China's GDP: Examining provincial disparities (1952–1998)

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Article

China's GDP: Examining provincial disparities (1952–1998)

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Abstract Accompanying rapid economic growth in China, there have been provincial disparities. This article presents and analyzes the evolution of China's provincial GDP per capita disparity between 1952 and 1998. First, an examination of some basic indicators of disparity is carried out, and a test for unconditional convergence is performed to explore the dispersion features. Then, a more comprehensive regression analysis, allowing insights into the evidence of conditional convergence and highlighting the main determinants of growth in two main periods of the recent history of China (i.e., prereform and postreform) is presented. Finally, a discussion and conclusion are provided.

Key words Regional disparity · Unconditional convergence · Conditional convergence · China

1 Introduction

The latter half of the 20th century saw the prominent emergence of China in the world economy, attracting worldwide attention. China has become the world's seventh largest economy (the second largest economy when measured in terms of purchasing power parity) and the second largest recipient of foreign direct investment, and has achieved an impressive record of rapid growth, with an average annual rate of over 10% since 1978 when it adopted an "open door" policy and market-oriented economic reforms. On the other hand, China is a land of considerable regional variation in growth experience. Alongside the fast economic growth, one of the most noteworthy aspects of China's GDP performance has been its widening regional disparity. The coastal area is booming at an average 10.3% annual growth rate of real GDP per capita in the reform era, while the inland provinces are also growing, but at a slower pace of 8.2% annually. As a consequence, the gap between coastal and inland provinces is growing fast. In 1998, the per capita GDP of Shanghai, the richest provincial unit, was 12 times that of the poorest, Guizhou Province.

Given the significant impacts of regional disparities on economic, social, and political developments, clarifying the exact trends of China's provincial GDP per capita disparity during both the prereform and the postreform eras and understanding the mechanisms and determinants behind the provincial development differences will have important implications not only for currently implemented Western Development Strategy but also for future growth in China.

This article presents and analyzes the evolution of China's provincial disparity since the 1950s up to the present. The analysis here proceeds as follows: first, an examination of some basic indicators of disparity is carried out; second, a test for unconditional convergence is performed; third, a more comprehensive regression analysis, allowing insights into the evidence of conditional convergence and highlighting the main determinants of growth in two main periods of the recent history of China (i.e. pre-reform and post-reform) is presented; finally a discussion and conclusion is provided.

2 Time-series properties of provincial GDP per capita disparity: 1952–98

The analysis here has been concentrated on Mainland China. Hong Kong and Macao have been excluded, since those provinces exhibit special characteristics and their historical economic growth paths differ significantly from that of the other provinces. Mainland China is currently divided into 31 provinces. The provincial units with seashore are classified as part of the coastal region, except for Beijing, which is just next to the port city of Tianjin. All other provincial units are classified as the interior.[1]

In general discussions, Chinese economic development history can be broadly divided into the prereform (1949–78) era and the postreform (1979-present) era. The prereform phase can be further subdivided into several subperiods: Revolution and Land Reform (1949–56), The Great Leap Forward and the Great Famine (1957–61), Post-Famine Recovery (1962–65), and Cultural Revolution (1966–78). The postreform phase can also be divided into subperiods, as follows: Agricultural and Rural Reform (1979–84), Broadening of Reform (1985–91), and Deepening of Reform (1992-present). This division reflects important political and social events that have changed China's course and will be referred to when explaining the results of this analysis.

This section attempts to derive some estimates of disparities among China's 31 provinces by applying the data on GDP per capita recently released by the Chinese State Statistical Bureau (SSB 1999). All GDP figures are converted and expressed in Chinese currency of RMB in 1998 constant prices. Region-specific price indexes are used to obtain GDP per capita in constant prices. The provincial

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[1] Therefore, the coastal region includes 12 provinces: Beijing, Tianjin, Hebei, Liaoning, Shandong, Jiangsu, Shanghai, Zhejang, Fujian, Guangdong, and Guangxi; and the inland region includes 19 provinces: Anhui, Chongqing, Gansu, Guizhou, Heilongjiang, Henan, Hubei, Hunan, Inner Mongolia, Jiangxi, Jilin, Ningxia, Qinghai, Shannxi, Sichuan, Tibet, Xinjiang, and Yunnan.

specific deflators applied to the GDP per capita figures are also issued by SSB. The data are available for the long period 1952–98. This means they the Chinese official GDP growth rates are accepted in this study, and no attempt is made to conduct more sophisticated quality-control analyses of the data.

This section aims to compare the findings from different methods, i.e., both absolute and relative measurements with different indicators. Absolute measurements demonstrate the level of difference among provinces; relative measurements show changes in provincial disparity that depend on the respective pace of growth in each province during the period under examination.

2.1 Basic indicators for the changing trends of provincial GDP differences

This subsection presents the definitions of the basic indicators applied in this study. Standard deviation (SD) is chosen to describe absolute dispersion. For indicating relative dispersion, the coefficient of variation (CV), the Gini coefficient (GC), and the ratio of high/low GDP per capita (RHL) are used.

When studying regional income differences, one of the issues not generally agreed upon by all researchers is whether or not to weight the regional statistics by their population.[2] In this study, as the major focus is China's provincial GDP dispersion performance rather than the issue of general inequality, we do not introduce the provincial population weighted index.

Standard deviation. The absolute dispersion is defined as the absolute value of a certain variable to the reference value. Generally, it can be expressed by way of extreme value or standard deviation. In this study, we will use the latter measurement, which is calculated by equation 1:

$$SD(t) = \sqrt{\sum_{i=1}^{n}\left[Y_i(t) - \overline{Y}(t)\right]^2 / n} \tag{1}$$

where $Y_i(k)$ stands for the provincial GDP per capita, i for the province, n for the number of provinces to be measured, and $\overline{Y} = \Sigma_{i=1}^{n} Y_i(t)/n$ represents national per capita GDP.

Coefficient of variation. The CV is a relative measure of dispersion for use in comparing the variability of two data sets. Dividing the standard deviation by the arithmetic mean, we obtain the CV, which is defined symbolically as:

$$CV(t) = \sqrt{\sum_{i=1}^{n}\left[Y_i(t) - \overline{Y}(t)\right]^2 / n} \Big/ \overline{Y} \tag{2}$$

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[2] For example, Tsui (1991) argues that population weights provide a more accurate measure of income inequality among individual members. However, Lyons (1991) shows that the use of population weights does not provide a clear picture of changes in the degree of regional inequality.

Gini coefficient. The Gini coefficient is another relative measure, which is an aggregate numerical indicator of inequality ranging from zero (absolute equality) to one (absolute inequality). The greater the value of the coefficient, the larger is the inequality of the provincial GDP per capita distribution. Many approaches can be used to calculate the Gini coefficient. We will perform the following process to obtain it:

Let $X_j(t)$ ($j = 1,2, \ldots ,n$) be the per capita GDP of j region in year t, and $X_j(t)$ be arranged in an ascending order and renamed as $Y_i(t)$ ($i = 1,2, \ldots ,n$). We have

$$Y_1 \leq Y_2 \leq \ldots \leq Y_n.$$

Let

$$Z_i(t) = Y_i(t) \Big/ \sum_{i=1}^{n} Y_i(t), \quad i = 1,2,\ldots,n$$

$$C_i = (n+1) - i, \quad i = 1,2,\ldots,n$$

We have the Gini coefficient as follows:

$$G_n(t) = a\sum_{i=1}^{n} C_i \times Z_i(t) - b \tag{3}$$

where $a = 2/n$; $b = (n + 1)/n$; n is the number of regions as samples.

