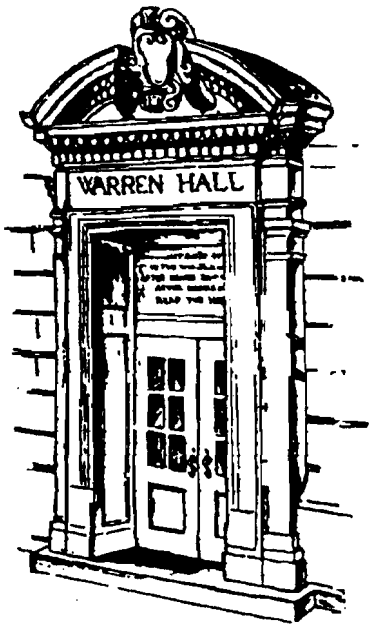

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WHICH REGIONAL INEQUALITY? THE EVOLTION OF RURAL-URBAN AND INLAND-COASTAL INEQUALITY IN CHINA, 1983-1995

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Which Regional Inequality?

The Evolution of Rural-Urban and Inland-Coastal Inequality in China, 1983-1995

by

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ABSTRACT

This paper develops a unified empirical framework for describing the relative contribution of rural-urban and inland-coastal inequality to overall regional inequality in China during the 1980s and 1990s. The framework (i) assesses rural-urban and inland-coastal inequalities from the same dataset, (ii) presents results for a sufficiently long time period to transcend short term fluctuations, (iii) allows for differential price changes and (iv) applies a consistent notion of "contribution to inequality" through decomposition analysis. The paper highlights an interesting contrast. While the contribution of rural-urban inequality is much higher than that of inland-coastal inequality in terms of levels, the trend is very different -- the rural-urban contribution has not changed very much, if anything it has decreased a little, but the inland-coastal contribution has increased several fold. The paper ends by speculating on the possible reasons for this empirical observation.

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1. Introduction

The object of this paper is to contribute to the debate on growth and inequality in China by developing a coherent and unified empirical framework for describing the relative evolution of rural-urban and inland-coastal inequalities over a significant period of time. China presents us with the case of a country which has undergone phenomenal economic growth, but where there are deep concerns about growing inequalities. These concerns have come from inside and outside China. Inside China, commentators have expressed concerns on regional inequality. Thus Hu Angang (1996), an influential researcher in China, warned that further increases in regional disparities may lead to China's dissolution like the former Yugoslavia. Xue (1997) noted that "further expansions of the differences may create serious social and political problems, generate nationalist conflicts and negatively influence China's economic and social stability." Commentators have stressed, in particular, rural-urban and inland-coastal differentials (Li, 1996; Li and Zhang, 1996; Huang, 1996; Hu, 1996; Yang, 1996; Ye, 1996).

Not surprisingly, there is a large academic literature which attempts to describe and explain the patterns of regional inequality in China. However, a number of different data sources, different time periods, and different methodologies are used to draw a range of conclusions. Thus, for example, Lyons (1991) showed a downward trend in inter-provincial inequality up to 1987, using nominal per capita National Material Product. In contrast, Tsui (1991) argued for an upward trend of this inequality up to 1985 using deflated per capita National Income Utilized. But in a later paper (Tsui, 1996) he found a U-shaped evolution of regional inequality in the post reform period using real per capita

GDP from 1978 to 1989. Chen and Fleisher (1996), however, argue for a decline in inter-provincial inequality until the early 1990s, based on per capita real provincial GDP and National Income, but with inequality calculated without provincial population weights They also found, using the same method, that the gap between inland and coastal provinces increased in the 1980s. Jian, Sachs and Warner (1996) found growing divergence between inland and coastal province, but for 1990-1993. Using only rural income at the provincial level, Yao (1997) found a significant increase in regional inequality for 1986-92.

Much attention has been devoted also to the rural-urban dimension of inequality. The rural-urban gap has been commented on, for example, by Xue (1997), who uses aggregate time series data on nominal rural and urban consumption to demonstrate a dramatic increase in the ratio of these magnitudes (see also Yang, 1996 and Ye, 1996). Tsui (1993) does a detailed decomposition of rural-urban (and inland-coastal) inequality with county level data. But this is a snapshot, for 1982--he finds that rural urban inequality is the major component of county level regional inequality in China. Similar decompositions are done, again for a single year (1986), by Hussain et. al (1994) on the basis of a specially conducted survey. The trend of within-rural or within-urban inequality has been investigated through detailed household surveys, but coverage is restricted to the late 1980s, and to particular provinces. Aaberge and Li (1997) found that urban Gini coefficients increased slightly from 1986 to 1990 in two provinces; Chen and Ravallion (1996) concluded that rural inequality increased slightly from 1985 to 1990 in four southern provinces; Rozelle (1994) found an increase in rural inequality during 1984 - 1989 in Jiangsu Province.

