Regional Inequalities in Contemporary China Measured by GDP and Consumption

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ABSTRACT

This paper presents a comprehensive picture of China's regional inequality from 1952 to 1999 using newly released data on consumption and gross domestic product (GDP) at the provincial level. Although there are many studies on regional inequality in China, this paper is the first attempt to evaluate regional inequalities before and after the economic reforms for a time span of almost half a century. Our results show that inter-regional inequality widens over time, either measured by per capita GDP or consumption expenditures, and either in the pre-reform or the post-reform period. The results also show that the choice of GDP or consumption as an indicator of economic welfare matters in regional inequality analysis. Per capita GDP is more unequally distributed than per capita consumption.

1. INTRODUCTION

CHINA HAS achieved fast economic growth since 1949, especially in the economic reform period after 1978. GDP increased 36 times in real terms from 1952 to 1999. Per capita GDP rose more than 16 times, from 257.6 to 4202.7 yuan measured in 1990 prices (NBS, 2000). However, rapid economic growth has been accompanied by rising regional income inequality, which has important implications for China's future economic development strategy.

Economic growth is much faster in the post-reform period than in the pre-reform period. The great success of reforms has attracted tremendous interest from academic researchers as well as policy makers. Many studies deal with inequality in the process of development. Because of the important policy implications, there are a few studies (Knight and Song, 1993; Hussain, et al. 1994; Tsui, 1991, 1993, 1996, 1998a, 1998b; Kanbur and Zhang, 1999; Yao, 1997, 1999a, 1999b) attempting to measure the relative contribution of intra-regional, inter-regional, urban, rural, and urban-rural inequalities to overall inequalities. However, no one has presented a whole picture of regional inequality, both spatially and inter-temporally, for such a long period of time.

Based on the decomposable method by Theil (1967) and Shorrocks (1980, 1984), inter-provincial inequality, evaluated by the generalized entropy measure, is decomposed into two components: inter-regional and intra-regional. Tsui (1993) has made progress in decom-

posing China's inequalities using this method. He conducts a detailed decomposition of rural-urban and inland-coastal inequality with county-level data, using the inequality index of generalized entropy by Theil (1967) and three attributes of well-being: per capita gross value of industrial and agricultural output, infant mortality rate, and the illiteracy and semi-illiteracy rates. However, his study is a snapshot for 1982 only. Similar decompositions are done by Hussain et al. (1994), but again for a single year 1986. Yao (1999b) made some headway in this direction based on survey data in three selected provinces. However, his study was seriously hampered by a lack of reliable statistical information. Kanbur and Zhang (1999) provide an excellent framework for describing the relative contribution of rural-urban and inland-coastal inequality to overall regional inequality. Following Theil (1967) and Tsui (1993), they employ the decomposable general entropy method to measure the inequality of consumption expenditures. However, their work only covers the period 1983-95.

In tackling the above issues, this paper extends the literature on China's regional inequalities in three directions. Firstly, we present the longest and the most comprehensive dynamic picture of China's regional disparities. One main problem faced by previous studies on China's inequalities was the fragmentary nature of their data. Paucity of statistical information has often limited studies to selected provinces, such as Hussain et al. (1994), Rozelle (1994), Chen and Ravallian (1996), Aaberge and Li (1997), Tsui (1998b), Yao (1999b), and Yang (1999), or on a single year or a few years, such as Tsui (1993), Hussain et al. (1994) for a single year, Yao (1999b), Kanbur and Zhang (1999) for a few years in the reform period.

Secondly, we make use of consistent per capita GDP and per capita consumption data to measure regional disparities. This could result in important policy implications for narrowing regional inequalities. To our best knowledge, no one has attempted to do this before because of the paucity of longitudinal data. Most previous studies use mainly statistics of the system of material product balances (MPS) adopted by the socialist countries, such as the former Soviet Union, Eastern European countries, and China, due to the availability of long term data series for MPS system statistics. For example, Bramall and Jones (1993), Tsui (1993), Rozelle (1994), and Yao (1997) use gross value of industrial and agricultural output (GVIAO). Lyons (1991) and Tsui (1991) use net material product and national income utilized. All these statistics are different from those under the system of national accounts (SNA) used in most western countries, such as GDP, in the sense that services are excluded. Also, GVIAO includes intermediate inputs, which often results in double counting in industrial outputs (Tsui, 1993).

Thirdly, we compare inequality measured by per capita GDP with inequality measured by per capita consumption expenditures to investigate the difference between GDP distribution and consumption distribution. It is generally believed that income is more unequally distributed than consumption. Grootaert (1995) indicates that consumption is more appropriate than income for measuring the standard of living because it is usually less subject to short-term fluctuations. Consumption is also a better proxy for permanent income than other welfare indicators.

The rest of this paper is organised as follows. Section two briefly reviews the process of economic reforms in China and how regional inequality has evolved over the years. Section three introduces the methodology. Section four analyses regional inequalities measured by per capita GDP. Section five analyses regional inequalities measured by per capita consumption expenditures. Section six compares inequalities measured by GDP with consumption expenditures. Section seven draws conclusions.