The Lorenz curve can be used to visualize the Gini coefficient. The Lorenz curve is a representation of the degree of inequality of a frequency distribution in which the cumulative percentages of a population are shown as a function of the cumulative percentage of the variable under study. A straight line rising at an angle of 45° from the origin will indicate perfect equality.

Ratio of high/low GDP per capita. The ratio of high/low GDP per capita (here denoted as RHL) is defined as the ratio of the top per capita GDP to the lowest per capita GDP among the provinces. In order to avoid some special causes of disparity, such as extra small area and sparse population in a certain province, the RHL in this study is expressed by using the ratio of the arithmetic mean value of per capita GDP of the top five provinces to that of the bottom provinces. It is common in the literature to stress that one of the key dimensions of inequality in China is between inland and coastal regions (e.g., Kanbur and Zhang 1999, 2001; Tian 1998). In order to capture such aspects of inequality, the ratio of average per capita GDP between the coastal and inland provinces, denoted by RCI, is also calculated and analyzed in this study.

2.2 Estimations of the indices and some major findings

Given the provincial data, a comprehensive time series of their disparities on the basis of the above indicators can be constructed. The results are listed in Table A1, in the appendix, based on which Fig. 1 shows the time evolution of the five basic indicators.

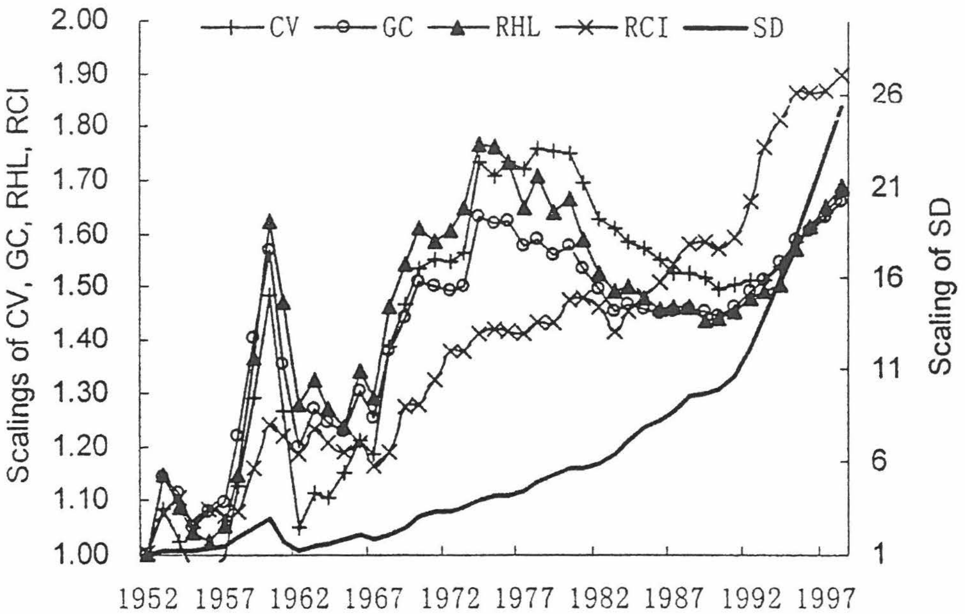

Fig. 1. Time evolutions of the five disparity indicators: coefficient of variation (*CV*), Gini coefficient (*GC*), ratio of high/low GDP/capita (*RHL*), ratio of average GDP/capita between coastal and inland region (*RCI*), and standard deviation (*SD*). Hainan Province and Tibet Autonomous Region are excluded due to incomplete data; Chongqing's data are consolidated with Sichuan Province. Thus, the real sample number is 28. All indicators are converted into comparable scaling values with the benchmark that the value in 1952 is equal to 1. The Y-coordinates of SD are on the right side; the Y-coordinates of CV, GC, RHL, and RCI are on the left side

The bold black line in Fig. 1 shows the standard deviation of per capita GDP for China's provinces and metropolitan cities during 1952–98. A sharp, steady rising trend of the absolute dispersion, from 204 RMB in 1952 to 5181 RMB in 1998, is illustrated.

Absolute disparities are, however, not very appropriate for comparison between different data sets in different periods, i.e., changes in disparities over time. Attention should be given, therefore, to relative disparities. Figure 2 presents the CVs of per capita provincial GDP constructed from two samples. The first one consisted of 28 provinces that had complete income data for the whole period of 1952–98. The CV of the GDP per capita for the 28 provinces (measured in 1998 price) increased from 0.42 to 0.78 over the prereform period 1952–78. Along the generally rising trend there is a salient point with the CV of 0.74 in the year of 1960, which is the end year of the Great Leap Forward phase. From the starting year of the market-oriented economic reform, the CV showed a decline and reached 0.63 in 1990, resuming its upward trend afterwards.

Including the three metropolitan cities (Beijing, Shanghai, and Tianjin) in the coastal group to compare with other inland provinces is problematic, as these three cities are mainly urban economies. They are much smaller and more homogeneous than other provinces in the sample, and they have been traditionally richer than other provinces, closer to coastal areas. In addition, they operate

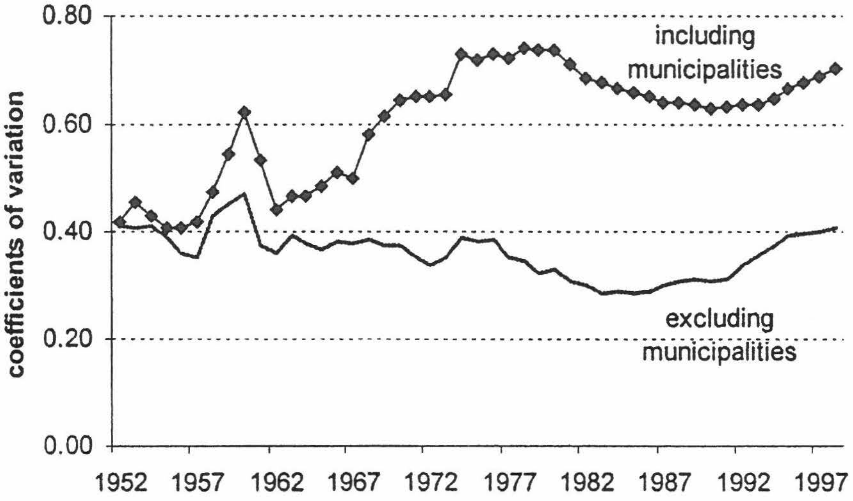

Fig. 2. Coefficients of variation of China's provincial GDP per capita, including and excluding the three main metropolises

as administrative and power centers and seem to have been particularly favored during the prereform period (Démurger et al. 2001). For this reason, another GDP per capita sample excluding these metropolises is constructed. The resulting CV is reflected by the lower line in Fig. 2. Compared with the CV of the 28-province sample, the CV of the 25 metropolis-excluded provinces is much lower and relatively flat during the prereform period 1952–78, with only one obvious fluctuation between the end of the 1950s and the beginning of the 1960s. For the postreform phase (1978–98), however, it shows a quite similar trajectory to that of the 28-provinces sample, that is, a clear downward trend in the 1980s and an upward trend in the 1990s.

The differences between the CVs of these two samples reveal that the fact that the GDP per capita of the three metropolises has traditionally been larger than in other provinces constitutes one major cause for the widening disparities of provincial GDP per capita during the prereform period 1952–78, when all provinces in the sample are considered.