Thus, while the different strands of analysis all point to the problem of increasing inequality, coming at it from different angles, we do not find a coherent analysis which treats the relative evolution of rural-urban and inland-coastal inequality in a unified empirical framework. Tsui's (1993) work comes closest to the spirit of our intentions, but his work is for a single year, and cannot speak to the relative evolution of the different dimensions of inequality over a significant time period. Our object is to develop a framework in which (i) rural-urban and inland-coastal inequalities can be assessed from the same data set, (ii) there is a sufficient run of data to allow interesting intertemporal comparisons to be made which transcend possible short term fluctuations, (iii) price changes can be allowed for to the extent possible, and (iv) a consistent notion of "contribution to inequality" can be applied throughout. Such a framework is developed in the Section 2 of the paper. Section 3 of the paper presents the main results--to anticipate, we find that while the rural-urban gap is a more important contribution to overall regional inequality in China, the inland-coastal component has been growing very fast from a low level. Section 4 of the paper concludes by speculating on the reasons for this marked contrast between the two dimensions of inequality.

2. Data and Methodology

2.1 Data

Previous studies on regional inequality have mainly used Soviet type statistics such as Gross Value of Industrial and Agricultural Output or GVIAO (e.g. Bramall and Jones, 1993; Rozelle, 1994; Tsui, 1993; Yao, 1997), Net Material Product or NMP (e.g. Tsui,

1991; Lyons, 1991), and National Income Utilized or NIU (e.g. Tsui, 1991; Lyons, 1991), in large part because there exist long term data series for these. All these measures are different from GDP in the sense that services are excluded. Also, GVIAO includes intermediate input, which may result in double counting in industrial sectors. Since the agricultural sector uses less intermediate input than the industrial sector, the double counting may exaggerate the degree of rural-urban inequality (Tsui, 1993). In addition, all these measures are not designed for reflecting the living standards across different regions and differ from commonly used measures of income or expenditures. In the literature related to within-rural or within-urban inequalities (Khan et al., 1994; Hussain et al., 1994; Chen and Ravallion, 1996; Aaberge and Li, 1997), income and expenditures are more often used as measures of the standard living. Generally speaking, expenditures are more appropriate than income for measuring the living standard because they are usually less subject to short-term fluctuations and proxy permanent income better than other measures(Grootaert, 1995).

Since 1983, both rural and urban per capita consumption expenditures at a provincial level have been published in *China Statistics Yearbook.* These average expenditures are compiled from annual rural and urban household survey data by the China State Statistical Bureau (SSB). Alongside the nominal expenditures, the annual growth rates of real expenditures are also published on the basis of separate rural and urban price indices[1]. China did not start radical price reform until October, 1984 when the

[1] According to the China Statistical Yearbook (1995, p. 54), rural and urban resident consumption refers to "total final consumption of goods and services by the resident units in a certain period of time; including the purchase of various kinds of goods for consumption and outlays of various kinds of services, such as rents, traffic, health care, cultural life and education, etc.; imputed value of consumption of owner-occupied dwelling and consumption goods in the form of physical wages obtained by residents,

central government completely lift the control over all small commodities (Tong, 1987, p. 57). Before that, price was under strict control by state governments and only allowed to fluctuate within a 2 percent bound each year mainly for the purpose of keeping price stability instead of sending market signal to supply and demand (Tang, 1987, p. 27). As a result, "in 1983 free prices covered only approximately 4 per cent of the items in domestic trade" (Guo, 1992, p. 43). On this basis, we make the assumption that price levels were the same for all provinces in 1983, and the nominal expenditures are equivalent to the real expenditures in that year. Under this assumption, the real expenditures for the whole period 1983 to 1995 (the latest available year) can be derived from the base year's nominal expenditures and the published annual growth rates of real expenditures.

In China, own production constitutes a large share of consumption for rural households (Chen and Ravallion, 1996; Zhang, 1998). It is worth mentioning how rural consumption expenditures are estimated by the SSB. The consumption from self-production is valued at fixed state prices, which might be different from the market prices. However, the sale of products and purchased inputs are all valued at market prices. As a result, using fixed state prices instead of market prices to value the consumption from self-production may lead to an underestimation of expenditures for rural residents (Chen and Ravallion,1996). Also, the officially used sampling method and income (expenditure) definition may result in underestimation of the overall inequality (Bramall and Jones, 1993; Griffin and Zhao, 1993). In addition, there exist some non-comparabilities between the rural and urban residents. For instance, urban residents enjoyed housing and medical care

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excluding outlays on the purchase of buildings and production." The annual growth rates of real consumption per capita of national, rural (agricultural), and urban (non-agricultural) residents are

subsidies while rural residents do not. In spite of these shortcomings of the consumption expenditure measure, it is the only summary measure at a provincial level which is readily available, consistently compiled, and covers both rural and urban populations in all the provinces for a reasonably long period.

We also need rural and urban population weights for each province. Prior to 1985, these data were published in *China Statistics Yearbook.* Thereafter, they can only be found from other data sources, such as *China Population Statistics.* Urban and rural residency refer to the status registered in the household register system. Principally speaking, rural and urban residents are supposed to specialize in farm work and non-farm work in their registration areas, respectively. The strict household register system prevents population from moving freely to a large extent. However, with the success of rural reform, many workers are freed up from agriculture activities and move to urban areas, especially to big cities, to seek opportunities without any entitlement to subsidies like urban residents. It is as well to be aware of the possible biases resulting from using the official registered numbers of rural and urban population.

