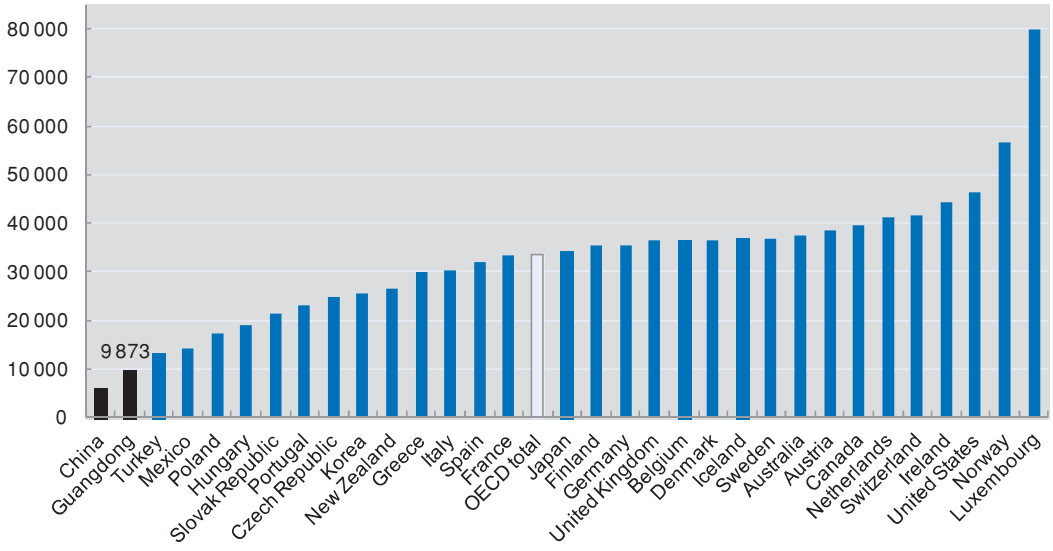


Note: China GDP PPP data are from the World Bank, 2008; Guangdong GDP PPP uses the same conversion rate as China.

Source: OECD (2009), *National Accounts of OECD Countries*, OECD Publishing, Paris; *World Development Indicators database*, *http://data.worldbank.org*.

Figure 1.19. **GDP per capita in OECD member countries, China and Guangdong province**

USD, current prices and PPPs, 2008

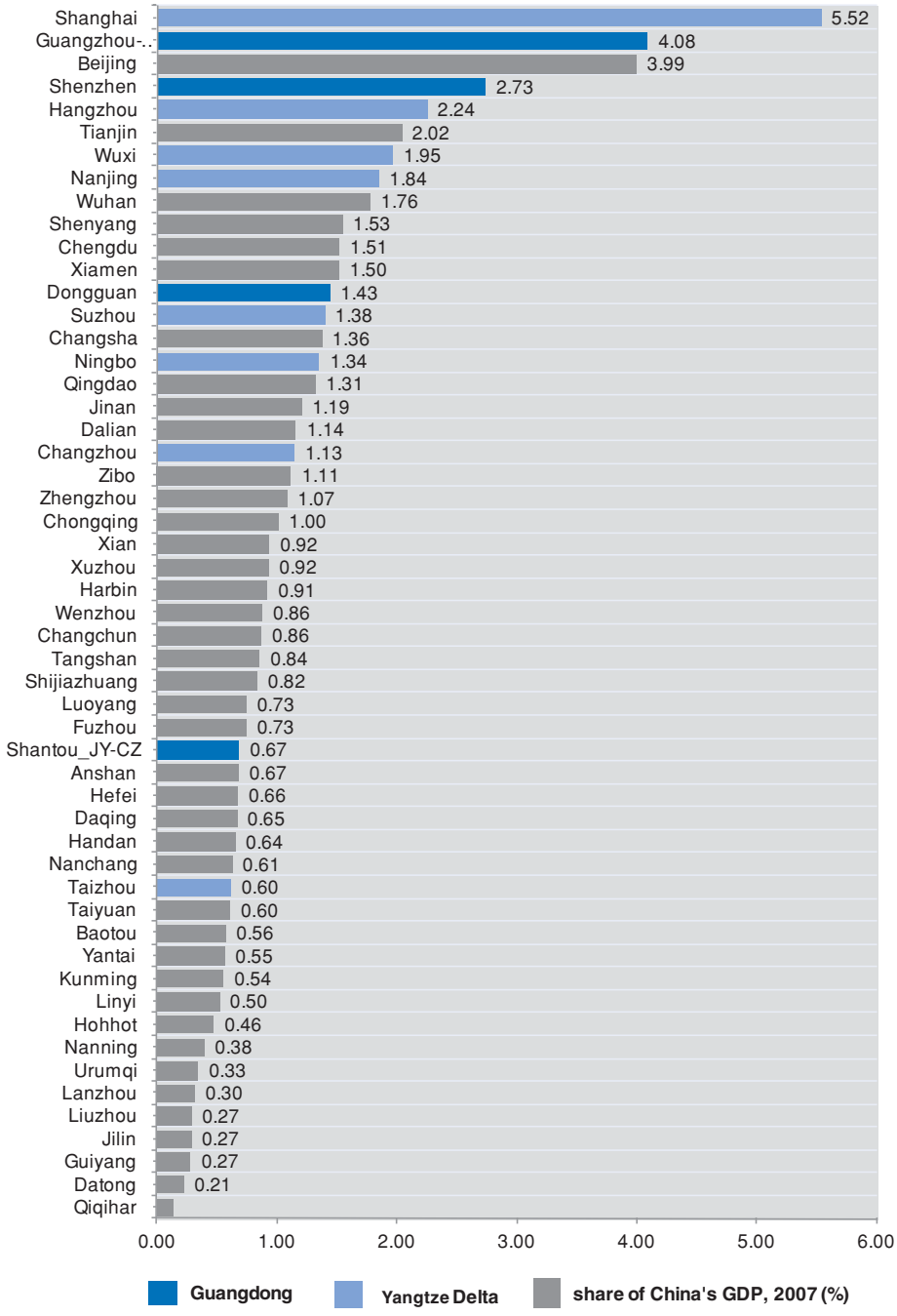


Note: China GDP per capita PPP data are from the World Bank, 2008; Guangdong GDP per capita PPP uses the same conversion rate as China.

Source: OECD (2009), *National Accounts of OECD Countries*, OECD Publishing, Paris; *World Development Indicators* (database), *http://data.worldbank.org*.

The Pearl River Delta has been the main economic driver of the province. In 2008 the GDP of the PRD region was CNY 2 974.6 billion (USD 781.9 billion, PPP), representing 79.4% of the provincial GDP. The other 20.6% is generated by 3 non-PRD regions (Western Guangdong, Northern Guangdong and Eastern Guangdong). The PRD alone accounts for 9.9% of China's national GDP,[8] with the 3 metropolitan regions (GuangFo, Shenzhen and Dongguan) together representing 8% of the Chinese economy. Among the 53 largest Chinese metropolitan regions, GuangFo, Shenzhen and Dongguan rank 2nd, 4th and 13th respectively in terms of their share in China's total output (Figure 1.20).

Figure 1.20. **Share of China's GDP for the 53 largest metropolitan regions, 2007**



Source: Kamal-Chaoui, L., E. Leman and R. Zhang (2009), "Urban Trends and Policies in China", *OECD Regional Development Working Paper*, 2009/1, OECD Publishing, Paris.

Since the inception of the "Reform and Open-up" policy in 1978, Guangdong has transformed itself from a backward agricultural economy to an industrial-based economy. Over 2005-2008, Guangdong's GDP was generated as follows: 51.4% from the secondary sector (including 48.0% from industry and 3.4% from construction), 43.0% from the tertiary sector and 5.6% from the primary sector.[9] Industry, therefore, accounted for the main part of the provincial GDP in 2005-2008, up from 33.8% in 1981-1985. Between 1981 and 2008 the average annual growth rate of industry was 17.9%, higher than both the primary and secondary sectors. Meanwhile, the tertiary sector increased its share from 27.0% in 1981-1985 to 43.0% in 2005-2008 although the average growth rate for this sector has slowed from 15% in the 1980s and 1990s to 12.3% since 2000. The contribution of the primary sector decreased from 32.3% of the provincial GDP in 1981-1985 to 5.6% in 2005-2008 (Table 1.3). The dominance of the industrial sector in Guangdong is similar to that of several other coastal provinces – Zhejiang, Jiangsu and Shandong – which also have economies with larger industrial sectors and smaller primary sectors than the national average.

