China's Unbalanced Economic Growth[+]

C.W. Kenneth Keng[*]

Rotman School of Management

University of Toronto

keng@rotman.utoronto.ca

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Abstract

This paper summarizes empirical findings and results from the author's most recent research publication in Chinese: ***China's Unbalanced Economic Growth***. It studies China's economic growth with a special emphasis on its regional disparities. It provides an analysis of China's overall economic landscape as well as an empirical study of China's unbalanced regional development. Based on its quantitative findings and results, the author predicts the emergence of ten Chinese metropolitan economies in the early 21st century and recommends a regional development strategy as well as implementation policies for China's future development. This research's major empirical findings, results and conclusions are outlined in three sections: Section 1 describes China's economic future – the emergence of ten regional metropolitan economies, Section 2 reports the empirical findings of China's national and regional economic disparities and discusses policy implications, and Section 3 investigates China's future economic growth and discusses its growth limitations.

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* Affiliate Professor and Academic Director, Asia Pacific Executive Programs, Rotman School of Management, University of Toronto; Email: keng@rotman.utoronto.ca, website: www.rotman.utoronto.ca/facbios.

China's Unbalanced Economic Growth

China possesses one fifth of the world's population. It also has a vast territory of some 9.60 million square kilometers that is larger than the USA's by an area about 6.3 times Taiwan's size. For the past 25 years (1978-2003), China has accomplished miraculous economic growth at an average annual rate of over 9%[1]. The Chinese economy is now the sixth largest in the world while its people's average income (US$911 in 2002) is still relatively low. At the dawn of this century when globalization impels the world towards a maturing knowledge economy, China's impact on the world's political economy has become one of the most prominent issues in international affairs. China's influence on the world is complex and multifaceted. It involves not only international business and economics but also global politics and regional security. As a result, the world has become more and more concerned with China's future economic growth as well as its social and political stability. There are various views concerning the future of China's political economy, one being potential political and social instability possibly resulting from its growing income inequality and unbalanced regional development.

This paper concisely summarizes empirical findings and results from the author's most recent research publication in Chinese: ***China's Unbalanced Economic Growth*** (Taipei: Himalaya Foundation, 2004 and Beijing: Social Sciences Academic Press (China), forthcoming)[2]. The research studies China's economic growth with a special emphasis on its regional disparities. It follows on from the author's earlier book entitled: ***China's Regional Economic Development*** (Taipei: Linking Publishing Company, 2001) and provides an analysis of China's overall economic landscape as well as an empirical study of China's unbalanced regional development. Based on its quantitative findings and results, this research predicts the emergence of ten Chinese metropolitan economies in the early 21st century. It also recommends a regional development strategy as well as implementation policies for China's future development. The following three sections outline this research's major empirical findings, results and conclusions. Section 1 describes China's economic future – the emergence of ten regional metropolitan economies. Section 2 reports at some length the empirical findings of China's national and regional economic disparities as well as many policy issues implied by these new results. Section 3 investigates China's future economic growth and discusses its growth limitations. This paper uses 4 charts and tables and 12 graphs to minimize its text presentation of the complicated and substantial empirical findings and results from this research.

1. China's Regional Economic Agglomeration

A sustainable growing economy is a necessity for China's future stability. The sustainability of growth depends essentially on China's continued commitments to institutional reform and economic liberalization. A relaxation of government intervention in economic activities has impelled and will continue to impel China into decentralizing its central government authority over economic planning and control. To date, this may have resulted in unbalanced regional economic growth and will probably further stimulate the

[1] Statistics used in this paper is based on China's official figures. Many studies have questioned these statistical data. For example, the World Bank's 1997 report: ***China 2020: Development Challenges in the New Century*** indicated that there had been as much as 1% to 1.5% over estimate in China's official growth rate due to those price indicators adopted.

[2] Interested readers are referred to Appendix 1 for a structural overview of this book.

emergence of regional economies. This research presents ample quantitative evidence and arguments to support the prediction that in the first two decades of the new century, there will most likely be ten metropolitan economies with relatively independent industrial and market structures emerging in Greater China (the adjacent areas of Hong Kong, Macao, Taiwan and the Chinese Mainland). China's future economic growth will be characterized and powered by these fast growing and highly urbanized metropolitan economies. The emergence of these regional economies with independent local metropolises as their centers is in broadly line with the predictions of the new theory of economic geography due to, for example, Krugman (1991), Fujita, Krugman and Venables (1999) and Scott (2001)[3].

The Emergence of Ten Regional Metropolitan Economies

China possesses a huge population (near 1.3 billion) with numerous nationalities on a vast territory of complex geography and topography. The 55 Chinese minorities alone constituted a population of 104.5 million in 2000 that is larger than most of the countries in the world[4]. China's enormous societal and physical differences imply that it would be impractical, if not impossible, to develop a homogeneous economic market embracing its entire territory.

In 2000, over 91% of China's passenger transportation utilized its highways with an average travel distance of 49 kilometers[5]. Long-distance travel was mainly by railway (7.1% of the total volume) with an average distance of 431 kilometers and by air (0.5%) with an average distance of 1,444 kilometers. Over 76% of China's cargo was trucked by highways over an average distance of 59 kilometers, whereas 13% of cargo was transported by railways over an average distance of 781 kilometers and 9% was shipped by water over an average distance of 1,939 kilometers. These transportation statistics unambiguously show that even after 25 years of fast growth, at the turn of the new century, inter-regional economic activities represent merely a small fraction of the overall economic activity in China. Thus, the Chinese economy essentially still remains a collection of many regional economies. It seems that China is not only a big country but also a combination of many "small worlds" constituting a wide spectrum of regional economies.

Moreover, China's inter-regional logistical/transit systems at present are far from adequate to meet the demands of a modern highly integrated economy (similar to that of the USA). This study asserts that due to physical (geographical and topographical) constraints, it is not only costly for China to build a modern inter-regional transit system (to match that of the USA's), but it is also nearly a physical impossibility. Thus, the optimal economic structure for China has been and will most likely be a network of relatively independent regional economies that are politically administered by a central/federal government.[6]

Considering China's history, geographic-economic characteristics, and current status of regional development, this study suggests that in the first decade of the twenty-first century, there will likely be ten

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[3] Allen J. Scott (2001): ***Global City-Regions: Trends, Theory, Policy***, Oxford: Oxford University Press; Masahisa Fujita, Paul Krugman and Anthony J. Venables (1999): ***The Spatial Economy: Cities, Regions, and International Trade***, Cambridge: MIT Press; and Paul Krugman (1991): ***Geography and Trade***, London: MIT Press.

[4] In 2001, among the 280+ countries in the world, there are merely 10 possessing populations over 100 million. They are (in descending order of their population sizes): China, India, USA, Indonesia, Brazil, Russia, Pakistan, Bangladesh, Nigeria, and Japan.

[5] All the transportation statistics cited in this section were from Table 4-1 of ***China's Unbalanced Economic Growth*** (Taipei: Himalaya Foundation, 2004). Detailed analyses of these data Original data were from ***China Statistical Yearbook 2001*** (Beijing: China Statistics Press, September 2001), Tables 15-6, 15-7, 15-8, 15-9, 15-10, and 15-11.

[6] See also Keng (2001): "China's Future Economic Regionalization," Journal of Contemporary China, Vol. 10, No. 29, pp. 587-612.

(regional) metropolitan economies emerging in Greater China (the area of the Chinese Mainland, Hong Kong and Macau, plus Taiwan).[7] They are:

Six Coastal Regions:

Liaoning (with Dalien and Shenyang as its core metropolises),
Capital (Beijing, Tianjin, Tangshan and Shijiazhuang),
Shandong Peninsula (Jinan and Qindao),
Greater Shanghai (Shanghai, Hangzhou, Suzhou and Ningbo),
Taiwan-Fujian (Taipei, Kaoshiung, Xiamen and Fuzhou), and
Pearl River Delta (Hong Kong, Macao, Guangzhou, Shenzhen and Zuhai);

Four Inland Regions:

Jilin-Heilongjiang (Changchun and Harbin),
Yangtze River Downstream (Nanjing, Yangzhou and Hefei),
South-Central (Wuhan, Changsha and Nanchang), and
Sichuan (Chongqing and Chengdu).

Liaoning, Capital, and Shandong Peninsula along the Bohai Bay area occupy China's north coast. Greater Shanghai is comprised of the vast area of the Yangtze River delta and the Qientang River delta and covers nearly a quarter of China's coastline. Taiwan-Fujian occupies both sides of the Taiwan Strait. The Pearl River Delta shelters China's southern coast. The other four metropolitan regions are all inland (non-coastal) economies. However, Yangtze River Downstream containing Northwest Jiangsu and Anhui is a near-coastal region where large cargo ships can reach its harbors through the Yangtze River. The remaining three inland regions are: Jilin-Heilongjiang located in northeast China bordering North Korea and Russia, South-Central consisting of three heavily populated provinces: Hunan, Hubei and Jiangxi, and Sichuan located in China's Midwest comprising more than 115 million people.

These ten regional metropolitan economies together comprise approximately 65% of China's population, 75% of China's plains, and produce over 80% of China's GDP. At present, all of these regional economies have built relatively modern intra-regional highway systems and have all developed their own regional markets with either relatively independent industrial structures or are in the process of doing so. The principal mode of Inter-regional transportation is frequently congested railways.

The emergence of Chinese metropolitan economies may have also been attributed to China's economic decentralization and market deregulation over the last 25 years. When the central authority relaxes its control over regional economic decision-making, market forces will then guide economic activities towards establishing lower-transaction-cost industrial structures and market systems. Resources can then be

[7] This notion of "Chinese metropolitan economies" is built on the idea first suggested by a Chinese research scholar, Jian Wang of the Economic Research Institute, State Planning Commission in mid 1990s. What is suggested here are results based on the author's further research. The concept of "Metropolitan Economies" also falls under Krugman's "manufacturing zones" framework. Francis Johnson explicitly suggested 3 Chinese coastal manufacturing zones in his 1999 article: "Beyond Regional Analysis: Manufacturing Zones, Urban Employment and Spatial Inequality in China" published in ***The China Quarterly*** (No. 157, pp. 1-21). Interested readers are also referred to the following literature by the author: "China's Future Economic Regionalization", ***Journal of Contemporary China***, Vol. 10, No. 29, 2001, 587-611; "China's Economic Regions", ***Mainland China Studies***, Vol. 43, No.6, 2000, 51-79; "China's Regional Economic Development", ***Mainland China Studies***, Vol. 43, No.9, 2000, 47-67; "China's Future Economic Development: Regionalization", in R. E. Bedeski and J. A. Schofield ed. ***Prospects for Development in the Asia-Pacific Area*** (Victoria: Western Geographical Press), 2000, 171-212; and "China's Economic Prospects in the New Century", in A. Nathan, Z.H. Hong and S. Smith ed. ***Dilemmas of Economic Reform in Jiang Zemin's China*** (Boulder: Lynne Rie), 1999, 171-212.

efficiently utilized by being allocated towards urban centers where infrastructure and business services provide production units with scale economies and comparative advantages. As a result, individual regional markets and industrial systems, each with a network of closely affiliated cities and metropolitan areas, will emerge and become relatively independent local cores. This process of regional economic agglomeration is based on the reality that there is a geographical limit of economically optimizing a logistic system for the production and exchange of goods and services. This process of regional agglomeration and urbanization has been evidenced by Japan's successful development experience in the last fifty years where a relatively large population resided in many relatively isolated areas.

2. China's Income Inequality and Regional Disparities: Empirical Findings

Following the line of argument described above, this research proceeds with a comprehensive analysis of China's regional economic disparities that includes a study of China's economic regions by applying an explicit quantitative method for analyzing economic disparities among multiple regions. The methodology specifically addresses the distinction between partial and general approaches to the analysis of multiple regional inequalities. The analysis also differentiates between the interwoven disparities among multiple regions by decomposing the overall (national) income inequality into intra-regional and inter-regional inequalities. These methodological improvements represent a new refinement in the analysis of regional inequality.[9]

Many interesting empirical findings concerning the history of (1952-2000) and trends in China's economic disparities are generated. In general, China's national income inequality has not been significantly larger than the average of the ten most populous countries in the world; neither has it been significantly greater than the average of 16 adjacent or comparable developing countries. In effect, in the mid 1990s China's income inequality was very close to that of the USA. However, China's regional inequality was more than twice as large as the USA's or Japan's. China's income inequality is caused, to a significant extent, by its relatively large regional disparities. These intriguing empirical results are selectively presented in the following sub-sections.

