

# China's economic growth during 1984–93: a case of regional dualism

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After opening up its economy to the rest of the world in 1979, China has been able to double its gross domestic product (GDP) twice by 1994, with an average annual (real) growth rate of 10.5%.<sup>1</sup> However, Chinese economic growth has been uneven as is evident from disparate growth rates especially between the Eastern (coastal) and the Western (far inland) regions of the country.<sup>2</sup> The imbalance in economic growth between the two regions has been exacerbated since China further opened the coastal region in 1984. For instance, the economic growth rate of the Eastern region was 11.4% on average from 1984 to 1993, while it was 8.9% for the Western region. This led to an increased economic gap between the two regions. In 1993 the GDP per capita of the Eastern region was 2.3 times as much as that of the Western region. The economic disparity between the two regions can be attributed to many factors, such as economic reforms and an open-door policy in favour of the Eastern region, differences in economic structures and resource conditions, a coast-orientated regional policy, and consequently differential impacts of foreign trade and foreign investment.

The uneven growth and resulting increased interregional economic disparity in China have become a new focus for development economists and policy makers. Several studies have examined the influence of economic reforms and regional policy on regional economic development in China.<sup>3</sup> Another group of scholars has studied regional impacts of foreign trade and foreign direct investment (FDI) in particular.<sup>4</sup> These scholars have found that the impact of foreign trade and FDI on the economic development of China are different between the Eastern and Western regions.

This paper attempts to present an in-depth study of the regional dualistic growth pattern of the Chinese economy and the factors behind the uneven development of the Eastern and Western regions, with particular emphasis on some important structural characteristics of the Chinese economy. Section two below discusses the dualistic pattern of the Chinese economic structure. Section three analyses the structural characteristics of the Eastern and Western regions and accounts for the factors contributing to disparate growth rates in the two regions. Section four provides empirical results for 19 provinces covering the period of 1984–93. Finally, a conclusion and some policy implications will be drawn in Section five.

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### Dualistic pattern of growth

Dualism<sup>5</sup> is a typical structural feature of developing countries especially for those at lower stages of development. It refers to the coexistence of two disparate structural segments within the geographical territory of a country. Dualism may take various forms, such as regional dualism, urban and rural dualism, agricultural and industrial dualism, etc. During the period of transition from a non-market to a market-orientated economy, a certain degree of dualism may be inevitable for many countries, especially at their lower stage of growth and development. After a certain level of overall growth and development is achieved, the degree of dualism may again start to diminish. For a given period, the economic policies pursued by the government of a country may play an important part in increasing or decreasing economic dualism.<sup>6</sup> This has been demonstrated by the experiences of many developed and newly industrialised countries.

Traditionally, China's economic development was markedly characterised by regional dualism, ie the existence of a relatively developed Eastern (coastal) region and a less developed Western (far inland) region.<sup>7</sup> The Eastern (coastal) region had a buoyant commodity economy, especially because of its close proximity to the international market, while the Western (mountainous) region had a 'natural' or 'semi-natural' economy.<sup>8</sup> During the Maoist period (1949–76), interregional disparity between the Eastern and Western regions was reduced as a result of resources being transferred from the Eastern to the Western region, which was an important component of the Maoist strategy for economic development and national security. During the post-Maoist reform period of transition from a product-based economy (that rejects the market mechanism) to a commodity (or market) economy, interregional economic disparity and income inequality have widened. Regional dualism has become a basic feature of the contemporary Chinese economy. Many authors, as mentioned above, have identified factors influencing regional economic development and interregional disparity. This paper aims at investigating the dualistic growth pattern during the reform period, by providing a comparative analysis of economic growth processes in the Eastern and Western regions of the Chinese economy.

Economic disparity between the Eastern and Western regions seems to have been accentuated during the reform era. The most important indicator demonstrating this is the increased income disparity between the two regions. In 1982 income per capita in the Eastern region was 1.595 times as much as income per capita in the Western region.<sup>9</sup> By 1993, the income per capita ratio between the Eastern and Western regions had increased to 2.223, indicating that income per capita in the Eastern region was 122.3% higher than that of the Western region. This further aggravated the interregional gap in terms of income per capita. As shown in Table 1, income per capita (measured in 1984 constant prices) in the Eastern region increased from 913 yuan in 1984 to 2141 yuan in 1993, while income per capita in the Western region increased from 507 yuan to 963 yuan. As a result, over the period 1984–93, income per capita measured in constant prices in the Eastern region grew at 9.93% per year on average, compared to a growth of 7.39% in the Western region.

TABLE 1  
**Income per capita in Eastern and Western regions (*Renminbi* Yuan)**

	<i>Income per capita (in 1984 prices)</i>			<i>Income per capita (current prices)</i>		
	<i>Eastern</i>	<i>Western</i>	<i>E/W</i>	<i>Eastern</i>	<i>Western</i>	<i>E/W</i>
1984	913	507	1.801	913	507	1.801
1985	1046	572	1.829	1108	591	1.875
1986	1113	601	1.852	1242	643	1.932
1987	1226	648	1.892	1447	731	1.980
1988	1356	704	1.926	1784	900	1.983
1989	1517	718	2.113	2171	970	2.239
1990	1420	744	1.909	2101	1104	1.903
1991	1548	797	1.942	2412	1231	1.960
1992	1813	876	2.070	3001	1422	2.110
1993	2141	963	2.223	4077	1785	2.284
1984-93 growth (%)	9.93	7.39	1.024	18.09	15.02	1.027

*Source:* Various issues of *Statistical Yearbooks* for 19 provinces over the period 1984-94.

The direct reason for the increased income gap between the Eastern and the Western regions is the difference in the economic growth rates of the two regions. As mentioned at the beginning, the GDP growth rate of the Eastern region was 2.5 percentage points higher than that of the Western region, resulting in an increased interregional income gap. Population growth is another direct factor influencing per capita income in each region. As the population in the Eastern region grew slightly faster than in the Western region,<sup>10</sup> it, therefore, did not contribute to the exacerbation of the income per capita gap between the two regions. Consequently, it is the regional divergence in economic growth rates that could be identified as the principal cause for the interregional income disparity. Various other factors, however, directly contributed to the differential growth rates of the economy. Apart from the government's regional development strategy and policies that have been favourable to the Eastern region during the reform period, some inherent structural factors have also played a considerable role in giving rise to the dualistic growth pattern in the contemporary Chinese economy.

### **Structural characteristics**

The dualistic growth pattern of the Eastern and the Western regions stems from various structural characteristics of the two regions. Three such characteristics important to focus on are: industrial structure, openness of the economy, and investment structure. The dualistic growth pattern can be accounted for by the resulting income disparity between the two regions, which in turn may accentuate regional dualism, unless appropriate steps are taken.

#### *Industrial structure*

As generally agreed, the industries of an economy can be broadly classified into three categories: primary, secondary and tertiary industries. In general, primary

**Table 2**  
**Industrial structure of Eastern and Western regions**

	<i>Eastern region</i>			<i>Western region</i>		
	<i>Primary industry as % of GDP</i>	<i>Secondary industry as % of GDP</i>	<i>Tertiary industry as % of GDP</i>	<i>Primary industry as % of GDP</i>	<i>Secondary industry as % of GDP</i>	<i>Tertiary industry as % of GDP</i>
1984	27.2	50.7	22.1	37.3	39.0	23.7
1985	25.1	52.5	22.4	35.6	40.7	23.7
1986	24.1	47.6	24.4	34.5	40.6	24.9
1987	23.2	50.8	24.9	34.4	39.8	25.7
1988	23.3	51.6	25.6	34.1	40.8	25.1
1989	22.6	51.3	29.0	33.9	41.3	26.3
1990	23.2	49.5	27.2	35.7	38.2	26.0
1991	21.8	49.8	28.3	34.2	39.4	26.4
1992	18.8	52.0	28.7	31.4	41.4	27.2
1993	15.6	51.1	33.3	26.0	42.0	32.1

*Source: Statistical Yearbooks for 19 provinces over the period 1984–95.*

industry holds a large share of GDP and total employment when the economy is at a lower stage of development. As economic development in a country or region reaches a higher level, the secondary and tertiary industries tend to become more and more important and account for larger shares of GDP and total employment.