The Gini coefficient trend in Table A1 confirms the findings from the CV. As mentioned above, Lorenz curves can also be used to visualize the trends. Figure 3 presents the difference between the Lorenz curve and the 45° perfect-equality line in five selected years: 1952, 1966, 1978, 1990, and 1998. A lower line corresponds to lower disparity. The trend of departure from the abscissa among the three curves of 1952, 1966, and 1978 reveals a widening disparity along these years. The phenomenon that the curve of 1990 is lower than that of 1978, while the curve of 1998 moves up, reflects the fact described above that the provincial disparity decreased from 1978 to 1990 and increased from 1990 to 1998.

Figure 4 presents both the high-low ratio and the coastal-inland ratio of per capita GDP. The ratio of the five mostdeveloped provinces to the five mostunderdeveloped provinces has marched along almost the same track as that of the 28-province sample's coefficient of variation. The GDP per capita ratio of

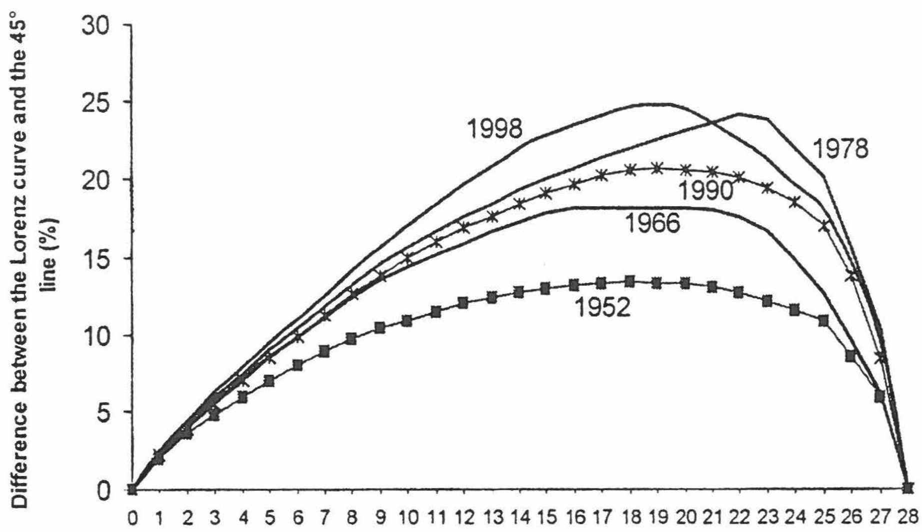

Fig. 3. Difference between the Lorenz curve and the 45° perfect-equality line

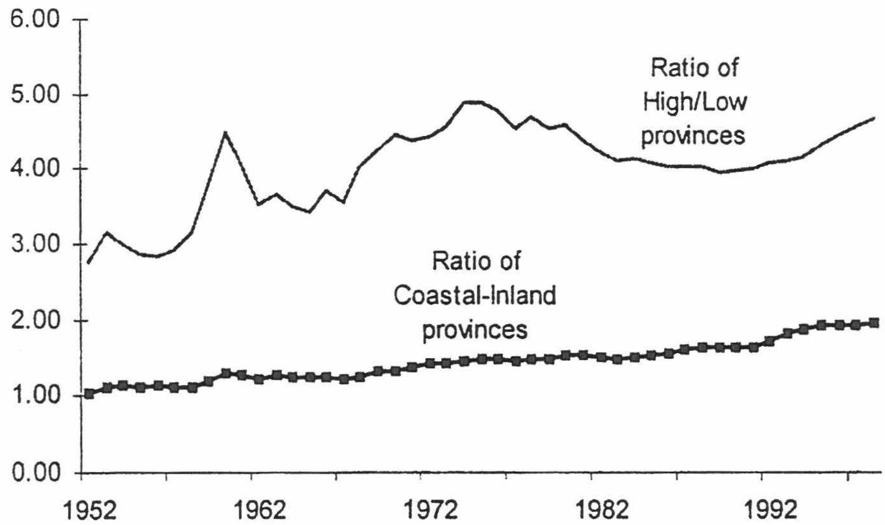

Fig. 4. Ratio of high/low and coastal/inland provincial GDP per capita

coastal provinces to inland provinces grows steadily during the study period and shows a relatively steep incline after the beginning of the 1990s. It reveals the fact that real per capita GDP increased in almost every province.

Coastal provinces, however, grew much faster. The steady faster growth of coastal provinces can to some extent explain the performance of the coefficient of variation. Since the fastest-growing coastal provinces started from a below-average level of per capita GDP in the 1980s, it naturally brought about a slight downward trend in the cross-section dispersion of per capita GDP. However, from the 1990s onward, as these provinces caught up and growth still accelerated in the richest coastal provinces, the convergence process came to an end and worsening disparity resumed.

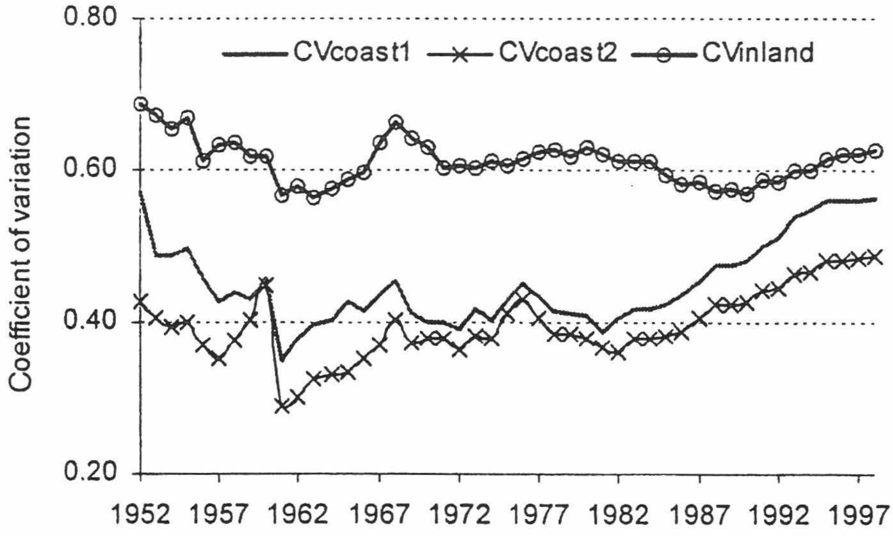

Fig. 5. Coefficient of variation for coastal and inland regions. *CVcoast1*, *CVcoast2*, and *CVinland* are the estimated coefficients of variation for, respectively, the coastal region including Beijing, Tianjin, and Shanghai; the coastal region excluding the three metropolises; and the inland region

To examine in more detail the difference between coastal and inland regions, Fig. 5 plots the evolution of the coefficients of variation for these two regions. For the coastal region, the indicator is computed both including and excluding the three metropolitan cities. Several basic observations are found from the graph. First, disparities within coastal regions are smaller than within inland regions. Second, in sharp contrast to Wu's (1999) finding that the disparities within both the inland region and the coastal region, excluding the three large cities, have been reduced considerably in the 1990s, this study does not achieve such a result. As shown in Fig. 5, all three sets of regions (i.e., inland, coastal without metropolises, and coastal with metropolises) show an increasing disparity trend in the 1990s. This coincides with the finding of many authors (e.g., World Bank 1997; Lin et al. 1998). Third, the increasing CV within coastal regions (with or without the three big cities) implies that some coastal regions are growing much faster than others. Fourth, in contrast, relative variations of the CV within inland regions appear smaller than in coastal regions, signaling the fact that these regions seem to be growing at similar rates, although absolute differences in GDP per capita within them may still be very large.