China's National Income Inequality: International Comparisons

A country's (national) income inequality is defined as the average of the income difference between every pair of individuals in that country. In statistical terms, this is termed the ***mean difference income*** for that country. One half of the ratio of the mean difference income to the average income is called the ***Gini Coefficient*** - the most popular measure of income inequality over a country's entire population. In 2000, China had a Gini Coefficient of 43.8%, a GDP per capita of US$856 and a mean difference income

[9] Interested readers are referred to Chapter 7: "A Methodology of Regional Inequality Analysis" of ***China's Unbalanced Economic Growth*** for details. There are numerous published works sharing the topic of regional (or spatial) inequality in China. However, few of them specifically provide with clear definition and analytical methodology of the Regional Equality. Branko Milanovic in his 2004 paper: "Half a World: Regional Inequality in Five Great Federations" (www.worldbank.org/research/inequality) discussed and provided with various concepts and definitions of regional inequality and M. Francis Johnston in his 1999 paper in ***The China Quarterly*** discussed to some extent two approaches: the RAF (regional analysis framework) and the MZF (manufacturing zone framework). However, neither of them explicitly considered the regionalization (the way of partitioning a country into regions) of China. To the best of the author's knowledge, most of the studies in China's regional inequality are promising in choosing eligible inequality measures but somehow fall short in qualifying China's regionalization. The author is inclined to advocate that a scientific definition of the regional inequality should include at least two essential constituents: how the regions are defined and how the inequality is measured. See also A. F. Shorrocks and Guanghua Wan (2004): "Spatial Decomposition of Inequality," WIDER Discussion Paper No. 200401.

of US$750. This means that China had an income inequality that was 87.6% as large as its average income (on a per-person basis). The World Bank recently predicted that by 2020 China's Gini Coefficient would have risen to 47.4%.[10] That implies that China's income inequality will increase to 94.4% of its average income in 2020.

Table 1 and Graph 1 present the results of a general international comparison of China's income inequality with those of other 30 selected countries of interests using data published by the World Bank. It shows that China's income inequality as represented by its Gini coefficient is insignificantly different from the average of those relevant 30 countries'.

At the end of the 20th century, there were 10 countries with populations greater than 100 million (the Populous 10). The average Gini Coefficient for these ten most populous countries around the mid 1990s was 38.8% with a standard deviation of 10.3%. China's income inequality was smaller than Brazil, India, and Nigeria, slightly larger than USA, not too distant from Indonesia, and significantly larger than India, Pakistan, Bangladesh, and Japan. However, China's income inequality was not significantly different from the average of the Populous 10.

Compared with the USA, China had a Gini Coefficient of 41.5% in 1995 while the USA's was 40.1% in 1994. But, China had a smaller income gap between rich and poor than the USA did. The top 20% of the Chinese population collectively earned 8.6 times amount earned by the bottom 20% while in the case of the USA the figure was 9.2 times (i.e., the 20% Kuznets ratio was 8.6 for China in 1995 and 9.2 for the USA in 1994). Furthermore, China and the USA had the 10% Kuznets ratios of 14.0 and 19.0 respectively. That means; the USA had much larger income gaps between its rich and poor subpopulations than China did. However, the majority Americans (i.e., the middle 60% population) had a more even income distribution (i.e., with a smaller income inequality) than the counter part in China. As a result, China had a marginally larger national income inequality than the USA.

This study also compares China's income inequality with the Economic Giant 7 countries (i.e., USA, Japan, Germany, France, UK, Canada, and Italy) as well as the other 16 adjacent Asian countries. It finds that while China's Gini Coefficient is larger than the average of the Giant 7 it is not significantly different from the average of those 16 Asian neighboring countries. These empirical comparisons suggest that although China's income inequality has been rising, it has not distinguished itself significantly (in a statistical sense) from the average of a large number of adjacent or comparable countries'.

China's Regional Economic Disparities: International Comparisons

China's national income inequality may not have deviated very far from the world's average, but its regional economic inequality is distinctively greater than its closest neighbor Japan as well as the USA that has a comparable size of territory with a relatively large population. This fact alone unambiguously indicates that regional differentiation contributes more to China's income inequality than it does to Japan or the USA.[11]

Using the administrative regions at the provincial level as the basic unit of analysis, ***region***, China's ***overall regional economic disparity*** (ORD) can be defined as the mean difference income between the

[10] World Bank (2003): "China: Promoting Growth with Equity," Report no. 24169-CHA, September 3, Washington, D.C.: The World Bank.

[11] Milanovic (2004) studied the overall regional inequalities of five populous countries: Brazil, China, India, Indonesia and the USA and found similar results as ours: in 2000, China's Regional Gini was 24.4% and the USA's was 8.3%. The rest were: Brazil (28.0%), Indonesia (19.9%) and India (18.7%).

465 pairs of provinces accrued from China's 31 provinces.[12] The ***Regional Gini Coefficient***, measuring the overall regional inequality can then be computed (estimated) as one half of the ratio of the ORD to the national GDP per capita. In the same manner, we may calculate the regional Gini Coefficients of Japan's 47 prefectures and the USA's 51 states (50 states plus Washington DC). As demonstrated in Graph 2, China's regional disparities historically have all been significantly greater than Japan's or the USA's. On average, China's provincial disparity is, 1.5 times greater than that of Japan's 47 prefectures, and 3.0 times greater than that of the USA's 51 states.

China's National Income Inequality and Regional Disparities

If China's national population is partitioned into 31 mutually exclusive and jointly exhaustive provincial populations[13], this study shows that China's national income inequality can be decomposed into three additive inequalities: the **overall intra-provincial disparity** that is the sum of 31 intra-provincial mean difference income and the **overall inter-provincial disparity** (or, for simplicity, the **Overall Regional Disparity**) that is the mean difference income of the 465 pairs of provinces accrued from China's 31 provinces as well as an interactive (residual) term.[14]

Our empirical study found that in 2000, the overall regional disparity (i.e., the inequality between provinces) accounted for at least 59% of China's national income inequality, while the overall intra-provincial inequality (the sum of inequalities within provinces) accounted for at most 41%. As shown in the first column of Table 2, an average Chinese earned an income of US$856 (GDP per capita) in 2000 and experienced a Gini coefficient of 43.8% that is equivalent to a national income inequality (average income difference between all pairs of individuals) of US$750. At least 59% of this national income inequality, or US$443, can be attributed to the differences among/between China's 31 provinces. The remaining national income inequality, or US$307, was due to inequalities within each of those 31 provinces plus some statistical discrepancy. These empirical results unambiguously show that nearly 60% of China's national income inequality can be attributed to its provincial disparities. In other words, if there were no disparities between its provinces, China's national inequality would have been merely 40% of its

[12] The number of pairs generated by N provinces can be calculated by the formula: N(N-1)/2. China has 31 provinces; therefore there are 465 differences between any pair of those provinces.

[13] Here we use mathematical terminology to precisely define the relation between the national population, P and provincial populations, Pi where i = 1,2,…,31. If P is partitioned into 31 sub-populations (provincial populations) , say Pi , where i = 1,2,…,31, these sub-populations are mutually exclusive if $Pi \cap Pj = \phi$ for all $i \neq j$, and jointly exhaustive if $\bigcup Pi = P$ for all i.

[14] In general, the national income inequality (as measured by Gini Coefficient) can be additively decomposed into the intra-provincial and the inter-provincial equalities when the data of individual level is used. When provincial-level aggregate data is used certain statistical discrepancies occur. In that case, the national income inequality can be decomposed into three additive terms: the intra-provincial, the inter-provincial and the interactive terms. The interactive term captures those discrepancies (residuals) due to replacements of individual data points in provinces by their corresponding provincial means. This interactive term may consist of both intra-provincial and inter-provincial residuals. Due to the unavailability of individual income data to this study, there is no way to compute the residual term exactly. However, the Lambert and Aronson Theorem (refer to Peter J. Lambert and J. Richard Aronson (1993): "Inequality Decomposition Analysis and the Gini Coefficient Revisited," ***Economic Journal***, 103, pp. 1221-1227) indicates that the residual term is positive. As a result, the inter-provincial inequality of US$443 is best interpreted as the ***lower estimate*** of the inter-provincial inequality. By the same token, the intra-provincial inequality of US$307 should be interpreted as the ***upper estimate*** of the intra-provincial income inequality given there exists a positive but unknown residual term. Interested reader may also refer to D. Mookherjee and A. F. Shorrocks (1982): "A Decomposition Analysis of the Trend in U.K. Income Inequality," ***Economic Journal***, 92, pp. 886-902; and A. F. Shorrocks and Guanghua Wan (2004): "Spatial Decomposition of Inequality," WIDER Discussion Paper No. 200401; as well as to the huge volume of literatures referenced by the papers cited above.

observed magnitude![17]

One of the principal factors underlying intra-provincial disparity in China has been identified as the urban-rural separation.[18] Ever since its establishment in 1949, the Chinese Communist government has been using the Household Registration System (the Hukou System) to control the size of its urban population and to regulate its rural population from migrating to cities. As a result, by the turn of the new century, 70% of the total Chinese population was still living in the rural areas. Recently, the Government in Beijing has gradually relaxed its strict control over urban-rural population movement.[19] We view this policy change as a positive step towards balancing regional disparities of economic growth.

Trends in China's Overall Regional Disparities

Over the period from 1952 to 2000, the time series of China's overall regional disparity (as represented by the regional Gini Coefficient) exhibits seemingly a flat W-shape with three peaks of 32.6%, 28.2%, and 26.8%, which occurred in 1960, 1976, and 1999 respectively, and two troughs of 21.5% and 22.5% occurred in 1967 and 1990 respectively (see Graph 3). The historical average regional Gini Coefficient over the entire period was 25.2%.

No statistically significant linear trend was found in China's overall regional disparity over the period from 1952 to 2000, but there were significant upswings in both the Cultural Revolution period (1967-1976) and the reform period (1981-2000). During the period of the Cultural Revolution, China's provincial inequality increased by 31% and in the reform period, it increased by 14%. China's largest regional inequality occurred in 1960 when the Great Leap Forward movement failed and its economy nearly collapsed, and the smallest regional inequality occurred in 1967 when the Cultural Revolution started. Furthermore, during the first half of the reform period (i.e., 1979 to 1992), China's regional inequality was well below the historical average with a minimum Gini Coefficient as low as 22.5%, which occurred in 1990. The sharp decline in China's regional disparity that occurred between 1977 and 1983 may be attributed to the breakdown of the Commune System in rural areas where over 70% of the Chinese population resided as well as to its replacement of the Household Production System (i.e., the privatization of agricultural production).

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[17] There is research reported in the literature suggesting that national income inequality may have been over stated because it includes income differences between subpopulations. For example, the age group of 30-50 should naturally earn more than that of 15-25 and 65-75. Therefore these between group differences should be "corrected" in calculating the true national income inequality. See, for example, Morton Paglin (1975): "The Measurement and Trend of Inequality: A Basic Revision", ***American Economic Review***, Vol. 65, No. 4, pp. 598-609, September.

[18] Numerous researches that were mainly based on the 1995 household income survey data by CASS (China Academy of Social Sciences) claim that rural-urban inequality was the main "cause" of inequality, and regional differentiations were smaller in magnitude (see for example: Ajit S. Bhalla, Shujie Yao and Zongyi Zhang (2003): "Causes on Inequalities in China", ***Journal of International Development***, 15, pp. 939-955; Takahito Akita and Kazumi Kawamura (2002): "Regional Income inequality in China and Indonesia: a Comparative Analysis," http://www.ersa.org; Shujie Yao and Zongyi Zhang (2001): "On Regional Inequality and Diverging Clubs: a Case Study of Contemporary China", ***Journal of Comparative Economics***, 29, pp. 466-484; Ravi Kanbur and Xiaobo Zhang(2004): "Fifty Years of Regional Inequality in China: A Journey Through Central Planning, Reform and Openness," ***Review of Development Economics***, forthcoming; and also Milanovic (2004).

[19] For instance, in the latest census conducted in 2000, the Chinese government adopted, for the first time, the international definition of residency as those who had lived in an administrative district for 6 months or longer. This definition of urban residency officially recognizes those who came from rural areas but have worked in urban locations for longer than six months as "urban residents" at least in the sense of its official economic statistics. At present, cities in China adopt widely differentiated social welfare policies (e.g. regulations governing medical cares, schoolings, etc.) to those nearly 100 million rural workers and their families currently residing in urban areas.