Table 1.3. **GDP sectoral breakdown, 1981-2008**

Comparison between China and Guangdong, Jiangsu and Zhejiang provinces

	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2005-2008
Primary sector						
China	31.8%	26.4%	21.2%	17.4%	13.3%	11.3%
Guangdong	32.3%	26.5%	17.3%	11.6%	7.1%	5.6%
Jiangsu	33.0%	26.6%	17.9%	14.1%	9.5%	7.0%
Zhejiang	32.8%	25.9%	18.2%	12.7%	8.0%	5.4%
Shandong	38.1%	30.4%	23.0%	17.2%	12.6%	9.7%
Secondary sector: industry						
China	39.9%	38.0%	39.4%	40.7%	40.5%	43.0%
Guangdong	33.8%	32.8%	38.8%	41.6%	43.5%	48.0%
Jiangsu	44.8%	45.4%	47.7%	44.8%	48.3%	50.5%
Zhejiang	40.0%	41.1%	44.3%	48.2%	45.7%	48.3%
Shandong	37.3%	38.3%	41.3%	42.9%	48.3%	51.9%
Secondary sector: construction						
China	4.4%	5.1%	5.7%	5.9%	5.5%	5.6%
Guangdong	6.9%	6.5%	7.8%	5.9%	4.3%	3.4%
Jiangsu	4.6%	4.8%	6.1%	6.3%	6.4%	5.2%
Zhejiang	4.6%	5.0%	5.5%	5.3%	5.5%	5.7%
Shandong	4.7%	5.0%	5.1%	5.6%	6.2%	5.3%
Tertiary sector						
China	24.0%	30.6%	33.7%	36.0%	40.7%	40.1%
Guangdong	27.0%	34.2%	36.0%	40.9%	45.1%	43.0%
Jiangsu	17.7%	23.2%	26.6%	34.9%	36.5%	37.2%
Zhejiang	22.6%	28.1%	28.1%	33.4%	38.5%	40.6%
Shandong	19.9%	26.3%	26.3%	34.7%	35.1%	33.1%

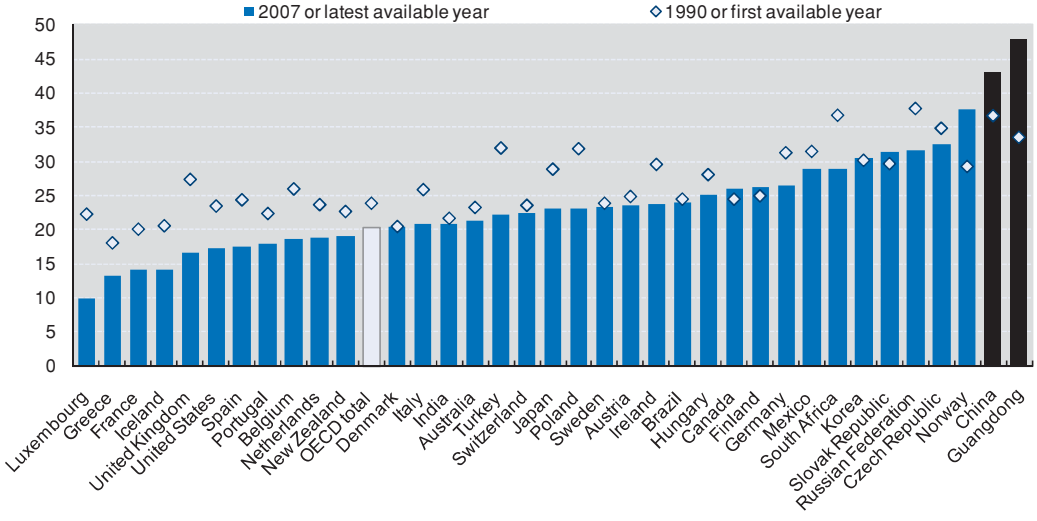
Source: National Bureau of Statistics of China database, *www.stats.gov.cn/english/statisticaldata/yearlydata*; *CEIC database*, *www.ceicdata.com*.

The share of industry in Guangdong's economy differs markedly from most industrialised OECD member countries. Value added from industry as a percentage of GDP is 48% in Guangdong, yet the rate is 20.2% in OECD member countries (Figure 1.21). This is because Guangdong's economy is at a different stage of economic development and structural change. For instance, the significant growth in Guangdong's manufacturing sector over the last 20 years of industrialisation significantly contributed to growth in total value added from industry (Yang *et al.*, 2008). While during the same period, many developed OECD member countries have entered the knowledge economy

and experienced a decline in the share of value added from industry, with a concurrent rise in the share of services. In most OECD member countries, this process has been driven by rapid changes in productivity change of the manufacturing sector and a demand shift to services (OECD, 2007a).

Figure 1.21. **Value added in industry**

As % of total value added



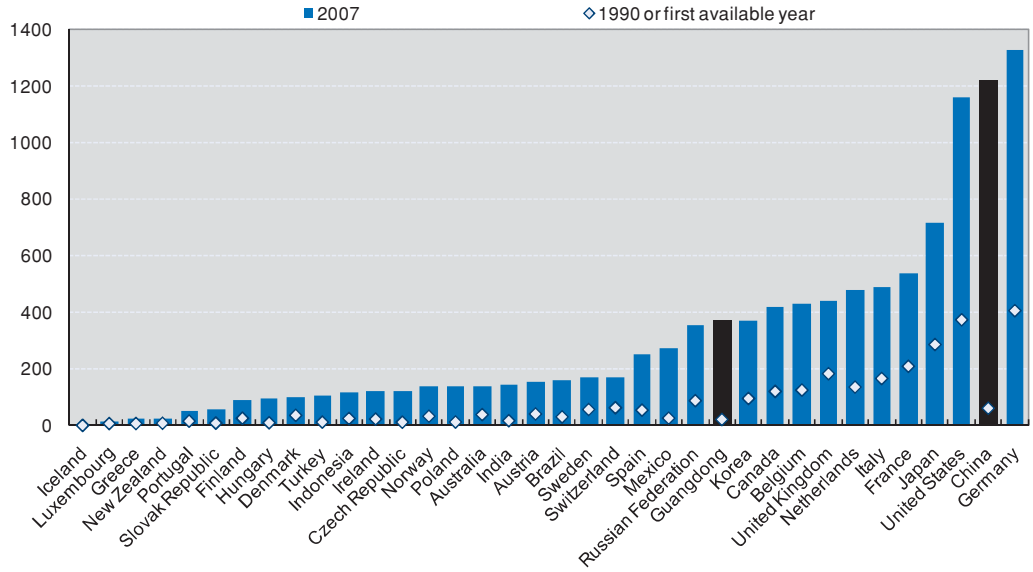
Notes: Exceptions in first available year data are: Hungary, 1991; Poland, 1992; Slovak Republic, 1993; OECD total, 1995; India, 1997. Exceptions in latest available year data are: Canada, 2004; Iceland, 2005; Japan, 2006; Mexico, 2006; New Zealand, 2003; United States, 2006; OECD total, 2003; Brazil, 2006.

Source: OECD (2009), *OECD Factbook 2009*, OECD Publishing, Paris; *National Bureau of Statistics of China database*, *www.stats.gov.cn/english/statisticaldata/yearlydata*; *CEIC database*, *www.ceicdata.com*.