Tibet and Hainan Provinces are excluded from the analysis due to lack of consistent data on annual growth rates of per capita real expenditure. As a consequence, there are 28 Provinces in the sample--with rural and urban components for each Province, this makes 56 observations per year for each year from 1983 to 1995. Now, while the rural-urban classification is well developed and established in statistical sources, there is less guidance on how to arrive empirically at the inland-coastal divide. One approach to this is to go to the literature on inter-zone inequality in China. Zones are the level of

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calculated based on separate comparable prices (SSB, 1995, p. 258) "to reflect accurately the change in

aggregation above Provinces, and there exist at least two ways to classify these (see Yang, 1997 for a detailed discussion). One way (following Tsui, 1993; Huang, 1996; Yao, 1997) is to divide China into three zones--east (i.e. coast), middle and west. The other way (Chen and Fleisher, 1996; Yang and Wei, 1996) is to classify China as just two zones--coast and inland. But under both, the east or coast zone includes the following provinces: Beijing, Liaoning, Tianjin, Hebei, Shandong, Jiangsu, Shanghai, Zhejiang, Fujian, Guangdong and Guangxi. We follow this procedure, and classify all the remaining Provinces as inland for our study.

2.2 Decomposition Methodology

Our assessment of the evolution of the relative contributions of rural-urban and inland-coastal gaps to overall regional inequality in China is based on a decomposition methodology as set out in Cowell (1995) and followed by Tsui (1993). We use the Generalized Entropy (GE) class of inequality measures (Shorrocks 1980, 1984), which can be written as:

$$I(y)=\begin{cases}\sum_{i=1}^{n} f(y_i)\left\{\left(\frac{y_i}{\mu}\right)^{c}-1\right\} & c\neq 0,1\\ \sum_{i=1}^{n} f(y_i)\left(\frac{y_i}{\mu}\right)\log\left(\frac{y_i}{\mu}\right) & c=1\\ \sum_{i=1}^{n} f(y_i)\log\left(\frac{\mu}{y_i}\right) & c=0\end{cases} \qquad (1)$$

real term(s)" (SSB, 1995, p. 52).

In the above equation, y_i is i^{th} income, μ is the total sample mean, $f(y_i)$ is the population share of y_i in the total population and n is total population. The key feature of the GE measure is that it is additively decomposable. For K exogenously given groups indexed by g:

$$I(y)=\sum_{g}^{K} w_g I_g + I(\mu_1 e_1,\ldots,\mu_K e_K) \qquad (2)$$

$$\text{where } w_g = \begin{cases} f_g\left(\frac{\mu_g}{\mu}\right)^c & c \neq 0,1 \\ f_g\left(\frac{\mu_g}{\mu}\right) & c=1 \\ f_g & c=0 \end{cases}$$

where I_g is inequality in the g^{th} group, μ_g is the mean of the g^{th} group and e_g is a vector of 1's of length n_g, where n_g is the population of the g^{th} group. If n is the total population of all groups, then $f_g = \frac{n_g}{n}$ represents the share of the g^{th} group's population in the total population. The first term on the right side of (2) represents the within-group inequality. $\frac{w_g I_g}{I(y)} * 100$ is the gth group's contribution to total inequality. The second term is the between-group (or inter-group) component of total inequality.

For all values of the parameter c, the GE measure is additively decomposable in the sense formalized by Shorrocks (1980, 1984), and this property allows us to talk about the "contribution" of different component to overall inequality. For values of c less than 2, the measure is transfer sensitive (Shorrocks and Foster, 1987), in the sense that it is more sensitive to transfers at the bottom end of the distribution than at the top. When c is

1 or 0, we have the measures of inequality made famous by Theil (see Cowell, 1995). For simplicity we only present results in this paper for c=0. The results for c=1 are similar.

3. Empirical Results

With a common data set, and a decomposition methodology, we are now in a position to assess the relative contributions over time of rural-urban and inland-coastal disparities to the evolution of regional inequality in China. Before the decomposition analysis, however, let us consider the overall inequality. For each year we calculate several measures of inequality from the 56 observations in our data set--one rural and one urban observation for each of 28 Provinces. Apart from the GE measure (with c=0) we also present the standard Gini coefficients for the same data set. Table 1 reports the overall inequalities measured by Gini coefficient and the GE index. Figure 1 presents the time path of inequality in real per capita expenditures from 1983 to 1995. The Figure shows the evolution of the measures relative to their 1983 values.

Three features are immediately apparent from the Table 1 and Figure 1. First, the overall trend has been one of sharply increasing regional inequality in China during this period of very fast growth--this confirms earlier studies that there is indeed an issue to be investigated. Second, although there is an overall upward trend, this is not uniform, and there have been short periods for which inequality has actually declined. This emphasizes the importance of not relying too heavily on time series of four or five years to draw overall conclusions. Third, the GE measure rises much faster than the Gini. This indicates the different sensitivities of these two measures to changes in different parts of the

distribution. The important point for us, however, is that the two measures agree on the trend over a significant length of time. When we move to a deeper investigation of this trend, we focus on the GE measure because it, unlike the Gini, is additively decomposable across socio-economic groups.

Tables 2, 3, and 4 capture the key empirical results on the evolution of rural-urban and inland-coastal inequalities in China over the period 1983 to 1995. Table 2 shows the evolution of (population weighted) urban-rural and coastal-inland mean real expenditures. Figure 2 graphs these results. Two features stand out from these mean ratios. First, the rural-urban gap is much higher than the inland-coastal gap, over the entire period. However, second, while the rural-urban gap shows a weak upward trend has remained more or less constant--if anything, it tended to decline in the 1980s and rise in the 1990s, with an increase of 6%--but the inland-coastal gap has increased sharply; there has been a 23% increase in the coast/inland ratio of mean real per capita expenditures. Table 3 follows up by presenting results on GE inequality within each of the four groupings rural, urban, inland, and coastal, and Figure 3 graphs the results. It is seen that inequality increased on trend in each of these groupings. Certainly there seems to have been a generalized increase in regional inequality in China within each of a set of broad categories.