In the case of China, the industrial structure has experienced remarkable changes in the past decade and a half. The share of primary industry in GDP declined from 28.4% in 1978 to 21.2% in 1993. The share of secondary industry rose from 48.6% to 51.8% during the same period. The tertiary industry, as a share of GDP, increased from 23% to 27.4%. Although this sort of structural change occurred in all the regions, both the pace and extent of such structural change is significantly different between the Eastern and Western regions. As shown in Table 2, the share of primary industry in GDP in the Eastern region declined from 27.2% in 1984 to 15.6% in 1993, in comparison with a corresponding decrease from 37.3% to 31.4% in the Western region. The secondary and tertiary industries increased their shares of GDP in both the regions. By 1993 secondary industry produced 51% of GDP in the Eastern region, compared to 42% in the Western region. Similarly, tertiary industry's share of GDP shows an increasing trend in both regions, although with a higher pace in the Eastern region.

Industrial structure may significantly affect the overall economic growth rate, since the growth rates of different industries vary significantly. For example, GDP produced by tertiary industry grew at 17.1% in the Eastern region, compared to 13.6% in the Western region during 1984–93. GDP generated by secondary industry meanwhile grew at 12% in the Eastern region, compared to 10.7% in the Western region during the same period. The growth rates of primary industry were similar in the two regions. As the secondary and tertiary industries produced over 84% of GDP in the Eastern region, the relatively higher growth rates of these industries led to a higher rate of GDP growth. In the Western

region, however, these two industries produced only 74% of GDP. As a result, the differential growth rates of the Eastern and the Western regions can be partly attributed to industrial structure.

### *Openness of the economy*

Openness in trade is increasingly being viewed as an important mechanism for steady economic growth in less developed countries, especially after the experiences of success stories in East and Southeast Asian regions.<sup>11</sup> The degree of openness of an economy is usually measured in terms of the sum of export and import values, as a percentage of GDP, in an economy. In the case of China, the openness of the economy has dramatically increased since 1979, when the Chinese government started pursuing the 'opening up' policy and economic reforms that followed. The sum of exports and imports as a percentage of GDP has risen from 8% in 1979 to 35% in 1993. Many recent studies have shown that export expansion is an important factor contributing to the rapid economic growth in China during the past 15 years.<sup>12</sup> It is, however, to be noted that the openness of the Chinese economy is biased towards the Eastern (coastal) region. Government policy has been instrumental in gaining a much higher degree of openness in the Eastern region, compared to that in the Western region, although the economic openness of the Western region has significantly increased during the reform era.

As demonstrated in Table 3, during the period from 1984 to 1993 both the Eastern and Western regions made significant progress in opening their economies. However, there is still a marked difference in the economic openness of the two regions. In 1993 over one-third of the total output of the Eastern region was sold in overseas markets, compared to only 10% in the Western region. A greater openness, especially in terms of export expansion, is expected to promote economic growth in various ways. First, exports guide countries (or regions) to produce goods in which they have comparative advantages. By specialising in industries or products of comparative advantage, a country or region can achieve higher productivity and lower production costs. Second, trade can induce economic resources to flow from less productive sectors to sectors with comparative advantage, thereby increasing the overall allocative efficiency of resources. In addition, trade facilitates a country's or region's access to new technology and overseas markets, which are in turn expected to have positive effects on organisation and management efficiencies. A greater openness and integration into the world economy is, therefore, considered to be one of the principal factors propelling economic growth in the Eastern region of the Chinese economy.

Because the share of foreign trade in GDP is much smaller in the Western region than in the Eastern region, the impact of exports on economic growth of the Western region is not as significant as in the Eastern. Although the average growth rate of exports over the 1984–93 period was higher in the Western region, per capita exports in the Eastern region were far ahead of the Western region. Exports per capita in the Eastern region were at US\$44.8 in 1980, compared to US\$1.2 in the Western region. By 1993 exports per capita in the

TABLE 3  
**Openness of the economy in the Eastern and Western regions**

	<i>Eastern region</i>			<i>Western region</i>		
	<i>Exports (X)</i> (US\$ mill)	<i>Imports (M)</i> (US\$ mill)	<i>(X+M)</i> /GDP	<i>Exports (X)</i> (US\$ mill)	<i>Imports (M)</i> (US\$ mill)	<i>(X+M)</i> /GDP
1984	18643	3683	0.15	793	479	0.02
1985	20081	7327	0.19	1065	608	0.03
1986	19399	7568	0.19	1445	794	0.05
1987	24348	9362	0.22	2024	968	0.06
1988	28402	13457	0.22	2554	1283	0.06
1989	31034	13822	0.21	2810	1457	0.06
1990	36997	13386	0.27	3156	1147	0.07
1991	42908	17825	0.32	3713	1165	0.07
1992	53475	24690	0.35	4520	2125	0.09
1993	68393	40001	0.36	5302	3545	0.10

*Note:* The sum of exports and imports as a share of GDP = [The sum of exports and imports converted into the Chinese currency (Renminbi yuan)/GDP]. The exchange rates used are annual official exchange rates. The values of GDP are in current prices.

*Sources:* *Statistical Yearbooks* of 10 Eastern provinces (for data from 1984 to 1992) and of nine western provinces (for data from 1985 to 1994) and *Statistical Yearbook of China 1994* (for 1993 data).

Eastern region reached US\$157.6, which was US\$140 more than that of the Western region.<sup>13</sup> Thus it can be argued that the different levels of openness in the two regions of the Chinese economy seem to be a major reason for their differential economic growth rates and thereby the resulting income gap between them.

### *Foreign investment and capital formation*

Since the early 1980s, foreign direct investment (FDI) has flowed into China rapidly and played an increasingly important role in capital formation and economic growth. From 1984 to 1993, realised FDI in China grew at 40.9% on average per year, with the amount increasing from US\$1258 million to US\$27 589 million.<sup>14</sup> In 1993 foreign capital accounted for 7.3% of the total domestic capital formation of China. FDI has thus become a dynamic driving force for Chinese economic growth. However, regional distribution of foreign investment is highly uneven. During the period from 1979 to 1993, over 90% of FDI was in the Eastern (coastal) region, only 6% in the Central and 4% in the Western regions. One can easily see the impact of this huge FDI in terms of significant economic growth in the Eastern region.

The regional distribution of FDI in China is primarily determined by the existing investment environment and return on capital in different regions. The investment environment in a region is affected by a number of social and economic factors, which in the theory of international investment are termed location-specific factors. These include infrastructure, transportation, the economic structure and development level, economic policy, the legal system, and resource endowment. In the case of China, location-specific factors differ considerably between the Eastern and the Western regions. Generally speaking,

the Eastern region is economically more developed. It has better infrastructure, especially in transportation and the communications system, and also has a developed financial system. Traditionally, all economic centres of China, as well as major seaports and airports, are concentrated in the eastern coastal region. In addition, better service facilities and human resources make the investment environment in the Eastern region superior to that of the Western one. In terms of economic structure, the economy of the Eastern region is also more developed, as discussed above. Manufacturing and tertiary industries have thus led economic growth in this region.