Guangdong's economic growth has been characterised by a high trade to GDP ratio, thanks to its participation in the pilot round of China's "Reform and Open-up" policy. A key development feature of this model has been "processing trade", which allows companies to benefit from importing, assembling, and exporting via Hong Kong, China. This allowed Guangdong to become the largest exporting province in China, accounting for 28.3% of China's total exports in 2008 (whilst Guangdong represents 7.1% of the country's population) (*NBS China database*). However, the average portion of Chinese exports coming from Guangdong declined from 39% in 1990-1999 to 33% in 2000-2008, mostly due to progress in other coastal provinces such as Zhejiang and Jiangsu (*NBS China database*). China surpassed the United States and became the second largest exporting nation after Germany when its share of the global goods market reached 8.73% in 2007, up from less than 1% in 1979 (World Trade Organisation – WTO, 2008). Guangdong played a role in that progress, as the province itself accounts for 2.64% of the 2007 total world exports of goods (Figure 1.22). In 2008, Guangdong's exports amounted to USD 404.1 billion, e.g. larger than that of the Russian Federation.

Figure 1.22. **Export of goods**

Billions USD



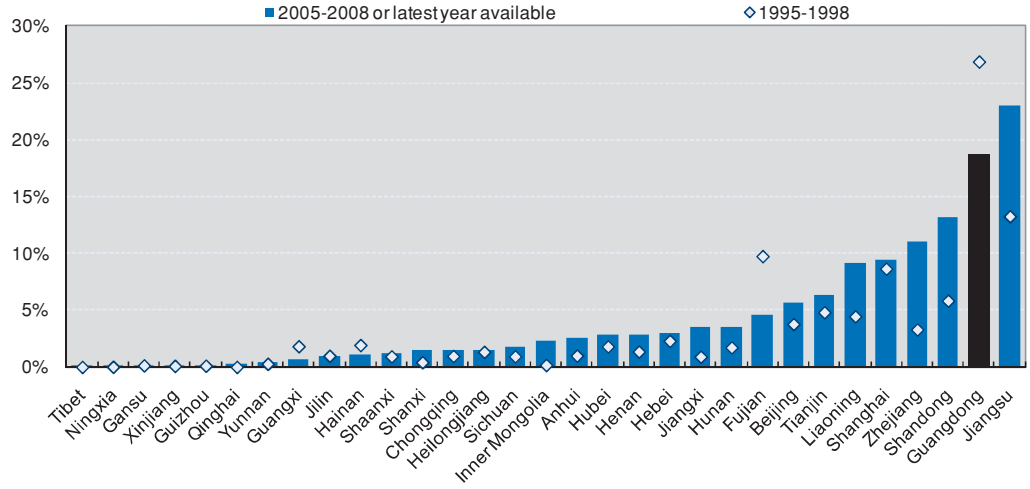
Notes: The data are calculated at year 1990 or first available year and 2007 current prices. Exceptions in first year data are: Belgium and the Czech Republic, 1993; Hungary and Poland, 1992; Korea, 1994; Luxemburg, 1999; Slovak Republic and India, 1997; Russian Federation, 1996.

Source: OECD (2009), *OECD Factbook 2009*, OECD Publishing, Paris; *National Bureau of Statistics of China database*, *www.stats.gov.cn/english/statisticaldata/yearlydata*; *CEIC database*, *www.ceicdata.com*.

As a provincial economy open to trade, Guangdong is one of the main receivers for China's incoming foreign direct investment (FDI). In accumulative terms, Guangdong obtained roughly 25% China's total FDI over 1978-2008. The provincial incoming FDI was USD 19.2 billion in 2008, up from USD 12 billion in 1998 (*NBS China database*). Yet Guangdong's portion of China's utilised FDI declined from 26.8% in 1995-1998 to 18.8% in 2005-2008 (Figure 1.23), largely due to the surge in other coastal provinces, e.g. Jiangsu, Shandong. Internationally, the average inflow of FDI in Guangdong reached USD 15 792 million in 2005-2008, similar to that of Poland and Turkey (Figure 1.24).

Figure 1.23. **Inflows of foreign direct investment to Chinese provinces**

As % of national total

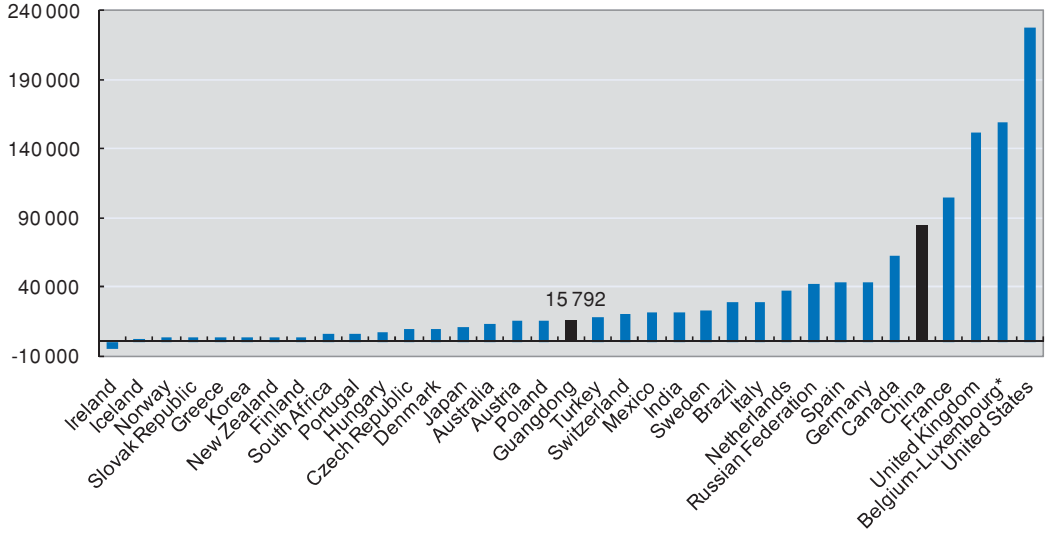


Note: Tianjin, Shanghai, Shandong, Yunnan, Sichuan show 2005-2007 data.

Source: CEIC database, *www.ceicdata.com*, adopted from Chinese Ministry of Commerce.

Figure 1.24. **Inflows of foreign direct investment, international comparison**

Millions USD, average 2005-2008



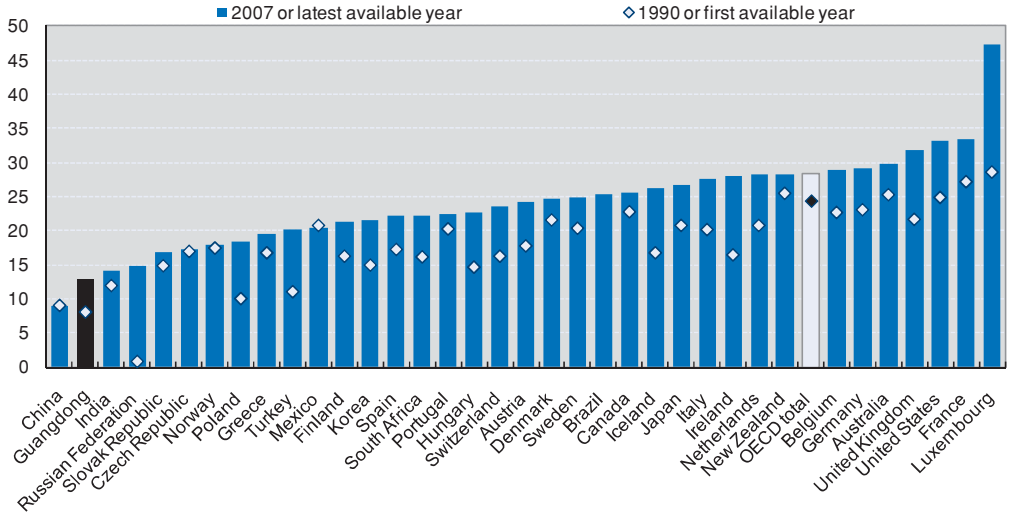
Note: Including Belgium and Luxembourg for flows only.

Source: OECD International Direct Investment (database); *CEIC database*, *www.ceicdata.com*, adopted from Chinese Ministry of Commerce.