China's Regional Disparities under Bi-regionalization and Tri-regionalization

Traditionally, there are two popular approaches to the identification of regions in China: the Coastal-Inland **bi-regionalization** and the East-Central-West **tri-regionalization**. The **Coastal Region** (also called the **East Region**) consists of 9 costal provinces: Liaoning, Hebei, Shangdong, Jiangsu, Zhejiang, Fujiang, Guangdong, Guangxi, and Hainan, as well as three municipalities: Beijing, Tianjin, and Shanghai.[20] The remaining 18 inland provinces and the municipality of Chongqing are generally grouped as the **Inland Region**, which can be further divided into the **Central Region** of 9 provinces: Heilongjiang, Jilin, Inner Mongolia, Shanxi, Henan, Hubei, Hunan, Jiangxi, and Anhui, and the **West Region** of 9 provinces: Shannxi, Ninxia, Qinghai, Gansu, Xingjiang, Sichaun, Yunan, Guizhou, and Tibet, plus Chongqing.

Bi-regional (Coastal-Inland) Disparities

Using a bi-regional perspective, China's overall regional disparity consists of three parts: two intra-regional disparities: the intra-Coastal disparity and the intra-Inland disparity, as well as the inter-regional disparity between the Coastal and the Inland regions. This study found that in 2000, the Coastal-Inland disparity accounted for 71% of China's overall regional disparity, while the intra-Coastal disparity and the intra-Inland disparity accounted for 18% and 11% respectively (see the third column of Table 2).

Tri-regional (Coastal-Central-West) Disparities

The tri-partition of the Chinese economy generates six regional disparities: three intra-regional disparities of the Coastal, the Central and the West regions as well as three inter-regional disparities of the Coastal-Central, the Coastal-West, and the Central-West. China's overall regional disparity can then be decomposed into these six regional categories. In 2000, the intra-regional disparities of the Coastal, the Central and the West regions represent 18%, 4%, and 1% of China's overall regional disparity respectively, while the inter-regional disparities of the Coastal-Central, the Coastal-West and the Central-West represent 39%, 32% and 6% respectively (see the forth column of Table 2). One obvious but often overlooked fact is that the intra-regional disparity of the Coastal area is three times as large as the inter-regional disparity between the Central and the West regions. This clearly indicates that the Coastal-Inland or the Coastal-Central-Western partitions may have been overly crude as it ignores the fact that China's 12 coastal provincial economies are too diverse to be considered as a region. This study suggests a ten-region approach instead (see the next sub-section).

Trends in Bi-regional and Tri-regional Disparities

China's **Coastal Region** consists of 12 provincial regions (9 provinces and three municipalities: Beijing, Shanghai and Tianjin). It had a population of 536 million (43% of China's total population) and produced nearly 60% of China's output in 2000. The intra-regional disparity of the Coastal Region has decreased by as much as 34% during the reform period (1978-2000) (see Graph 4). This indicates that China's open and reform policy adopted in the last quarter century has created a much more balanced (much equal) economic environment for nearly a half of its coastal population that is almost twice as large as the American population. China's economic equality (or in the growth terminology, the economic growth

[20] China currently adopts a governing system of four levels: the central, the provincial, the city, and the county. Its 31 provincial-level administrative regions comprise 4 municipalities, 6 minority autonomous regions, and 21 provinces. In this paper, we use "provinces" to represent those 31 provincial level administrative regions for simplicity. **Table 4** provides with succinct economic statistics for China's 31 provincial economies.

convergence) among China's 12 costal provincial economies has improved by 34% since 1978. By the end of 2001, coastal Chinese mainlanders have progressed to enjoy the average living standard that Taiwan residents did in 1987.[21]

Another two decreasing tri-regional disparity trends were found: the intra-regional disparity of the Central region and the inter-regional disparity between the Central and the West regions. The West region exhibited no significant trend in its intra-region disparity. These individual decreasing and flat trends associated with these two inland regions together unambiguously indicate that the regional disparity within the Inland Area (accounted for 57% of the Chinese population) has been narrowing (economic converging) (see Graph 4).

These empirical findings of declining trends in regional disparities under bi-regionalization and tri-regionalization should revise the popular but rather abridged proposition: "China's regional disparity has been widening in the reform period". China is too big and its regional disparities are too intricate to be described in such an over-simplified manner. China deserves a much more nuanced and detailed analysis of its multifaceted regional disparities.

Furthermore, the decreasing trends in intra-regional disparities of the Coastal, the Central and the West regions may help to explain why there has been, in general, relatively little social and political conflict during the reform period when the inter-regional economic disparities between the coastal and two inland regions increased significantly.[22] The social and political impact that resulted from the income inequality between distant regions may not be as great as that arising from inequalities between nearby areas. China's strict controls over migration (e.g. the household registration system) and the heavily censored news media might well have diminished the social impact of regional disparities (between distant regions) considerably.

The inter-regional disparity between the Coastal and the Inland regions has been increasing since 1967(see Graph 4). This increasing trend, that began as early as 1967, at least partly contradicts the popular proposition that China's regional inequality was mainly caused by those regionally discriminatory policies that were implemented during the reform period (mainly in the 1980s and early 1990s). This is because both the overall regional disparity and the coastal-inland regional disparity had started to widen more than a decade earlier than the reform period ever started. Graph 4 demonstrates that increasing trend in China's Coastal-Inland inter-regional disparity that started as early as 1967, while both the coastal and the inland intra-regional disparity have started to decrease since 1967. 1967 was the first year when the Cultural Revolution (a radical political movement with violent power struggles) started. It remains unclear why China's coastal-inland regional disparity started to widen coincidentally with the start of the Cultural Revolution. It may require cross-disciplinary research by economists, historians, political scientists, and social scientists to discover a satisfactory answer to this coincidence.

Disparities among China's Ten Regional Economies

This study analyzes China's regional disparity further by partitioning China's 31 provinces into 10

[21] The PPP GDP per capita of the costal Chinese mainlanders was estimated as US$6,980. Taiwan's constant price PPP GDP per capita in 1986 and 1987 were US$5,687 and US$7,580 respectively. Interested readers are referred to Keng (2004), Chapter 1 for details.

[22] There were several events during the reform period that caused significant societal or political uncertainties. For example, two presidents and communist party chiefs (i.e. Hu Yaobang and Zhao Ziyang) were removed from their posts due to internal struggles over various social and political issues. However, these incidents did not generate any uncontrollable unrest for a significantly long period of time.

mutually exclusive regions. These ten regions, according to their geographic locations, can be categorized or "mapped" into the ***Inner Core*** (mainly consisting of interior provinces) and the ***Outer Circle*** (consisting of coastal and/or bordering provinces surrounding the Inner Core). The Outer Circle contains six regions that are either coastal or bordering, or both: the Northeast, the Coastal North, the Coastal East, the Coastal South, the Southwest, and the Northwest. These six periphery regions contain 12 coastal, 6 bordering provinces plus three interior provinces (Ningxia, Qinghai, and Guizhou). The four regions in the Inner Core are the Inner East, the Inner South, the Inner West, and the Inner North. They contain 9 interior provinces plus Inner Mongolia that borders Mongolia and Russia. Except the Inner North and those two western regions (the Northwest and the Southwest), all the other seven regions are endowed with populations exceeding 100 million in 2000. Table 4 exhibits detailed compositions and related economic statistics for these 10 regional economies.

The division of China into 10 contiguous regions generates 55 regional disparities: 10 intra-regional disparities and 45 inter-regional disparities (see Graph 5). In 2000, those 45 inter-regional disparities collectively represented almost 95% of China's overall regional inequality and the remaining 10 intra-regional disparities only contributed 5%. That means that 95% of China's regional disparity would have been "explained" by the 10-regional partition suggested in this study. Comparing with the 71% and 77% "explanatory power" of the bi-regionalization and the tri-regionalization respectively, the 10-regionalization suggested and adopted in this study clearly signifies a more comprehensive, nuanced, and insightful representation of China's regional disparities.[23]

The empirical analysis of these 45 inter-regional inequalities accrued from China's 10 economic regions furnish many intriguing and in several cases astonishing new results that are summarized in the following subsections.

The Largest Disparity is not between the Richest and the Poorest Regions

In 2000, the largest inter-regional disparity existed between the Costal East (consisting of Shanghai, Jiangsu, and Zhejiang) and the Inner South (Hubei, Hunan and Jiangxi) regions; the second largest existed between the Coastal East and the Inner East (Henan and Anhui) regions. The inter-regional disparity between the richest region (the Coastal East) and the poorest region (the Southwest consisting of Guizhou, Yunnan, and Tibet) was ranked eleventh in magnitude among those 45 inter-regional disparities. China's largest inter-regional disparity was 1.6 times that between its richest and poorest regions!

This finding alerts us of the limitation of *ad hoc* inequality analyses of the richest and the poorest regions. Regional disparity depends not only on difference in regional average income levels but also on regional population sizes. When there are sub-regions (e.g., provinces) in each region, and when a country has multiple regions, inter-regional disparities become much too complicated and multifaceted to be adequately analyzed by partial analyses (e.g. *ad hoc* case studies with partially selected regions such as the richest and the poorest regions). A close study of the interwoven relations among all regions is needed in order to come close to depicting the complete picture of multi-regional disparities. Results from the ten-regionalization study provide corroboration of this assertion.

[23] The ten-regionalization suggested by the author is built on many studies in China's economic regions. It considers many non-economic factors such as regional history of cultural, ethnic, and social development, administrative, governmental and institutional issues, geographical/topological location and contiguity, current transportation systems, etc. Interested reader is referred to Chapter 4 of Keng (2004) and Keng (2000) "China's Economic Regions", ***Mainland China Studies***, Vol. 43, No.6, 51-79.

The Heavily Skewed Distribution of Regional Disparities

Among the 55 regional disparities as demonstrated in Graph 5, the largest five inter-regional disparities together represent 25% of China's overall regional disparity. They are those between the Coastal East and the Inner South, the Inner East, the Inner West (Sichuan and Chongqing), and the Coastal North (Beijing, Tianjin, Hebei and Shandong) respectively, as well as that between the Coastal North and the Inner East. The 6^{th} to 10^{th} and the 11^{th} to 15^{th} largest inter-regional disparities jointly represent 19% and 17% of China's overall regional disparity respectively. This demonstrates that the distribution of those 55 regional disparities is largely skewed to the right: the larger 15 inter-regional disparities occupy 61% of the overall regional disparities, the smaller 30 merely occupy 34%, and the 10 intra-regional disparities occupy 5% of the overall regional disparity. Furthermore, intra-regional disparities of the three large costal regions: the Coastal North, the Coastal South (Fujian, Guangdong, Guangxi and Hainan), and the Coastal East exceed more than one third (16) of those 45 inter-regional disparities.

Trends in 10-region's Overall Inter-regional Disparity

The overall inter-regional disparity (the sum of 45 individual inter-regional disparities) between China's 10 economic regions exhibited a significant increasing trend during the period of 1978 to 2000, a less steep upward trend between 1967 and 2000, and a flat (statistically insignificant) trend between 1952 and 1978 (see Graph 6).

Among those 45 individual inter-regional disparities, 21 exhibited increasing trends, 17 exhibited decreasing trends, and the rest exhibited no significant trends during the period of 1978-2000. Among those 21 exhibiting increasing trends, 18 include at least one of the rich coastal regions: the Coastal North, the Coastal East, or the Coastal South. Among those 17 exhibiting decreasing trends, 9 include the Northeast Region (Heilongjiang, Jilin and Liaoning). The average annual marginal propensity to converge or diverge (i.e. the slopes) of these 21 increasing and 17 decreasing trends are estimated and presented (Refer to Keng, 2004, Chapter 10: Tables 10-8 to 10-10).

Needless to say, the increasing trends in regional disparities were mainly due to those three fast growing coastal regions that have left behind those inland regions that have been growing relatively slowly. As a result, Inter-regional disparities between these regions have been widening. A popular explanation for this divergence of regional growth has been that the reform and liberalization policies implemented in the 1980s and 1990s, which were highly discriminatory, favoring costal regions significantly over inland regions. However, a closer examination of the overall inter-regional disparity curve presented in Graph 6 indicates that the escalating trend started at least a decade earlier than implementation date of the reform and liberalization policies (1978). This finding emphasizes the need for a more detailed study in individual inter-regional disparities between each pair of regions. The following paragraphs summarize these more detailed findings.

The Changing Context of China's Inter-regional Disparities

Among China's 45 inter-regional disparities, the largest disparity has prior to 1983 always occurred between the Coastal East and the Coastal North, however, since then, it has been decreasing and was surpassed by those between the Coastal East and the Coastal South, as well as by those between the Coastal East and two populous interior regions nearby. Starting in the mid 1980s, disparities between the Coastal East and its two populous neighboring interior regions, the Inner East and the Inner South increased significantly and exceeded that between the Coastal East and the Coastal North. However, the disparity between the Coastal East and the other populous but less wealthy inner region, the Inner West,

has remained relatively stable (within the 4% - 5% range of the overall regional disparity) over the last 25 years. Disparities between China's fastest growing regions, the Coastal East and the Coastal South have narrowed significantly since the early 1980s. The largest reduction in inter-regional disparity occurred between the Coastal East and the Northeast regions. Graph 7 demonstrates the changing context of the inter-regional disparities between the Coastal East and the other 9 regions.

