

Postprint: Analysis of the Economic Development Gap and Its Evolution between North and South China

Authors: Yang Duogui, Liu Kaidi, Zhou Zhitian

Date: 2023-03-19T00:00:00+00:00

Abstract

China's principal social contradiction has transformed into the contradiction between the people's ever-growing needs for a better life and unbalanced and inadequate development. As one of the core issues, unbalanced and uncoordinated regional development has become the top priority within this principal social contradiction in the new era. This article conducts a comparative analysis of GDP and fiscal revenue between China's northern and southern regions since 1953, revealing that the evolution of the North-South regional economic development disparity has undergone four distinct stages: the first stage (1953–1978) was a period of balanced development; the second stage (1979–2003) was a period of divergence; the third stage (2004–2012) was a period of adjustment and mitigation; and the fourth stage began in 2013, which marked an inflection point for the North-South economic development gap, with the disparity surging dramatically thereafter. In 2016, the gaps in regional GDP and fiscal revenue between North and South reached their highest levels since 1953, with the northern region's share of national GDP and fiscal revenue both falling below 40%. While regional economic development disparities have long focused on the gaps among Eastern, Central, and Western regions, the North-South economic development gap has now become extremely severe. In this new era of transformed principal social contradictions, the North-South economic development gap issue demands even greater attention and resolution.

Full Text

Analysis of Economic Development Disparity and Its Evolution Between Southern and Northern China

YANG Duogui^{1,2,3*}, LIU Kaidi^{1,2}, ZHOU Zhitian^{1,3}

1 Institutes of Science and Development, Chinese Academy of Sciences, Beijing 100190, China

2 School of Public Policy and Management, University of Chinese Academy of Sciences, Beijing 100049, China

3 Tangshan Academy of Scientific Development, Intercross-Science Research Centre for Natural Science and Social Science, Chinese Academy of Sciences, Tangshan 063000, China

*Corresponding author

Abstract

The principal contradiction facing Chinese society has transformed into the contradiction between unbalanced and inadequate development and the people's ever-growing needs for a better life. As one of the core issues, unbalanced and uncoordinated regional development has become the most critical aspect of this principal contradiction in the new era. This paper compares and analyzes the GDP and fiscal revenue of southern and northern China since 1953, revealing that the evolution of regional economic development disparity between these two regions has experienced four distinct stages. The first stage (1953–1978) was a balanced development period. The second stage (1979–2003) was a gap-widening period. The third stage (2004–2012) was an adjustment and mitigation period. The fourth stage began in 2013, which marked a tipping point for the economic development gap between north and south, after which the disparity surged dramatically. In 2016, the gaps in both GDP and fiscal revenue between the two regions reached their highest levels since 1953, with northern China's share of national GDP and fiscal revenue declining below 40%. While scholarly attention has long focused on the development gap among eastern, central, and western regions, the economic development gap between southern and northern China has become increasingly severe. In this new era of transformed principal contradictions, the economic development gap between southern and northern China demands greater attention and more effective solutions.

Keywords: Regional Economy, Development Disparity, Comparison Between Southern and Northern China

Introduction

China has become the world's second-largest economy, largest industrial nation, largest goods trading nation, and largest holder of foreign exchange reserves. Over the 40 years of reform and opening up, China's GDP (at comparable prices) has grown at an average annual rate of nearly 9.5%; foreign trade in USD terms has grown at an average annual rate of 14.5%; and poverty reduction has exceeded 70% of the global total during the same period [1]. However, alongside these tremendous achievements, China faces prominent issues of unbalanced and inadequate development. The 19th Party Congress report pointed out that socialism with Chinese characteristics has entered a new era, and the

principal contradiction facing Chinese society has transformed into the contradiction between unbalanced and inadequate development and the people's ever-growing needs for a better life. In terms of economic scale, seven of the top ten provinces by GDP in 2017 were located in southern China, the same as in 2016. Meanwhile, Guangdong and Jiangsu provinces ranked first and second nationally with GDP exceeding 8 trillion RMB each. Regarding growth rates, only Guizhou and Tibet achieved GDP growth exceeding 10% [1].