Thus overall inequality increased, and so did its components. But which components increased relatively fast, and whose relative contribution to overall inequality increased? Table 4 presents the decomposition analysis, and this is graphed in Figure 4. It is seen that the within-rural and within-urban contribution to overall inequality increased during this period, while the contribution of within-inland and within-coastal declined. At

the same time, the between rural-urban contribution to total inequality was high but showed a weak downward trend over time, while the between inland-coastal contribution was low but increased dramatically, although overall the contribution of the rural-urban gap to total inequality still dominates.

We have thus seen that the disequalising forces behind China's dramatic increase in regional inequality have played themselves out within each of the four major categories of rural, urban, inland and coastal, and also across the inland-coastal divide. On the other hand, these forces seem not to have operated quite so strongly across the rural-urban divide. There has been considerable discussion of increasing inequalities within rural areas, for example, and the role of incentives and the reform process have been discussed (e.g. Rozelle, 1994; Chen and Ravallion, 1996). What our analysis seems to have revealed additionally, however, is the relative dynamic roles of the inland-coastal gap and the rural-urban gap--the former is low relative to the latter but increasing fast, while the latter is large but stagnant. To see this playing out in great detail, consider Tables 5 and 6 which are graphed in Figures 5 and 6. Table 5 takes only the rural areas, and decomposes rural inequality across inland and coastal groupings. It is seen that the disequalising forces behind the inland-coastal divide play themselves out even when we restrict attention only to rural areas. Correspondingly, Table 6 looks only at inland areas, and does the rural-urban decomposition. We see immediately that the relative contribution of the rural-urban divide is high, but stays more or less constant. These empirical regularities further confirm the very differently evolving roles of the rural-urban and inland-coastal divides in China.

4. Conclusions and Further Research

It does seem, then, that the forces of growth and distribution are increasing the coastal-inland gap dramatically while not changing the rural-urban gap greatly. What might explain this? There are several possible explanations, and we offer some here in preliminary fashion. First, labor migration may occur more easily to an urban area from its rural hinterland than from an inland area to a coastal area. Second, the impact of reform in rural areas, especially in village enterprises, has meant that rural incomes in general have kept pace with their urban areas. However, third, the dynamic growth in the coastal areas has been of an altogether different magnitude and nature, pulling these far away from the inland areas. The rural areas surrounding the coastal urban explosion have benefited, indeed some of the growth areas are spilling over into what were once, and perhaps still are, counted as rural areas. These forces are leading to a split in China along the coastal-inland divide which is becoming increasingly more pronounced and will, eventually at this rate, come to dominate the traditional rural-urban divide.

The key analysis for testing these hypotheses requires data on rural-urban and coastal-inland migration. A growing literature on migration in China supports these hypotheses. The Hukou system (household registration system), established in the 1950s, pretty much confined people to the village or city of their birth (Chan, 1995, Solinger, 1993). After the success of the rural reform in the 1980s, which freed labor from agricultural production, an explicit policy was adopted to localize migration. To quote the Ministry of Labor (Li, 1996), the aim of the policy is to "limit the interregional movement of workers to the current level and the majority of redundant rural workers should leave

agriculture for new jobs locally." Not surprisingly, local rural-urban migration increased, but cross-regional migration remained difficult. Zhang and Chi (1996), in a study of six inland provinces, find that more than 96 percent of rural-to-urban migration was intra-provincial; Meng (1994) shows that in a survey of four counties, two coastal and two inland, less than 2.8 percent of workers in rural industries were from outside the provinces; Banister (1997) estimated that about 3.5 percent of total rural population worked outside its province of origin. Thus, although there is more mobility for educated workers (Zhang and Chi, 1996), labor markets are still fragmented across provincial lines. This migration story is broadly consistent with the rural-urban and inland-coastal inequality trends described in this paper (see also Tian et al., 1996). However, much more work is needed in analyzing the specifics of the interaction at different points in time, and in different parts of China.

References

Aaberge, Rolf and X. Li (1997), "The Trend in Urban Income Inequality in Two Chinese Provinces, 1986-90." *Review of Income and Wealth*, 43(3):335-355.

Banister, Judith (1997), "China: Internal and Regional Migration Trends" in Thomas Scharping ed., *Floating Population and Migration in China: the Impact of Economic Reforms*. Berbund Stiftung Deutsches Ubersee-Institut.

Bramall, Chris and M. E. Jones (1993), "Rural Income Inequality in China since 1978". *The Journal of Peasant Studies*, 21(1):41-70.

Chang, Kam Wing (1995), "Migration Controls and Urban Society in Post-Mao China." Seattle Population Research Center working paper, No. 95-2.

Chen, Jian and B. M. Fleisher (1996), "Regional Income Inequality and Economic Growth in China." *J. of Comparative Economics*, 22: 141-164.

Chen, Shaohua and M. Ravallion (1996), "Data in Transition: Assessing Rural Living Standards in Southern China." *China Economic Review*, 7(1): 23-56.