2. ECONOMIC REFORMS AND REGIONAL INEQUALITY

Economic development in China from 1949 can be divided into two different periods: the pre-reform period (1949-77) and the reform period (1978 to date). During the pre-reform period economic achievement was very impressive but it had some obvious limitations and problems. When the People's Republic was established in 1949, China was not only the most populous nation, but also one of the poorest countries in the world. With 22 per cent of the world's population living on 5 per cent of its arable land, China was on the cutting edge of the conflict between population growth and economic development, facing a problem unlike any confronted by any other developing country. However, China shifted rapidly away from agriculture towards industry with agriculture's share of gross material product falling from 57 to 28 per cent during the pre-reform period (Nolan and Dong, 1990). Apart from the three years of the Great Famine (1959-61), living standards were generally much higher than during the pre-1949 period. Measured by constant 1990 prices, per capita GDP in China in 1978 was over 2.5 times that in 1952, rising from 258 to 659 yuan and growing annually at an average rate of 3.67 per cent (NBS, 2000). These figures put China at the top among the low-income countries in growth performance.

In the pre-reform period, China's industrial growth came largely from increases in production factors, especially fixed capital, and there was little productivity growth. Part of the explanation lies in the structural shift towards more capital-intensive heavy industries. However, the main reason was due to many political struggles, especially the Great Leap Forward (1958-61) and the Cultural Revolution (1966-76), which depressed production incentives. As a result, the economy failed to perform to its full potential (Lardy, 1983).

Economic reforms started from the countryside in 1978 when Deng Xiaoping took power from Mao's hand-picked successor, Hua Guofeng. Rural and agricultural reforms comprised several distinct aspects (Riskin, 1987):

- substantial increases in procurement prices of agricultural products;
- increased autonomy for decision-making to the rural collectives;
- the change of policy from emphasizing forced local self-sufficiency in grain to encouraging diversification and specialization;
- decollectivization of decision-making and organization.

As markets developed and incomes improved, household savings grew rapidly, workers were encouraged to specialize in various sideline productions ranging from forestry to fishery and to develop township and village enterprises (TVEs). The share of TVEs in China's GDP rose from 13 per cent in 1985 to 28 per cent in 1998 (MAPRC, 1999; NBS, 1999). Rural reforms in China were highly successful, in less than 6 years (1978-84), grain output rose by more than one-third, per capital rural income more than doubled in real terms (Yao, 1994).

Following the success of rural reforms, China launched its large-scale reform in the industrial sector in 1984. In the 1980s, several methods were adopted to reform the urban and state-owned industrial sectors. Firstly, the state leased out many small state-owned enterprises (SOEs) to collectives or individuals. Secondly, the 'factory director's responsibility system' was introduced to reduce the level of unwanted political interference by party secretaries. Enterprise autonomy was expanded. The command system was gradually replaced by a free market system. Local governments were granted considerable authority over budgetary rev-

enues and expenditures. The practice of budgeting all fixed and circulating capital free of charge (soft budget) was gradually replaced by use of repayable interest bearing bank loans (hard budget). Thirdly, an experimental shareholding system was set up to allow the state and enterprise workers to own its assets and care for its economic well-being. The state, the enterprise and individuals were permitted to invest in companies through the purchase of shares. Fourthly, a contract labour system was introduced, aimed at breaking the 'iron rice bowl' (life-long secure jobs) in SOEs (Riskin, 1987; Zhang, 2000).

Reforms had been pursued in areas such as salaries, housing, public utilities, medical care and social welfare. Measured in constant 1990 prices, per capita GDP in China increased by more than six times from 1978 to 1999, rising from 659 yuan to 4, 203 yuan, or by 9.22 per cent per annum (NBS, 2000).

Although this record of growth is unprecedented in Chinese history and every province achieved remarkable growth over this period, income growth has been accompanied by rising inter-regional inequality. China's open-door policy after economic reforms was location-specific. The state offered preferential policies to coastal provinces, including the establishment of four special economic zones (1979), the opening up of fourteen coastal cities (1984) and Hainan Island (1988), and the establishment of Pudong Development Zone in Shanghai (1990). Before economic reforms, the eastern region was already more advantaged than the rest of the country in terms of human resources, transportation and other infrastructures, overseas ties and industrial and commercial conditions. After economic reforms, the country's development efforts were highly concentrated in the east. The east has become increasingly better off than the rest of the country. The more remote western region has been permanently disadvantaged. Consequently, inter-regional inequality has a clear geographical pattern as will be revealed in the following sections.

3. GENERALISED ENTROPY MEASURE AND ITS DECOMPOSITION

Shorrocks (1980, 1984) develops the class of generalized entropy (GE) inequality measures, which can be written as equation (1).

$$I(y) = \begin{cases} \sum_{i=1}^{n} s(y_i)\left[\left(\dfrac{y_i}{\mu}\right)^c - 1\right] & c \neq 0,1 \\[2ex] \sum_{i=1}^{n} s(y_i)\left(\dfrac{y_i}{\mu}\right)\log\left(\dfrac{y_i}{\mu}\right) & c = 1 \\[2ex] \sum_{i=1}^{n} s(y_i)\log\left(\dfrac{\mu}{y_i}\right) & c = 0 \end{cases} \tag{1}$$

where y is a vector of y_i, where y_i is the ith provincial income measured in per capita Chinese yuan, μ is the mean of all the observations, $s(y_i)$ is the share of y_i's population in total population, and n is the number of observations. The attractive feature of GE measure, $I(y)$, is its additively decomposable property by population sub-groups for all c values. The parameter c determines the transfer sensitivity of the GE measure. When c is less than 2, the GE measure is trans-

fer sensitive, that is it is more sensitive to transfers at the bottom end of distribution than those at the top (Shorrocks and Foster, 1987). When c equals 0 or 1, the GE measure is the inequality measure introduced by Theil (1967).