The aforementioned advantages of the Eastern region over the Western region in economic development and investment environment have been reinforced by the coast-orientated economic reforms and the open door policy adopted by the Chinese government since the early 1980s. The Chinese government committed a large amount of capital to the Eastern region to improve its infrastructure in areas such as transportation, communications, public utilities and service facilities. Furthermore, the government granted a package of preferential policies to the Eastern region, including favourable policies on taxation, foreign trade and investment, and more autonomy in economic decision making, all of which resulted in a better investment environment.

In particular, the open-door policy has been pursued with a remarkable spatial dimension. In 1979 the Chinese government initiated the open-door policy by establishing four Special Economic Zones (SEZs) in the Southeast coastal region.<sup>15</sup> These SEZs were initially designed as laboratories for foreign investment, where special economic policies were adopted. The spatial proximity to Hong Kong, where about 80% of total FDI in China comes from, was important. In the initial stage, FDI was highly concentrated in the four SEZs and, during the period from 1979 to 1983, about 80% of total FDI projects were located in the four SEZs. However, as the government used administrative regulation to isolate the SEZs economically from the rest of the country, the SEZs in essence became foreign enclaves with little economic linkages with other regions.

Furthermore, in 1984, 14 coastal cities were opened to foreign investment. As in the SEZs, a series of special economic policies was introduced in these open coastal cities (OCCs). This helped FDI to diffuse spatially from the SEZs to the 14 OCCs across 10 coastal provinces. Consequently, the contracted FDI in the 14 OCCs exceeded that in the SEZs. Since 1986, FDI has gradually spread to other regions, including the other coastal areas and the vast inland regions. In 1990 the emphasis of open policy shifted to the Shanghai Pudong new area, Changjiang (Yangtse River) Delta and Minnan Delta. This was followed by a rapid increase in FDI to the inland regions after Deng Xiaoping's 'south tour' in early 1992. As a result, FDI diffused quickly to the inland regions and scattered widely across the country.

However, thanks to the favourable investment environment in the Eastern region, FDI has been concentrated in the Eastern region since the beginning of the open-door policy. As Table 4 shows, during the period 1983–93, 89.7% of the FDI realised in China was located in the coastal region, with 6.9% and 3.4% in the central inland and the western inland regions respectively. Although FDI has spread to the inland regions since the mid-1980s, the Eastern region is still the

TABLE 4

**Regional distribution of foreign direct investment (utilised) in China 1983–93**  
(US\$ millions)

Regions/provinces	1983–85		1986–89		1990–93		1983–93	
	Value	%	Value	%	Value	%	Value	%
All Regions	2779.8	100.0	8497.7	100.0	45387.0	100.0	56664.7	100.0
Coastal (East) Region	2573.7	92.6	7651.7	90.0	40575.2	89.4	50800.4	89.7
Guangdong	1701.4	61.2	3440.0	40.5	14482.0	31.9	19623.4	34.6
Fujian	185.5	6.7	571.9	6.7	5047.4	11.1	5804.8	10.2
Guangxi	59.6	2.1	141.3	1.7	1108.0	2.4	1308.9	2.3
Zhejiang	37.0	1.3	123.3	1.5	1411.6	3.1	1571.9	2.8
Jiangsu	62.7	2.3	261.2	3.1	4643.4	10.2	4967.3	8.8
Shanghai	160.6	5.8	1016.7	12.0	3973.1	8.8	5150.3	9.1
Shandong	42.8	1.5	217.6	2.6	3176.9	7.0	3437.3	6.1
Beijing	199.9	7.2	1056.5	12.4	1538.6	3.4	2795.0	4.9
Tianjin	70.6	2.5	216.6	2.5	815.9	1.8	1103.1	1.9
Hebei	14.4	0.5	57.9	0.7	593.4	1.3	665.7	1.2
Liaoning	39.2	1.4	339.7	4.0	2371.7	5.2	2750.6	4.9
Hainan	41.1	1.5	250.9	3.0	1438.5	3.2	1730.5	3.1
Central Inland	86.2	3.1	390.7	4.6	3421.9	7.5	3898.8	6.9
Western Inland	95.7	3.4	455.6	5.4	1361.3	3.0	1912.6	3.4

*Notes:* The figures for 1983–85 include foreign direct investment and other forms of investment, such as compensation trade, processing assembly and international leasing. The figures for 1986 and after refer only to foreign direct investment.

*Source:* *Almanac of China's Foreign Economic Relations and Trade, 1984–1994; Statistical Yearbook of China 1991–1994; and China Foreign Economic Statistics 1979–1992.*

primary location of foreign investment. For example, Guangdong province is the single largest recipient of FDI, receiving US\$19.6 billion, or 34.6% of the national total for the period from 1983 to 1993. In the initial stage (1983–85), 61% of total FDI flowed into Guangdong. Since the mid-1980s, Guangdong has maintained the most important location for FDI although its share in the national total has declined.

Fujian Province is second only to Guangdong, with FDI amounting to US\$5.8 billion during the period from 1983 to 1993, accounting for 10% of the national total. At the other end, however, both the Central and Western regions got a very small share of FDI. The sum of the FDI in these two inland regions was less than 30% of that in Guangdong for the period 1983 to 1993. The FDI which flowed into the Western region (nine provinces) was only equal to 10% of the FDI in Guangdong province over the same period. Therefore, the regional distribution of FDI in China remained highly uneven.

As a result of the uneven regional distribution of FDI, its contribution to total capital formation is significantly different between the Eastern and Western regions. Foreign capital, as a share of total capital, was 17.6% in the Eastern region in 1993, which is much higher than the corresponding percentage in the Western region (2.5%). Table 5 shows the changing role of foreign investment in total capital formation in the two regions during the 198–93 period. The contribution of FDI to total capital formation in the two regions is significantly different. In the Eastern region, especially in the southeast provinces, FDI

TABLE 5  
**Foreign direct investment as a share of total capital formation (%)**

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Eastern region	1.9	2.2	2.6	2.4	3.6	4.5	6.1	7.5	11.2	17.6
Guangdong	9.7	8.2	10.3	8.8	9.7	12.5	18.7	20.3	21.2	26.4
Fujian	3.3	6.3	3.5	2.4	5.2	14.0	12.7	25.9	39.6	44.5
Jiangsu	0.4	0.2	0.3	0.6	1.0	1.1	1.9	2.8	10.9	14.7
Zhejiang	0.3	0.5	0.5	0.6	0.6	1.1	1.2	2.0	4.5	7.6
Shanghai	1.1	2.7	3.5	4.2	5.5	7.4	3.7	3.6	12.2	28.3
Shandong	0.1	0.1	0.3	0.3	0.4	1.6	2.1	2.2	0.7	11.9
Hebei	0.1	0.1	0.2	0.2	0.3	0.5	1.1	1.6	2.9	5.0
Beijing	0.4	3.4	5.1	2.9	13.4	2.7	7.4	9.0	9.6	9.2
Tianjin	1.0	2.0	2.1	2.7	1.1	3.7	4.5	3.9	7.5	13.8
Liaoning	0.1	0.3	0.7	1.1	1.3	1.7	4.5	5.2	5.5	10.2
Western region	0.2	0.5	0.6	0.8	0.9	0.7	0.6	0.4	0.9	2.5

*Notes:* Foreign direct investment (FDI) was originally in US dollars. The original data on FDI are converted into Chinese yuan when calculating the share of FDI in total capital formation. The exchange rates used are official rates in each year. Capital formation here refers to total fixed capital investment realised each year.