Structural changes in Guangdong's economy could unleash the potential of its tertiary sector. Although it has the highest share of tertiary sector activity among Chinese provinces (excluding municipalities like Beijing, Shanghai and Tianjin), it is still low compared with OECD member countries. Guangdong's share of value added from banks, insurance, real estate and other business services reached 13% in 2007, up from 8% in 1990, while the figure in OECD member countries grew from 24.3% in 1990 to 28.4% in 2007 (Figure 1.25). Contribution to value added from traditional tertiary sectors – transport, trade, hotels and restaurants in Guangdong declined from 16.3% in 1990 to 13.1% in 2007, both of which present much lower figures than the average in OECD member countries (Figure 1.26). The proportional decline in more traditional tertiary sector activities is a consequence of the decreasing share of the transport, storage and posts services sectors, partly because market share of transport activities has been taken by the Yangtze River Delta region (Table 1.4).

Figure 1.25. **Value added from banks, insurance, real estate and other business services**

As % of total value added

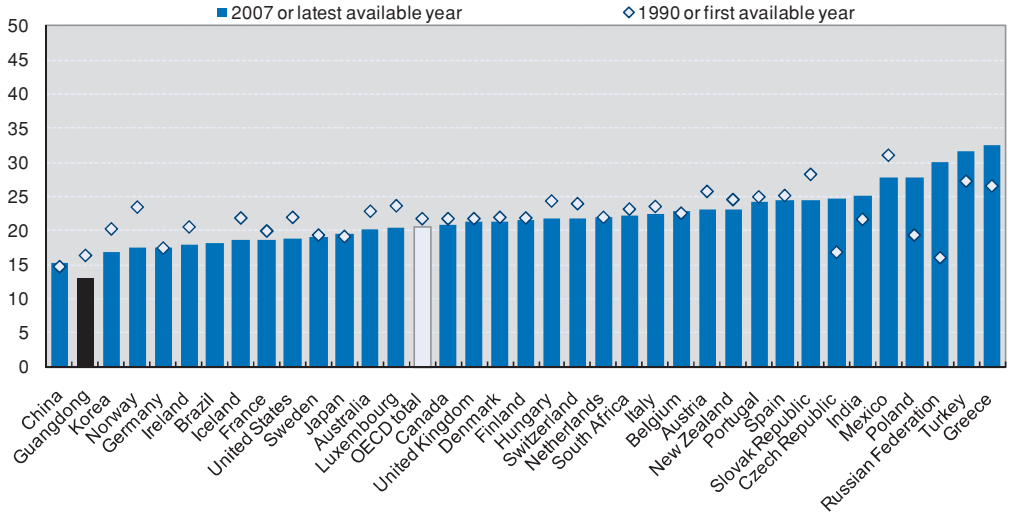


Notes: Exceptions in first available year data are: Hungary, 1991; Poland, 1992; Slovak Republic, 1994; OECD total, 1995; Brazil, no first year data; India, 1997; South Africa, 1993. Exceptions in latest available year data are: Canada, 2004; Iceland, 2005; Japan, 2006; Mexico, 2006; New Zealand, 2003; United States, 2006; OECD total, 2003; Brazil, 2006.

Source: OECD (2009), *OECD Factbook 2009*, OECD Publishing, Paris; *National Bureau of Statistics of China database*, *www.stats.gov.cn/english/statisticaldata/yearlydata*; *CEIC database*, *www.ceicdata.com*.

Figure 1.26. **Value added from transport, trade, hotels and restaurants**

As % of total value added



Notes: Exceptions in first available year data are: Hungary, 1991; Poland, 1992; Slovak Republic, 1994; OECD total, 1995; Brazil, no first year data; India, 1997; South Africa, 1993. Exceptions in latest available year data are: Canada, 2004; Iceland, 2005; Japan, 2006; Mexico, 2006; New Zealand, 2003; United States, 2006; OECD total, 2003; Brazil, 2006.

Source: OECD (2009), *OECD Factbook 2009*, OECD Publishing, Paris; *National Bureau of Statistics of China database*, *www.stats.gov.cn/english/statisticaldata/yearlydata*; *CEIC database*, *www.ceicdata.com*.

Table 1.4. **Guangdong's tertiary sector breakdown, 1991-2008**

	1991-1995	1996-2000	2001-2005	2006-2008
Tertiary sector	36.0%	40.9%	45.1%	43.0%
Transport, storage and posts	7.2%	8.2%	7.6%	4.1%
Wholesale, retail and catering	10.1%	12.4%	12.2%	9.4%
Banking and insurance	4.5%	3.8%	3.3%	5.1%
Real estate	3.5%	5.0%	6.0%	6.6%
Other	10.8%	11.6%	16.0%	17.8%

Source: CEIC database, *www.ceicdata.com*, adopted from National Bureau of Statistics of China.

Financial service is one source of potential growth in the tertiary sector. The province's financial industry is concentrated in Guangzhou and Shenzhen. The latter, in particular, enjoys more liberalised policies in terms of economic development as a special economic zone (SEZ) in China and has become the financial centre in South China, equivalent to Shanghai in the north. The Shenzhen Stock Exchange and the China Merchants Bank are the two important elements of financial business in Shenzhen (Box 1.8). The financial services sector requires highly skilled human capital. A key element is how Guangdong could pursue a brain-gain strategy to support the growth of the financial sector.

Box 1.8. Two important elements of financial business in Shenzhen

The Shenzhen Stock Exchange (SZSE)

The Shenzhen Stock Exchange (SZSE) is a "mutualised" national stock exchange under the China Securities Regulatory Commission. A broad spectrum of market participants, including 540 listed companies, 35 million registered investors and 177 exchange members, make up the market.

Established in 1990, the SZSE was the first stock exchange created in China. Over the last three decades, it has successfully developed into a nationwide securities trading market, with a market capitalisation around CNY 1 trillion (USD 122 billion). The daily trading volume is around 600 000 deals, valued at USD 807 million. The accumulated volume of capitalisation in the SZSE exceeds CNY 400 billion.

The SZSE contributes substantially to the rapid development of China's market economy, especially in the Pan Pearl River Area. A stock index of meaningful influence is a symbol of a mature securities market. Three indices have been created by the SZSE: the SZSE Component Index, the SZSE Composition Index and the SZSE SME Price Index. As equivalents and comparative indicators to Shanghai Stock Exchange indices, the SZSE indices are exerting a more and more significant influence over China's capital markets. Together with Shanghai Stock Exchange indices, the SZSE indices help to give investors a better understanding and a more exact picture of China's securities market and economy.

Profound changes are happening in China's capital market, especially in terms of the securities market. The national government's commitment to develop the securities market was demonstrated in the implementation of some key pieces of legislation. For example, the Security Law (1998, revised in 2005). The latter regulates security issuance and trading, and guarantees the legal status of the capital market. The capital market benefits from the involvement of the Small and Medium Enterprises (SME) Board. Created in 2004, the SME board supports the growth of small businesses and a multi-tier market. This board helps small and medium businesses access capital more easily. "[It] is designed for small- and mid-caps with pronounced core business, high growth potential and intensive technological contents." Its development was a strategic move of the SZSE who was seeking to engage the small- and medium-scale businesses which account for a majority of Guangdong's local economy. It is worth noting that there is no equivalent counterpart to the SME Board in the Shanghai Stock Exchange. The SME Board has injected new life into the SZSE's business and also made the SZSE more competitive relative to the Shanghai Stock Exchange.

The China Merchants Bank (CMB)

In 1987, the China Merchants Bank (CMB) opened as Shenzhen's first bank wholly owned by shareholders. Two decades later, the CMB had become a formidable player on the national market with competitive profitability and higher asset quality than most other commercial banks in China. In 2002, the CMB was listed in Shanghai and four years later it was listed in Hong Kong, China.