China State Statistics Bureau (SSB), *China Statistical Yearbook*, various issues. China Statistical Press.

China State Statistics Bureau (SSB), *China Population Statistics*, various issues. China Statistical Press.

Cowell Frank (1995), *Measuring Inequality*, Prentice Hall/Harvester Wheatsheaf.

Fleisher, B. M. and J. Chen (1997), "The Coast-Noncoast Income Gap, Productivity, and Regional Economic Policy in China." *J. of Comparative Economics*, 25:220-236.

Griffin, Keith and R. Zhao (1993), *Distribution of Income in China*. Macmillan, London.

Grootaert, Christiaan (1995), "Structural Change and Poverty in Africa: A Decomposition Analysis for Cote d'Ivoire." *J. of Development Economics*, 47:375-401.

Guo Jiann-Jong (1992), *Price Reform in China, 1979-1986*. St. Martin's Press, New York.

Hu, Angang (1996), "Excessively Large Regional Gaps Are Too Risky." *Chinese Economics Studies*, 22(6): 72-75.

Huang, Shikang (1997), "Control the Development Gap Between the Seaboard and the Interior; Accelerate the Development of Central and Western Regions." *Chinese Economics Studies*, 29(6): 76-82.

Hussain, A., P. Lanjouw, and N. Stern, "Income Inequalities in China: Evidence from Household Survey Data." *World Development Report*, 22(12): 1947-57.

Jian, T., J. Sachs, and A. Warner (1996), "Trends in Regional Inequalities in China." NBER working paper, No. 5412.

Khan, Azizur Rahman, K. Griffin, C. Riskin, and R. Zhao (1993), "Sources of Income Inequality in Post-reform China". *China Economic Review*, 4(1): 19-35.

Li, Baiyong (1996), "Objective of Labor Work in New Century." *Renmin Luntan (People's Forum)*, January 8.

Li, Peilin (1996), "Has China Become Polarized?" *Chinese Economics Studies*, 29(3): 73-76.

Li, Qiang and Z. Zhang (1996), "Lasting Political Stability Requires a Massive Middle-Income Stratum." *Chinese Economic Studies*, 29(6): 68-71.

Lyons, T. P. (1991), "Interprovincial Disparities in China: Output and Consumption, 1952-1987." *Economic Development and Cultural Change* 39(3): 471-506.

Meng, Xi (1994), "Rural Labor Market and TVEs Development" in Qingsong Lin and William Byrd ed., *China's Rural Industry: Structure, Development, and Reform* (Chinese version). Oxford University Press.

Rozelle, Scott (1994), "Rural Industrialization and Increasing Inequality: Emerging Patterns in China's Reforming Economy." *J. of Comparative Economics*, 19: 362-391.

Shorrocks, A.(1980), "The Class of Additively Decomposable Inequality Measures." *Econometrica*, 48: 613-625.

Shorrocks, A.(1984), "Inequality Decomposition by Population Subgroup." *Econometrica*, 52: 1369-1385.

Shorrocks, A. and J. E. Foster (1987), "Transfer Sensitive Inequality Measures." *Rev. of Economics studies*, 54: 485-497.

Solinger, Dorothy (1993), "China's Transients and the State: a Form of Civil Society." *Politics and Society* 21(1): 98-103.

Tang, Xianguo (1987), *The Reform of China's Pricing System.* Institut universitaire de hautes oetudes internationales, Genaeve.

Tsui, Kai-yuen (1991), " China's Regional Inequality, 1952-1985." *J. of Comparative Economics*, 15:1-21.

Tsui, Kai-yuen (1993), "Decomposition of China's Regional Inequalities." *J. of Comparative Economics*, 17:600-627.

Tsui, Kai-yuen (1996), "Economic Reform and Interprovincial Inequalities in China." *J. of Development Economics*, 50: 353-368.

Xue, Jinjun (1997), "Urban-Rural Income Disparity and Its Significance in China." *Hitotsubashi J. of Economics*, 38:45-59.

Yang, Dali (1997), *Beyond Beijing: Liberalization and the Regions in China.* Routledge, New York.

Yang, Yihong (1996), "Is 'Excessive Distribution' a Good Thing or a Bad Thing?" *Chinese Economic Studies*, 29(6): 46-53.

Yao, Shujie (1997), "Industrialization and Spatial Income Inequality in Rural China, 1986-92." *Economics of Transition*, 5(1): 97-112.

Ye, Fujin (1996), "Since the Government Is the Referee, Why Does it Get Into the Game?" *Chinese Economics Studies*, 29(6): 41-45.

Zhang, Toni T. and Peter S. Chi (1996), "Determinants of Rural-Urban Migration: a Study of Six Provinces in China, 1985-1990". Paper presented in the Annual Meeting of the Population Association of America, New Orleans, May 9-11.

Zhang, Xiaobo (1998), *Food Demand in China: A Case of Guangdong Province*, Master's Thesis, Cornell University.