In summary, based on the above individual estimation and description, several observations are worthy of notice:

1) There is a continuous widening trend through 1952–98 in terms of absolute dispersion of provincial GDP per capita (Fig. 1).

2) The various indices for relative dispersion (i.e., CV, GC, and RHL) move in close relation to each other (Figs. 2–4), and match the above-described different phases of Chinese development remarkably well. The relative disparity decreased in the early 1950s but increased dramatically in the late 1950s, partly

due to the Great Leap Forward movement campaigned in 1958 and the Great Famine. It fell during the recovery from the Great Famine, but the effects of the Cultural Revolution, which began in late 1966, started an increase that reached a peak in 1978. The beginning of the rural reform period saw a decline in relative disparity, which extended to the late 1980s when China decentralized, opened up, and experienced an explosion of trade and foreign direct investment. This investigation has shown a positive impact of economic reforms on provincial disparities. But it then rose steadily and sharply in the 1990s. Thus, in summary, over the second half of the 20th century, the dispersion of provincial GDP per capita in China has reached peaks during three periods: the Great Famine, at the end of the Cultural Revolution, and in the current period of marketization.

3) The disparity within inland provinces is in general larger than that within the coastal regions. However, disparity in the latter group exhibited a faster-growing trend in the postreform period (see Fig. 5). This means that the provinces within the inland region have similar paces of growth, although they exhibit large differences in terms of absolute GDP per capita level, and that within the coastal region, some provinces achieved more considerable development than others.

4) The impact of the three large cities on the CV is different when they are considered within the coastal region from when they are considered within the whole country sample (as shown in Figs. 2 and 5). With the inclusion of these cities, the magnitude of the 28-provinces CV nearly doubles, especially in the postreform period. On the contrary, the enlargement is not so dramatic within the coastal region.

2.3 Convergence analysis: a test for unconditional convergence

We can examine the trends in provincial GDP disparities more formally by using the theory of economic convergence, since it is an appropriate tool to tackle the issue of regional disparity. There are two concepts of convergence. Unconditional economic convergence focuses on the relationship between growth rates and initial levels of income across regions, which implies that a poor economy tends to grow faster than a rich one (Barro and Sala-I-Martin 1995). Conditional economic convergence refers to the hypothesis that an economy with a low initial income relative to its own long-run (or steady-state) potential level of income will grow faster than an economy that is already closer to its long-run potential level of income. This subsection will test unconditional convergence, and the next section will perform more detailed regressions for an econometric model under conditional convergence.

According to the suggestion of Barro and Sala-I-Martin (1995), the following functional form is used to test the unconditional convergence of GDP per capita among different provinces in China:

$$\frac{\ln\left(Y_{iT}/Y_{i0}\right)}{T} = a - \left(\frac{1-e^{-\beta T}}{T}\right) \cdot \ln\left(Y_{i0}\right) + \varepsilon_i \tag{4}$$

where Y_{iT} and Y_{i0} stand for GDP per capita of province i in the end year and initial year, respectively; a is a constant, and ε_i is the random error. The coefficient on initial GDP per capita $(1 - e^{-\beta T})/T$ is an expression that declines with the decrease of β, for a given length (years) of the interval period T. A significant and positive β implies convergence across provinces, and it also provides an estimate of the annual convergence rate.

The second half-century period and various subperiods corresponding to changes in the economic policy were tried to derive estimates of β to test for convergence of per capita GDP across China's provinces. A coastal dummy is added to the regression following Barro and Sala-I-Martin's (1995) recommendation that inclusion of regional dummies will help to obtain accurate estimates. The time span is first divided into two periods, prereform (1952–78) and postreform (1979–98). Then, both the prereform and the postreform periods are further subdivided into two periods each, for a more detailed investigation. For the prereform period, the two substages from 1952 to 1966 and from 1967 to 1978 are considered. For the postreform period, two substages from 1979 to 1989 and from 1990 to 1998 are defined. The summary of the results is presented in Table 1.

As an illustration, we first look at the estimate for the entire period under consideration (1952–98). The estimated β is quite low and nonsignificant. In the regressions without the coastal dummy, the estimate for β is 0.003 with a very low t-ratio indicating onsignificance. Even if this estimate were significant, it suggests an extremely slow speed of convergence—0.3% per year, compared with the average convergence rate of 2% per year in US state

Table 1. Estimation results of unconditional convergence

	Without regional dummy		With regional dummy	
Periods	β	F-test	β	F-test
1952–1998[a]	0.003	0.24	0.004	*8.46
	(−0.49)		(−0.83)	
1952–1978[a]	0.006	0.47	0.006	0.44
	(−0.69)		(−0.71)	
1952–1966[a]	0.005	0.15	0.004	0.23
	(−0.38)		(−0.29)	
1967–1978[a]	−0.009	0.96	−0.009	1.86
	(0.98)		(0.95)	
1979–1998[b]	0.007	0.75	0.013	*10.11
	(−0.86)		(**−1.84)	
1979–1989[b]	0.012	**3.76	0.015	**6.90
	(**−1.94)		(*−2.76)	
1990–1998[b]	−0.011	1.65	−0.001	*8.86
	(1.28)		(0.17)	

The number in brackets is the t-ratio for the corresponding β estimation
* Significant at 1%. ** Significant at 10%
[a] In total, the data for 28 provinces are included, excluding Hainan and Tibet due to missing data, and consolidating Chongqing data with that of Sichuan
[b] In total, the data for 30 provinces are included, consolidating Chongqing data with that of Sichuan

income.[3] Adding the coastal dummy increases the estimate for β by 0.001, but it still remains nonsignificant.

A model specification test (F-test), presented in the third column of Table 1, shows that almost all regression models, except the one for 1979–89, are not valid at the 10% level if they do not include the coastal dummy variable. This can be interpreted as a hint that there are no simple linear relations between the average growth rate and the level of the initial GDP per capita among the 28 provinces during the periods under examination, except for the period 1978–89. In other words, there is no evidence for trends of either unconditional convergence or unconditional divergence during those periods.

When a coastal dummy is added, the specification of the models improves and another three models for 1952–98, 1978–98, and 1990–98 become statistically significant. The significance of β, however, is improved only in the model for 1978–98 and becomes significant at 10%, in addition to the former valid one for 1978–89.

The following conclusions about unconditional convergence can be made:

1) During the period from 1952 to 1998 as a whole, there is no evidence of either unconditional convergence or divergence. This means that the relative changes in regional disparity among the 28 provinces are not significant.

2) The estimates for the prereform period (1952–78) and its two subperiods (1952–66 and 1967–78) also fail to provide evidence for convergence. Thus, the same conclusion as above is reached, i.e., that during the periods in consideration there are no statistically significant relative changes in regional disparity across provinces.

3) The postreform period (1978–98) as a whole witnessed an unconditional convergence if the coastal dummy is included. The positive and significant convergence rate β of 0.013 supports this conclusion. However, if the coastal dummy is omitted, we could not draw such a conclusion, other than that it is the same as the prereform period. The fact that the estimate does change after the coastal dummy is introduced to control for the coastal-inland region differences suggests that the speed of convergence is not the same in the coastal and inland areas.