If the total population is divided into sub-population groups exogenously, the class of GE measures can be decomposed in the following way,

$$I(y) = \sum_{m=1}^{M} w_m I(y_m) + I(\mu_1 e_1, \ldots, \mu_M e_M), \tag{2}$$

where

$$w_m = \begin{cases} s_m \left(\dfrac{\mu_m}{\mu}\right)^c & c \neq 0,1 \\[2ex] s_m \left(\dfrac{\mu_m}{\mu}\right) & c = 1 \\[2ex] s_m & c = 0 \end{cases} \tag{3}$$

and $I(y_m)$ is inequality in the mth sub-group, y_m a n_m vector, n_m the number of observations in the mth sub-group, μ_m the mean income of the mth group, and e_m a n_m vector of ones, s_m the share of population in the mth sub-group to the total population.

The first term on the right side of equation (2) is the intra-group inequality, measured by the weighted average of group-specific inequality. The second term is the inter-group inequality that measures the inequality when all the per capita incomes in a group are replaced by the group mean. The term $w_m I(y_m)/I(y)$ is used to measure the contribution of the inequality in the mth group to the overall inequality. In this paper, 'intra-group inequality' is used to express the weighted average of group-specific inequality; 'within-group inequality' is used to represent the inequality within a specific group; 'inter-group inequality' and 'between-group inequality' are used interchangeably to indicate the inequality between groups.

When c equals 0, the intra-group inequality and inter-group inequality are independent of each other. This property gives a clear interpretation with respect to the within-group and between-group components. For a detailed discussion, see Shorrocks (1980), Anand (1983), and Tsui(1993). In the following, we present the results only for c equals 0.

4. REGIONAL INEQUALITY MEASURED BY GDP

Although the growth rate during the 1978 to 1999 period is unprecedented in Chinese history and every province achieved remarkable growth over this period, income growth was accompanied by rising inequality. The Gini coefficient rose from 28.8 in 1981 to 38.8 in 1995 (World Bank, 1997). The World Bank reports that the Gini coefficient measured by consumption distribution in China was 41.5 in 1995, ranking 37th among 96 countries in descending order (World Bank, 2000: Table 5).

Inter-provincial inequality is a key component of income inequality and is closely related to geographic location. Because China adopted the system of material product balances in the pre-reform era, about half of China's provinces did not have provincial GDP data until

1978. National Income had been the most important economic indicator in the national and provincial accounts until 1993. Since the beginning of the economic reforms, China has gradually adopted the system of national accounts and the economic indicators that are consistent with international standards. This necessarily results in some difficulties when comparing the performance of the pre-reform period and the reform period.

Thanks to the newly released data set from Hsueh and Li (1999), Hsueh, Li, and Liu (1993), NBS (1996), and combined with the latest *Chinese Statistical Yearbooks* (NBS, 1997-2000), it is possible to derive a consistent data set covering a time span of almost half a century for nearly 30 provinces. Current GDP values are converted into real GDP values measured in 1990 prices using provincial-level deflators.

There are two ways to divide China's provinces into regions. One way, used by Chen and Fleisher (1996), Yang and Wei (1996), and Kanbur and Zhang (1999), is to divide China into two regions, which are the coastal (eastern) and the interior (inland). The other way, used by Tsui (1993), Huang (1996), and Yao (1997), following the official definition by the Chinese government, is to divide the provinces into three regions: the East, the Central and the West, each covering roughly the same number of provinces (see Appendix A). This paper adopts the second classification. Due to data paucity, Guangdong and Hainan in the east, and Tibet in the west are excluded in the following analysis.

Figure 1 presents the GDP GE measure among all the provinces (inter-provincial inequality) and its inter-regional component measuring the inequality among the average per capita GDP in the east, central and west regions.

**Figure 1: GE index among all provinces and its inter-regional component**
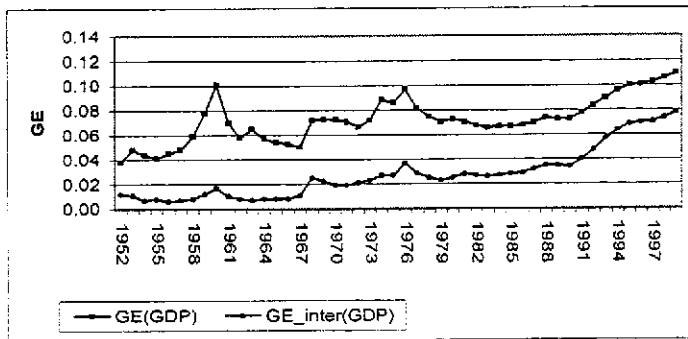
Inter-provincial GDP inequality rose in both the pre-reform and post-reform periods, but with greater fluctuations in the former period than in the latter period. A striking feature is that inequality widened greatly in the 1990s.