*Source:* *Statistical Yearbooks* of the 19 provinces (10 eastern provinces and nine western provinces) for the period from 1985 to 1994.

overtook the government investment budget and became the largest capital source of total domestic fixed investment. For instance, FDI as a share of total capital formation in the Fujian province was 44.5% in 1993. In the Guangdong province and Shanghai, the contribution of FDI to total capital formation is also significant—FDI as a share of total fixed capital investment was 26.4% and 28.3% respectively. In other Eastern provinces, FDI also contributed considerably to total capital formation. As a result of the large amount of foreign capital inflows, the investment rate (total fixed capital investment as a percentage of GDP) in the Eastern region has been constantly higher than that of the Western region. This can be seen in Table 6. During the 1984–93 period, fixed capital investment as a share of GDP was 31.8% on average in the Eastern region, while the investment rate in the Western region was just 28.5% on average. As Table 6 shows, there is no single year over this period in which the investment rate of the Western region was higher than that of the Eastern region. Therefore, capital formation has been divergent between the two regions and the Eastern region has continually been ahead of the Western region.

Apart from the impact of foreign investment, domestic capital flows from the Western region to the Eastern region are also a factor influencing regional concentration in capital formation. Thanks to the preferential economic policies pursued by the Chinese government and the favourable investment climate in the Eastern (coastal) region, companies and government agencies in the Western region have a high propensity to invest in this region with a view to achieve high returns on capital.<sup>16</sup> As a result, domestic capital flight from the Western region to the Eastern region has occurred. For example, the Shaanxi province of the Western region invested over 270 million yuan in eastern provinces, resulting in a net capital outflow of 225 million yuan in 1992.<sup>17</sup> In the past few years, other Western provinces have also experienced net capital outflows. Such interregional

TABLE 6  
**Fixed capital investment and as a share of GDP (100 million yuan, %)**

Regions	Indicator	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Eastern region	Investment	872	1247	1486	1855	2316	2115	2294	2724	4294	7250
	As % of GDP	0.25	0.29	0.31	0.32	0.32	0.26	0.26	0.27	0.33	0.41
Western region	Investment	311	442	469	550	670	647	720	909	1240	1809
	As % of GDP	0.24	0.29	0.28	0.28	0.28	0.24	0.23	0.26	0.31	0.35

*Note: Both GDP and fixed capital investment are in current prices in each year.*

*Source: Statistical Yearbooks of 10 eastern provinces and nine western provinces for the 1985-94 period.*

flows of domestic capital have a differential impact on capital formation in the two regions. They increase capital supply and stimulate capital formation in the Eastern region, while capital outflows negatively affect capital formation in the Western region. This, in turn, contributes to the concentration of capital formation in the Eastern region over the Western one.

Since capital formation is a major determinant of economic growth, the difference in investment rates of the Eastern and Western regions is a principal reason for their differential economic growth and therefore the resulting income gap. Foreign investment, through its contribution to domestic capital investment and its positive effects on technology transfer and export growth, accelerated the economic growth of the Eastern region. The same logic applies to the relatively lower economic growth in the Western region, with a lesser amount of both domestic and foreign capital investments.

### *Rural industry development and interregional economic disparity*

Rural industry development has also been an important factor promoting the economic development of China during the reform era. It has become a most dynamic part of the Chinese economy and plays an increasing role in economic growth, especially in rural development. This is because rural industry provides a primary source of income for the rural sector, which accounts for nearly 80% of the total population in China. During the period from 1978 to 1993, the total output value of township and village enterprises (TVES) (measured in 1978 prices) grew at 20.73% per year on average. This growth rate is nearly two times as high as the GDP growth rate of China during the same period. However, the development of rural industry is subject to regional imbalance as well. As Table 7 shows, the total output value of TVES (measured in 1984 prices) in the Eastern region increased from 127.6 billion yuan in 1985 to 1278.6 billion yuan in 1993, with an annual growth of 24.0%. During the same period, the total output value of TVES (measured in 1984 prices) in the Western Region increased from 16.6 billion yuan to 140.6 billion yuan, with an annual growth of 21.4%. The differential growth of rural industry has an explicit bearing on the widened interregional economic disparity, especially in terms of the income per capita gap. In fact, the regional gap in TVES' output value per capita has been further increased between the Eastern and Western regions. While it was five times higher in the Eastern region than that in the Western in 1985, this figure increased to 5.9 in 1993.

Another principal indicator of rural industry development is the growth in sales of enterprises run by townships and villages. During the period from 1981 to 1992, the total sales of TVES in the Eastern region grew at 23.1% per year on average, with the value increasing from 44.9 billion yuan to 750.1 billion yuan. The TVE sales per capita in the Eastern region increased from 121 yuan in 1981 to 1750 yuan in 1992.<sup>18</sup> In comparison, TVE development in the Western region was relatively slow. During the same period, the total sales of TVES in this region grew by 19.7% per year on average. The TVE sales per capita increased from 25 yuan in 1981 to 273 yuan in 1992. The ratio of TVE sales per capita of the Eastern region to that of the Western region increased from 4.84 in 1981 to 6.41

TABLE 7  
**Total output value of township and village enterprises (unit: billion yuan)**

	Eastern region			Western Region		
	Output value I	Output value II	Output value per capita	Output value I	Output value II	Output value per capita
1985	127.6	120.4	313.1	16.6	16.1	62.4
1986	157.2	140.4	360.6	19.4	18.2	69.7
1987	210.2	178.1	450.3	24.6	21.8	82.2
1988	310.9	235.5	587.2	33.3	26.0	96.5
1989	352.7	246.7	607.4	38.6	28.6	104.6
1990	383.0	258.8	623.1	41.9	28.3	101.7
1991	484.2	310.4	732.2	51.9	33.7	119.8
1992	750.4	451.9	1054.5	77.3	47.9	168.9
1993	1278.6	672.9	1550.6	140.6	76.0	262.2
1985-93 growth%	33.3	24.0	22.1	30.6	21.4	19.7

Notes: The output value I refers to the output value at current prices, while the output value II refers to the output value calculated at the 1984 constant price. The output value per capita = output value at the 1984 constant price/population. The unit for the output value per capita is yuan.

Source: *The Statistical Yearbook of China's Agriculture 1986-1995*, SSB.

in 1992.<sup>19</sup> This indicates that income per capita generated by the rural industry became more disparate between the two regions. This is an important reason why interregional economic disparity, especially for vast rural areas, accentuated over time.

### Regression analysis

#### Model

In this regression model, the production function is assumed to have the form of the Cobb-Douglas production function, which is a basic and widely used function form. Gross domestic product (GDP) is used as total output, and capital and labour are used as inputs. Capital input consists of two components: domestically financed investment and foreign investment. To measure the impact of foreign investment on economic growth, FDI is enclosed in the regression equation along the domestically financed investment (DK). The coefficients of FDI in the model are expected to affect GDP positively in both Eastern and Western regions, with significant difference between the two regions. This is because FDI has been largely concentrated in the Eastern region in the decade.

In terms of econometric methodology, the model used here is a Kmenta Model,<sup>20</sup> ie a cross-section and time-series model. This model is suitable for a regression analysis using cross-section and time-series data, since it takes a cross-sectional heteroskedasticity and timewise autocorrelation into account, producing reliable econometric output. In this model, GDP is the dependent variable explained by domestically financed fixed capital investment (DK), foreign direct investment (FDI) and labour (L):

$$\text{GDP} = f(\text{DK}, \text{DFI}, \text{L})$$

For empirical estimation of the contributions made by the three explanatory variables in GDP growth, we consider the following Cobb–Douglas specification:

$$\text{GDP} = A (DK)^{\alpha_1} (FDI)^{\alpha_2} (L)^{\alpha_3}$$

In logarithmic form, the model can be written as below:<sup>21</sup>

$$\text{LGDP} = \alpha_0 + \alpha_1 \text{LDK} + \alpha_2 \text{LDFI} + \alpha_3 \text{LL} + u$$

where  $\alpha_0 = \log(A)$ ,  $\text{LGDP} = \log(\text{GDP})$ ,  $\text{LDK} = \log(\text{DK})$ ,  $\text{LDFI} = \log(\text{FDI})$ ,  $\text{LL} = \log(L)$  and  $u$  is a stochastic error term.