One-third of China's Inter-regional Disparities Decreased

17 out of the 45 inter-regional disparities exhibited decreasing trends during the reform period (1978-2000). These 17 converging inter-regional disparities represented 35% of the overall inter-regional disparity in 2000. An interesting finding is that all of the 9 inter-regional disparities involving the Northeast region exhibited declining trends in this period (see Graph 8). These 9 inter-regional disparities indeed made up over 62% of the total decreasing inter-regional disparity, or in other words, they made up about 22% of China's overall inter-regional disparity. This is probably because historically, when the Chinese economy was centrally planned, the Northeast region was the location of a large portion of China's heavy industries. Numerous state-owned enterprises were allocated to that region and they, in turn, employed a large portion of the regional workforce. Therefore, historically there were relatively large disparities between the Northeast and other regions. The liberalization policies, favoring a market economy, have corrected these distorted resource allocations. The economy of the Northeast region grew much more slowly during the reform period. In other words, the Northeast regional growth has been "converging" to other regions' growth patterns. Graph 8 shows those 9 converging trends of regional disparities involving the Northeast region.

Ranking Regions by Marginal Disparity

This study proposes the use of the Marginal Regional Disparity (MRD) to represent the magnitude of an individual province's contribution to the overall regional disparity. The MRD of a province is the sum of all the inter-provincial disparities involving that province. The ratio of a region's MRD to the overall regional disparity is called the **Effective Regional Disparity** (ERD) that represents its marginal share in the overall regional disparity. By placing all the provinces into the descending order of their ERD, we obtain the general ranking of a country's provinces according to their shares in the overall regional disparity. From a policy orientation, we may further sort all the provinces into rich and poor categories and then rank them accordingly. This will provide with a priority list of those provinces that need to be assisted first in order to reduce the overall regional disparity effectively. Table 3 demonstrates China's provincial population, GDP per capita, ERD as well as their rankings.

The largest "contributor" to China's overall regional disparity in 2000 was the province of Guangdong with a GDP per capita of RMB$11,181 (US$1,352) and a population of 86.42 million. Guangdong contributed 7.77% to China's overall regional disparity. The least contributor was Tibet with a GDP per capita of RMB$4,483 (US$542) and a population of 2.62 million. Tibet contributed 0.1821% to China's overall regional disparity.

It is easy to see that provinces possessing both high income and large population contribute more to the overall regional disparity. A region with too high or too low an income level alone does not necessarily generate a relatively large share in the overall regional disparity. For instance, China's richest province Shanghai with a GDP per capita 350% of the national one was ranked the third among China's 31 provinces and China's third richest province Tianjin was ranked the 24th, while Guizhou, the poorest province with a GDP per capita merely 36% of the national average, was ranked the 12th. This

observation leads to the caveat that there is a tendency to under estimate the regional disparity if one merely conducts an *ad hoc* (i.e., a restricted partial) case study of the disparity between the richest and the poorest regions.

As shown in the right most column of Table 3, in 2000 there were 21 of China's 31 provinces having a GDP per capita lower than the national GDP per capita. These lower income (or poor, for simplicity) provinces together generated 52% of the overall regional disparity while those 10 rich provinces generated 48%. The top ten lower income provinces on the ERD ranking list together generated 38% of China's overall regional disparity. They were: Henan, Sichuan, Hebei, Hunan, Anhui, Guizhou, Hubei, Guangxi, Yunnan, and Jiangxi. Each of the two most populous but poor provinces alone: Henan and Sichuan contributed 5.4% to the overall regional disparity.

The last six on the ERD ranking of lower income provinces together contributed merely 3.8% to China's overall regional disparity. They are (in descending ERD order): Inner Mongolia (with a population of 2,376 million), Xinjiang (1,925 million), Hainan (7.87 million), Ningxia (5.62 million), Qinghai (5.18 million) and Tibet (2.62 million). These six poor provinces are all with relatively small populations and mostly (except Hainan) located in the Grand West. [24]

It is important to note that among these 10 high ERD ranking poor provinces there are merely four (Sichuan, Guizhou, Guangxi and Yunnan) belonging to the Grand West area that is targeted by China's West Development policy initiative. This leads to the author's inference that China's West Development Strategy is not aimed solely at reducing its regional disparity, but also aimed at poverty reduction, environmental protection as well as political and security objectives such as easing China's minority/ethnic tensions and moderating sources of terrorism that may possibly arise in China's western territory where various minorities reside.

Policy Implications

A region's contribution to the overall regional disparity depends not only on its relative level of income but also on its relative size of population. Provinces with middle or low levels of income but large populations (e.g., Henan with a population of 9,256 million, Sichaun of 8,329 million, Hebei of 6,774 million, Hunan of 6,440 million, Hubei of 6,028 million and Anhui of 5,986 million) are ranked high on the list. Except the coastal Hebei, the others are all located in the Inner Core. This fact unambiguously suggests that in order to reduce China's overall regional inequality effectively it is essential to raise the income levels of those populous provinces located mainly in Central China first rather than attempting to directly salvage those small and poor provinces mostly located in the West region. That is, the central government needs to separate the policy objective of poverty reduction from that of regional disparity reduction.

From the perspectives of policy design and implementation, poverty reduction for small and poor provinces can be achieved by direct transfer payments within in a relatively short time frame, but the objective of reducing regional disparity (i.e., balancing regional economic growth) needs much more complex and comprehensive designs of policies and will inevitably take a much longer period of time. Results from this empirical study suggest that if the Chinese central government's goal is to reduce the country's overall regional disparity quickly and effectively, the ERD ranking suggested in Table 3 provides with a priority list for policy designs. It recommends that China's central government needs to engage in

[24] The Grand West region as defined under China's West Development Strategy initiated in 2001 comprises 12 provinces (the whole West Region of 10 provinces plus two poor provinces of Guangxi in the Coastal Region and Inner Mongolia) and three least developed minority districts located in Central Region's Hubei, Hunan and Jilin provinces.

a regional development strategy that focuses more on the heavily populated provinces in the Inner Core rather than on those remote provinces located in the West. In the following, we recommend a set of multi-regional economic development strategies for China's central government to consider:

1) Starting with the 10th Economic Plan (2006-2010), the central government should implement full decentralization and liberalization policies for the Coastal region. This includes bestowing full economic planning and development powers on coastal provinces. In tandem with this action the central government needs to withhold all of its future infrastructure investments from the coastal region. In other words, costal provinces need to live on their own to raise capital for investment and to improve productivity for open market competition. Coastal provinces also need to carry out their own policies to reduce economic disparities between their urban and rural populations and to perfect their own social welfare systems. The central government should limit its role to cross-province policy coordination and of the creation of efficient national (or cross-province) markets such as banking systems and financial markets, inter-provincial transit systems (including water transport and aviation), power transmission networks, etc.

2) During the next decade, the central government should proceed to invest in the populous Inner Core area in order to speed up its infrastructure construction and perfect its education and other public services systems as well as its social welfare networks. Economic development of Central China should be the top priority of China's national development strategy. Priority should be given to the Inner East (Henan and Anhui), the Inner South (Hunan, Hubei and Jiangxi), and the Inner West (Sichaun and Chongqing) regions. Specifically designed policies favoring the Inner Core provinces, such as tax returns on export, tax and interest credits for private infrastructure investments, etc. may be considered to support the necessary accelerated economic growth of the Inner Core.

3) The Government should continue the West Development policy initiative by first focusing on investing in transportation and environment conservation projects. It should also open up (e.g. privatize) the energy resources sector for international investment and competition. In addition, the Western provinces' primary, technology and vocational education systems should be upgraded by direct transfer payments from the centre. At the same time the higher education system should be opened to private investment and a measure of market competition. The current administrative-oriented human resources development policies (that rely on other provincial governments' administrative and budgetary supports) need to be replaced by the central government's direct transfer payments or subsidies. The central government might also consider initiating a new tax (such as the West Development Surcharge) for financing the economic and social modernization of the Grand West.

3. China's Future Economic Growth and Its Limitation

China's rapid development over the last 25 years has enabled it to raise the average income of its 1.3 billion population from a very low level in the late 1970s to a relatively high level (the lower middle income as defined by the UN) today. China has raised the living standards of the huge population living in its coastal area to an even higher level. By the end of 2001, there was a population of 527 million (nearly twice of the American population) in the nine provinces and three municipalities along the Pacific coast of China with an average income of US$6,980 (GDP per capita PPP). This income level was higher than that of an average Taiwan citizen in the early 1980s. Astonishingly, the Southeastern coastal area between the Yangtze River delta and the Pearl River delta (consisting of Jiangsu, Shanghai, Zhejiang, Fujian, and Guangdong) accommodating a population of nearly 250 million people) had an average

income of US$8,419 (per capita GDP PPP) in 2001, a little bit lower than that enjoyed by Taiwan residents in 1988. Furthermore, the difference in average income between Taiwan and Southeast Chinese has rapidly declined in the last 15 years.

The success of China's past economic development can be attributed to both economic and non-economic factors. Among them, political and social stability, high population growth together with an even higher labor force growth, a sustained high level domestic savings, the "gradualism" approach to regional development policies and institutional reforms, as well as the supportive international economic and political environment are identified as the major factors.[25]

Growth Outlooks

This study proposes three path-dependent scenarios that may depict China's future economic growth up to 2020. These three scenarios are labeled as the high growth, the stable growth, and the low growth scenarios. The high-growth scenario is based on the assumption that China will implement economic decentralization and liberalization policies both aggressively and successfully. The stable growth scenario is based on an extrapolation of past and current trends of reform policies, and the low growth scenario postulates a reversion to an authoritarian governing regime. The predications that may be derived from these three different scenarios are presented together with China's official forecasts for its economic plans as well as the World Bank's forecasts in Graph 9.[26]

Under the stable growth scenario, China will progress along a path of gradualism (i.e., by "searching for stones on which to cross the river.") This will enable the economy grow at a compound annual rate of 5.8%, thus achieving a total economy of 3.9 times its present size by 2020. Consequently, an average Chinese individual will earn an income in 2020 that is equivalent to that earned by average Mexicans at present. Under the low growth (i.e. the socialist hard-liner) scenario, the economy will grow at a much slower compound annual rate of 4.3%. If China successfully speeds up its efforts toward economic deregulation and decentralization, it would achieve its high growth potential at an annual rate of 7.4% through to 2020. Should this take place, by 2020, the average Chinese mainlander will enjoy a living standard as high as Taiwan residents do today.

Possible outcomes between the high growth and the low growth scenarios represent the author's 80% prediction range (a probabilistic forecast) for China's future economic growth up to 2020. In other words, this study suggests that in probability, there is a 10% chance that China's future growth would either exceed the high growth scenario or fall below the low growth scenario. As shown in Graph 9, the World Bank's prediction is higher than the stable growth scenario (in forecaster's jargon, the most likely prediction) and China's official plan's prediction is even higher than the World Bank's. However, both are lower than the forecast corresponding to the high growth scenario suggested in this book.

The Limitation to China's Economic Growth

China's future economic growth will not only be largely affected by its decelerating rate of population growth and rate of labor force growth but also stringently constrained by the extent that it can efficiently use its natural resources with which it is poorly endowed. China possesses more than one-fifth of the world's population but only seven percent of the world's arable land. In terms of its resource base per

[25] See Chapter 2, Part II of Keng (2001): ***China's Regional Economic Development*** (Taipei: Linking).

[26] Interested readers are referred to: C.W. Kenneth Keng: "China's Future Economic Regionalization", ***Journal of Contemporary China***, Vol. 10, No. 29, 2001 and "An Economic China", ***American Journal of Chinese Studies***, Vol. 6, No. 2, 1998, 182-215.

capita, China is among the most poorly endowed countries in the world. The shortage of arable and habitable land constitutes a fundamental physical limitation to China's future growth and suggests that economic regionalization and urbanization are the key proactive measures necessarily to overcome such fundamental limitations.

Decreasing Population and Labor Force Growth

Both of China's population and labor force growth have been slowing since the late 1990s, but the latter has been decelerating faster than the former. China's population will grow to a maximum of 1.58 billion around 2040 before it starts to shrink. However, China's labor force will reach its peak in the early 2020s. China's labor force growth rate will fall below the population growth rate in the mid 2010s and will exhibit a negative growth within 10 years from that point on. This reveals a bleak future: during the two decades before China's total population ceases to grow (i.e. between 2020 and 2040), China will encounter a situation where a shrinking labor force must support a growing population. Hence, for China to have sustainable economic growth in the future, it is necessary that labor force productivity rise sufficiently to offset the decrease in its labor force growth.