In 2007, the CMB accomplished a symbolic step towards becoming a global bank: it began operating in the world financial centre of New York. This achievement is also significant for Chinese banking, because the CMB is the first Chinese bank approved by the United States Federal Reserve Bank since the 1991 "Act of Enhanced Supervision of Foreign Banks". As of 31 December 2007, 40 branches and 534 sub-branches of the bank spread all over China, and more than 1 000 banks all over the world are doing business with the CMB.

Source: SZSE, "Shenzhen Stock Exchange Overview", *www.szse.cn/main/en/aboutsse/sseoverview/*, accessed 20 April 2009; CMB, "Corporate Information", *http://english.cmbchina.com/CMB+Info/aboutCMB*; CSRC (2009), "China's Capital Market Development Report, 2009", *www.csrc.gov.cn/n575458/n776436/n804882/n4261170/11406522.html*, in Chinese.

Major phases of economic change in Guangdong province

Guangdong province has experienced rapid and deep urbanisation and industrialisation over the last 30 years. Since 1978, Guangdong underwent four major phases of economic change:

1. Pre-reform era, during which there was little investment in industry.
2. Stage reforms (1980-early 1990s), during which Guangdong was chosen as the test bed for wide-ranging economic reforms.
3. PRD-led boom (1990s-2000), when the Pearl River Delta achieved the world's largest concentration of low- and medium value-added manufacturing, acquiring the moniker "The World's Factory".
4. Restructuring? (2000-present), when the "PRD Model" began to falter, and was replaced by the pursuit of new areas of economic growth that reduce Guangdong's reliance on low value-added industry.

Pre-reform era

Guangdong was one of China's most lagging provinces prior to economic reforms that began in 1978. In 1952, Guangdong ranked 18th among the country's 30 provinces in per capita national income (CNY 88). From 1952 to 1978, per capita national income growth was only 3.1% per year. Per capita growth of industrial output value was 8.3%, the 10th lowest rate among all provinces (Duncan and Tian, 1999).

Several factors explain this low level of performance. First, the local economy was underdeveloped. Historically, the province's economy had largely been based on agriculture, benefiting from the rich soils and water resources of the Zhujiang Delta and the western coastal plateau. Except for Guangzhou, there were no cities of any significant size, and little industry. Internally, sub-provincial markets were limited to towns serving the local hinterlands. Second, for political reasons, the borders with Hong Kong, China and Macao, China were virtually closed in 1949, and foreign influence was tightly controlled. There was almost no foreign trade as China turned inward. In 1964, the central government began to relocate industrial production from coastal provinces to western China.[10] What little industry existed in Guangdong at that time was either relocated or subsequently severely under-invested. The third major factor contributing to the province's lagging development was the relatively low level of education among its largely rural population.

By 1979, social engineering policy failures and natural calamities across the country engendered the second phase of economic change. The failing agricultural sector left 70-80% of China's rural labour force either unemployed or underemployed (Riedel, 2007). Agricultural output and productivity had stagnated across the country. In this context, economic reforms began in 1979 in the agricultural sector, and were instrumental in the introduction of urban industrial reforms, starting in the mid-1980s.

Staged reforms (1980-early 1990s)

Under Deng Xiaoping, China's government gradually initiated three major sets of reforms starting in the late 1970s: *i*) major shifts in the structure of agricultural production; *ii*) pricing reforms; and *iii*) opening up contacts and investment to the outside world. Guangdong figured prominently in all three.

i) Prior to 1979, agricultural production was organised into collectives where farmers worked together on collectively-owned land to meet state production quotas. In the mid-1970s, faltering production led farmers in Anhui and Sichuan to begin experimenting with a household-based production system in which use rights to specific parcels of land were given to individual households. In 1978, the major output and income improvements in these experimental collectives convinced the central government to extend the model to other provinces, including Guangdong. It formally replaced the commune system with a new "household responsibility system" in 1982 (Wang, 2008). This granted households use rights over land parcels (which remained collectively owned) under a 30-year contract; once state quotas were met, surpluses could be sold at market prices.

ii) The second major shift was characterised by the change in price controls for agricultural products and the liberalisation of planned targets for yield, outputs, and sown areas. State prices paid for grain increased by 20-50% in 1979. Throughout the 1980s, they were gradually liberalised and expanded to other agricultural products until price controls were virtually eliminated by 1993.

These two reforms provided farmers with production incentives that propelled output and incomes; by 1984, farmers' average income, in real terms, was 2.5 times higher than the 1978 level. This had a profound impact on Guangdong, especially in the fertile Pearl River Delta: rising incomes strengthened the fiscal capacities of township and village governments at a time when decentralisation in many sectors was giving them greater autonomy. By the early 1990s, a major – and largely unexpected – impact of agricultural reforms began to emerge. As agricultural productivity increased, fewer farmers were needed to meet the demand. This provided a larger and growing pool of unskilled and semi-skilled labour for manufacturing. Increased agricultural output also contributed to the initial boost to exports in this crucial stage of the reform period, especially when the national policy of growing grain was abandoned, allowing specialisation in cash crops.

The labour surplus and industrial reforms in the mid-1980s favoured the development of township and village enterprises (TVEs)[11] which began to rapidly emerge in Guangdong, Jiangsu, and Shandong provinces. TVEs focused on light manufacturing to supply domestic markets. From 1980 to 1990, TVEs' share in national gross industrial output increased from 5% to 20%, and, nationwide, TVE employment surged to 93 million from 30 million (Wang, 2008). TVE growth was fuelled by decades of pent-up demand, especially in urban areas, and rising household incomes in both the countryside and in cities.

One of the reasons that Guangdong was selected for testing economic reforms was its comparatively low level of state ownership of firms. In 1980, 63% of industrial firms were state-owned; by 1985, the proportion had dropped to 52.5% and by 1989 to 37.6% (Mody, 1997). In contrast, small collectively-owned enterprises (below the township level), private firms, partnerships and joint ventures with foreigners accounted for 9.9% of industrial firms in 1980, 17% in 1985, and 33.9% in 1989.

iii) The third major reform – opening up to foreign investment and (selectively) to foreign influence – was realised through bold experimentation, starting in Guangdong and Fujian provinces. After decades of isolation, Deng Xiaoping recognised that China's development must be tied to global markets. "Special economic zones" (SEZ) were conceived as the means to gradually introduce foreign investment and technology to China in a very controlled way. SEZs were to be specially designated areas with precise frontiers within which foreign firms could invest in manufacturing for export with a range of fiscal and policy incentives, including the waiver of import duties on machinery,

facilitation of residency procedure for expatriate managers and technical personnel, a reduced corporate income tax rate of 15%, profit repatriation, and simplified entry and exit procedures.

Three SEZs were established in January 1980 in Guangdong: *i*) in Zhuhai, on the border with Macao, China;[12] *ii*) in Shantou near the border with Fujian province (now part of the Shantou/Jieyang/Chaozhou Cluster); and *iii*) in Shenzhen, on the border with Hong Kong, China.[13] A fourth SEZ was established in October 1988 in Xiamen in Fujian province opposite Chinese Taipei.[14]

The SEZs were conceived as territories that would operate under a market system and be fuelled by foreign investment in export processing of manufactured goods. For the first few years, the absence of clear laws and regulations deterred foreign firms, including from Hong Kong, China, and it was not until 1984 that any significant manufacturing investment began to occur. To promote SEZs' development, Deng Xiaoping made a symbolic trip to Shenzhen in 1984 and declared that "special economic zones are to be China's windows to the world". That year, Guangzhou and 14 other coastal cities were fully opened to foreign investment. After Deng Xiaoping's 1984 inspection tour, Shenzhen became the most popular SEZ for foreign firms, beginning with those from across the border in Hong Kong, China. Hainan was designated as an SEZ in the late 1980s. Then, in early 1995, the Pearl River Delta, the Yangtze River Delta, and the Zhangzhou-Quanzhou-Xiamen region in Fujian province were fully opened to foreign investment.