4) During the first subperiod (1979–89) of the postreform phase, there is more obvious evidence for unconditional convergence. First, it is the only period among the various divided phases that shows a significant F-test and *t*-ratio for the coefficient of β without the coastal dummy; second, the *t*-ratio increased to significance at the 1% level when the coastal dummy was added; third, the value of the convergence coefficient β that indicates the speed of the convergence is as large as 0.015, which is relatively close to the US average state convergence rate of 0.02. All of the above is evidence of an unconditional convergence among the 28 provinces.

[3] Barro and Sala-I-Martin (1995) studied the income behavior of states in the United States from 1880 to 1990. They estimated β each decade and of twined an average estimate of 0.02.

5) During the second subperiod (1990–98) of postreform, the trend of unconditional convergence ceased. Although the sign of the coefficient β is negative, its *t*-ratio does not show statistical significance. Thus, the unconditional convergence regression for the subperiod in this study does not support the claim that there was an unconditional divergence among the provinces during this period.

3 Understanding the disparities: econometric analysis

3.1 Explanations of the disparities: brief literature review

Studying regional disparities in China has been a lively field in recent years, with different studies giving various explanations for the causes of the disparities.

For example, Duncan and Tian (1999) explain the provincial output disparities mainly by the different characteristics of industrialization in the prereform and postreform periods. Zheng and Tang (2000) point out the main causes of China's regional per capita income inequality as differences in three aspects: location, industrial structure, and policy impact. Fujita and Hu's (2001) conclusions include three factors: biased regional policies, globalization and economic liberalization, and foreign direct investment. Song et al. (2000) achieve the result that regional disparities are caused by historical factors, geographic factors, and regional development policies of the government. Lee's (2000) result shows that the dominant sources of overall regional inequality in output have shifted from intraprovincial to interprovincial inequality, from rural—urban to intra rural inequality, and also from the disparity within the coast to that between the coast and the interior. Batisse (2001) provides empirical evidence on the relation between industrial structure and China's provincial growth performance.

Another seven published econometric studies, which come close to the spirit of this study's interest in China's regional GDP disparities, are summarized briefly in Table 2. Most studies among them have chosen the average annual growth rate of provincial GDP per capita as the independent variable and focused on the postreform era, the only exception is the study of Kanbur and Zhang (2001) that investigates both the prereform and the postreform periods, but using an inequality indicator as the independent variable. Not surprisingly, the findings from these studies are not very consistent. For example, Zhang (2001) concludes that the coastal dummy is significant in 1985–94, but not in 1978–84, while Tian (1998) finds that the coastal dummy becomes nonsignificant after the market functioning variable is introduced. On the other hand, there are indeed some common findings. For instance, the variables on openness show a positive and significant impact on regional disparity in all studies that include it, even though the indicators of openness vary in different studies.

Although neither generally agreed nor complete explanations have been achieved, the key factors that attract relatively common attention in the broad literature are certain. Among them are institutional quality (e.g., domestic decentralization, international openness), geographic differences (e.g., regional dummy, resource abundance), capital accumulation (e.g., both physical and

Table 2. Summary of several quantitative studies on China's regional income disparities

Study	Time span	Dependent variables	Major findings
Zhang (2001)	1978–84 1985–94	Initial GDP per capita Domestic reform index Openness index (exports to GDP) Regional dummies (coastal, west)	The domestic economic reform does not play a direct role in the growth disparity Openness index is significant in both subperiods Coastal dummy is significant in 1985–94, but not in 1978–84
Kanbur and Zhang (2001)	1952–78 1979–99	Relative balance between heavy industry and agriculture Degree of decentralization Degree of openness to outside	Heavy industry prioritizing development policy plays a key role in forming the enormous rural-urban gap in the prereform period Openness has contributed to the rapid increase in inland-coastal disparity in the reform period
Démurger et al. (2001)	1979–98 1979–84 1985–91 1992–98	Initial GDP per capita Coast dummy Transportation cost and geography Preferential policy Initial agriculture; initial SOE size Education level	Conditional convergence is not statistically supported The geography index coefficient increases in magnitude and statistical significance over time The policy coefficient generally is stable and significant across time All the specifications fit the data best during 1992–98, and the authors attribute it to the slow-acting nature of geographic forces
Démurger (2001)	1985–98	Production factors variables Reform implementation and economic structure variables Geographic constraints and infrastructure endowment	Investment; Secondary education level; Share of agriculture; Share of collective sector; Foreign direct investment; Urbanization; Transport; Population density; Telephone; Distance to town; Village accessible by telephone are introduced to the models, and present statistically significant impacts on regional differences
Tian (1998)	1978–93	Initial GDP per capita Coastal dummy Domestic and international market index	After introducing market functioning variable, the coastal dummy turns to be nonsignificant, thus the former ones are main determinants of disparities
Li et al. (1998)	1978–95	Real GDP Labor force Fixed investment ratio Secondary school enrollment ratio Ratio of FDI to GDP	GDP per capita is shown to be higher in regional economies with lower population growth, greater openness to foreign countries, and more investment in physical and human capital. Regional economies are shown to converge both conditionally and unconditionally over the reform period
Chua and Bauer (1996)	1978–94	Urbanization control variables Educational attainment variables Investment rates Foreign investment variables	Primary schooling variable is significant Higher investment in the interior had little effect, but in coastal areas it is significant (by introducing variable of investment × coastal dummy) Foreign enterprises import is positive, whereas exports are negative

SOE, State owned enterprises; GDP, gross domestic product; FDI, foreign direct investment human capital investment), demographic variables (e.g., total population growth, working-age population growth, migration), and structural variables (e.g., agricultural share of GDP, industrialization, urbanization).

3.2 Econometric model test: by conditional convergence framework

Basic framework a nd variable descriptions A growth equation using the framework based on an extended version of the neoclassical growth model as described by Barro (1991) and Radelet et al. (1997) is estimated here. This model allows testing for conditional convergence by adding a set of variables determining the steady state to an unconditional convergence equation. This approach does not identify all of the specific factors associated with GDP per capita performance across provinces. Rather, it is an attempt to distill the large amount of information available on all the provinces into a brief, but to some extent sufficient, framework that identifies a small set of variables that stand out as the most important factors influencing disparity.

In order to account for cross-province differences in GDP per capita growth rates, we try to consider a variety of factors that have been proposed by earlier studies as important determinants of long-run GDP growth. These explanatory variables can be grouped into the following four dimensions[4]:

Initial conditions (initial per capita GDP, initial agricultural share of GDP)
Geography (coastal dummy/coastline density, transport endowment)
Economic policy (openness index)
Capital (production factors) accumulation, especially physical and human capital (fixed-asset investment ratio, human capital investment ratio)

A summary of the nationally averaged variables, grouped by two subperiods, is presented in Table 3.

Initial conditions. In the basic framework, for given values of the other explanatory variables, the model predicts that a province with a lower initial per capita GDP is in a more favorable position for future growth.

The basic idea for introducing the initial size of the agricultural sector is that the heavy-industry development strategy in the prereform period may cause agricultural provinces to have fewer opportunities for productivity growth than industrial provinces. Thus, they may grow substantially more slowly. On the other hand, the reform period started with the large-scale deregulation of agriculture, and thus this should have benefited the agricultural provinces.

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[4] Note that we did run regressions with some demographic variables (both total population growth rate and working-age population growth rate), but as was found by some other studies, demography has yielded such mixed influences on growth (e.g., Bloom and Williamson 1998) that it yields a confused result (e.g., a negative coefficient of working-age population growth rate with a positive coefficient for total population growth rate). Thus, the reported regressions do not include demographic variables.