In contrast, the trend of inter-provincial inequality in each of the three regions (Figure 2) was different from that of the inter-provincial inequality among all provinces (Figure 1). Inter-provincial inequality in the east (GE-e in Figure 2) rose in the data period as a whole but moved in an opposite direction from a rising trend in the pre-reform period to a declining trend in the post-reform period. Similarly, inter-provincial inequality in the central region (GE-c) widened in the pre-reform period, but declined noticeably in the reform period. Inter-provincial inequality in the west (GE-w) reached a peak from 1960 to the mid-1970s but stayed at a rela-

tively low level in other periods.

Comparing Figure 1 with Figure 2, the following observations are clear. Inter-provincial inequality among all provinces and its inter-regional component rose in both the pre-reform and post-reform periods. Inequality among the provinces in each of all the three regions fluctuated in the pre-reform period but declined in the post-reform period. It can be inferred that China's provinces are diverging into different geo-economic income clubs, especially in the post-reform period.

Figure 2: GE index by region (e-east, c-central, w-west)
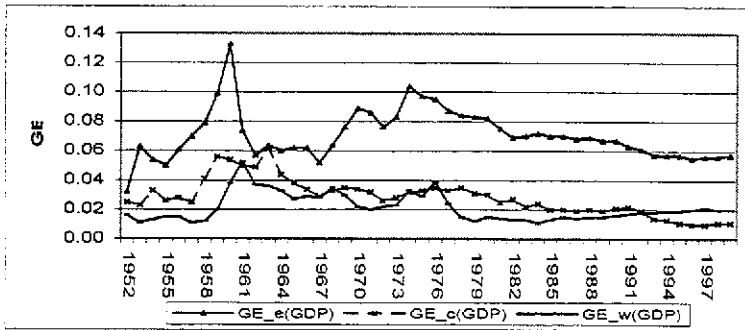
To see how each region contributes to the total inter-provincial inequality, the GE measure for all provinces is decomposed into four components, respectively explained by the three regions and the inter-regional component which is already shown in Figures 1 and 2 above. The relative contributions of these four components are shown in Figure 3.

Figure 3: Total inter-provincial inequality and its regional components
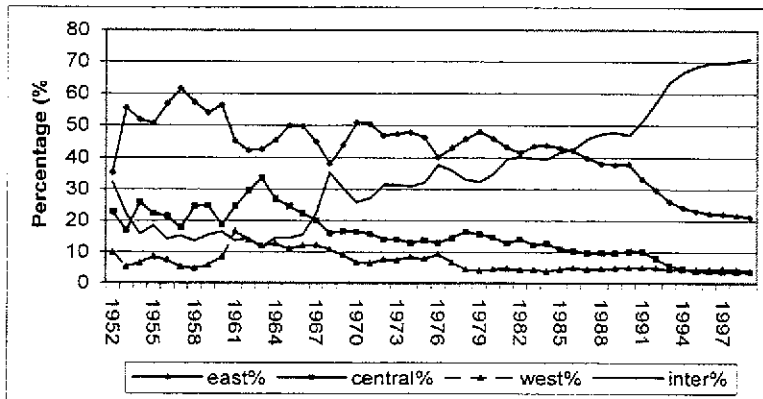
Compared with the contributions from the central and the west, the contribution from the east is much larger. However, it is quite clear that all the regional contributions declined in the whole study period. In most years, the west contributed less than 10 per cent of the overall inter-provincial inequality. With a big share in the beginning, the contribution from the central was

quite small and very close to that from the west in recent years. Being the biggest within-regional contributor, the east lost its share quickly after the economic reforms, implying a clear convergent tendency within the eastern region in terms of per capita GDP. The inter-regional contribution, with a big drop in the first two years and a stable contribution before the end of the 1960s, went up quickly since then. It touched its historic height in 1999, accounting for over 70 per cent of total inter-provincial inequality.

Using household level data, the World Bank (1997) estimates that almost one quarter of total inequality in 1995 and one third of the rise in inequality since 1985 was explained by inter-provincial inequality. Our results from per capita GDP data at provincial level show that over 70% of inter-provincial inequality in 1999 and all the increase in inequality in the reform period came from inter-regional inequality. This means that spatial inequality of per capita income in China was predominantly explained by the inequality among the three geo-economic regions defined in this paper. This certainly has important policy implications in China's regional development strategy. The recent attention by the central government to quicken the economic development in the west region is just a reflection of the seriousness of inter-regional inequality.

5. REGIONAL INEQUALITY MEASURED BY CONSUMPTION

It is generally believed that income is more unequally distributed than consumption expenditures. To see whether this is true for the Chinese data set, this section conducts the same inequality analysis using provincial level per capita consumption data. Due to data paucity in per capita consumption, the study period for consumption expenditures is just for the period 1952-95. The data are obtained from Hsueh and Li (1999), Hsueh, Li, and Liu (1993), and NBS (1996). Current consumption expenditures are converted into constant values in 1990 prices. Figure 4 presents the GE values measuring inter-provincial inequality of per capita consumption expenditures among all provinces (GE(C)) and its inter-regional component (GE-inter (C)).