Accelerating investment in education is likely to raise the average skills and competency of the Chinese labor force in the future. However, institutional modernization facilitating knowledge creation, sharing, and transfer is absolutely critical to future improvements in labor productivity. Such modernization will form the basis of advances in the development and application of technology that will constitute the main thrusts for China's continued and sustained productivity improvement in the future. China will necessarily need to modernize its institutional systems such as news media, social welfare, legal systems, property ownership and intellectual property rights, banking and financial institutions, and continuing education etc. to improve its ability to create knowledge and innovate.

Poorly Endowed Natural Resources

China's per capita agricultural land is 28% of the world average; its grazing (range) lands per capita are less than half the world average; forests and wildness areas per capita are merely 15% of the world average; its water resources are about one-third the world average; and its energy resources per capita, aside from coal are also very low. [27] China's poor endowment of natural resources could harshly limit its economic growth and welfare improvements in the future, unless efficient means (e.g., better technology) of utilization are adopted. Although less government intervention, internationalization of markets, and globalization of industrial structures could enable China to resolve a large portion of those natural resource constraints, the relatively low per capita endowment of arable and habitable land remains a critical, persistent, and tenacious physical restriction on China's future economic growth.

When the demand for urban land rises as urbanization and industrialization advance, land prices and hence the cost of using land services are likely to rise even faster than other prices. The high cost of arable and habitable land compounded with the government restrictions on urban land use will impede the ability of the Chinese economy to build a modern national transportation system (like the USA's). As China's land demand for both urban and rural housing, commercial development, and industrial uses raises, the limited supply of arable and habitable land will then become a major obstacle to China's future

[27] For example, China possesses 22% of the world's population but is endowed with merely 7% of the world's arable land. China's agriculture land per capita is 28% of the world average, range land per capita is less than half of the world average, forest and wildness areas per capita are only 15% of the world average, water resources per capita are about one-third the world average, and energy resources per capita are very low as well. See World Bank (1997): ***Clear Water, Blue Skies: China's Environment in the New Century***, p. 6.

economic development. The high-imputed cost of using arable and habitable land is thus a critical challenge for China's capital productivity and international competitiveness of production. Therefore, the intensive utilization of habitable and arable land is seen as the focal bottleneck for China's future economic growth.[28]

Better Regional Development Strategies Needed

The physical limitation due to a low plains-population ratio will impel China to diversify its national economy into regional ones. Each of China's regional economies should essentially have its own relatively independent industrial structure and market system so as to reduce inter-region long-distance land transportation. This will reduce the need for large inter-region logistic/transit systems that would consume significant quantities of arable and habitable land. In so doing, transportation costs, which would normally constitute a significant portion of the logistics transaction costs of almost all economic activities, would be drastically minimized. The Chinese economy as a whole would thus utilize fewer resources for transportation while producing a sustained level of output. This will lead to macroeconomic productivity gains.

Thus, China is likely to benefit both strategically and economically by decentralizing and sharing its resource allocation power with its regions. This would be an effective step in securing China's future economic growth. Productivity gains from this strategy of economic regionalization have been estimated at an average of as high as 1.5% per annum through to 2020.[29] In effect, had there been no central planning and had China relied completely on market forces to allocate its resources for economic development, a high degree of economic regionalization would already have been a reality in today's China.

If China's central authority keeps up the current trend in implementing policies of market-based institutional reform and a steady decentralization of its economic power to regional authorities, many regional economies with relatively autonomous industrial structures and markets are likely to emerge. If the Chinese macroeconomic strategic planners take into account the natural resource constraints on China's future growth, and accelerate China's process of economic decentralization and regionalization, this process of regionalization and urbanization may occur even faster.

Assuming that regionalization in China becomes a reality, there will likely be ten regional economies with major metropolitan centers emerging in China in the coming decade or two. This prediction is derived from the author's high growth scenario of "decentralization and regionalization" for China's future growth. Should this happen, China will most likely enjoy its highest growth potential ever: a compound annual growth rate of over 7% up to 2020.

Political and Social Reforms?

Although the main focus of this study is economic analysis, the author offers a clear future vision and predicts that due to the interwoven interactions among economic growth, societal progression, and political evolution China will not be able to separate its aggressive economic modernization from its political reforms. In fact, China's political reform has long been underway since Mr. Deng Xiaoping first engaged China in developing a "socialist market economy with Chinese characteristics" in the early 1980s. Many Chinese villages have already held free mayoral elections. Mr. Jiang Zemin's assertion of "Three

[28] See Keng (2000): "China's Future Economic Regionalization", ***Journal of Contemporary China*** for elaboration.
[29] See Keng (2001): ***China's Regional Economic Development***, Part II, Chapters 7 and 8.

Representations," which has recently been approved by the Peoples Congress, affirms the basis for future reforms in the Chinese political and social systems. By carrying out pragmatic policies and practicing a democratic approach, the Communist leaders of the post-Jiang generation are likely to further speed up institutional and political reforms. As a result, the author optimistically predicts that by 2020 China will achieve a "democratic system with Chinese characteristics."

Table 1: Income Inequality and Relevant Statistics: 30 Selected Countries

Country	Area (1000 km^2)	Population Density (People/km^2)	Population (Million)	PPP GNP Per capita (US$)	Gini Index	Kuznets 20% High/Low Income Ratio	Kuznets 10% High/Low Income Ratio	Data Year
Japan	378	334	126	$24,400	27.9%	4.7	n/a	1994
Germany	357	235	82	$21,170	28.1%	4.1	6.1	1989
Bangladesh	144	935	124	$1,090	28.3%	4.0	5.8	1992
Korea	99	461	46	$13,430	29.5%	5.3	n/a	1996
India	3,288	318	962	$1,660	29.7%	4.3	6.1	1994
Sri Lanka	66	283	19	$2,460	30.1%	4.4	6.6	1990
Italy	301	196	58	$20,100	31.2%	5.1	8.2	1991
Pakistan	796	163	128	$1,580	31.2%	4.3	6.8	1996
Canada	9,971	3	30	$21,750	31.5%	5.2	8.5	1994
Taiwan	37	611	22.3	$14,216	32.4%	5.5	n/a	1998
UK	245	243	59	$20,710	32.6%	5.6	10.3	1986
France	552	106	59	$22,210	32.7%	5.6	10.0	1989
Kazakhstan	2,717	6	16	$3,530	32.7%	5.4	8.0	1993
Mongolia	1,567	2	3	$1,490	33.2%	5.6	8.4	1995
Australia	7,741	2	19	$19,510	33.7%	5.8	n/a	1989
Kyrgyzstan	199	24	5	$2,180	35.3%	6.3	9.7	1993
Vietnam	332	232	77	$1,590	35.7%	5.6	8.3	1993
Indonesia	1,905	109	200	$3,390	36.5%	5.6	8.4	1996
Nepal	147	152	22	$1,090	36.7%	5.9	9.3	1996
Hong Kong	1	6,733	6.7	$24,350	37.4%	9.0	n/a	1996
Singapore	1	4,991	3	$29,230	38.7%	8.5	n/a	1996
USA	9,364	29	268	$29,080	40.1%	9.4	19.0	1994
China	**9,597**	**130**	**1,227**	**$3,070**	**41.5%**	**8.6**	**14.0**	1995
Philippines	300	241	74	$3,670	42.9%	8.4	14.0	1994
Nigeria	924	126	118	$860	45.0%	12.3	24.2	1993
Thailand	513	117	61	$6,490	46.2%	9.4	14.8	1992
Russia	17,075	9	147	$4,280	48.0%	12.5	26.7	1996
Malaysia	330	64	22	$7,730	48.4%	11.7	19.9	1989
Mexico	1,958	49	94	$8,110	53.7%	16.2	30.6	1995
South Africa	1,221	33	41	$7,190	59.3%	22.3	41.7	1994
Brazil	8,547	19	164	$6,350	60.1%	25.7	59.9	1995
Mean				***$10,580***	***37.75%***	***8.1%***	***15.4%***	
Std. Dev.				***$9,623***	***8.87%***	***5.2%***	***12.9%***	

Source: Keng, C.W. Kenneth: ***China's Unbalanced Economic Growth*** **(**Taipei: Himalaya Foundation, June 2004), Chapter 8, Tables 8-1, 8-2, and 8-3.

Original data source: ***1999 World Development Indicators*** (Washington D.C.: World Bank, 1999).

Table 2: China's Income Inequality and Regional Disparities in 2000

	National Inequality		Regional Disparities					
	Total Population		**Provincial** 31 Provinces	**Bi-regional** Coastal-Inland		**Tri-regional** Coastal-Central-West		**Ten-regional** Ten Grand Economies
GDP per capita	**US$856**							
National Gini Coefficient	**43.8%**							
National Inequality	**US$750**	**100%**						
Inter-provincial	**US$443**	**59%***						
Intra-provincial	**US$307**	**41%***						
Overall Regional Gini Coefficient			**25.9%**					
Overall Regional Disparity			**US$443**					
Intra-Regional Disparity				**US$ 128.**		**US$101.9**		**US$22.9**
Coastal				**US$79.4**	**18%**			
Inland				**US$48.7**	**11%**			
Coastal						**US$79.4**	**18%**	
Central						**US$17.2**	**4%**	
West						**US$4.4**	**1%**	
Inter-regional Disparity				**US$314.5**		**US$341.1**		**US$420.1**
Coastal-Inland				**US$314.*5***	**71%**			
Coastal-Central						**US$172.8**	**39%**	
Coastal-West						**US$141.8**	**32%**	
Central-West						**US$26.6**	**6%**	
Intra-regional Disparity as % of Overall Regional Disparity				**29%**		**23%**		**5.2%**
Inter-regional Disparity as % of Overall Regional Disparity				**71%**		**77%**		**94.8%**
Intra-regional Disparity as % of GDP per capita				**15.0%**		**11.9%**		**2.7%**
Inter-regional Disparity as % of GDP per capita				**36.7%**		**39.8%**		**49.1%**

Unit: US$ is converted from RMB$ at 2000 price level and exchange rate (US$1.0 = RMB$8.27).
Source: Keng: ***China's Unbalanced Economic Growth*** (Taipei: Himalaya Foundation, 2004); Chapters 9 and 10, various tables.
*: Interpretations of these figures need to be accompanied by cautions. Please refer to footnote 14 for details.

Table 3: Marginal Regional Disparity Ranking: China's 31 Provinces

Province	Population (10,000)	GDP per capita ($RMB)	Effective Regional Disparity Share (%)	Effective Regional Disparity Ranking	
				All Provinces	Lower Income Provinces
Guangdong	8642	11180.5	7.7666%	**1**	
Jiangsu	7438	11539.0	7.0882%	**2**	
Shanghai	1674	27187.3	6.7989%	**3**	
Shandong	9079	9409.0	6.5138%	**4**	
Zhejiang	4677	12906.4	5.6055%	**5**	
Henan	9256	5550.6	5.4381%	**6**	**1***
Sichuan	8329	4814.8	5.3600%	**7**	**2***
Hebei	6744	7545.9	4.0505%	**8**	**3***
Hunan	6440	5732.7	3.7480%	**9**	**4***
Liaoning	4238	11017.1	3.7290%	**10**	
Anhui	5986	5075.6	3.6945%	**11**	**5***
Guizhou	3525	2818.5	3.5860%	**12**	**6***
Hubei	6028	7094.1	3.5208%	**13**	**7***
Fujian	3471	11293.8	3.1758%	**14**	
Guangxi	4489	4567.0	3.0511%	**15**	**8***
Beijing	1382	17936.0	3.0190%	**16**	
Yunnan	4288	4559.4	2.9198%	**17**	**9***
Jiangxi	4140	4838.3	2.6528%	**18**	**10***
Heilongjiang	3689	8818.1	2.4918%	**19**	
Shaanxi	3605	4559.8	2.4545%	**20**	**11***
Gansu	2562	3838.3	2.0923%	**21**	**12***
Shanxi	3297	4985.8	2.0623%	**22**	**13***
Chongqing	3090	5143.5	1.8921%	**23**	**14***
Tianjin	1001	16377.2	1.8773%	**24**	
Jilin	2728	6675.9	1.5815%	**25**	**15***
Inner Mongolia	2376	5896.5	1.3792%	**26**	**16***
Xinjiang	1925	7087.6	1.1241%	**27**	**17***
Hainan	787	6588.1	0.4561%	**28**	**18***
Ningxia	562	4725.4	0.3689%	**29**	**19***
Qinghai	518	5088.6	0.3192%	**30**	**20***
Tibet	262	4483.2	0.1821%	**31**	**21***
National	126228	**7699.7**	**100.0%**		