Table 1 Inequality Measures, 1983-1995

Year	Gini	GE
1983	0.220	0.079
1984	0.217	0.076
1985	0.216	0.075
1986	0.225	0.080
1987	0.230	0.083
1988	0.239	0.089
1989	0.237	0.088
1990	0.241	0.091
1991	0.250	0.098
1992	0.263	0.108
1993	0.267	0.112
1994	0.273	0.117
1995	0.277	0.120

Table 2 Real Expenditures and Ratios

Year	Urban	Rural	Urban/Rural	Coast	Inland	Coast/Inland
1983	573	248	2.31	343	280	1.23
1984	622	278	2.24	383	313	1.22
1985	669	299	2.23	412	340	1.21
1986	709	316	2.25	440	359	1.22
1987	741	327	2.26	463	374	1.24
1988	775	335	2.32	486	382	1.27
1989	740	326	2.27	468	373	1.26
1990	761	327	2.33	476	376	1.27
1991	805	336	2.39	505	386	1.31
1992	871	354	2.46	556	404	1.38
1993	944	379	2.49	611	434	1.41
1994	1010	405	2.49	669	460	1.45
1995	1091	443	2.46	746	495	1.51

Table 3 Inequality Within Groups:
The GE index for Rural, Urban, Coast and Inland

Year	Rural	Urban	Coast	Inland
83	0.019	0.009	0.068	0.077
84	0.021	0.009	0.067	0.073
85	0.020	0.008	0.064	0.076
86	0.023	0.008	0.067	0.081
87	0.024	0.008	0.070	0.083
88	0.026	0.008	0.080	0.084
89	0.027	0.010	0.080	0.082
90	0.026	0.009	0.085	0.084
91	0.028	0.010	0.088	0.090
92	0.033	0.014	0.098	0.094
93	0.032	0.014	0.100	0.095
94	0.036	0.016	0.100	0.099
95	0.040	0.020	0.099	0.099

Table 4 GE Inequality Decomposition: Contributions to Overall Inequality

	Rural/Urban decomposition			Coast/Inland decomposition		
Year	Rural-Urban	Urban	Rural	Coast-Inland	Coast	Inland
1983	78.09	2.04	19.87	6.45	35.72	57.82
1984	75.76	2.10	22.14	6.55	36.57	56.88
1985	76.95	1.99	21.06	5.96	35.20	58.84
1986	74.50	2.04	23.45	6.26	34.33	59.41
1987	74.84	1.95	23.21	6.65	34.97	58.38
1988	74.70	1.89	23.41	8.02	36.55	55.43
1989	73.28	2.43	24.30	7.23	37.59	55.18
1990	74.88	2.17	22.95	7.49	38.42	54.09
1991	75.53	2.25	22.22	9.07	36.85	54.08
1992	73.54	2.86	23.60	11.60	37.25	51.15
1993	75.12	2.87	22.01	12.90	37.15	49.95
1994	73.25	3.12	23.63	14.74	35.13	50.13
1995	70.65	4.00	25.35	17.33	33.77	48.90
Growth(%)	-9.5	95.9	27.6	168.5	-5.5	-15.4

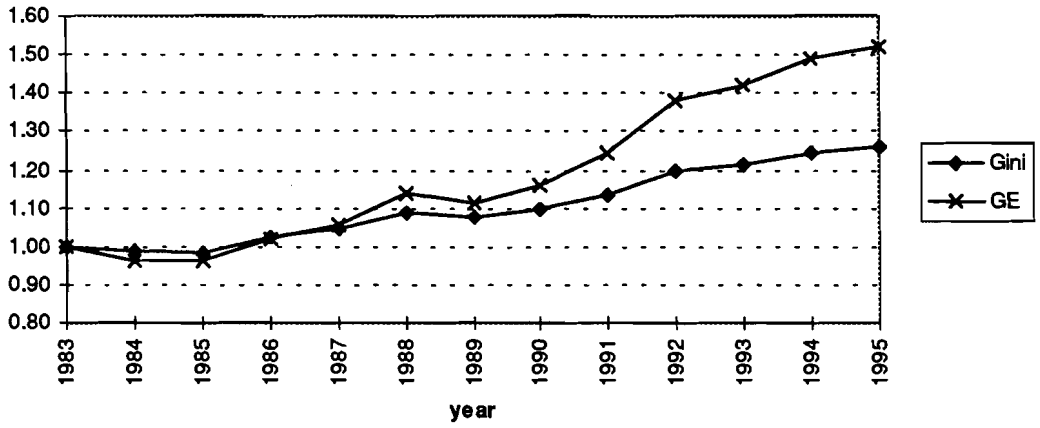
Table 5 Coast-Inland Inequality Decomposition within Rural Areas

Year	Coast-inland	Coast	Inland
83	30.99	31.08	37.93
84	26.52	33.39	40.09
85	28.13	34.62	37.25
86	26.06	31.75	42.19
87	27.89	33.98	38.13
88	28.83	38.19	32.98
89	24.78	42.42	32.81
90	25.39	43.06	31.55
91	32.39	38.25	29.36
92	38.10	39.68	22.22
93	43.65	38.32	18.03
94	46.47	33.95	19.59
95	49.05	28.71	22.24