Academic research has long concentrated on development gaps among eastern, central, and western regions, as seen in works by Yang Kaizhong [2], Wang Zheng [3], and others. In recent years, research scales have shifted toward urban agglomerations and economic circles, represented by scholars such as Wen Ruihong [4], Luo Qing [5], and Long Haiming [6]. In contrast, scholars have paid less attention to economic development gaps between southern and northern regions. In April 2017, Premier Li Keqiang noted during his inspection of Shandong that “a major change has occurred in China's economy, where the trend of divergence has shifted from an ‘east-west gap’ to a ‘north-south gap’ demarcated by the Yellow River” [2]. As China enters this new period of transformed principal contradictions, the economic development gap between southern and northern regions demands greater attention. Based on this, this study analyzes the regional GDP and fiscal revenue between southern and northern China since 1953 to examine the evolution and characteristics of economic development disparities, providing references for regional development strategy selection.

Research Object and Methodology

This paper analyzes the disparity and imbalance in regional economic development between southern and northern China. For the research object, we adopt the traditional north-south division, using the Qinling-Huaihe line as the boundary between southern and northern China.

Due to data availability and continuity issues, Hong Kong, Macao, and Taiwan are not included in the analysis. Thus, northern China includes Heilongjiang, Jilin, Liaoning, Hebei, Beijing, Tianjin, Inner Mongolia, Xinjiang, Gansu, Ningxia, Shanxi, Shaanxi, Qinghai, Shandong, and Henan. Southern China includes Jiangsu, Zhejiang, Shanghai, Anhui, Hubei, Hunan, Jiangxi, Sichuan, Chongqing, Guizhou, Yunnan, Guangxi, Fujian, Guangdong, Hainan, and Tibet.

Conceptual Definition and Analytical Methods

(1) Definition of Regional Economic Development Disparity. This paper focuses on regional economic development disparity reflected by aggregate economic output and per capita income, using these two dimensions to measure regional economic development gaps.

(2) Indicator Selection. This paper selects regional GDP and fiscal revenue

as primary indicators for southern and northern regions. The temporal scale analyzes the phased evolution of economic development disparity since 1953.

(3) Measuring Disparity. To comprehensively reflect economic development gaps between southern and northern regions, this paper employs both absolute and relative disparity measures. Standard deviation is used to measure absolute disparity, while weighted coefficient of variation and Theil index measure relative disparity. The specific formulas are:

- Standard deviation: $\sigma = \sqrt{\frac{\sum_{i=1}^n (x_i - \mu)^2}{n}}$
- Weighted coefficient of variation: $CV = \frac{\sigma}{\mu}$ (with population weights)
- Theil index: $T = \sum_{i=1}^n \frac{y_i}{\bar{y}} \log\left(\frac{y_i}{\bar{y}}\right)$, where y_i represents income of individual i , \bar{y} represents average income, and n is total number of individuals.

Overall Trend Analysis of Economic Development Disparity

Analysis of the overall evolution of economic development disparity between southern and northern China reveals that the gap has experienced a process of “microscopic—expansion—adjustment—surge.” Initially negligible, the gap gradually became significant with economic growth, moderated under the strong development momentum of northern China during 2004–2012, but then entered the most severe phase since 1953 beginning in 2013.

Evolution of GDP Disparity

In terms of GDP, southern China’s regional GDP was 38.495 billion RMB in 1953, while northern China was 34.915 billion RMB, accounting for 52.4% and 47.6% of national GDP respectively. For the subsequent 26 years (1953–1978), both regions maintained synchronized, low-speed growth with minimal regional disparity. Beginning in 1979, China’s economy entered a high-growth phase, characterized by rapid GDP growth in both regions, but regional economic disparities also emerged. After a brief period of synchronized development, a clear divergence in GDP between north and south appeared [Figure 1: see original paper].

Figure 1. Changes in GDP (at comparable prices) of southern and northern China since 1953. Data source: Calculated from National Bureau of Statistics website and Wind database; regional GDP data before 1993 from Wind database, after 1993 from National Bureau of Statistics website; GDP indices from National Bureau of Statistics website.

Following the 2008 global financial crisis, northern China’s economic development entered a slowdown phase. Particularly after 2012, northern China’s economy began to decelerate significantly, with Northeast China and Shanxi experiencing notable declines. By 2016, the GDP gap between the two regions peaked, with southern China contributing 60.3% of national GDP, while northern China’s share shrank from 47.6% in 1953 to 39.7% [2], a decline of nearly 8

percentage points. At current prices, southern China's GDP exceeded northern China's by 17 trillion RMB, representing 20.18% of national GDP. Among the top ten provinces by GDP in 2016, seven were southern provinces .