Source: Keng: ***China's Unbalanced Economic Growth*** (Taipei: Himalaya Foundation, 2004).
Original data source: ***China Statistical Yearbook 2001*** (Beijing: China Statistics Press, September 2001)

Table 4: China's Ten Economic Regions in 2000

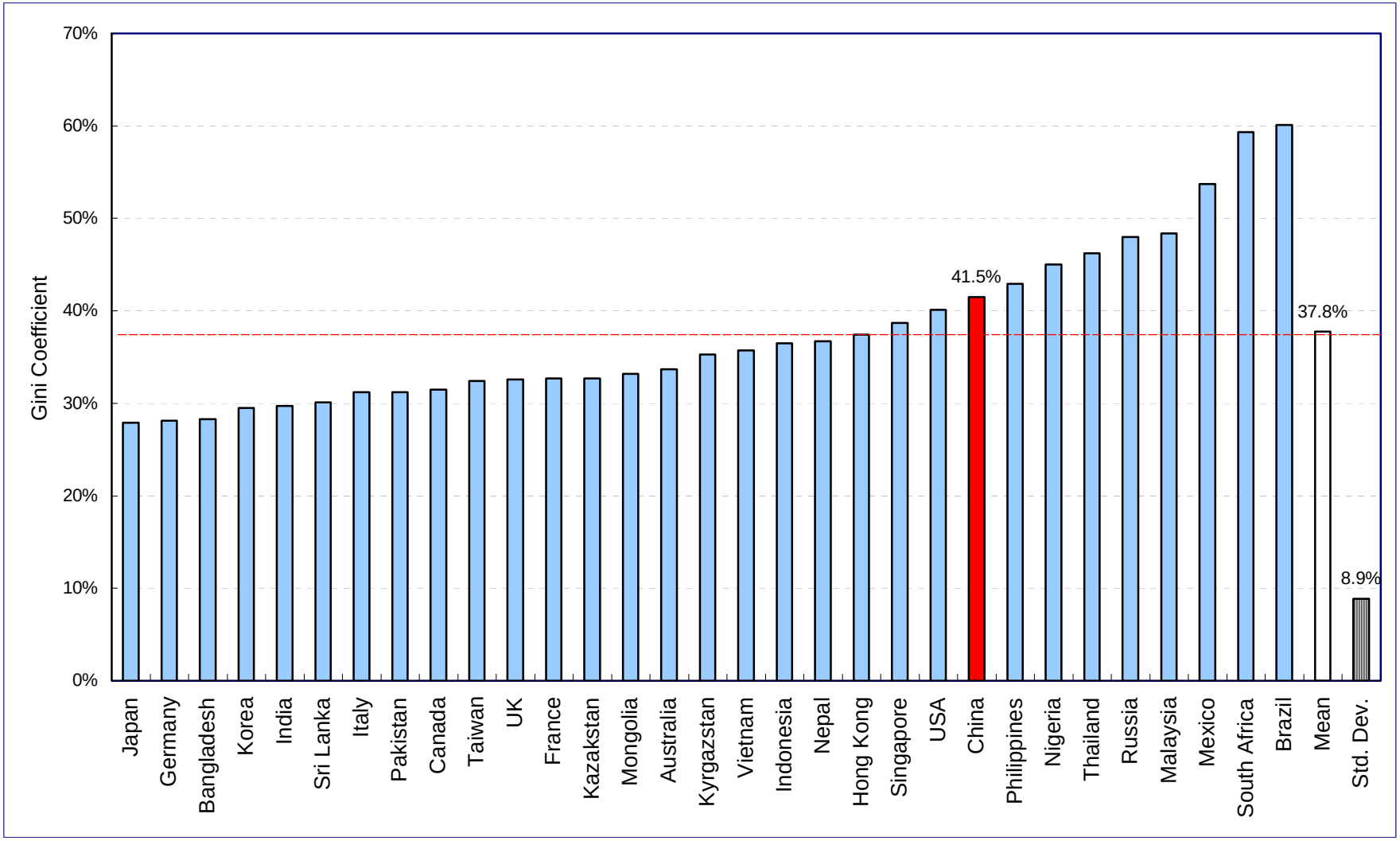
10 Regional Economies					31 Provinces				
Region/ Location		Population (10,000) Share (%)	GDP (RMB$100m) Share (%)	GDP per capita (US$)*	Province	Population (10,000)	GDP (RMB$100m)	GDP per capita (RMB$)	GDP per capita (US$)*
Outer Circle	**North East** (Coastal & Bordering)	10,655 8.44%	$974,325 10.02%	RMB$9,144 US$1,106	Heilongjiang	3,689	$3,253.00	$8,818	$1,065
					Jilin	2,728	$1,821.19	$6,676	$806
					Liaoning	4,238	$4,669.06	$11,017	$1,331
	Coastal North (Coastal)	18,206 14.42%	$1,774,952 18.26%	RMB$9,749 US$1,179	Beijing	1,382	$2,478.76	$17,936	$2,167
					Tianjin	1,001	$1,639.36	$16,377	$1,978
					Hebei	6,744	$5,088.96	$7,546	$912
					Shandong	9,079	$8,542.44	$9,409	$1,137
	Coastal East (Coastal)	13,789 10.92%	$1,917,022 19.72%	RMB$13,903 US$1,681	Shanghai	1,674	$4,551.15	$27,187	$3,284
					Jiangsu	7,438	$8,582.73	$11,539	$1,394
					Zhejiang	4,677	$6,036.34	$12,906	$1,559
	Coastal South (Coastal & Bordering)	17,389 13.78%	$1,615,092 16.62%	RMB$9,288 US$1,123	Fujian	3,471	$3,920.07	$11,294	$1,364
					Guangdong	8,642	$9,662.23	$11,181	$1,351
					Guangxi	4,489	$2,050.14	$4,567	$552
					Hainan	787	$518.48	$6,588	$796
	North West (Bordering)	5,567 4.41%	$287,688 2.96%	RMB $5,168 US$625	Qinghai	518	$263.59	$5,089	$615
					Gansu	2,562	$983.36	$3,838	$464
					Ningxia	562	$265.57	$4,725	$571
					Xinjiang	1,925	$1,364.36	$7,088	$856
	South West (Bordering)	8,075 6.40%	$306,608 3.15%	RMB$3,797 US$459	Yunnan	4,288	$1,955.09	$4,559	$551
					Guizhou	3,525	$993.53	$2,819	$340
					Tibet	262	$117.46	$4,483	$542
Inner Core	**Inner East** (Interior)	15,242 8.02%	$504,131 5.19%	RMB$$5,364 US$649	Henan	9,256	$5,137.66	$5,551	$584
					Anhui	5,986	$3,038.24	$5,076	$613
	Inner South (Interior)	21,724 17.21%	$1,310,586 13.48%	RMB$6,033 US$730	Jiangxi	4,140	$2,003.07	$4,838	$670
					Hubei	6,028	$4,276.32	$7,094	$857
					Hunan	6,440	$3,691.88	$5,733	$692
	Inner West (Interior)	11,419 9.05%	$559,959 5.76%	RMB$4,904 US$530	Sichuan	8,329	$4,010.25	$4,815	$582
					Chongqing	3,090	$1,589.34	$5,143	$621
	Inner North (Interior/ Bordering)	9,278 7.35%	$468,863 4.82%	RMB$5,053 US$611	Inner Mongolia	2,376	$1,401.01	$5,897	$712
					Shanxi	3,297	$1,643.81	$4,986	$602
					Shaanxi	3,605	$1,643.81	$4,560	$551
National		**126,228**	**$9,719,226**	**RMB $7,700 US$931**					

*: US$ is converted from RMB$ at 2000 price level and exchange rate (US$1.0 = RMB$8.27).

Source: Keng: China's Unbalanced Growth (Taipei: Himalaya Foundation, 2004), Chapter10, Table 10-1.

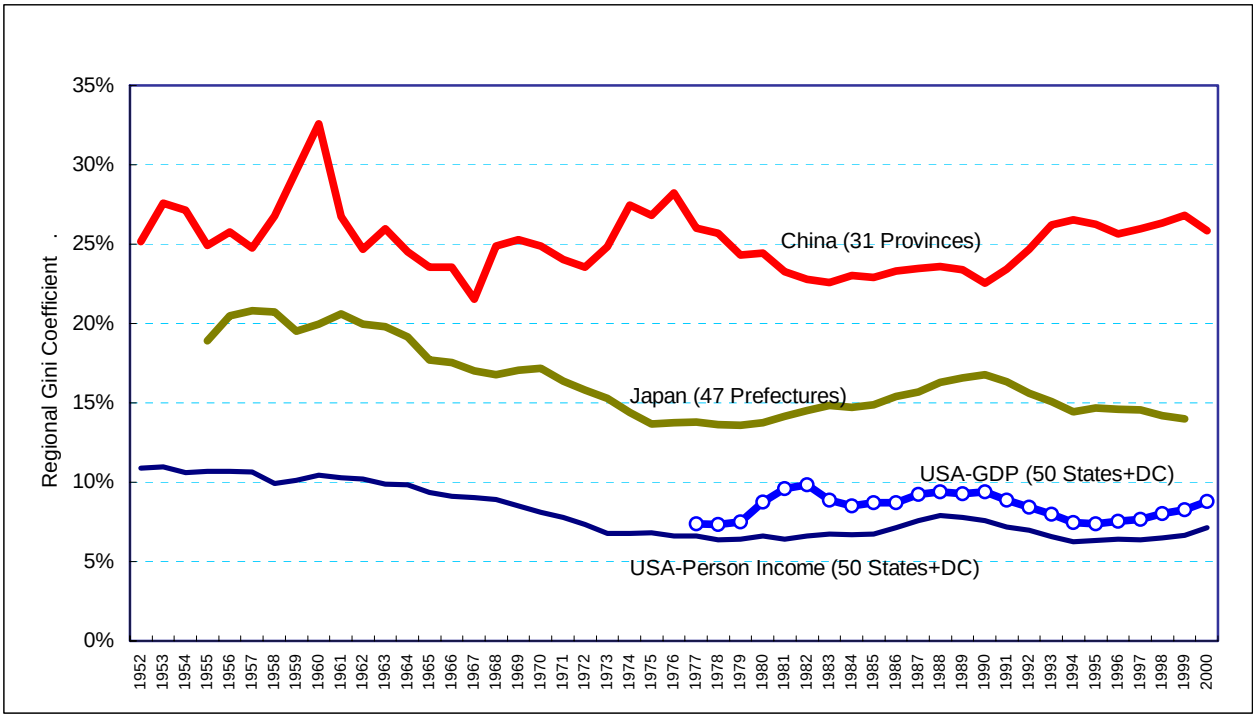
Graph 1

International Comparison of National Income Inequality: China and 30 Selected Countries