Table 6 Rural-Urban Inequality Decomposition within Inland Areas

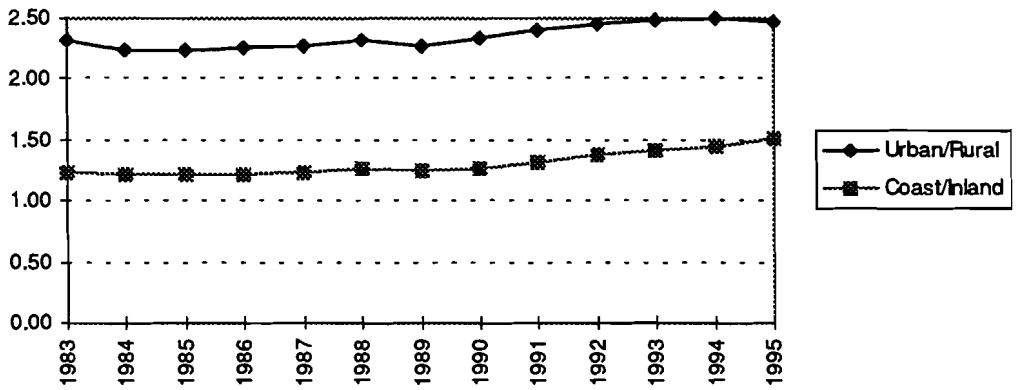
Year	Rural-Urban	Urban	Rural
1983	85.69	1.28	13.03
1984	83.21	1.18	15.61
1985	85.17	1.50	13.34
1986	81.82	1.53	16.66
1987	83.46	1.38	15.16
1988	85.05	1.02	13.93
1989	84.11	1.44	14.45
1990	85.52	1.09	13.39
1991	86.81	1.13	12.06
1992	88.67	1.08	10.25
1993	91.16	0.90	7.94
1994	89.60	1.17	9.23
1995	86.97	1.49	11.53

Figure 1 Inequality: Evolution Relative to 1983



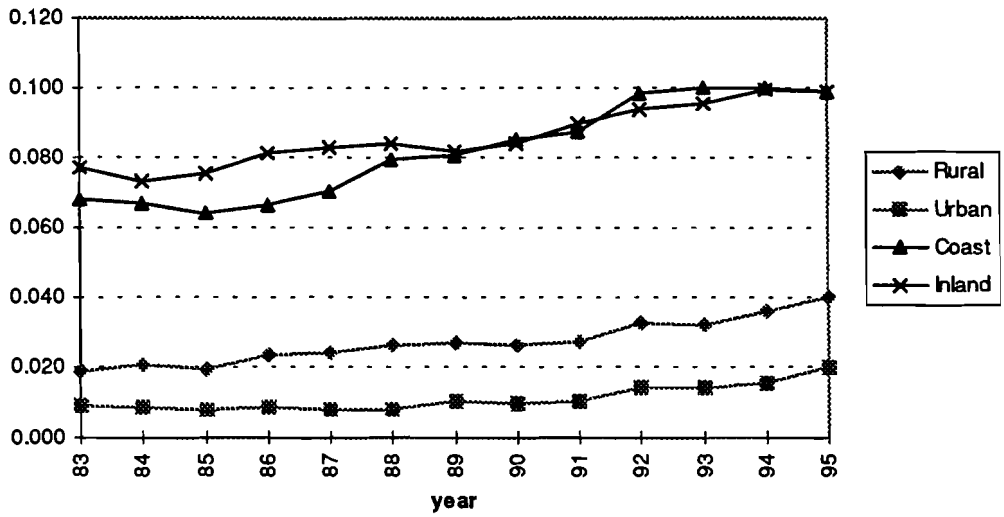
Source: Table 1.

Figure 2 Ratios of Real Expenditures: Urban/Rural and Coast/Inland



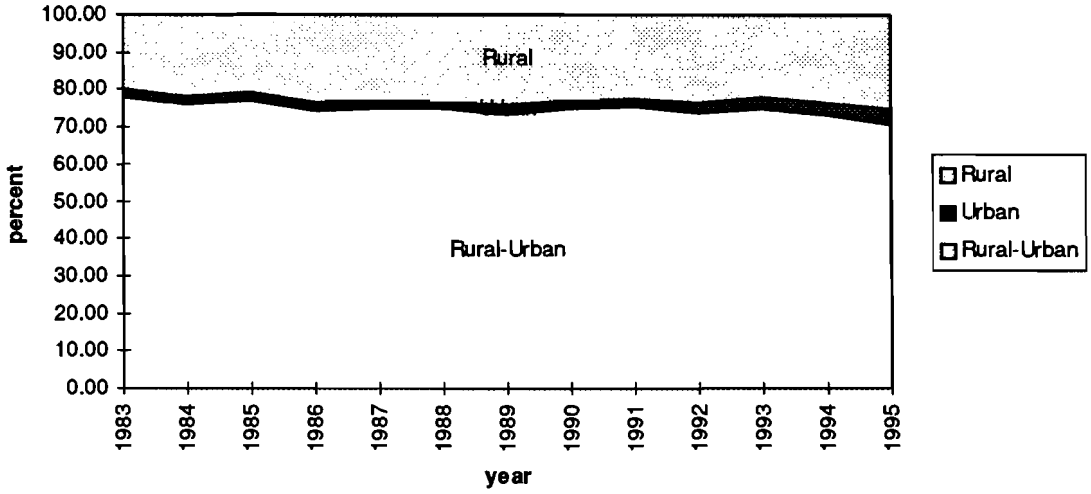
Source: Table 2.