Figure 4: GE of all provinces and its inter-regional component
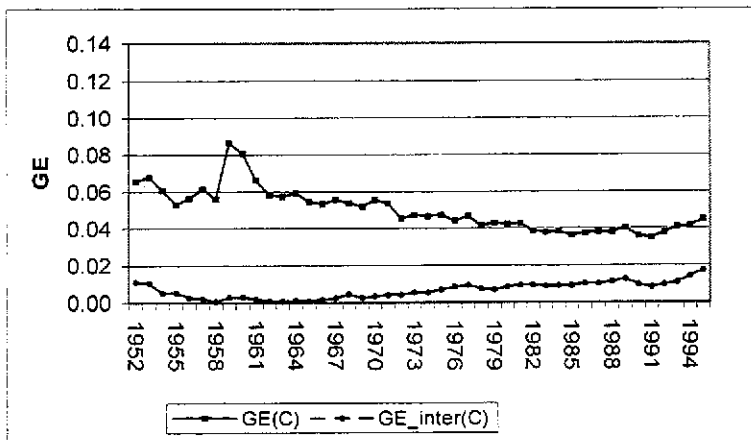
The inter-provincial inequality measured by consumption declined in the study period, but it is interesting to note a rising trend in the 1990s. However, inter-regional inequality widens significantly since the mid-1960s, with a decline only in the first few years (Figure 4). At the same time, in contrast to the rising inter-regional inequality, inequality among the provinces in each of the three regions declined in the whole period (Figure 5).

Figure 5: Inter-provincial inequality by region
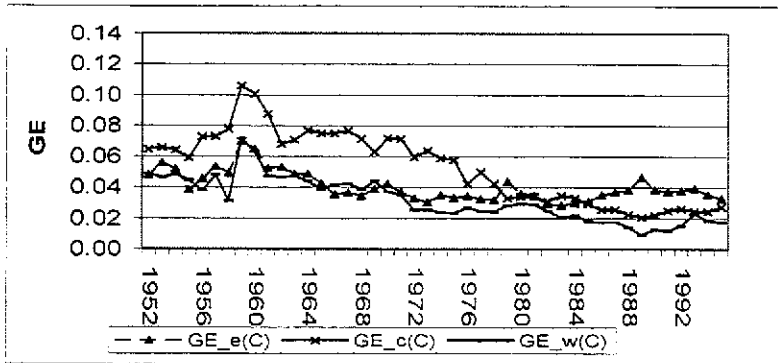
The within-regional inequality each of the three regions rose in the 1950s, reaching their peaks in 1959 when the country plunged into the three years of great famine. After the famine period (1959-61), within-regional inequality started to decline. Thus the trend persisted up to the late 1980s.

Figure 6: The regional and inter-regional components of total GE
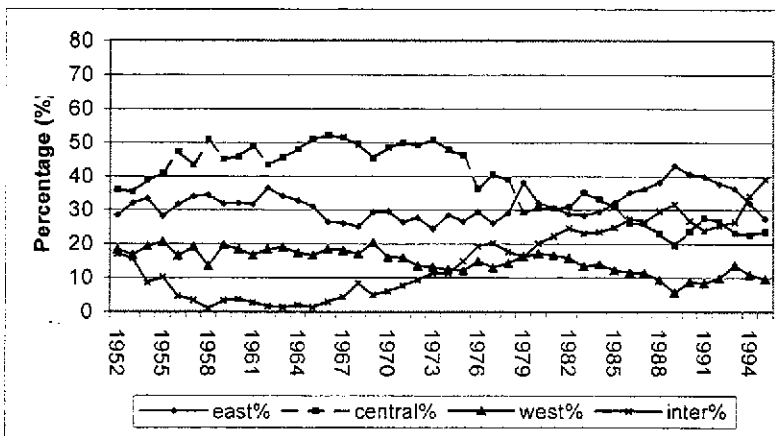
In consideration of the contributions of within-regional inequalities to overall inequality (Figure 6), the shares of the central and the west declined, but the share of the east fluctuated without a clear pattern. The inter-regional share declined sharply from 1952 to 1958. It then rose steadily from the early 1960s and accelerated in the post-reform period. The contribution of inter-

regional inequality surpassed all of the single contributions of the three within-regional inequalities weighted by population since 1994. The opposite movements of the inter-regional component and the within-regional components in the total GE imply that China's provinces converged into different consumption clubs, particularly in the post-reform period. This conclusion is similar to that drawn from the per capita GDP analysis in the previous section.

6. COMPARING GDP INEQUALITY WITH CONSUMPTION INEQUALITY
The overall inter-provincial inequality measured by per capita GDP rose in the whole data period, but the overall inter-provincial inequality measured by per capita consumption expenditures declined in the same period. In other words, income distribution worsened in the past half century, while consumption distribution improved. Except in the first decade, consumption inequality was much smaller than GDP inequality throughout the study period. The consumption GE was about half of the GDP GE in many years. In other words, the income was substantially more unequally distributed than consumption expenditures. The results show that the choice of GDP or consumption as an indicator of economic welfare matters a great deal in regional inequality analysis.