Table 1. Statistics of top 10 provinces by GDP in 2016 (100 million RMB). Data source: National Bureau of Statistics website.

Calculating the Theil index for inter-regional economic disparity reveals that the gap has continuously widened since 1976. Entering the 21st century, the relative disparity rose to a new level, increasing from the 0.2–0.3 magnitude of the previous stage to 0.3–0.4 [Figure 2: see original paper].

Figure 2. Theil index of economic development between southern and northern China since 1965. Data source: Calculated from National Bureau of Statistics website.

Evolution of Fiscal Revenue Disparity

The evolution of fiscal revenue shows characteristics similar to GDP. In 1953, northern China's local fiscal revenue was 4.946 billion RMB, accounting for 14.17% of northern GDP; southern China's was 5.449 billion RMB, accounting for 14.16% of southern GDP—essentially equivalent levels. By 2016, northern China's fiscal revenue accounted for 10.46% of its GDP, while southern China accounted for 11.66%, with northern China lagging behind [Figure 3: see original paper].

Figure 3. Changes in fiscal revenue (at comparable prices) of southern and northern China since 1953. Data source: Calculated from National Bureau of Statistics website.

In terms of relative changes, synchronized trends in fiscal revenue between the two regions only persisted until 2012. In 2013, northern China's fiscal revenue began to decline while southern China's continued to increase.

Among the top ten provinces by local fiscal revenue in 2016, the top three were all in southern China, and among the top five, only Shandong was in northern China, with the rest being southern provinces . Conversely, among the bottom ten provinces, seven were in northern China.

Table 2. Statistics of top 10 provinces by local fiscal revenue in 2016. Data source: National Bureau of Statistics website.

Regarding per capita fiscal revenue, northern China's per capita fiscal revenue was 20.85 RMB in 1953, 1.3 times that of southern China (16.40 RMB) and 1.2 times the national average (18.02 RMB). The per capita fiscal revenue gap between the two regions formally emerged beginning in 1992. Before 1992, southern China's per capita fiscal revenue was mostly below northern China's, but surpassed it from 1992 onward [Figure 4: see original paper].

Figure 4. Changes in per capita fiscal revenue of southern and northern China

relative to national level, 1981–2016. Data source: Calculated from National Bureau of Statistics website.

By 2016, southern China’s per capita fiscal revenue reached 6,846.39 RMB, while northern China only reached 5,597.39 RMB, less than 90% of the national level. Southern China’s per capita fiscal revenue led northern China by nearly 20% relative to the national level.

Phase Characteristics of Economic Development Disparity

Analysis of economic development between 1953–2016 reveals four distinct phases:

Phase One: 1953–1978 (Balanced Development)

During this period, China’s economic development policy emphasized comprehensive, sectoral, and regional balance, using planned measures to regulate economic development and focusing on balanced recovery of productive forces and inland construction. The First Five-Year Plan emphasized transforming old industrial bases in coastal areas and building new industrial bases inland. From 1958–1964, both regions experienced stagnation due to the “Great Leap Forward.” Beginning in 1964, the “Third Front” construction continued to prioritize inland areas while showing a slight southern bias, with Sichuan, Guizhou, and the “Three West” regions (western Henan, Hubei, and Hunan) becoming investment priorities [4]. Although regional development policies clearly favored inland areas from 1953–1978, the fundamental principle was balanced development, resulting in relatively balanced economic development with minimal gaps.

In terms of GDP, both regions’ total GDP remained at similar levels from 1953–1978, with shares of national GDP fluctuating around 50% by no more than 3%. Southern China’s average share was 50.5%, while northern China’s was 49.5%. From 1969–1978, the shares converged even more closely [Figure 5: see original paper].

Figure 5. Southern and northern China’s GDP (at comparable prices) relative to national GDP, 1953–1978. Data source: National Bureau of Statistics website.

Fiscal revenue showed similar patterns. In 1953, southern China’s fiscal revenue was 5.449 billion RMB and northern China 4.946 billion RMB, accounting for 52% and 48% of national fiscal revenue respectively. During this phase, the average shares were 53% (south) and 47% (north). 1978 marked the last year of similar levels before divergence began in 1979.