In order to remove the influence of inflation on the variables and their relations, GDP, DK and FDI are expressed in constant prices (1984 = 100). The current values of GDP and DK are converted into real values, using 1984 constant prices for each province. The values of FDI, originally expressed in terms of current US dollars are deflated using the US GDP implicit price delators.<sup>22</sup> To measure variation in the effect of each independent variable on economic growth between the Eastern and Western regions, a dummy variable (D) is used. It takes the value 1 for the Eastern region and 0 for the Western region. Thus the regression equation is expressed as follows:

$$\text{LGDP} = \beta_0 + \beta_1 D + \beta_2 \text{LDK} + \beta_3 \text{LDK}(D) + \beta_4 \text{LDFI} + \beta_5 \text{LDFI}(D) + \beta_6 \text{LL} + \beta_7 \text{LL}(D)$$

where  $\beta_0$  is the intercept for the Western region;  $\beta_1$  is the differential intercept for the Eastern region.  $\beta_2$ ,  $\beta_4$  and  $\beta_6$  are the estimated coefficients of DK, FDI and L respectively for the Western region. They are the elasticities of GDP with respect to DK, FDI and L in the Western region.  $\beta_3$ ,  $\beta_5$  and  $\beta_7$  are the differential coefficients of DK, FDI and L for the Eastern region. If  $\beta_3$ ,  $\beta_5$  and  $\beta_7$  are significantly different from zero, the effects of DK, FDI and L on GDP are significantly different between the Eastern and Western regions. The values of  $(\beta_2 + \beta_3)$ ,  $(\beta_4 + \beta_5)$  and  $(\beta_6 + \beta_7)$  are the coefficients of DK, FDI and L for the Eastern region respectively. They are the elasticities of GDP with regard to domestically financed investment, foreign direct investment and labour in the Eastern region. The regression can also be run separately for each region without a dummy variable; the results in this case should be the same as those obtained for the two regions using a regional dummy variable.

### *Regression results and implications*

The data used in this regression analysis have been drawn from 19 provinces for the 1984–94 period. The two sets of results are presented below in Table 8.

The results indicate:

1. The effect of FDI on GDP is significantly different between the Eastern region and the Western region. It is stronger in the Eastern region than in the Western region. This supports the hypothesis raised at the beginning of this paper. In terms of the elasticity of GDP with regard to FDI, a 1% growth in FDI will generate a 0.074 percent growth in GDP in the Eastern region, while the responsiveness of GDP to a percentage change in FDI is just 0.02 in the Western region.

TABLE 8  
**Production function estimates for the Eastern and Western regions**

<i>Variables name</i>	<i>Estimated coefficient</i>	<i>t-ratio</i>	<i>Partial correlation</i>	<i>Standardised coefficient</i>
<i>LDK</i>	0.4844	17.26*	0.788	0.456
<i>LDK(D)</i>	-0.0947	-2.106*	-0.154	-0.243
<i>LFDI</i>	0.0243	2.852*	0.207	0.059
<i>LFDI(D)</i>	0.0500	3.664*	0.262	0.136
<i>LL</i>	0.5281	21.87*	0.851	0.502
<i>LL(D)</i>	-0.1641	-4.551*	-0.320	-0.253
Constant	1.8874	26.05*	0.888	0.000
Constant(D)	1.0502	8.573*	0.536	0.541

$R^2 = 0.9838$ , d.o.f. = 182, F-statistics = 1575.91 >  $F_{0.001} = 2.66$  (for one tailed test).

The Eastern region:

<i>LDK</i>	0.3896	11.14*	0.751	0.414
<i>LFDI</i>	0.0743	6.994*	0.581	0.213
<i>LL</i>	0.3640	13.67*	0.0813	0.470
Constant	2.9376	29.90*	0.950	0.000

$R^2 = 0.9548$ , d.o.f. = 96, F-statistics = 676.02 >  $F_{0.01} = 3.65$  (for one tailed test).

The Western region:

<i>LDK</i>	0.4844	17.16*	0.880	0.145
<i>LFDI</i>	0.0243	2.835*	0.292	0.048
<i>LL</i>	0.5281	21.74*	0.920	0.588
Constant	1.8874	25.90*	0.941	0.000

$R^2 = 0.9787$ , d.o.f. = 86, F-statistics = 1315.42 >  $F_{0.01} = 3.72$ .

Note: \*t-ratio is statistically significant at 1% level (for one tailed test).

- The coefficients of DK are statistically significant in both the Eastern and Western regions, indicating that the responsiveness of GDP with regard to domestically financed investment is strong in the two regions. A 1% growth in DK will lead to a 0.39 percent growth of GDP in the Eastern region, and to a 0.48% growth of GDP in the Eastern region. The relatively lower coefficient of DK in the Eastern region may reflect the fact that domestic investment in the region grew faster than in the Western region.
- There is a significant difference in the elasticities of GDP with respect to labour change between the two regions. A 1% growth in labour is associated with 0.36% growth of GDP in the Western region, while the corresponding coefficient for the Western region is 0.52%. This suggests that the economic growth in the Western region is more responsive (or sensitive) to changes in the labour force, in comparison to the Eastern region.
- A higher value of the constant (intercept) term of the estimated production function for the Eastern region indicates that other factors such as technology, management and economic structure have a more positive impact on the economic growth in the Eastern region than that in the Western region.

Using the estimated elasticity coefficients of GDP with regard to *DK*, *FDI*, *L* and constant term, the relative contributions of these inputs (*DK*, *FDI*, *L* and other factors) to the output (GDP) in the two regions can be identified. During the period of 1984–93, the average annual growth rate of GDP was 11.35% in the

Eastern region, and the growth rates of  $DK$ ,  $FDI$  and  $L$  were 15.01%, 37.00% and 2.08% respectively. During the same period, the GDP of the Western region grew at 8.92% on average.  $DK$ ,  $FDI$  and  $L$  grew at annual rates of 11.36%, 38.43% and 2.18% respectively.<sup>23</sup> Thus, the estimated GDP growth functions for the Eastern and Western regions can be expressed respectively as:

(1) For the Eastern region:

$$\begin{aligned} GDP^* &= 2.9376 + 0.3896 DK^* + 0.0743 FDI^* + 0.364L^* \\ &= 2.9376 + (0.3896 \times 15.01) + (0.0743 \times 37.00) + (0.364 \times 2.08) \\ &= 2.9376 + 5.844 + 2.749 + 0.756 \\ &= 12.287 \end{aligned}$$

where an asterisk denotes average proportional change with respect to time.

$$\text{Now, } GDP^r/GDP^* = 11.351/12.287 = 0.924$$

where  $GDP^r$  is the real GDP growth rate and  $GDP^*$  is the estimated growth rate.