In recent years, the debate over China's regional development strategy has been dominated by the alleged widening of income gaps among the three geo-economic regions described in this paper. Despite the opposite movements in GDP and consumption GE measures in the study period, the inter-regional component in both GE measures moved in the same direction. In most years, this component rose, particularly in the post-reform period. In both absolute and relative terms, inter-regional inequality, measured by GDP or consumption, did decline in the first few years (before the mid-1960s), but increased from the late 1960s right up to the most recent years. Our results for nearly half a century confirm that inter-regional inequality was substantially larger by the end of 1990s than at the beginning of the data period.

These results show that the regional development strategy pursued by the Chinese government in the pre-reform period, to set up an egalitarian society, did not appear to have played a role. On the industrial front, the development strategy pursued before 1978 closely resembled the experiences of the Soviet Union and Eastern Europe (Tsui, 1993). The industrialization strategy biased the development of heavy industries in the cities. Regional development strategy was just an extension of the urban-biased industrialization policy. The pursuit of an egalitarian society and defence considerations prompted the government to redistribute the uneven industries across China and to allocate more investment funds to build up the heavy and defence-related industries in the interior, especially since the second half of the 1960s. However, very few linkages were generated between these industries and the backward local economies. Our results confirm that the heavy industry-biased strategy failed to drive forward the economic growth of backward areas.

The regional development strategy in the reform period, characterized by east-biased policies, recognised the different natural endowments of the provinces and the financial ability of the government. It gave priority to the development of the east since this region had advantages over the other two regions in terms of human capital, industry bases, close relationships with overseas Chinese, communications, infrastructures, and geographic locations. The eastern provinces are close to the main outside investors, such as Hong Kong, Taiwan, Japan, and South Korea.

In retrospect, China's reform strategy is successful in the sense that it has brought about rapid economic growth for a prolonged period of time. However, the economic strategy has also failed to check the ever rising inter-regional inequality. Although every province grew fast by international standards, the east grew much faster than the other regions. As a result, the gap between the east and the central and west has widened dramatically in the reform period.

7. CONCLUSIONS

A comprehensive picture of the evolution of regional inequalities in China from 1952-99 has been presented. Our results confirm that inter-regional inequality measured by per capita GDP or per capita consumption expenditures rose significantly in the study period, particularly in the post-reform era. Secondly, it is important what kind of economic indicator is used to measure regional inequality, because of the opposite movements of the inter-provincial inequality among all provinces as measured by per capita GDP or by per capita consumption expenditures.

Government policy has an important effect on regional economic development and spatial income inequality. For example, the open policies given to the eastern regions and the establishment of four special economic zones and fourteen coastal cities in the early 1980s helped the fast economic expansion in the east. However a consequence is that the central and western provinces find themselves in a permanently disadvantaged position. The lack of growth centres, poor education and human resources, lack of transportation and other infrastructures, poor climatic and environmental conditions are the most important factors hampering economic growth in the west and the central regions.

Recognising the seriousness of regional inequality, the central government has moved in the right direction to stimulate economic growth in the west in recent years. Three main areas are identified to promote economic development in that region: education, environment and infrastructure. Investment in education (and hence human capital) is as important as investment in physical capital. Environment is particularly important in the west where agricultural productivity is constrained by the poor weather and climatic conditions. Without better environmental conditions, it is also difficult to attract large non-agricultural investments from domestic or foreign investors. Infrastructure, especially transportation, is the most basic condition for profitable investments in the local regions.

However, local governments in the poor regions are unable to finance huge investment projects in education, environmental protection and infrastructure. There is an urgent need for financial support from the central government, but reallocation of resources from east to west may raise some other problems. Firstly, the ability for the central government to tax the rich regions is limited. Secondly, resource reallocation from the east to the west may slow down economic growth in the east. Thirdly, reallocation of resources is always accompanied with an efficiency issue. Although more investment to the west can help reduce regional inequality, it may incur efficiency losses because investments forgone in the rich regions may generate more financial returns than the same investments made in the poor areas.

Another way to reduce regional inequality may be through inter-regional migration. Allowing people to migrate from poorer regions may have some immediate effect in reducing regional income inequality as migrants can remit funds to their home-towns. However, as China is a highly populated country, even a small proportion of people moving from poorer regions would cause severe absorption problems in the richer areas. Massive migration from the inland

areas to the coastal provinces over the last two decades has caused enormous congestion in the country's highly inadequate and inefficient transportation system. Migration has also created tremendous social and environmental pressures in the prosperous areas where the population density is many times higher than in the western provinces.

Severe pollution, social problems and transportation congestion may make rapid growth in the prosperous regions unsustainable. Moreover, massive migration from the poorer areas will have detrimental effects on the local economy. As migrants are usually young and educated, large outflows of these people can result in severe shortage of manpower, undermining agricultural production and the development of TVEs in the out-migrating regions. Thus, long term solutions for reducing regional inequality should rely on creating jobs for people, instead of encouraging massive out-migration.

APPENDIX A
Regional classification

The East (coastal) includes Beijing, Tianjin, Hebei, Liaoning, Shanghai, Jiangsu, Zhejiang, Shandong, Fujian, Guangdong, Guangxi, Hainan. The Central consists of Shanxi, Inner Mongolia, Jilin, Heilongjiang, Anhui, Jiangxi, Henan, Hubei, Hunan. The West includes Sichuan, Guizhou, Yunnan, Tibet, Shaaxi, Gansu, Qinghai, Ningxia, Xinjiang.