Table 3. Summary of variables by subperiod (unweighted averages)

Variables	1952–78	1979–98
Initial conditions		
Initial per capita GDP (RMB, in 1998 price)	485	1449
Initial agricultural share of GDP (%)	57	33
Geography		
Coastal dummy	0.37	0.37
Coastline density	0.68	0.68
Transport endowment (km/km^2)	9.15	13.09
Economic policy		
Openness index	0.00	0.96
Capital accumulation		
Fixed-asset investment / GDP (%)	13	29
High educated population / population (%)	0.78	2.58

Source: SSB (1999). RMB, Ren min bi, Chinese currence unit

Geography. The most commonly highlighted feature in the extensive studies on China's regional disparity is the growing gap between the coastal provinces and the inland provinces. By introducing a coastal dummy into the growth model, this study assumes that the provinces within each group (coastal or inland) are assumed to share the same steady state given other variables.

However, the coastal dummy can usually be interpreted as a combination of independent causes and some important determinants of economic growth. For China's condition especially, it is an amalgam of "pure geography effects" and "preferential-policy effects" (Démurger et al. 2001), as many preferential policies benefit mainly the coastal region. Therefore, when independently considering the variable of openness policy described in the next paragraph, two other indicators, coastline density and transport endowment, will be used here to replace the coastal dummy to purely measure the "geography effects." That is, the differences in the transportation cost to trade with other economies, both domestic and international. The coastline density is the ratio of the length of a provincial coastline to its land area, which gives a rough measure of the share of the population with relatively easy access to the sea. Transport endowment is the density of railway, road, and inland navigable waterway networks.[5]

Openness policy index. Economies open to the outside will have greater access to new technologies, larger markets, and improved management techniques. They also tend to have fewer distortions and better resource allocation, and their firms are more likely to be competitive in world markets. Several indicators can measure the openness, such as foreign direct investment, international trade, and tariffs. We use the openness index constructed by Démurger et al. (2001). The construction of the openness policy index is based on the number of

[5] These factors have been taken into account together, since it is difficult to distinguish benefits from one transportation mode to another. The quality differences among provinces are also omitted because of data limitation.

designated open economic zones in a province and the extent of the preferential treatment.[6]

Capital accumulation. We examine two kinds of variables that may represent capital promotion to economic growth. The first variable measures physical capital accumulation, and is calculated as the ratio of fixed-assets investment to total GDP. The recent growth literature has emphasized the importance of education and human capital in the process of economic growth and development. A better-educated, more skilled workforce is likely to be able to produce more from a given resource base than less-skilled workers. Thus, referring to Persson's (2002) work on the contribution of human capital to economic growth, the second capital variable chosen in this study is a proxy for the ratio of human capital investment to GDP. The average percentage of the population enrolled in regular institutions of higher education over the sample period is used.[7]

Regression results Four equations have been tried to regress the provincial GDP per capita growth rate in the two subperiods of the pre-reform and post-reform eras, using different combinations of variables. The results are presented in Table 4.

Regression 1 explores only two determinants of both the initial per capita GDP and the coastal dummy, which have been discussed in the section on unconditional convergence above.

Regression 2 performs a decomposition of the coastal dummy's mixed effects of geography and policy, by replacing the coastal dummy with the openness index as a proxy for the degree of openness, and the coastline density and transport endowment as the proxies for provincial accessibility to other economies. When this model specification is used, and in contrast to the findings in Regression 1, evidence is found that both subperiods have seen conditional convergence, according to the negative and significant coefficients of the logarithms of initial GDP per capita. The openness index and the transport density show positive and significant coefficients, while the coastline density appears to have no significant effect. The reason that the coastline density is nonsignificant is that, to some extent, the openness index reflects the regional effect, since the correlation coefficient between openness index and coastline density is as high as 0.82. Regression 3 estimates the relatively complete specifications of provincial growth equations by introducing the initial agricultural share of GDP, education level index, and fixed-asset investment ratio.

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[6] The construction of this index relies on available information on designated open economic zones across China, gathered from different sources, as well as a subjective classification based on their importance in terms of special treatment given to investors and industrial enterprises (Démurger et al. 2001).

[7] As pointed out by Li et al. (1998), such a measure of investment in human capital is clearly imperfect. The variable ignores primary education and occupational training, and it does not reflect variations in educational quality across provinces. Moreover, there are other attributes of human capital that need to be measured, such as health status. But given the data available, this may be the best measure we can construct so far.

Table 4. Cross-section regressions for unconditional convergence

Variables		Log (GDP_0)	Coastal dummy	Coastline density	Transp. density	Open. index	Ini. agri. ratio	Edu. level	Inv. rate	Inv.-coast. Interaction	A-R^2	F-test
Reg. 1	1952–78	−0.86	−0.05								0.08	0.38
		−0.31	*0.05*									
	1979–98	−2.78	2.47								0.32	***10.1
		**2.03*	****3.73*									
Reg. 2	1952–78	−6.58		−0.14	0.21						0.62	***15.9
		****3.56*		*0.50*	****6.73*							
	1979–98	−6.34		0.22	0.06	1.75					0.49	***10.3
		****3.76*		*0.65*	***2.32*	****3.07*						
Reg. 3	1952–78	−5.31		0.31	0.05		−0.04	4.77	0.09		0.86	***27.6
		****4.05*		*1.55*	*1.28*		**1.95*	****3.51*	****3.77*			
	1979–98	−5.3		0.16	0.004	1.75	0.04	4.57	−0.04		0.70	***7.3
		***2.20*		*0.43*	*0.08*	****3.01*	*1.24*	**1.70*	*0.71*			
Reg. 4	1952–78	−5.33					−0.07	5.24	0.08	0.04	0.84	***28.8
		****3.85*					****3.87*	****3.88*	****3.33*	*0.95*		
	1979–98	−5.54				1.28	0.07	5.83	−0.02	0.06	0.67	***11.6
		****3.37*				****3.03*	***2.25*	****4.03*	*0.47*	***2.24*		

1. Dependent variable is the average growth rate of per capita GDP of the province in indicated period. Constant term is not reported. The number in italics is the absolute t-statistic rate
2. Sample for 1952–78 excludes Hainan, Tibet, and Chongqing; sample for 1979–98 excludes Chongqing
3. *** Significant at 1%, ** significant at 5%, * significant at 10%

For the prereform subperiod, all of the three added variables have the theoretically expected sign and receive strong statistical support. The negative coefficient for initial agriculture ratio corroborates China's heavy-industry-biased development strategy during the prereform era. Compared with Regression 2, the transport density turns out to be nonsignificant. One explanation can be that there is a correlation between transport density and fixed-asset investment.[8] The coastline density remains nonsignificant in Regression 3.

For the postreform subperiod, both the openness index and education level correctly appear to have a positive and significant effect on growth differences. The positive coefficient for the agriculture variable confirms that the large-scale deregulation of agriculture at the beginning of the reform era led agricultural provinces to grow at a relatively high rate. As with the results for the prereform period, both coastline density and transport density are nonsignificant. The investment variable, however, cannot confirm anything about the contribution of fixed assets to growth differences, although theoretically this should be the case. There is a wrong sign for investment rate, and the *t*-test shows statistical nonsignificance.

In order to solve the problems in Regression 3, Regression 4 investigates whether or not the impact of investment on GDP growth varied by region. This is implemented by adding an investment rate-coastal dummy interaction to the regression and correspondingly taking out the coastline density. At the same time, transport endowment is also removed.[9] The interaction variable is the product of the investment rate and the coastal dummy. A positive coefficient on this variable would directly mean that investment has a greater positive impact on GDP growth in the coastal provinces than it does in the nationwide average, which implies more influence on GDP growth in the coastal region than in inland regions.