The Chinese government selected SEZs based on their strategic locations: Shenzhen was to benefit from spillovers from Hong Kong, China, over which China was to regain sovereign control in 1997; Zhuhai was to align with Macao, China, the second colony to be reintegrated; Xiamen was opposite the straights of Chinese Taipei where cultural and family ties were strong; and Shantou was also supposed to benefit from the proximity of Chinese Taipei and perhaps also Hong Kong, China. Aside from the political issues, the government recognised that overseas Chinese businesses in Hong Kong, China and Chinese Taipei were likely to be the first to engage with China in direct investment and technology transfer. Growth among the SEZs was uneven from the start, with the highest levels of investment occurring in Shenzhen. Because SEZs' borders were strictly enforced,[15] spillovers to other parts of the province did not begin to occur until the late 1980s; these were limited to the inner Pearl River Delta, especially to Dongguan, but also to Guangzhou, Foshan, and Zhongshan. There is little evidence that SEZs had any impacts on the structure and pace of development elsewhere in Guangdong.

Despite limited spillovers from the SEZs, growth in Guangdong as a whole accelerated markedly during this period driven by the rapid emergence of TVEs, the establishment of the three SEZs, and the growing supply chain relationships between TVEs and foreign-invested firms in the SEZs. From 1978-1993, Guangdong's per capita GDP growth rate was 11.26%, the highest in China; growth in per capita industrial output value was 19.81%, the second highest in the country after Zhejiang province (Duncan and Tian, 1999). The Industrial output value of non-state-owned enterprises in Guangdong was 38.1% during this period, almost triple the 14% growth of state-owned firms.[16]

Conditions were set in the 1980s that led to a PRD-led boom in development starting in the early 1990s. Compared to other coastal regions, the PRD's emerging structure in light industry was diverse – a wide range of outputs, from textiles to shoes, toys, watches, processed foods, and light machinery began to be produced. The Inner PRD was clearly the focal destination of foreign investment, largely from Hong Kong, China but

increasingly from Chinese Taipei as well. Its human capital was comparatively stronger than elsewhere in Guangdong, and at least a rudimentary network of roads had been established in the Inner PRD.

Guangdong's PRD-led boom (early 1990s-2000)

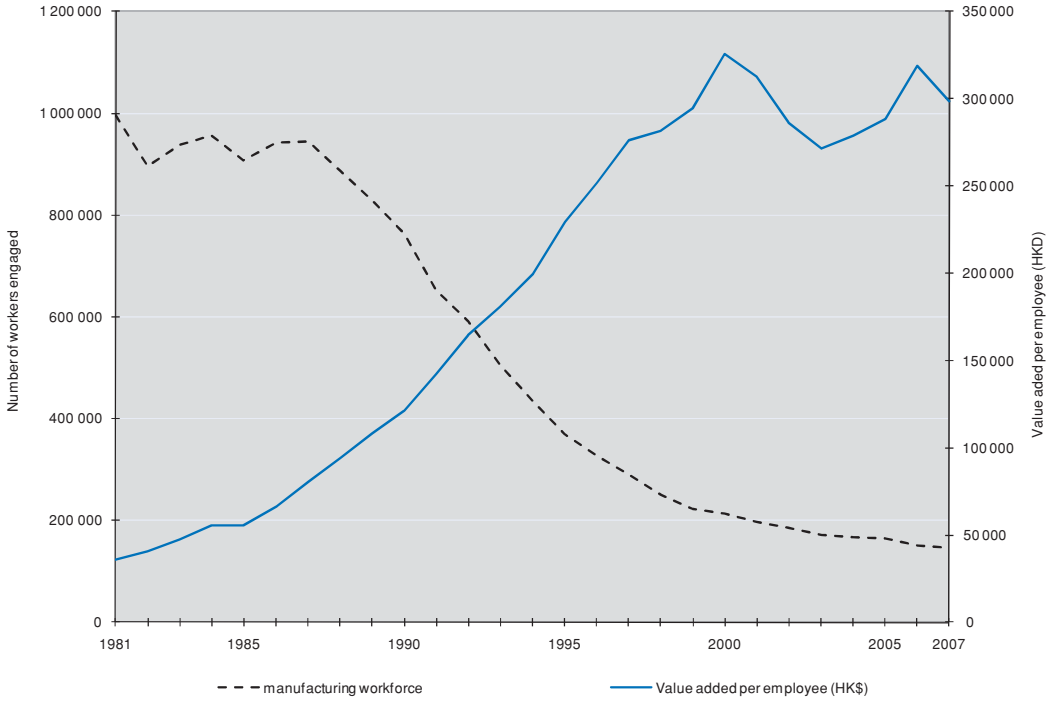
Against the backdrop of a decade of reforms, improving regulatory frameworks for foreign investors, and increasing decentralisation of investment approvals to local governments, several converging factors led to a boom in Guangdong during the 1990s that was largely concentrated in the Inner PRD: *i*) massive relocation of Hong Kong, China's manufacturing capacity to the PRD, and the associated restructuring of Hong Kong, China's economy into a global centre for trade and finance; *ii*) recommitment to reform as a central tenet of government policy; *iii*) acceleration in the globalisation of supply chains which relocated component manufacturing to developing countries; *iv*) the return of Hong Kong, China and Macao, China to mainland China; and *v*) Hong Kong, China's emerging role as a financial centre for mainland China.

Perhaps the most important factor for Guangdong's boom was the relocation of Hong Kong, China's industries to the PRD. Increased land and labour costs in Hong Kong, China during the late 1980s – in concert with the globalisation of supply chains in the late 1980s that led to massive off-shoring of manufacturing by multinationals in Southeast Asia – began to threaten the competitiveness of Hong Kong, China's manufacturers. Industry in the territory was generally low value-added in textiles, toys, luggage and simple electronics. The SEZs, with their low land costs, tax breaks, and access to China's huge pool of low-cost, surplus labour, provided a natural outlet for Hong Kong, China's firms to relocate their production. After almost a decade of exposure to the reform process, confidence was high enough for these firms to very rapidly shift production (which, given the nature of outputs, was not capital intensive). This process began in 1987 but accelerated such that, by the year 2000, Hong Kong, China's manufacturing workforce had shrunk by 80%. The remaining 20% was redirected toward much higher value-added manufacturing (Figure 1.27).

Another important factor in Guangdong's rapid growth was the significant relocation that occurred beyond the Shenzhen and Zhuhai SEZs. By the 1990s, TVEs had generally become uncompetitive and town governments began looking for alternatives to manufacturing. As decentralisation increased,[17] local governments began to pursue greater returns by building multi-tenant factory space that could be rented out to Hong Kong, China's manufacturers, or "leasing" land outright to them. Although this practice contravened national laws on land-use rights, it was treated as a "grey area" by regulators who did not want to curtail economic growth in the PRD. Large swaths of farmland, especially along the eastern flank of the Inner PRD in Dongguan and suburban Shenzhen, were transformed into plants for low value-added, original equipment manufacturing (OEM)[18] initially for Hong Kong, China firms, and then to firms from Chinese Taipei.[19] These plants created an almost instant demand for un- and semi-skilled workers. However, local residents had little incentive to take up these jobs as the new and substantial revenue flows from rentals and leases were distributed to existing households. Migrants from elsewhere in Guangdong, and increasingly from other provinces, poured into the PRD to fill the demand for labour in such large numbers that by the year 2000 there were 22 million migrants working in the Pearl River Delta.[20] Whole towns were transformed in this process. For example, Changan Town in Dongguan had 595 000 residents in 2000 among which 561 500 were migrant workers (94.4%). Other

towns, such as Lecong in Shunde, Guzhen in Zhongshan, and Humen in Dongguan became "single industry towns" in furniture, lighting, and apparel. Virtually all of the manufactured outputs were exports.