Figure 3 Inequality Within Groups



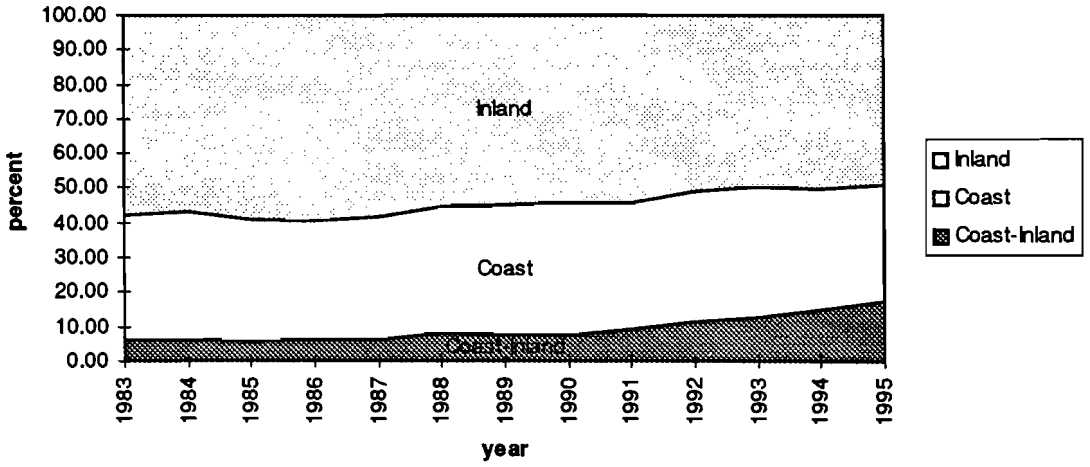
Source: Table 3.

Figure 4a Inequality Decomposition: Rural/Urban



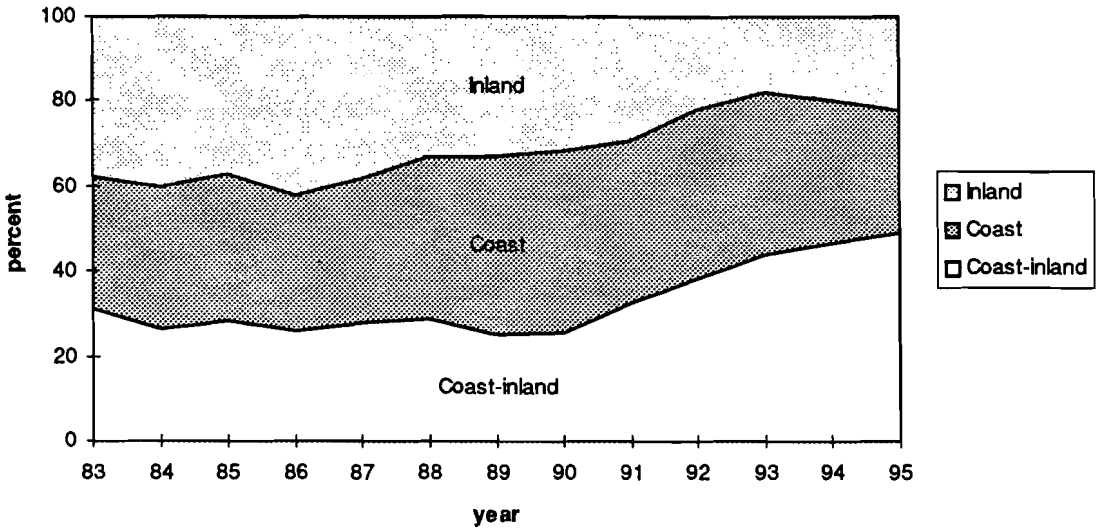
Source: Table 4.

Figure 4b Inequality Decomposition: Coast/Inland



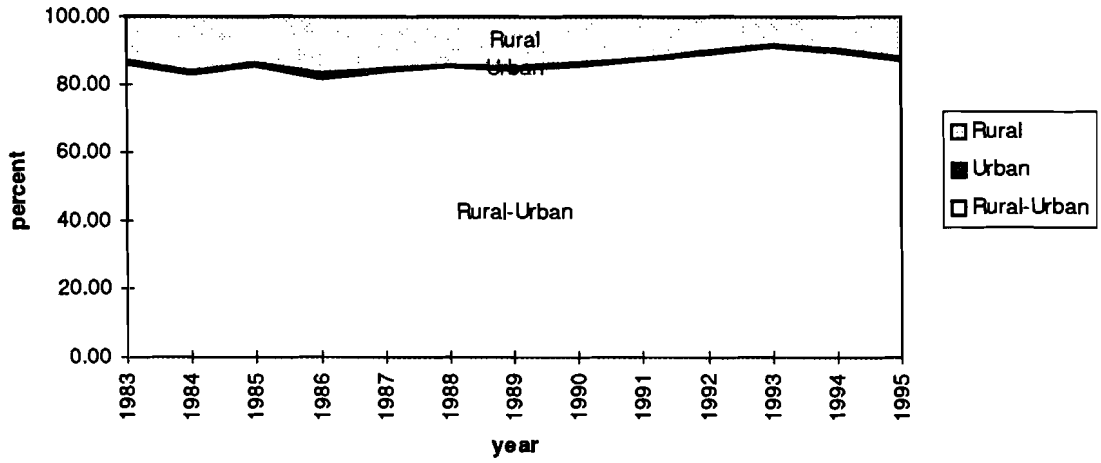
Source: Table 4.

Figure 5 Coast-Inland Inequality Decomposition within Rural Areas



Source: Table 5.

Figure 6 Rural-Urban Inequality Decomposition within Inland Areas



Source: Table 6.

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