Therefore, the relative contributions of the three inputs ( $DK$ ,  $FDI$  and  $L$ ) to output ( $GDP$ ) in the Eastern region are respectively:

$$\begin{aligned} DK^*/GDP^* &= 5.844/12.287 = 0.476, \text{ or } 47.6\% \\ FDI^*/GDP^* &= 2.749/12.287 = 0.224, \text{ or } 22.4\% \\ L^*/GDP^* &= 0.756/12.287 = 0.062, \text{ or } 6.2\% \end{aligned}$$

$$\text{The relative contribution by other factors} = 2.9376/12.287 = 0.239, \text{ or } 23.9\%.$$

(2) For the Western region:

$$\begin{aligned} GDP^* &= 1.8874 + 0.4844DK^* + 0.0243FDI^* + 0.5281L^* \\ &= 1.8874 + (0.4844 \times 11.36) + (0.0243 \times 38.43) \\ &\quad + (0.5281 \times 2.181) \\ &= 1.8874 + 5.503 + 0.934 + 1.152 \\ &= 9.476 \end{aligned}$$

Now,  $GDP^r/GDP^* = 8.917/9.476 = 0.941$  Thus, the relative contributions of the three inputs to output are:

$$\begin{aligned} DK^*/GDP^* &= 5.503/9.476 = 0.581, \text{ or } 58.1\% \\ FDI^*/GDP^* &= 0.934/9.476 = 0.986 \text{ or } 9.86\% \\ L^*/GDP^* &= 1.152/9.476 = 0.122, \text{ or } 12.2\% \end{aligned}$$

The relative contribution of other factors =  $1.8874/9.476 = 0.199$ , or 19.9%.

These results suggest that:

1. Domestically financed investment ( $DK$ ) is the largest contributor to economic growth in both the Eastern and Western regions. In the Eastern region, 47.6 percent of GDP growth was accounted for by the increase in  $DK$  during the period from 1984 to 1993. In the Western region,  $DK$ 's relative contribution

- to GDP growth was even larger (58.1 percent). This implies that economic growth in the Western region is more dependent on domestic investment than in the Eastern region.
2. Foreign direct investment (FDI) has become another important contributor to economic growth of the Eastern region. FDI generated a 2.75% growth of GDP in the Eastern region, which accounted for 22.4% of the estimated GDP growth (12.29%) in the region during the period from 1984 to 1993. In comparison, the contribution of FDI to economic growth in the Western region is less important. During the same period, FDI generated 0.93% of GDP growth in this region, accounting for about 10% of the estimated growth (9.5%) of GDP. Thus, FDI alone can result in a 1.82 percentage-point difference ( $2.75 - 0.93 = 1.82$ ) in GDP growth rate between the two regions. Holding other factors the same, FDI can explain 74.5% of the overall regional difference in the GDP growth rate ( $11.351 - 8.917 = 2.434$ ).
  3. The labour (L) increase contributes to economic growth in both regions at different levels of significance. In the Eastern region, 6.2% of GDP growth was generated by an increase in the labour force, compared to 12.2% in the Western region. This suggests that labour-intensive industries account for a larger share of economic structure in the Western region than in the Eastern region.
  4. The share of the contribution by all other factors (mainly technology, management and economic structure) to GDP growth is 23.9% in the Eastern region, which is larger than their contribution in the Western region (19.9%). This indicates that advanced technology, improved management and a developed economic structure played a greater part in the economic growth of the Eastern region compared to that in the Western region. This is an important reason for the higher rate of economic growth in the Eastern region.

The above findings suggest that FDI has become an important dynamic force propelling economic growth in the Eastern region. At the same time, however, FDI only contributed slightly to economic growth in the Western region, where its share is small and its effect insignificant. This is one of the primary reasons for the different rates of economic growth in the Eastern and Western regions. If we examine the percentage points of GDP growth generated by different factors of production, we find that without FDI, the GDP growth rate of the Eastern region would be 9.538% ( $= 12.287$  minus  $2.749$ ), which is only slightly higher than the estimated GDP growth rate of the Western region (8.542%) without the impact of FDI. Thanks to FDI inflows and greater openness, the real GDP growth rate of the Eastern region is 11.35% which is 2.43 percentage points higher than that of the Western region. This suggests that a larger amount of foreign investment and a greater openness are the major causes of the inter-regional disparity of economic growth between the Eastern and Western regions. Therefore, it can be argued that Eastern-dominated FDI and the Eastern-orientated open policy have played an appreciable role in reinforcing the existing inter-regional economic disparity, although other factors may also have contributed to this. As a result, inter-regional economic disparity between the two regions has widened.

The increased inter-regional economic disparity is also reflected in an enlarged

TABLE 9  
East/West income per capita ratios 1983-93

Year (I)	East/West income ratio (II)	East/West FDI ratio (III)	East/West investment ratio (IV)	East/West TVE sales ratio (V)	East/West export divergence (VI)
1983	1.795	7.857	1.689	4.896	57.8
1984	1.801	8.095	1.709	5.012	45.1
1985	1.829	8.398	1.784	5.073	47.3
1986	1.852	9.671	2.094	5.345	43.8
1987	1.892	6.292	2.253	5.734	54.5
1988	1.926	9.267	2.372	6.277	61.9
1989	2.113	14.669	2.205	6.146	66.3
1990	1.909	22.127	2.158	6.074	77.5
1991	1.942	35.321	2.163	6.194	88.3
1992	2.070	30.951	2.410	6.415	109.5
1993	2.223	18.453	2.605	6.721	139.3
Correlation	1.000	0.626	0.816	0.968	0.793

*Notes:* Column II is the East/West per capita income ratio. Column III is the East/West per capita FDI ratio, the figures for 1983-85 refer to total foreign investment (utilised) including FDI and other foreign investment, they refer to FDI only after 1986. Column IV is the East/West ratio of the fixed capital investment per capita. Column V is the East/West ratio of township and village enterprises' sales income per capita. Column VI is the difference in exports per capita between the East and the West, the unit is US dollars. The correlation coefficients listed on the bottom line are the correlation coefficients between column I and each of the other columns.

*Sources:* The figures for 1982-91 in column II are cited from Joseph Chai, East-West regional income gap: problems of divergent regional development in China, in Dieter Cassel & Carsten Herrmann-Phillath (eds), *The East, The West, and China's Growth: Challenge and Response*, Vol 6, Baden-Baden: Nanas Verlag, 1994, Table 1. The figures for 1992 and 1993 in column II are calculated based on *Statistical Yearbook of China 1994*. The figures in other columns are calculated from *Statistical Yearbook of China 1982-95*; *China Foreign Economic Statistics 1979-94*; and provincial statistical yearbooks for nine Eastern and eight Western provinces over 1988-93.

income inequality, ie income per capita gap, between the two regions. Theoretically, per capita income is determined by economic growth and population change. During the period from 1980 to 1993, the population in the Western region grew by 1.29% per annum, lower than the population growth rate (1.52%) of the Eastern region (see Appendix 1). This suggests that relative change in population is not a factor leading to an increased income per capita gap. Instead, the factors contributing to the differential economic growth of the two regions are the causes of the increased income per capita gap. This is demonstrated in Table 9.

As this table shows, the East:West income per capita ratio clearly displays an increasing trend. It is positively correlated with the East:West ratios in domestic investment per capita, FDI per capita, township and village enterprises' sales per capita and the divergence in exports per capita between the two regions. This suggests that the increased disparity between the Eastern region and the Western region in fixed capital investment, foreign investment, exports and in rural industry development are primary reasons for the growing income inequality.

The increased interregional economic disparity reveals that the economic boom of the Eastern region has not diffused efficiently to the Western region. The diffusion of growth (or trickle down effect) from the Eastern region to the Western region has not happened, or has not been proven empirically, as Rothenberg (1987), Putterman (1992) and Chai (1994) maintain.<sup>24</sup> The main reason for the deficiency in the diffusion of growth is the lack of effective interregional industrial linkages and an integrated domestic market.