Figure 1.27. **Manufacturing workforce and productivity change in Hong Kong, China, 1981-2007**



Source: Industrial Production & Tourism Statistics Section, *Hong Kong Census and Statistics Department database*, *www.censtatd.gov.hk.*

As price and distribution controls were liberalised in the early 1990s, wholesale markets began to appear across the Inner PRD, giving rise to a new spatial economic organisation. Wholesale markets attracted small and medium-sized industries, and gradually became what could loosely be described as "partial clusters", i.e. concentrations of firms benefiting from proximity to buyers. Producers of intermediate inputs were subsequently attracted to or near what become known as "specialised towns". By 2007, there were 228 "specialised towns" in Guangdong (GDPG, 2009a). This rapid, intensive, and extensive development in the Inner PRD was initially driven by firms from Hong Kong, China and then Chinese Taipei. It occurred, however, at a time of rapid globalisation of manufacturing off-shoring. Multi-national corporations (MNCs) had begun to offshore extensively in the 1980s, focusing on countries in Latin America and Southeast Asia. During the 1990s, as the economics of off-shoring to these regions became obvious, MNCs began to consider Chinese locations. While Hong Kong, China and Chinese Taipei firms continued to predominate in the Inner PRD, MNCs from Japan, the United States, and Europe gradually began to locate in the other parts of the Pearl River Delta as well.

Two important political events occurred in the 1990s that had major impacts on the evolution of the PRD. The first involved Deng Xiaopong's high-profile "southern tour" (covering Shenzhen and Zhuhai) in January 1992 during which he repeatedly stressed the need for "high-speed growth" (Lam, 1993). His message was translated in the pivotal Document No. 2 that became the blueprint for renewed economic reforms, including extending the "Open Door" policy to more than 30 cities which acquired *de facto* SEZ status. This series of events had an ambiguous impact on the PRD and Guangdong generally. On the one hand, the "Guangdong model" was re-affirmed at the highest levels, reinforcing foreign firms' confidence in the province, which led to greater investment – especially from Hong Kong, China, and Chinese Taipei. On the other hand, it increased competition from the rest of China, especially the Yangtze River Delta anchored in Shanghai. The second major political event was the return to China of Hong Kong, China in 1997 and Macao, China in 1999. The two became special administrative regions of the People's Republic of China, enjoying virtual autonomy in governance of all affairs except for national defence and foreign affairs. Instruments such as the two "Basic Laws" reassured residents and investors that the SARs' capitalistic economies would be allowed to continue for at least "another 50 years". By the late 1990s, this new political context had made clear the importance of heightened development co-ordination, including strategic infrastructure and environmental management. Despite sensitivities on both sides, all levels of government recognise that better economic integration of the two SARs with the PRD in particular is a win-win outcome.

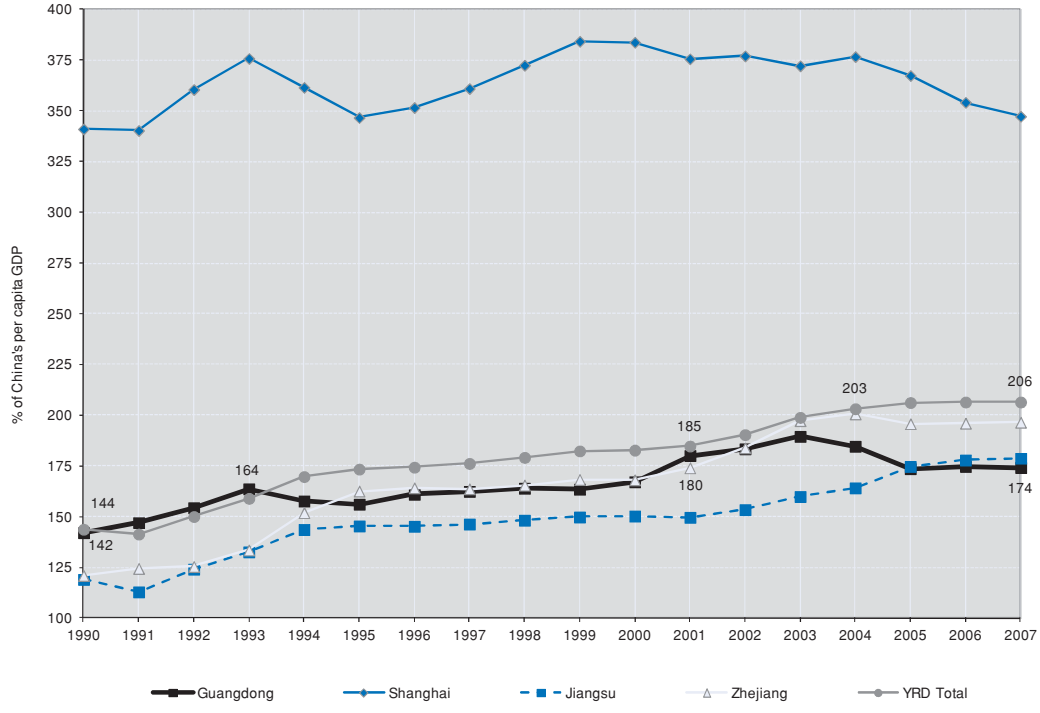
Restructuring? (2000-present)

By the end of the 1990s, the Guangdong economic model, started to show some signs of weakness. Rapid industrialisation and urbanisation in the PRD led to a high concentration of population and economic activities in successful metropolitan areas like Shenzhen and GuangFo (Guangzhou and Foshan) which affected the structure of regional development with the emergence of agglomeration diseconomies, notably in the form of congestion costs, energy shortages and cross-border pollution. Given the speed and intensity of economic and urban/rural change in the Inner PRD, transport and infrastructure bottlenecks quickly became serious issues. A "superhighway" was rapidly built from Hong Kong, China to Guangzhou by private interests,[21] but access roads remained heavily congested during peak hours. Power outages were common for several years until Guangdong's capacity was upgraded through extensive development of new, largely thermal generating plants. Ports were built in Shekou and Yantian in Shenzhen, and later in Guangzhou. Huge airports were constructed in Zhuhai, Shenzhen, and Guangzhou in tandem with the development of Hong Kong, China's new airport at Chek Lap Kok on Lantau Island.

Some of this infrastructure was built rapidly and in the absence of a PRD-wide, integrated development strategy, which might have resulted in diseconomies of scale in duplicated facilities, and uncontrolled suburban and corridor development. From 1990 to 2000, built-up land area in the Inner PRD grew by over 300% in a pattern of sprawl that was hitherto unknown in China (see Section 4.1, Figure 4.3). The uncontrolled and sprawling growth of urban constructed area and industry has resulted in serious environmental challenges to the region.

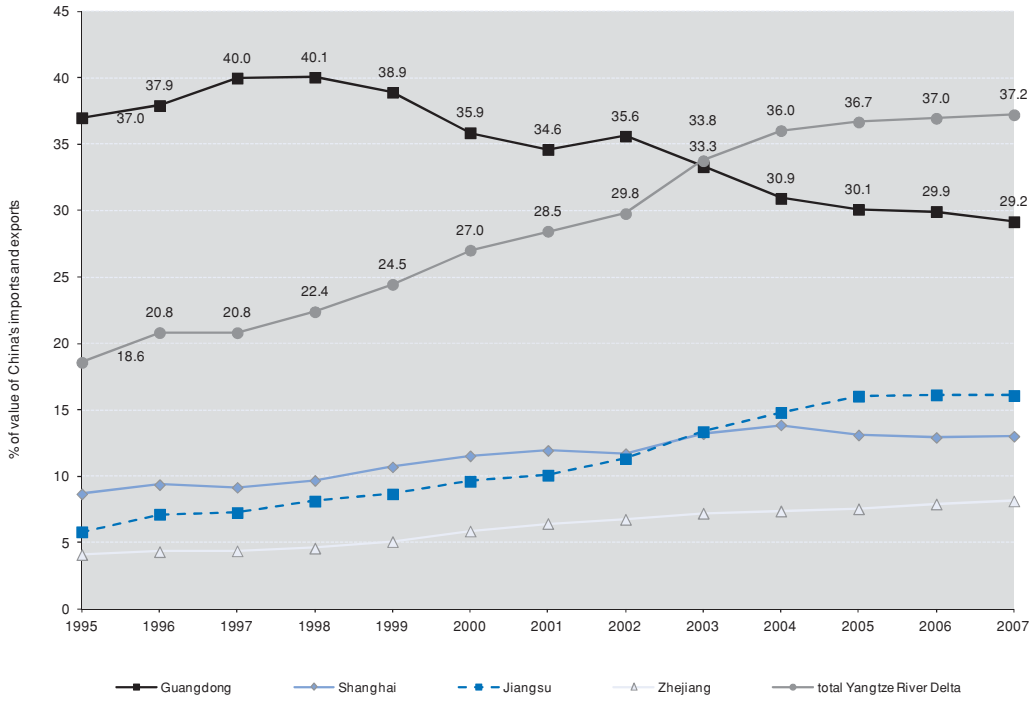
In the late 1990s, Guangdong's growth started to slow. Initially fuelled by the relocation of export-oriented industries from Hong Kong, China, the 1990s was a boom period for the Inner PRD, initially centred on the Shenzhen SEZ but quickly expanding to all other municipalities. However, Guangdong experienced a spurt in productivity and prosperity up until the first three years of the 1990s that declined in 1994, and remained steady until the end of the decade (Figure 1.28). In comparison, the Yangtze River Delta's (YRD) take-off lasted a year longer, and productivity gradually continued to improve, albeit at a more measured pace. A central tenet of Guangdong's growth was its pivotal position in China's global trade. Not only had the Inner PRD become the world's largest export processing zone, but exports from the rest of Guangdong and from neighbouring provinces flowed through the province's ports and airports. By 1998, 40% of China's exports were from Guangdong (Figure 1.29). However, by the end of the decade, Guangdong's share of China's trade dropped to 36% – an early signal of the province's ebbing competitiveness.