As shown in Table 4, during the prereform period, the investment rate remains significant and with a larger coefficient than that of the interaction variable, which is statistically nonsignificant. This indicates that investment is a significant influential factor in the provincial GDP growth differences. In addition, there is no systematic variation between the effect of investment rate on GDP growth within inland provinces and that within coastal provinces.

On the contrary, the result for the postreform period shows a negative but nonsignificant coefficient on investment rate. However, the coefficient of the interaction variable is positive and significant, with a larger absolute value than that of the investment rate coefficient. This suggests that the higher investment rate in the coastal provinces has contributed to more rapid growth, whereas within the inland provinces, such a trend does not appear.

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[8] The correlation coefficients between these two variables are 0.25 and 0.53 for, respectively, the prereform and postreform periods.

[9] In fact, we did the regression including transport density in Regression 4. There is no significant variation between the results with and without transport density, while transport always shows no significance.

Other than getting theoretically reasonable coefficients of investment rate and the interaction term, Regression 4 appears to give good regression results for all other variables for the two subperiods in question. The R^2 and F-test also indicate statistically acceptable equation specification for this regression.

Based on the above description of the regression results, several common findings can be arrived at.

First, the results show evidence of conditional convergence. The initial GDP level has a negative sign and strong statistical support in all of the four specifications taken to regress for the postreform phase, and in three cases out of four for the prereform phase.[10]

Second, the regression results forcefully point to the role of the openness policy variable in determining the provincial GDP growth differences. From the regressions including this variable, it is obvious that the openness index is very strongly and positively associated with GDP growth.

Third, contrary to other studies that have found only a weak direct link between education and growth, the estimated coefficient on the human capital investment variable (in terms of the higher educated population ratio) is positive and strongly significant in regression both for the prereform era and for the postreform era. This result gives evidence for the impact that human capital investment has on GDP growth differences.

Fourth, the investment rate has a positive and significant impact on GDP growth variations. This result becomes particularly significant after taking into account the coastal-inland differences.

Fifth, the provinces with a higher agricultural share of GDP grew more slowly during the prereform era and faster during the postreform era than the provinces with a lower agricultural share, after other determining variables were controlled for.

Robustness test for variations in sample size and specification In order to test the robustness of the results from Regression 4, two subsamples of China's provinces were used to re-estimate the equation. First, three metropolitan provinces (Beijing, Tianjin, and Shanghai) were dropped from the sample to check whether the big cities had been influencing the overall results. The estimation results were broadly similar to those from the full sample, as shown in Table 5. Second, five provinces in the sample are randomly removed. Once again, the results (shown in Table 5) were broadly similar to the original results.

Several alternative specifications were also tried. For example, the ratio of deposits in the national banking system to GDP was tried as an alternative measure to reflect the investment level; the average agricultural share and industrial share of GDP in the considered period were substituted, respectively, for the initial agricultural share; two demographic variables (total population growth

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[10] Moreover, this result holds even when municipalities (i.e., Beijing, Tianjin, and Shanghai) are excluded from the sample.

Table 5. Cross-section regressions for unconditional convergence, smaller sample size

Variables		Log (GDP_0)	Open. index	Ini. agri. ratio	Edu. level	Inv. rate	Inv.-coast. interaction	A-R^2	F-test
Reg. 4	1952–78	−5.33		−0.07	5.24	0.08	0.04	0.84	***28.8
Original		***3.85		***3.87	***3.88	***3.33	0.95		
sampled	1979–98	−5.54	1.28	0.07	5.83	−0.02	0.06	0.67	***11.6
		***3.37	***3.03	**2.25	***4.03	0.47	**2.24		
Three big cities	1952–78	−4.98		−0.04	7.23	0.09	0.10	0.64	***9.63
out of sample		***4.03		*1.68	1.10	***3.58	**2.41		
	1979–98	−6.68	1.01	0.08	12.3	0.003	0.08	0.74	***13.1
		***2.89	*2.15	**2.71	***3.14	0.08	**2.48		
Five provinces	1952–78	−6.46		−0.08	4.70	0.07	0.02	0.85	***26.8
randomly		***4.21		***4.12	***3.34	*2.10	0.44		
dropped out	1979–98	−5.04	1.27	0.08	5.73	−0.007	0.06	0.64	***7.9
		**2.11	**2.76	**2.24	***3.50	0.14	*1.86		

See notes of Table 4

rate and working-age population growth rate) were added to the equation. All of them met with little success.

3.3 Decomposing the disparities

Although the regressions reported in Table 4 give some estimation of the marginal contribution of each identified factor to China's provincial GDP per capita growth disparities, they provide little direct impression of the determinants' relative average contribution. In order to shed some light on this issue, a decomposition of GDP growth differences is performed in this section. For this purpose, first, the gap between the predicted per capita GDP growth rate of each province (calculated by multiplying the estimated coefficients by the actual value for each variable for each province, and adding these terms together) and the national average (approximated by the average of the sample simulated growth rates) is computed. Then, this gap is decomposed into various differences of the variables included in regression 4. The result is reported in Table 6.

The provinces are listed by coastal-inland classification in this table. The coastal provinces have had, on average, higher per capita GDP growth rates. As indicated in Table 6, their above-average performance comes mainly from the opening policy and fixed investment. In addition, for the three metropolitan cities of Beijing, Tianjin, and Shanghai, the high educational level has played a particularly important role. Over half of the coastal provinces have a positive contribution of the initial GDP per capita to the gap between their GDP growth and the national mean. This can to some extent explain why, although the coastal provinces in general grow faster than the inland provinces, the provincial disparity still narrowed in the 1980s. Most of the fast-growing coastal provinces were less developed at the beginning of reform.

4 Conclusions and future research

The first major finding of this study is that provincial disparity has experienced considerable fluctuation in the period from 1952 to 1998, having reached peaks during three main periods. The first decade (1980s) of the postreform era has significantly contributed to the reduction in regional disparities, but this trend ceased from the beginning of the 1990s, when disparities again began to widen substantially.

The second major finding is that there is no evidence either of unconditional convergence or of divergence during the subperiod of prereform (1952–78) and the entire period from 1952 to 1998, while there is obvious evidence of unconditional convergence for the first decade of the postreform era. The conditional convergence for both the prereform and postreform periods, however, have strong statistical support from the econometric regressions performed here.