APPENDIX B
Inequality index measured by GE

See Table 1 (p.25)
Sources: Hsueh and Li (1999), Hsueh, Li, and Liu (1993), NBS (1996), NSB (1997-2000)

and

and Table 2 (p.26)
Sources: Hsueh and Li (1999), Hsueh, Li, and Liu (1993), NBS (1996)

Table 1: Regional GDP GE measures and their contributions to overall inequality

Year		Inequality measured by Theil's index				Share of decomposition component to overall inequality (%)			
	Overall	East	Central	West	Inter	East	Central	West	Inter
1952	0.038	0.032	0.025	0.016	0.012	35.19	22.73	9.78	32.30
1953	0.048	0.063	0.023	0.011	0.011	55.47	16.95	5.32	22.26
1954	0.044	0.054	0.033	0.013	0.007	51.79	25.88	6.59	15.75
1955	0.041	0.050	0.026	0.015	0.008	50.69	22.27	8.61	18.43
1956	0.045	0.061	0.028	0.015	0.006	56.92	21.38	7.53	14.17
1957	0.048	0.070	0.025	0.011	0.007	61.63	17.75	5.39	15.23
1958	0.059	0.079	0.041	0.012	0.008	57.25	24.55	4.78	13.42
1959	0.078	0.099	0.056	0.020	0.012	54.09	24.79	5.73	15.40
1960	0.101	0.133	0.054	0.038	0.017	56.42	18.64	8.41	16.52
1961	0.070	0.074	0.050	0.053	0.010	45.21	24.60	16.67	13.52
1962	0.058	0.057	0.049	0.037	0.008	42.27	29.38	13.95	14.40
1963	0.065	0.064	0.062	0.036	0.007	42.62	33.66	12.16	11.57
1964	0.057	0.060	0.044	0.033	0.008	45.49	27.07	12.86	14.57
1965	0.054	0.062	0.038	0.027	0.008	49.95	24.57	11.03	14.45
1966	0.053	0.062	0.034	0.029	0.008	49.89	22.37	12.20	15.53
1967	0.050	0.052	0.029	0.028	0.011	44.92	20.13	12.42	22.53
1968	0.072	0.064	0.033	0.035	0.025	38.01	15.94	10.88	35.17
1969	0.073	0.076	0.035	0.030	0.022	43.90	16.64	9.21	30.26
1970	0.073	0.089	0.034	0.022	0.019	51.02	16.45	6.70	25.83
1971	0.071	0.086	0.032	0.020	0.019	50.58	15.82	6.50	27.11
1972	0.067	0.076	0.026	0.022	0.021	46.96	14.06	7.67	31.31
1973	0.072	0.083	0.028	0.023	0.023	47.31	13.96	7.43	31.30
1974	0.089	0.104	0.032	0.033	0.027	47.87	12.88	8.44	30.81
1975	0.086	0.097	0.033	0.029	0.027	46.36	13.75	7.85	32.04
1976	0.097	0.095	0.035	0.039	0.037	40.05	12.87	9.43	37.64
1977	0.082	0.087	0.033	0.024	0.029	43.04	14.38	6.67	35.92
1978	0.075	0.084	0.035	0.015	0.025	45.87	16.58	4.61	32.94
1979	0.071	0.083	0.031	0.012	0.023	48.02	15.58	4.08	32.32
1980	0.073	0.082	0.030	0.015	0.025	45.92	14.63	4.63	34.82
1981	0.071	0.075	0.025	0.014	0.028	43.11	12.69	4.66	39.54
1982	0.068	0.069	0.027	0.013	0.027	41.36	14.17	4.43	40.04
1983	0.066	0.070	0.022	0.013	0.026	43.58	12.28	4.47	39.67
1984	0.067	0.072	0.024	0.011	0.027	43.89	12.72	3.93	39.46
1985	0.067	0.070	0.020	0.013	0.028	43.05	10.84	4.59	41.52
1986	0.068	0.070	0.020	0.015	0.029	42.10	10.34	4.96	42.60
1987	0.070	0.068	0.019	0.014	0.032	39.85	9.74	4.58	45.84
1988	0.074	0.069	0.020	0.015	0.035	38.05	9.84	4.75	47.35
1989	0.073	0.067	0.019	0.015	0.035	37.67	9.70	4.82	47.81
1990	0.073	0.067	0.021	0.016	0.034	37.72	10.26	5.13	46.89
1991	0.078	0.063	0.022	0.017	0.040	33.20	10.22	5.05	51.53
1992	0.084	0.061	0.019	0.018	0.048	29.75	8.00	4.97	57.28
1993	0.090	0.057	0.014	0.018	0.057	26.05	5.83	4.57	63.55
1994	0.096	0.057	0.013	0.019	0.064	24.18	4.70	4.44	66.68
1995	0.100	0.057	0.011	0.019	0.069	23.15	3.95	4.42	68.48
1996	0.101	0.055	0.010	0.020	0.070	22.35	3.65	4.52	69.48
1997	0.103	0.056	0.010	0.021	0.071	22.20	3.64	4.64	69.52
1998	0.106	0.056	0.011	0.020	0.074	21.67	3.70	4.46	70.18
1999	0.110	0.057	0.011	0.020	0.078	21.23	3.59	4.21	70.98