Figure 1.28. **Trends in relative per capita GDP, selected provinces and regions, 1990-2007**



Source: National Bureau of Statistics of China database, *www.stats.gov.cn/english/statisticaldata/yearlydata*; *CEIC database*, *www.ceicdata.com*.

Figure 1.29. **Change in the share of China's external trade (%), 1995-2007**



Source: National Bureau of Statistics of China database, *www.stats.gov.cn/english/statisticaldata/yearlydata*; *CEIC database*, *www.ceicdata.com*.

Notes

1. Since 2009, the Outer Pearl River Delta has included the full prefectures of Zhaoqing and Huizhou, following a change in the definition by the Guangdong Provincial government.

2. Apart from more general data at the municipal level in the *Statistical Yearbook*, data are available on the population of statutory towns, townships, and street committees from the 2000 National Census of China. The most recent population data available at the scale of prefecture-level cities for Guangdong are for 2008; these data were derived from a 1% sample survey conducted by the Guangdong Statistical Bureau. Importantly, this sample survey followed the same process as the 2000 National Census, counting migrants with residency longer than 6 months. Aside from the 2000 National Census, there is no official, current assessment of the size and spatial distribution of Guangdong's population below the administrative level of the prefecture-level city.

3. Statutory towns, townships, and street committees are the lowest statistical units in China's year 2000 census.

4. Densities are calculated through a kerning process, using a 4-kilometre radius from every point; this radius has been tested against 9m Landsat at satellite imagery for 2000/2001 and has been found to conform, on average, to built-up urban and suburban areas better than any other radius.

5. This second factor is linked to three types of policy measures: *i)* conversion of agricultural to non-agricultural *hukou* for rural residents, permanently relocating to towns within their counties; *ii)* land reforms designed to create secondary markets in farming rights by allowing farmers to permanently sell off their rights to other farmers to encourage economies of scale in production; and *iii)* promotion of industrialisation in towns with implied approval of conversion of agricultural land to town construction land (largely for industrial parks).

6. The gap between the permanent population and the registered population represents the inflow of migrants from other provinces (permanent population = registered population + migrants from other provinces). The result of 13 million differs from previous estimates of 19 million due to different methodologies: 13 million was estimated by the Provincial Statistical Bureau based on the census method, while 19 million was estimated by the Provincial Department of Labour and Social Security based on internal surveys (Guangdong Provincial Government, 2009).

7. In Guangdong, the provincial government sets minimum wage levels, which are adopted by municipal governments (GDPG, 2006).

8. As appeared in *Guangdong Statistical Yearbooks* of various years, the statistical data for the PRD region includes nine prefectures: Guangzhou, Shenzhen, Zhuhai, Foshan, Jiangmen, Dongguan, Zhongshan, Huizhou and Zhaoqing.

9. The "primary sector" includes agriculture, forestry, fishing, etc. The "secondary sector" includes manufacturing, construction, energy, etc. The "tertiary sector" comprises all other industries not included in the primary or secondary sectors, represented by service sectors.

10. Responding to growing Cold War tensions, in 1964 the central government launched a "Third Front Line" (*sanxian*) Programme of relocating the country's industries from vulnerable coastal and central cities (the "first front line" and "second front line" respectively in national defence terms) to western regions.

11. TVEs as an institution began to wane across China in the early 1990s due to their weak competitiveness arising from diseconomies of scale, low levels of investment in technology upgrading, and weak capacities to obtain and assimilate market information.

12. Macao was a colony of Portugal at the time. It became a special administrative region with Chinese sovereignty in 1999.

13. In 1898, China leased the New Territories, including Hong Kong, China and what is now the Kowloon Islands, to the United Kingdom for 99 years. After 2 years of negotiation, in 1984, UK and China signed the Sino-British Joint Declaration on the Question of Hong Kong (the Joint Declaration). It outlined the "one country, two systems" model for Hong Kong, China, conceived by Deng Xiaoping, under which the territory would return to Chinese sovereignty but retain its capitalist system and way of life for 50 years. The government of the special administrative region of Hong Kong retained a high degree of autonomy, except in foreign affairs and defence, which came under the sovereign control of China. A "mini-constitution", known as the Basic Law, was enacted in 1990 that described the relationship between the government of China and the Hong Kong, China government.

14. Initially, SEZ policy provisions were applied in 1979 only to Shekou, a small port area (about 1 square kilometre) in Shenzhen (which was then a fishing village of 30 000) controlled by China Merchant Steam Navigation Ltd., a Hong Kong-based arm of China's Ministry of Communication. They were extended to the rest of Shenzhen and the other three SEZs less than a year later (Sit, 1985).

15. Since its inception, the Shenzhen SEZ has been completely encircled with security fencing; entry into the SEZ, including by trucks heading to the ports in Hong Kong, China, is through a border checkpoint. All visitors require special permits to enter the SEZ, issued by the Public Security Bureau in their home city or county.

16. Interestingly, research on the drivers of industrial growth in 6 coastal provinces during the period 1985-1989 found that: *i)* industrial specialisation had a largely negative effect on growth; *ii)* foreign investment had a very strong positive impact (a 10% increase in foreign investment raised the growth rate by 1%); *iii)* secondary school enrolment rates were strongly correlated with growth; and *iv)* infrastructure endowment, especially of roads and telecommunications, yielded increasing returns (Mody, 1997).

17. For a description of the decentralisation process in China during this period, see Kamal-Chaoui *et al.* (2009).

18. The term, OEM (original equipment manufacturer) refers to companies that make products for others to repackage and sell. Resellers buy OEM products in bulk, minus

the costly retail packaging that comes with individually sold units. The product itself is essentially the same as its more expensive, retail-packaged sibling. OEM products are used in many industries, but are perhaps most prevalent in electronics. The success of OEM in Guangdong carries a significant downside as the economy seeks to restructure. OEM inherently requires minimal innovation as contractors are simply producing intermediate inputs to technical standards and specifications prepared by others. It is also highly volatile as OEM capacities improve in less expensive producer markets, such as Vietnam and Bangladesh.

19. Town governments, that had been sponsors of the surge in TVEs in the 1980s, became *de facto* real estate developers in the 1990s.

20. Local villagers quickly recognised another real estate opportunity emerging from the influx of migrants: constructing basic, village housing (including medium-rise buildings) to rent out to migrant workers.

21. The USD 1.5 billion project was completed in July 1994, and was a 50/50 joint venture of the Guangdong provincial government and Hopewell Holdings Ltd. of Hong Kong, China.