Under the open-door policy, the Eastern region has been encouraged to be more involved in the international markets for both exports and imported materials. This development strategy was formally confirmed at the 13th Congress of the Chinese Communist Party in 1987. As a result, the economy of the Eastern region became more foreign market-orientated. This is particularly the case in the Guangdong and Fujian provinces. Economic integration between Guangdong, Fujian, Hong Kong and Taiwan has been rapidly developed. It is the most important characteristic of economic development in the Southeast region of China. However, as the coastal region has increasingly shifted to production for overseas markets, the economic linkages between coastal and inland regions (including the Western region) have weakened.

In addition, the less developed domestic market is an important reason for the lack of effective regional economic linkages. Since the early 1980s, the Chinese economy has been undergoing a transformation from the traditional centrally planned system to a market economy. The market-orientated reforms are more progressive and far-reaching in the Eastern region than in the Western region. The regionally unbalanced reform progress impedes the formation and development of the integrated domestic market and restrains economic linkages and cooperation between the two regions. As a result, economic growth in the Eastern region can not effectively be diffused to the Western region, as dualism theory expects. Consequently, interregional economic disparity has increased.

### **Conclusion and policy implications**

In the reform era since 1979, the Chinese economy has experienced rapid growth and a widened inter-regional disparity, with many factors contributing to this. Industrial structure and resource conditions, economic reforms and openness, regional development policy (with an emphasis on the Eastern region), the uneven growth of exports and foreign direct investment, rural industrial development, and domestic capital flows from the Western region to the Eastern region all contributed to the interregional disparity in economic growth and income per capita.

This paper has presented a comparative study of economic growth between the Eastern and Western regions of China. It investigated the factors behind the disparate growth of the two regions, especially structural factors and economic openness. Using production function analysis, this paper also examined the effects of domestic capital, foreign direct investment and labour input on economic growth. It has found that foreign direct investment and greater openness are the major reasons for the higher economic growth of the Eastern region compared with the Western region. Without a larger amount of FDI and

greater openness in the Eastern region, its economic growth rate would be almost the same as that of the Western region. This suggests that foreign investment, exports and greater involvement in the international market are the principal contributors to higher economic growth in the Eastern region, which, in turn, leads to the interregional economic disparity.

The resulting disparity is also closely related to the regional policy of the Chinese government. Basically, the regional policy throughout the reform era was based on regional comparative advantages. Under this policy, because of its superior geographic location and factor endowment, the coastal region has been given a pivotal role as a growth pole or engine of growth. To promote the development of the coastal region, the central government pursued a special economic policy and committed a large amount of capital to improve infrastructure in this region. As a result, the investment environment in the coastal region was much better than in the inland region. Domestic and foreign capital therefore flowed into the coastal region, accelerating its regional economic growth. Because of a lack of effective interregional industrial linkages and a well functioning domestic market, the economic boom in the coastal region has not been noticeably diffused inland, resulting in a widening interregional economic disparity.

Some implications can be drawn from the Chinese experience of rapid growth and interregional disparity. First, interregional disparity is unavoidable in the process of economic development, especially for a developing country with various constraints. This is because the conditions for development in each region are different, and a regional policy based on comparative advantages tends to reinforce the existing regional difference. Such a policy can be temporarily justified during the initial stage of development only if it results in overall national economic growth.

Second, a government should pay particular attention to growing interregional disparity. In order to facilitate the diffusion of development from the growth region to a relatively stagnant region, interregional economic linkages should be promoted through a series of policy tools and encouragement of interregional economic cooperation. All the artificial barriers to inter-regional economic linkage and integration should be removed. In the Chinese context, some regulations which isolate the SEZs or other coastal areas from the inland regions should be eliminated. At the same time, interregional trade, investment and other linkages between the coastal and the inland regions should be promoted, rather than the coastal region being encouraged to rely more on foreign markets.

Another important point for a less developed market economy, or one undergoing the transformation from a central planning system to a market orientated economy, is the enhancement of the market mechanism. Because a well developed market most probably allocates resources efficiently, the overall efficiency of an economy can be significantly improved. However, since market forces could result in regional inequality in the first stage of economic development, a suitable regional policy which can foster market efficiency and domestic market integration, and facilitate economic linkages and cooperation between regions, is crucial.

Third, at present, it is important that the Chinese government standardise open-door policy in all regions and eliminates the prevailing policy differences

which discriminate against the Western region. The coast-orientated open policy is one of the most important causes of the widened economic gap between the Western and the Eastern regions. When the Eastern region is efficiently involved in the world economy, the open-door policy should be extended as much as possible to the vast inland regions, where a huge potential for development exists. The differences in policy treatment between the Western and the Eastern regions would then be eliminated, enabling the Western region to greatly improve its development potential.

Fourth, improvement in transportation links between the Eastern region and the Western region is essential for enhancing interregional linkages. The central government should allocate fiscal funds to finance some important transportation projects, and should also encourage local capital to invest in infrastructure so as to improve the local investment environment. To this end, some special programmes stimulating investment in the Western region are necessary.

## Notes

<sup>1</sup> *The Statistical Yearbook of China*, State Statistical Bureau of China, 1995.

<sup>2</sup> China consists of three macro-regions. The Eastern (coastal) region includes 11 provinces and cities: Guangdong, Fujian, Jiangsu, Zhejiang, Shanghai, Shandong, Hebei, Beijing, Tianjin, Liaoning and Hainan. The Central (inland) region contains 10 provinces: Heilongjiang, Jilin, Inner Mongolia, Shanxi, Henan, Hubei, Hunan, Jiangxi, Anhui and Guangxi. The Western (far inland) region includes nine provinces: Shaanxi, Sichuan, Gansu, Qinghai, Xinjiang, Ningxia, Guizhou, Yunnan and Tibet. Although this study includes brief references to the Central region, it mainly focuses on the Eastern and Western regions (excluding Tibet).

<sup>3</sup> They include Joseph CH Chai and Chi-Keung Leung. The economic and spatial dimensions of development in China, in Chai & Chi-Keung Leung (eds), *Development and Distribution in China*, Hong Kong: The University of Hong Kong, 1985; Victor C Falkentheim, Spatial inequalities in China's modernisation program: some political-administrative determinants, in Joseph CH Chai & Chi-Keung Leung (eds), *Development and Urbanisation in China*, Hong Kong: University of Hong Kong, 1985, pp 149-172; Cliftow W Panell, Economic reforms and readjustment in the People's Republic of China and some geographic consequences, *Studies in Comparative International Development*, 22(4), 1987, pp 54-73; Jerome Rothenberg, Space, interregional economic relations, and structural reform in China, *International Regional Science Reviews*, 11(1), 1987, pp 5-22; Chor-Pang Lo, Recent spatial restructuring in Zhujiang Delta, South China: a study of socialist regional development strategy, *Annals of the Association of American Geographers*, 79, 1989, pp 239-308; Lo, The geography of rural regional inequality in mainland China, *Transactions* (Institute of British Geographers), 15, 1990, pp 466-486; Dali Yang, Patterns of China's regional development strategy, *China Quarterly*, June, 1990, pp 231-257; Terry Cannon, Regions, spatial inequality and regional policy, in Terry Cannon & Alan Jenkins (eds) *The Geography of Contemporary China: The Impact of Deng Xiaoping's Decade*, London: Routledge, 1990; Kai Yuen Tsui, China's regional inequality, 1952-1985, *Journal of Comparative Economics*, 15, 1991, pp 1-21; Liqun Jia & Chen Tisdell, *Resource Redistribution and Regional Inequality in China*, Economics Discussion Paper, No 9318, University of Otago, New Zealand, 1993; Clem Tisdell, *Economic Development in the Context of China: Policy Issues and Analysis*, London: The Macmillan Press, 1993; and Joseph CH Chai, East-West regional income gap: problems of divergent regional development in China, in Dieter Cassel & Carsten Herrmann-Phillath (eds), *The East, The West, and China's Growth: Challenge and Response*, Vol 6, Baden-Baden: Nomos Verlag.