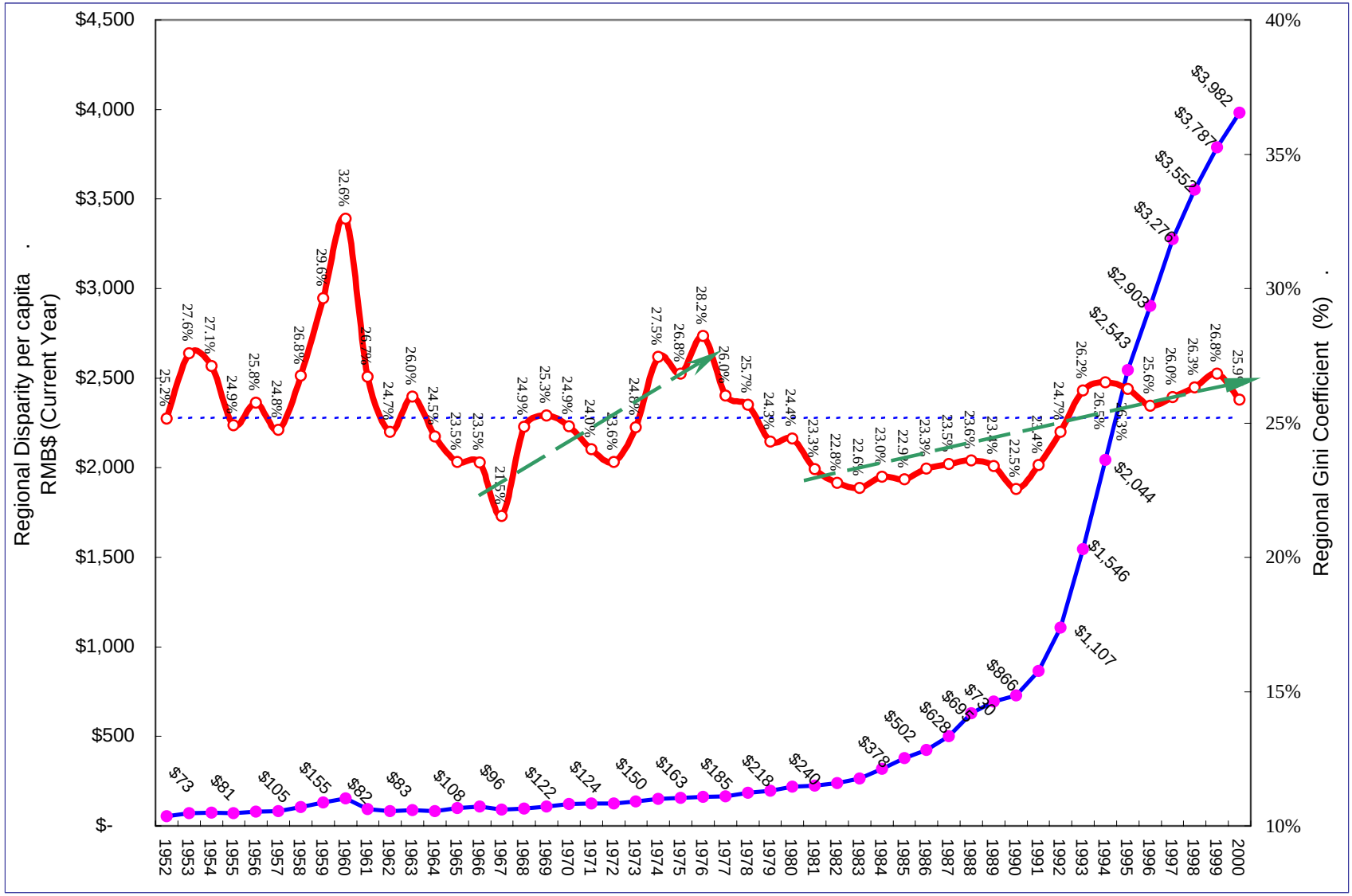
Source: Keng, C.W. Kenneth: ***China's Unbalanced Economic Growth***, Taipei: Himalaya Foundation, June 2004; Graphs 8-2 and 8-3.

Graph 2: International Comparison of Regional Disparities: China, Japan & USA



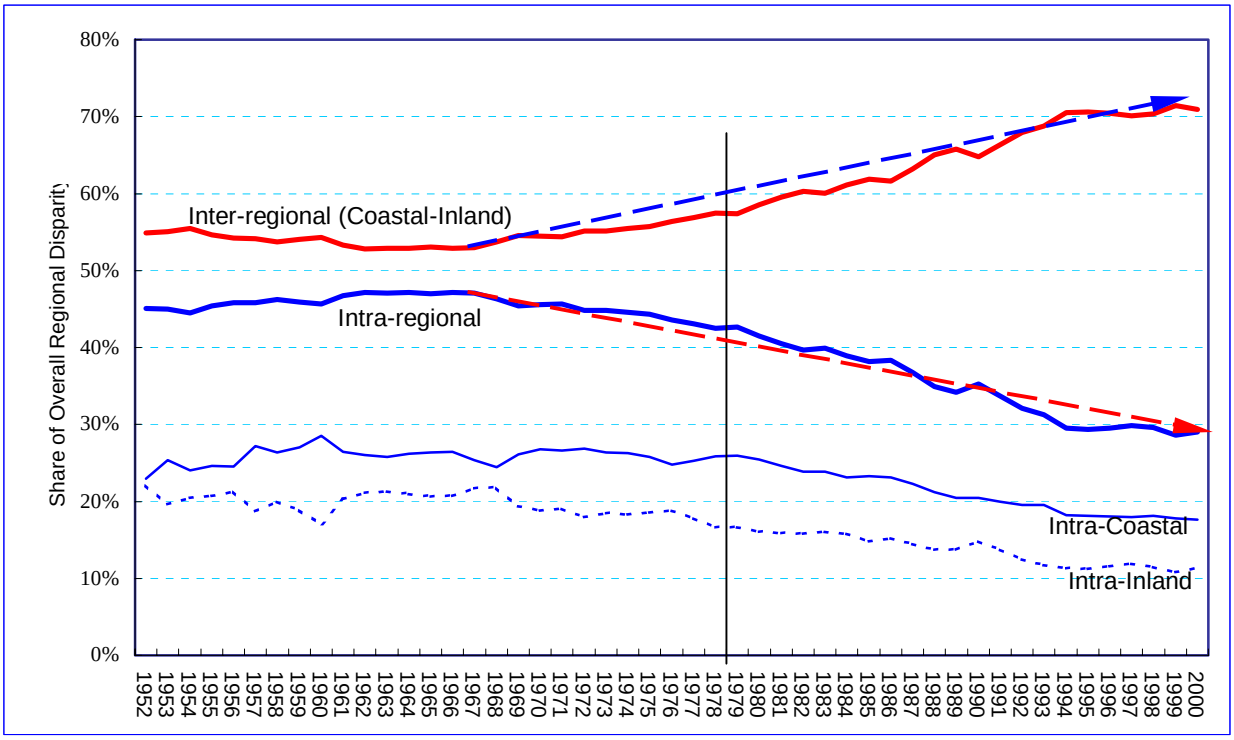
Source: Keng: ***China's Unbalanced Economic Growth***, Taipei: Himalaya Foundation, 2004, Graph 9-1.

Graph 3: Trends in China's Regional Disparity: Regional Gini Coefficient (1952-2000)



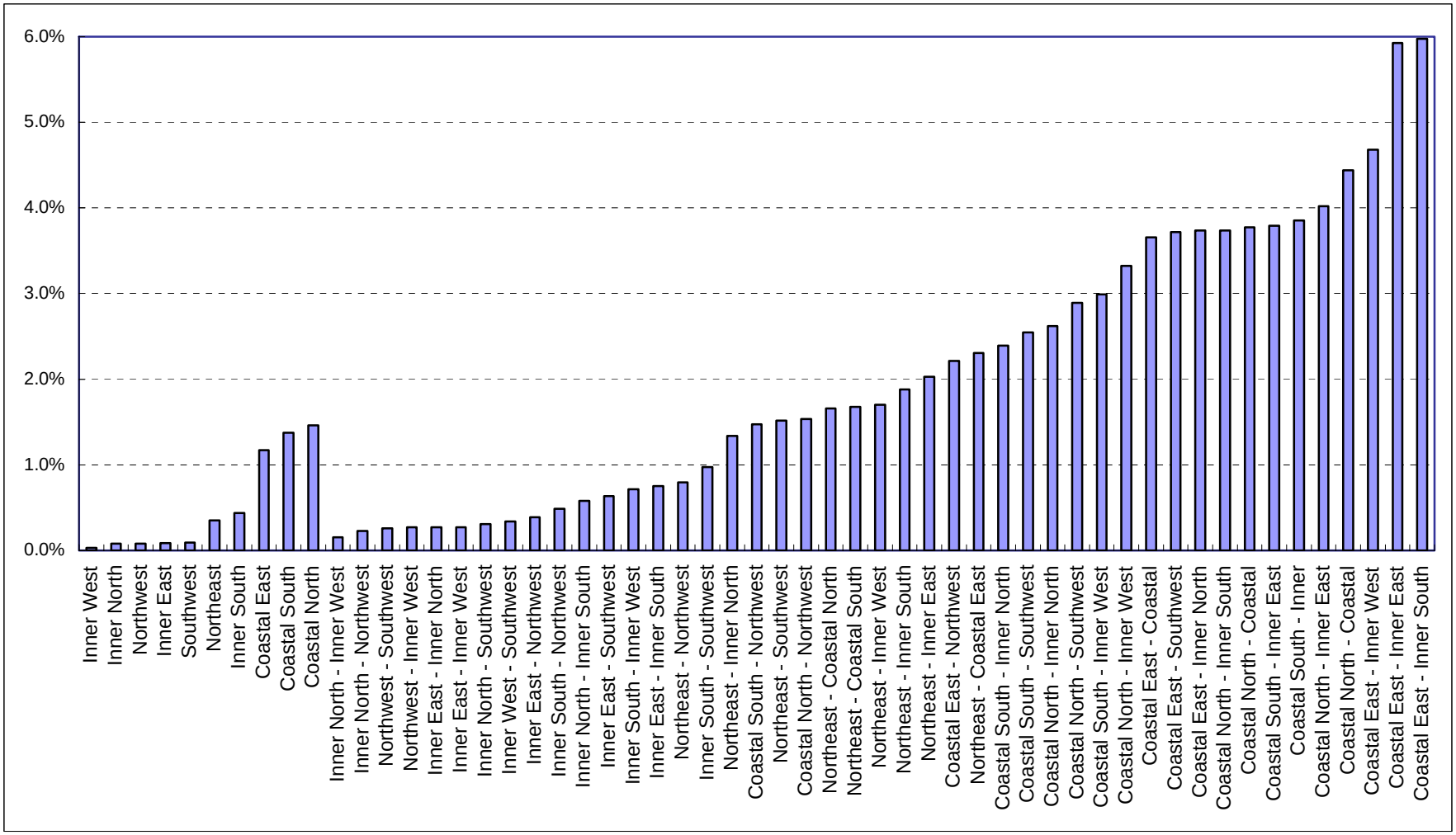
Source: Keng: ***China's Unbalanced Economic Growth*** (Taipei: Himalaya Foundation, 2004)

Graph 4: Trends in Costal-Inland Disparities



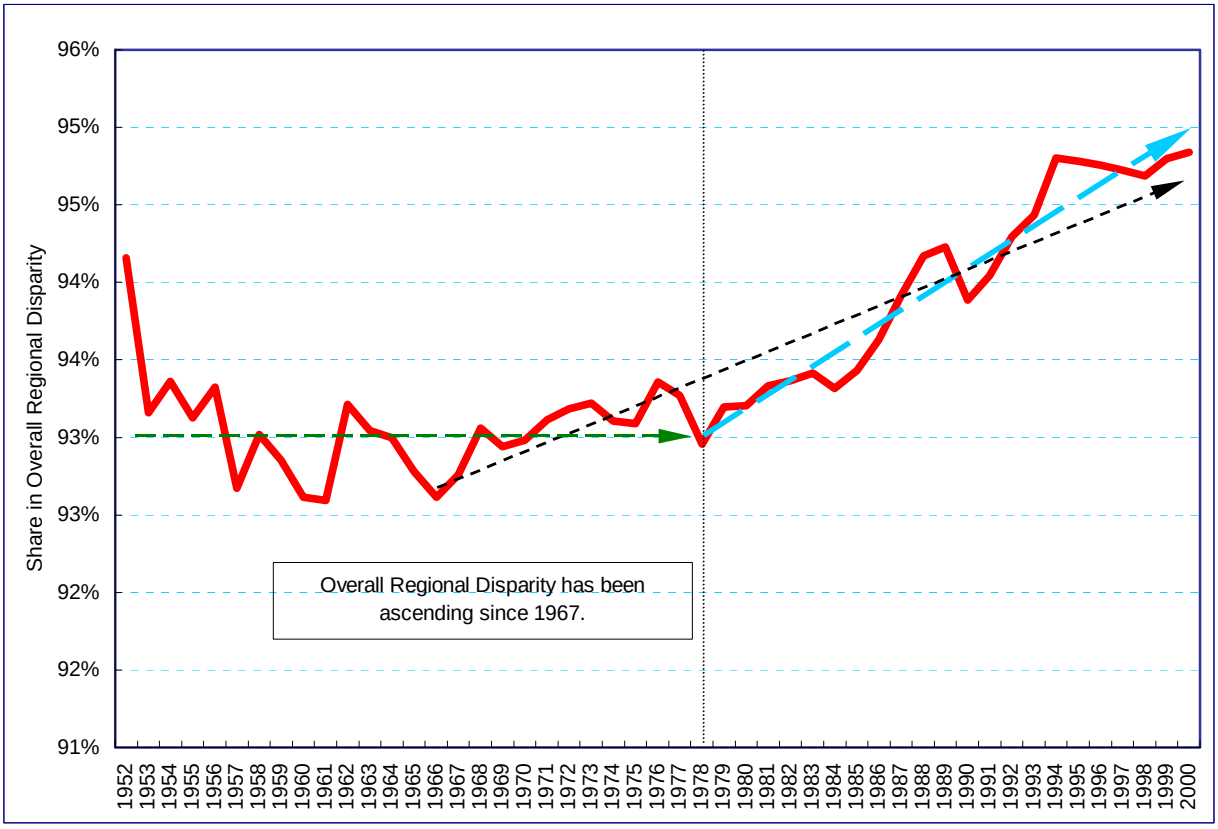
Graph 5: Distribution of Intra- & Inter-regional Disparities under 10-regionalization in 2000