Although only six explanatory variables were used, the conditional convergence growth model appears to provide a good regression of cross-province data

Table 6. Contributions to provincial growth gaps relative to the national mean (1979–98) (%)

Province	Growth difference predicted	Contribution of each variable to the gap in per capita GDP growth relative to the national mean					
		log (GDP_0)	Edu. level	Open. index	Ini. agri. ratio	Inv. rate	Inv.-cst. intera.
Coastal provinces							
Beijing	2.72	−2.65	6.03	−0.34	−1.95	0.17	1.45
Shanghai	0.69	−3.72	3.91	1.14	−1.97	0.10	1.23
Guangxi	1.36	0.60	−0.84	0.43	0.76	−0.13	0.53
Hainan	4.09	1.13	−0.74	0.88	1.38	0.12	1.31
Tianjin	−0.07	−2.42	2.05	0.69	−1.77	0.11	1.26
Hebei	0.52	0.08	−0.65	0.43	−0.20	−0.02	0.88
Liaoning	−0.79	−1.39	0.46	0.43	−1.11	−0.03	0.85
Jiangsu	1.36	−0.08	−0.13	0.69	0.13	−0.04	0.80
Zhejiang	1.64	0.08	−0.53	0.69	0.67	−0.05	0.78
Fujian	3.41	0.29	−0.35	2.42	0.32	−0.05	0.78
Shandong	1.23	0.23	−0.65	0.69	0.22	−0.04	0.79
Guangdong	3.02	0.02	−0.52	2.62	−0.08	0.01	0.97
Inland provinces							
Shanxi	−2.67	−0.10	−0.38	−0.79	−0.79	0.04	−0.65
Neimengg	−1.07	0.36	−0.45	−0.34	−0.01	0.02	−0.65
Jilin	−1.10	0.02	0.28	−0.34	−0.35	−0.06	−0.65
Heilongj	−3.17	−1.36	−0.12	−0.34	−0.63	−0.07	−0.65
Anhui	0.16	0.97	−0.69	−0.40	1.02	−0.10	−0.65
Jiangxi	−0.45	0.74	−0.53	−0.79	0.94	−0.15	−0.65
Henan	−0.83	0.93	−0.79	−0.79	0.52	−0.06	−0.65
Hubei	1.09	1.40	−0.01	−0.40	0.83	−0.08	−0.65
Hunan	−1.28	0.07	−0.57	−0.79	0.79	−0.13	−0.65
Sichuan	−0.43	0.67	−0.73	−0.40	0.79	−0.11	−0.65
Guizhou	−0.04	1.75	−0.90	−0.79	0.62	−0.07	−0.65
Yunnan	−0.46	0.75	−0.78	−0.34	0.62	−0.06	−0.65
Tibet	−0.69	0.42	−0.80	−0.79	1.02	0.11	−0.65
Shaanxi	−0.31	0.76	0.26	−0.79	0.10	0.01	−0.65
Gansu	−2.10	0.87	−0.55	−0.79	−0.95	−0.04	−0.65
Qinghai	−2.42	−0.23	−0.56	−0.79	−0.47	0.27	−0.65
Ningxia	−2.38	−0.04	−0.44	−0.79	−0.63	0.16	−0.65
Xinjiang	−1.02	−0.14	−0.27	−0.34	0.19	0.18	−0.65

Sources: calculated by the authors

over both the subperiod 1952–78 and the subperiod 1979–98. As predicted by the model, GDP per capita growth rates were higher in provinces with lower initial income levels, more investment in physical and human capital, and greater openness to foreign countries. The initial agricultural share of GDP showed a significant but reverse contribution to the growth rates for the two subperiods. That is, provinces with a higher agricultural share grew more slowly in the prereform era, but faster in the postreform era.

The result of conditional convergence does not contradict the fact of widening disparity between provincial GDP per capita levels after 1990. The conditional convergence means that the per capita GDP differences among provinces narrowed if the steady state of individual provinces is estimated. It thus implies that the widening dispersion was due to the increasing variation in the steady states of provincial economies. As China joins the WTO and continues its market-oriented reform, the economy will become more liberalized and open. That is likely to result in more dramatic shifts in provincial steady states. If the government continues to favor the coastal provinces, that is, more preferential policy and more investment in coastal than in inland provinces, then regional disparity may widen even more. The Western Development Strategy aiming to further open and invest in the inland provinces is thus important for China to both promote economic growth and reduce regional inequality. According to this study, human capital investment, among others, should attract special attention when regional development policy is implemented.

The caveat must be stated here that the findings reported may change as more advanced methods, better underlying data, and more appropriate indicators are employed for the analysis. Some suggestions for possible refinements are given here.

First, the quality of the data could be explored more carefully. The reliability of official Chinese data has received some criticism in the literature. Comparing the official data with other estimates by some international organizations (World Bank, OECD, etc.), testing the consistency of some critical parameters (e.g., provincial price deflators used to derive GDP in constant price) would help to increase the credibility of the findings.

Second, in the economic growth literature, population dynamics has been identified as an influential variable in the determination of economic growth. Since the demographic transition—a change from high to low rates of mortality and fertility—has been dramatic in China during the second half of the 20th century, a closer look at the complex relationship between demography and China's provincial economic growth differences is strongly suggested.

Third, more work needs to be done to find out more accurate indicators for various factors, such as openness policy, human capital investment, and geography.

Fourth, more detailed regional division (e.g., classifying the provinces into coastal, central, and western regions) may have more concrete implications for regional development policy.

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Appendix

Table A1. Time evolutions of five indicators of GDP per capita disparity

Year	SD	CV	GC	RHL	RCI	Year	SD	CV	GC	RHL	RCI
1952	204	0.42	0.196	2.76	1.04	1976	855	0.73	0.318	4.79	1.48
1953	251	0.46	0.224	3.16	1.12	1977	908	0.72	0.309	4.55	1.47
1954	249	0.43	0.219	3.00	1.15	1978	1014	0.74	0.312	4.71	1.49
1955	246	0.41	0.206	2.88	1.10	1979	1068	0.74	0.306	4.53	1.49
1956	275	0.41	0.212	2.83	1.13	1980	1148	0.74	0.310	4.60	1.53
1957	295	0.42	0.215	2.92	1.12	1981	1163	0.71	0.301	4.39	1.54
1958	396	0.47	0.239	3.16	1.12	1982	1206	0.68	0.294	4.22	1.52
1959	512	0.54	0.275	3.77	1.21	1983	1295	0.68	0.285	4.12	1.48
1960	599	0.62	0.307	4.48	1.29	1984	1457	0.67	0.287	4.15	1.51
1961	342	0.53	0.266	4.07	1.27	1985	1607	0.66	0.286	4.09	1.54
1962	257	0.44	0.235	3.53	1.23	1986	1675	0.65	0.284	4.03	1.57
1963	293	0.47	0.249	3.66	1.28	1987	1787	0.64	0.285	4.04	1.61
1964	325	0.46	0.244	3.51	1.26	1988	1949	0.64	0.287	4.04	1.65
1965	375	0.48	0.241	3.41	1.24	1989	1982	0.64	0.286	3.97	1.65
1966	431	0.51	0.256	3.71	1.26	1990	2034	0.63	0.284	3.98	1.64
1967	386	0.50	0.245	3.56	1.21	1991	2188	0.63	0.287	4.02	1.66
1968	430	0.58	0.270	4.04	1.24	1992	2500	0.64	0.293	4.09	1.73
1969	515	0.62	0.282	4.26	1.32	1993	2861	0.64	0.297	4.12	1.83
1970	628	0.64	0.296	4.45	1.33	1994	3280	0.65	0.303	4.16	1.89
1971	675	0.65	0.295	4.37	1.38	1995	3753	0.67	0.311	4.34	1.94
1972	687	0.65	0.293	4.44	1.44	1996	4162	0.68	0.315	4.46	1.94
1973	720	0.66	0.295	4.56	1.44	1997	4660	0.69	0.320	4.56	1.95
1974	815	0.73	0.320	4.88	1.47	1998	5181	0.70	0.326	4.67	1.97
1975	855	0.72	0.318	4.87	1.48						

GDP values per capita are converted into 1998 prices. Hainan Province and Tibet Autonomous Region are excluded due to incomplete data; Chongqing's data are consolidated with Sichuan Province. Thus, the real sample number is 28. SD, Standard deviation of provincial GDP per capita; CV, coefficient of variation; GC, Gini coefficient; RHL, ratio of high/low provincial GDP per capita; RCI, ratio of coastal/inland provincial GDP per capita

Sources: calculated by the author based on the data from SSP (1999)