<sup>4</sup> See, for example, David R Phillips & Anthon Gar-On Yeh, Foreign investment and trade: impact on spatial structure of the economy, in Cannon & Jenkins, *The Geography of Contemporary China*; YY Kueh, Foreign investment and economic change in China, *China Quarterly*, 1992, pp 637-690; C Cindy Fan, Regional impacts of foreign trade in China, 1984-1989, *Growth and Change: A Journal of Urban Regional Policy*, 23(2), 1992, pp 129-159; Jongchul Lee, Regional differences in the impact of the open door policy on income growth in China, *Journal of Economic Development*, 19(1), 1994, pp 215-234; Haishun Sun, Foreign investment and regional economic development in China, *Australasian Journal of Regional Studies*, 1(2), pp 133-148; and Sun, Direct foreign investment and interregional economic disparity of China, *International Journal of Social Economics*, special issue, Part four, 1996.

- <sup>5</sup> Dutta has a detailed methodological analysis on dualistic economies. Dilip K Dutta, Socio-economic analysis of dualistic economies: a review of methodological alternatives, *Journal of Interdisciplinary Economics*, 3(4), 1991, pp 255–273.
- <sup>6</sup> Louis Putterman, Dualism and reform in China, *Economic Development and Cultural Change*, 40(3), 1992, pp 467–493.
- <sup>7</sup> Writing in the late-1980s, Dong observed that serious imbalances existed in the regional development of markets. Apart from a few markets in the coastal areas with certain features of a developed modern market, the majority were still crude and undeveloped. Markets were either non-existent or assumed medieval forms in the economic backwaters (most of the rural areas in China have only regular country fairs). Furen Dong, Market development in Chinese economic reform, in OT Bogomolov (ed), *Market Forces in Planned Economies*, Basingstoke: Macmillan, 1990, pp 244–245.
- <sup>8</sup> While a *commodity* economy is essentially a *market* economy in the sense that products are for exchange, a *natural* or *semi-natural* economy is essentially a subsistence economy where people are ready to exchange their products only when there are surpluses, and social division of labour is yet to develop. Dong, Market development in Chinese economic reform, p. 246.
- <sup>9</sup> Chai, East–West regional income gap, Table 1.
- <sup>10</sup> The average growth rates of the population in Eastern and Western Regions were 1.46% and 1.43%; respectively during the 1984–93 period.
- <sup>11</sup> The recent publication of *The East Asian Miracle* by the World Bank in 1993 is testimony of this view. In this publication, East Asia comprises all the low- and middle-income economies of East and Southeast Asia and the Pacific, east of and including China and Thailand.
- <sup>12</sup> For such studies, see Sun, Foreign investment and regional economic investment in China.
- <sup>13</sup> *Statistical Yearbook of China*, Beijing: State Statistical Bureau of China, 1981–93.
- <sup>14</sup> *Statistical Yearbook of China*, Beijing: State Statistical Bureau of China, 1994.
- <sup>15</sup> The four Special Economic Zones (SEZs) established in 1979 were Shenzhen, Zhuhai, Shantou and Xiamen.
- <sup>16</sup> Especially in its open coastal cities or provinces, such as the five SEZs, as well as in Shanghai, Fujian and Guangdong.
- <sup>17</sup> *Shaanxi Statistical Bureau*, 1994.
- <sup>18</sup> *Statistical Yearbook of China*, Beijing: State Statistical Bureau of China, 1981–93.
- <sup>19</sup> *Ibid.*
- <sup>20</sup> For details see J Kmenta, *Elements of Econometrics*, Basingstoke: Macmillan, 1986, pp 616–625.
- <sup>21</sup> It is a common practice to add a time trend ‘T’ in production function to measure the rate of technical progress over time. In the current model, however, it has been found that the addition of ‘T’ results in a biased coefficient for FDI because ‘T’ and FDI are highly correlated with each other (0.73 for the Eastern region and 0.54 for the Western region). Therefore, time trend is removed from the production function measurement in this study and a constant technology is assumed. The effects of factors other than direct inputs (labour and capital) on output, including technology, management and economic structure, can be reflected in the value of the constant ‘A’ in the production function, because ‘A’ fixes the position of the isoquant and therefore reflects the influences of technology change and management improvement on the movement of the isoquant. For a detailed discussion, see David F Heathfield, *Production Functions*, London: Macmillan, 1971.
- <sup>22</sup> The US GDP implicit price deflators are published in *Survey of Current Business*, September 1995, p 44).
- <sup>23</sup> *Statistical Yearbook of China*, Beijing: State Statistical Bureau of China, 1986–93.
- <sup>24</sup> Rothenburg, Space, interregional economic relations, and structural reform in China; Putterman, Dualism and reform in China; and Chai, East–West regional income gap.

## Appendix I

## Real GDP and growth rates in different regions of China (in 1980 constant prices)

Regions	Real GDP (100 million yuan)				'Population (millions)			
	1980	1985	1993	1980-93 Growth (%)	1980	1985	1993	1980-93 Growth (%)
The East	2187.5	3708.0	8613.3	11.1	362.29	384.59	440.95	1.52
Guangdong	245.7	436.1	1376.4	14.2	52.27	56.56	66.07	1.82
Fujian	85.9	147.9	390.0	12.3	25.18	26.96	31.50	1.74
Jiangsu	319.8	568.3	1414.5	12.1	59.38	61.90	69.67	1.24
Zhejiang	179.7	357.5	888.8	13.1	38.27	40.22	42.66	0.84
Shanghai	311.9	466.8	897.2	8.5	11.46	12.11	13.49	1.26
Shandong	301.2	509.3	1266.9	11.7	72.96	77.11	86.42	1.31
Hebei	219.2	355.4	763.3	10.1	51.68	55.48	63.34	1.58
Beijing	139.1	221.0	418.7	8.8	9.04	9.51	11.12	1.61
Tianjin	103.5	161.5	276.7	7.9	7.49	8.05	9.28	1.66
Liaoning	281.5	432.5	805.6	8.4	34.56	36.69	40.42	1.21
Hainan <sup>2</sup>	n/a	42.3	115.2	n/a	n/a	n/a	6.98	n/a
The West	789.4	1284.5	2474.8	9.2	245.42	257.88	289.85	1.29
Shaanxi	95.2	159.8	309.2	9.5	28.31	30.02	34.43	1.52
Sichuan	322.0	507.8	945.3	8.6	99.20	101.88	111.04	0.87
Qinghai	18.3	28.1	44.7	7.1	3.77	4.07	4.67	1.66
Yunnan	84.3	147.2	300.9	8.6	31.73	34.06	38.85	1.57
Guizhou	60.3	107.8	196.5	9.5	27.77	29.68	34.09	1.59
Ningxia	15.1	25.7	46.2	9.0	3.69	4.11	4.95	2.29
Gansu	73.9	106.2	235.1	9.3	19.18	20.29	23.45	1.56
Inner Mongolia	67.4	105.0	187.0	8.2	18.94	20.16	22.32	1.27
Xinjiang	53.0	96.9	209.9	11.1	12.83	13.61	16.05	1.74

Notes: <sup>1</sup> the deflators used in calculating the real GDP of all provinces are their provincial deflators for each year.

<sup>2</sup>Hainan was a part of Guangdong province before 1987, its data were included in the statistics of Guangdong province.

Source: *The Statistical Yearbooks* of all the province listed above for the period from 1986 to 1993, and *Statistical Yearbook of China 1995*.