(Percentage Shares of China's Overall Regional Disparity)

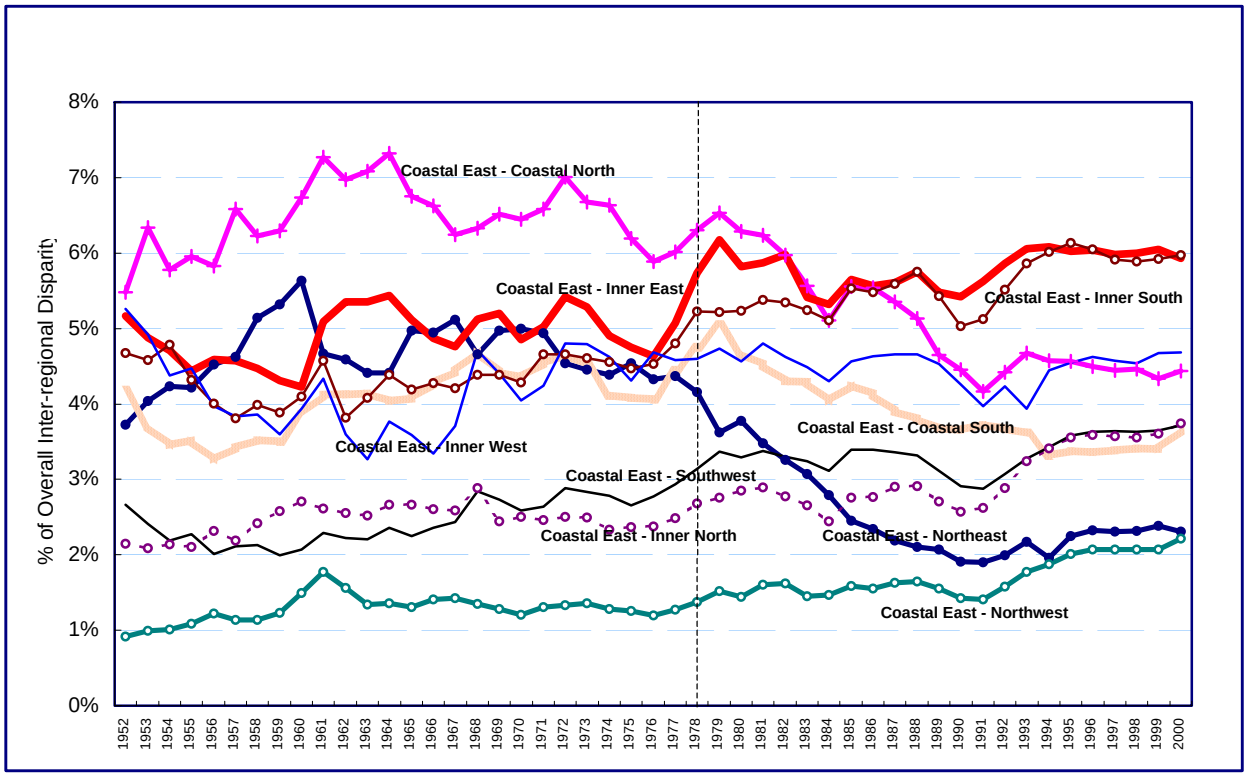


Source: Keng: *China's Unbalanced Economic Growth* **(Taipei: Himalaya Foundation, 2004)**

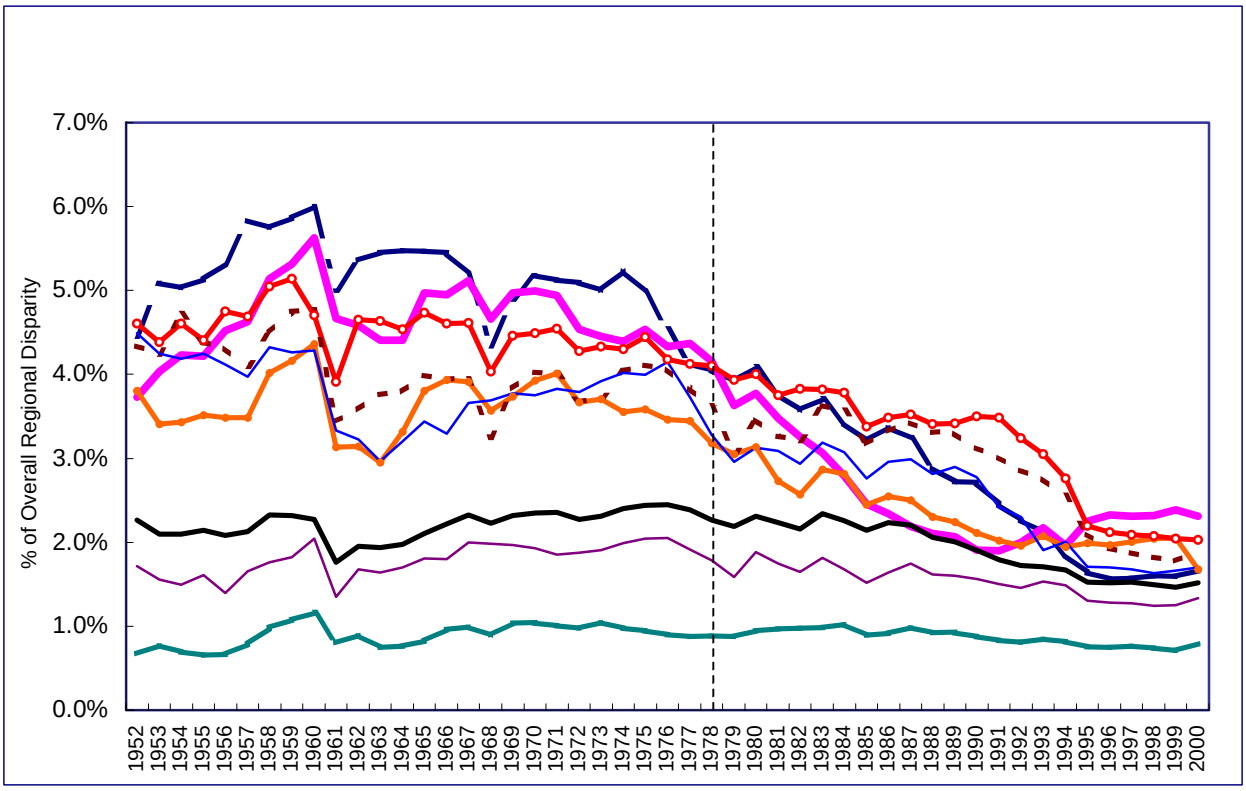
Graph 6: Trends in Ten Regions' Overall Inter-regional Disparity



Graph 7: Inter-regional Disparities: Coastal East vs. Others

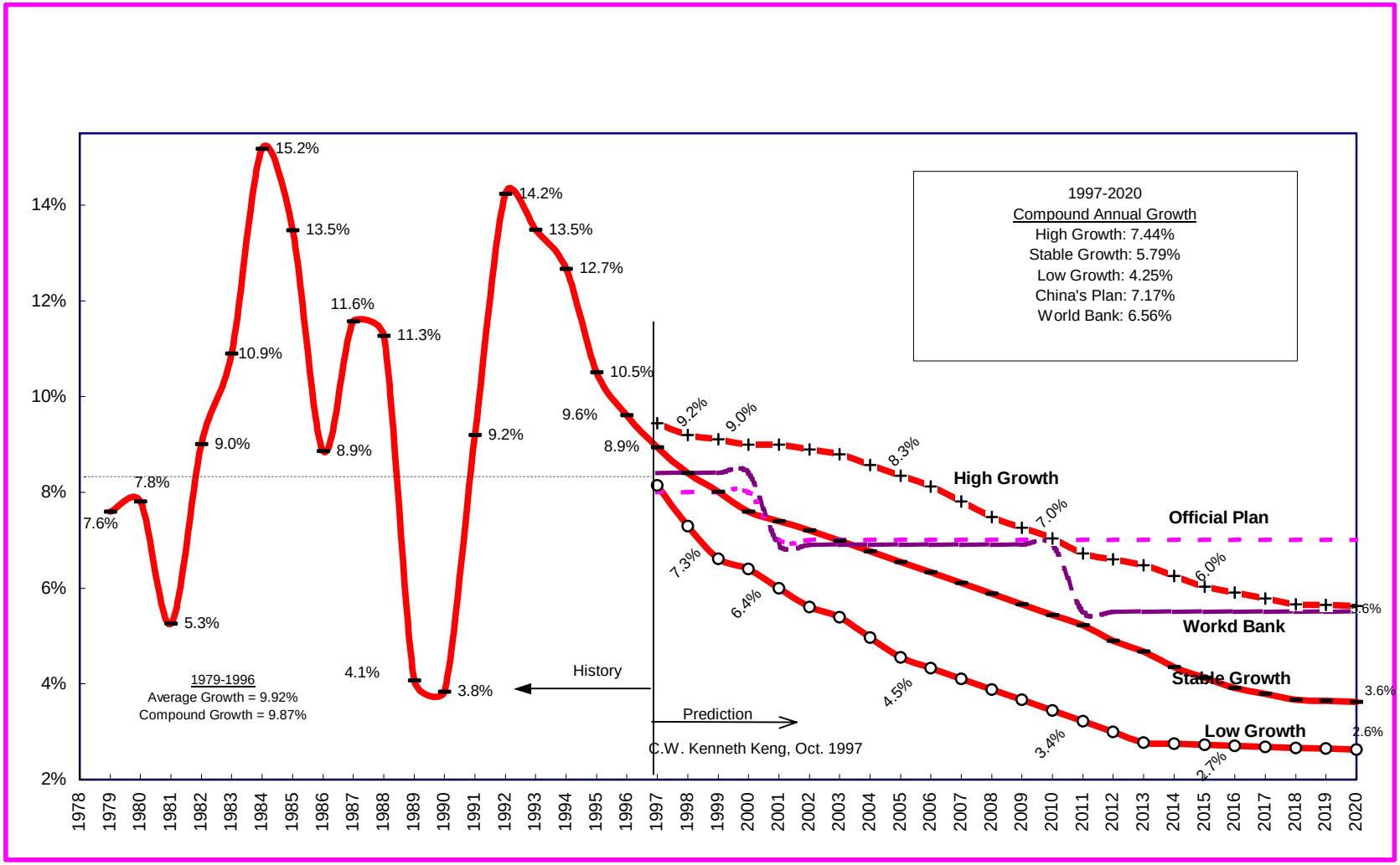


Graph 8: Inter-regional Disparities: Northeast vs. Others



Source: Keng: ***China's Unbalanced Economic Growth*** (Taipei: Himalaya Foundation, 2004)

Graph 9: China's Economic Growth Prospects up to 2020



Source: Keng: ***China's Regional Economic Development*** (Taipei: Linking 2001), p. 449.

Appendix 1

China's Unbalanced Economic Growth

Publishers:
Traditional Chinese version (ISBN:957-41-1366-3): Himalaya Foundation, Taipei; June 2004.
Simplified Chinese version (ISBN:7-80190-460-3): Social Sciences Academic Press (China), Beijing; 2005.

Summary:

As illustrated by the following structural chart, this book's 11 chapters are organized into three interrelated but relatively independent parts plus two English subdivisions of Introduction and Table of Content.

The first part (Chapters 1-3) consists of a review of China's economic development since 1978, a long-term outlook of China's economic growth, and the author's vision for China's economic future – Greater China, the integrated economy of Hong Kong, Macao, Taiwan and the Chinese Mainland. The second part (Chapter 4, 5 and 7) includes an analysis of China's economic regionalization, a review of regional development theories, and a systematical approach for analyzing multi-regional inequalities. The remaining chapters are devoted to a comprehensive empirical study of China's regional economic disparities. It utilizes published statistical data from various Chinese and international sources to study China's national income inequality and regional economic disparities. This study is based on the newly matured theories of endogenous economic growth and economic geography as well as an explicit methodology developed by the author for analyzing economic inequalities among multiple regions.

Due to the complex nature of China's regional economies, this research's empirical study inevitably needs to use huge data set and generate numerous and intricate results. Those complex results are concisely interpreted in the text of the book as well as summarized in its 106 tables and graphs.

Structural Chart

China's Unbalanced Economic Growth