Table 2: GE measures and decomposition components of consumption expenditures

Year	Inequality measured by Theil's index					Share of decomposition component to overall inequality (%)			
	Overall	East	Central	West	Inter	East	Central	West	Inter
1952	0.0654	0.0481	0.0645	0.0490	0.0111	28.52	36.07	18.39	17.02
1953	0.0680	0.0562	0.0657	0.0464	0.0107	32.09	35.41	16.71	15.80
1954	0.0608	0.0521	0.0643	0.0483	0.0052	33.36	38.76	19.38	8.49
1955	0.0529	0.0384	0.0591	0.0448	0.0054	28.23	40.93	20.70	10.14
1956	0.0563	0.0458	0.0729	0.0379	0.0026	31.63	47.32	16.50	4.54
1957	0.0615	0.0538	0.0731	0.0482	0.0021	34.03	43.43	19.16	3.38
1958	0.0561	0.0493	0.0779	0.0314	0.0006	34.47	50.97	13.54	1.01
1959	0.0866	0.0701	0.1061	0.0717	0.0028	31.92	45.10	19.73	3.25
1960	0.0807	0.0651	0.1008	0.0632	0.0030	32.06	45.85	18.41	3.68
1961	0.0660	0.0524	0.0878	0.0473	0.0018	31.67	49.04	16.64	2.65
1962	0.0582	0.0533	0.0681	0.0465	0.0009	36.64	43.35	18.38	1.63
1963	0.0573	0.0487	0.0708	0.0471	0.0008	34.02	45.70	18.89	1.38
1964	0.0592	0.0488	0.0769	0.0441	0.0011	32.83	47.98	17.32	1.87
1965	0.0544	0.0425	0.0750	0.0386	0.0008	31.00	51.02	16.59	1.39
1966	0.0531	0.0356	0.0749	0.0417	0.0015	26.48	52.17	18.47	2.88
1967	0.0553	0.0366	0.0768	0.0423	0.0024	26.07	51.49	18.08	4.36
1968	0.0537	0.0345	0.0715	0.0385	0.0045	25.12	49.46	17.03	8.39
1969	0.0518	0.0390	0.0630	0.0443	0.0025	29.28	45.43	20.38	4.91
1970	0.0553	0.0423	0.0718	0.0370	0.0033	29.55	48.53	16.01	5.91
1971	0.0536	0.0369	0.0714	0.0354	0.0042	26.39	49.97	15.88	7.77
1972	0.0454	0.0330	0.0596	0.0255	0.0042	27.75	49.36	13.58	9.31
1973	0.0470	0.0303	0.0635	0.0255	0.0054	24.45	50.99	13.17	11.40
1974	0.0465	0.0350	0.0588	0.0236	0.0053	28.45	47.82	12.42	11.30
1975	0.0472	0.0334	0.0578	0.0232	0.0070	26.66	46.38	12.05	14.91
1976	0.0440	0.0345	0.0423	0.0267	0.0085	29.36	36.41	14.89	19.33
1977	0.0465	0.0323	0.0499	0.0246	0.0094	26.03	40.72	13.00	20.25
1978	0.0413	0.0320	0.0422	0.0242	0.0073	29.06	38.90	14.38	17.67
1979	0.0429	0.0437	0.0330	0.0283	0.0070	38.24	29.34	16.18	16.24
1980	0.0421	0.0360	0.0338	0.0295	0.0085	32.06	30.60	17.15	20.19
1981	0.0425	0.0346	0.0341	0.0289	0.0094	30.57	30.59	16.61	22.23
1982	0.0384	0.0295	0.0310	0.0249	0.0095	28.82	30.75	15.80	24.64
1983	0.0376	0.0284	0.0346	0.0206	0.0087	28.39	35.11	13.36	23.14
1984	0.0381	0.0299	0.0331	0.0218	0.0090	29.40	33.13	13.92	23.55
1985	0.0362	0.0309	0.0293	0.0181	0.0090	32.02	30.95	12.15	24.88
1986	0.0373	0.0349	0.0256	0.0176	0.0102	35.07	26.22	11.46	27.25
1987	0.0379	0.0367	0.0257	0.0177	0.0101	36.28	25.86	11.33	26.53
1988	0.0377	0.0384	0.0226	0.0144	0.0111	38.22	22.94	9.32	29.53
1989	0.0403	0.0464	0.0207	0.0094	0.0127	43.06	19.66	5.69	31.59
1990	0.0357	0.0386	0.0221	0.0129	0.0096	40.71	23.65	8.79	26.85
1991	0.0349	0.0372	0.0252	0.0120	0.0083	40.05	27.69	8.34	23.93
1992	0.0376	0.0380	0.0263	0.0154	0.0096	37.85	26.79	9.90	25.46
1993	0.0407	0.0395	0.0247	0.0232	0.0108	36.41	23.31	13.82	26.46
1994	0.0414	0.0355	0.0246	0.0187	0.0141	32.04	22.84	10.94	34.18
1995	0.0447	0.0329	0.0276	0.0177	0.0175	27.50	23.69	9.62	39.19

ENDNOTES

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