Phase Two: 1979–2003 (Gap Widening)

1979 marked the divergence point for north-south economic development. Following reform and opening up, China shifted from the previous balanced de-

velopment approach that sacrificed efficiency to an unbalanced development strategy, focusing on developing advantages in eastern coastal areas to drive development in less-developed regions. Benefiting from geographic advantages and historical accumulation, southern China received substantial policy and financial support, characterized by policies favoring the south over the north and prioritizing southern development. In July 1979, the CPC Central Committee and State Council approved special policies and flexible measures for Guangdong and Fujian provinces in foreign economic activities, establishing export special zones in Shenzhen, Zhuhai, Shantou, and Xiamen [5]. In May 1980, these were renamed Special Economic Zones, all located in southern China. In May 1984, 14 coastal port cities including Tianjin and Shanghai were opened, seven of which were in southern China. Subsequent development of the Pearl River Delta, Yangtze River Delta, and Southern Fujian Delta economic zones, as well as the Hainan Special Economic Zone, all reflected this pattern.

During this period, national investment focused on these areas [4]. While north and south had similar development levels before 1978, both GDP and fiscal revenue growth accelerated significantly after 1979, with southern China's growth rate clearly exceeding northern China's, opening the development gap.

In 1978, southern China's GDP (at comparable prices) was 155.622 billion RMB, while northern China's was 155.358 billion RMB—a gap of only 0.09% of national GDP. By 2003, southern China's GDP reached 2,073.784 billion RMB while northern China's was 1,686.388 billion RMB, a gap of 387.396 billion RMB representing 10.30% of national GDP [Figure 6: see original paper].

Figure 6. Southern and northern China's GDP (at comparable prices) and their gap, 1979–2003. Data source: National Bureau of Statistics website.

Fiscal revenue showed similar patterns. In 1978, northern China's fiscal revenue was 47.836 billion RMB, equivalent to 97.5% of southern China's. By 2003, northern China's fiscal revenue (380.67 billion RMB) was only 63.0% of southern China's (604.33 billion RMB). Northern China's share of national fiscal revenue generally declined, reaching only 38.65% in 2003 [Figure 7: see original paper].

Figure 7. Southern and northern China's fiscal revenue relative to national level, 1979–2003. Data source: National Bureau of Statistics website.

Phase Three: 2004–2012 (Adjustment Period)

Beginning in 2004, a new situation emerged as northern China's growth momentum exceeded southern China's. During this period, regional policies such as Northeast Revitalization and Central China Rise became important components of national regional development strategy. The October 2003 “Decision of the CPC Central Committee on Several Issues Concerning the Improvement of the Socialist Market Economic System” stated: “We must strengthen coordination and guidance for regional development, actively promote western development, support central and western regions in accelerating reform and development,

revitalize old industrial bases such as Northeast China, and encourage eastern regions with favorable conditions to take the lead in basically achieving modernization.” Under such policies, northern China’s economic development received strong impetus.

Both regions maintained high growth, but northern China’s GDP performance surpassed southern China’s, with northern growth rates exceeding southern rates from 2004–2012 (except 2007). Benefiting from this, the north-south GDP gap gradually narrowed, with the ratio of southern to northern GDP declining from 123.20% in 2003 to 118.12% in 2012 [Figure 8: see original paper].

Figure 8. Southern China’s GDP (at comparable prices) relative to northern China, 1993–2012. Data source: Calculated from National Bureau of Statistics website.

However, per capita GDP revealed deeper imbalances. The standard deviation measuring absolute disparity began increasing from 2004, rising from 18.16 in 2003 to 104.35 in 2004, and continuously intensifying to 697.98 by 2012. Relative disparity measures (weighted coefficient of variation and Theil index) also increased from 2002, confirming that the narrowing of the gap during this phase was unstable and unsustainable.

Table 3. Absolute disparity (standard deviation) of per capita GDP between southern and northern China. Data source: Calculated from National Bureau of Statistics website.

Fiscal revenue showed similar characteristics. Northern China’s share of national fiscal revenue rose from 38.65% in 2003 to 41.12% in 2012—the highest level since 1993.

Analysis of per capita fiscal revenue absolute disparity shows a clear jump in the 21st century: the standard deviation exceeded 20% in 2000 and surpassed 600 by 2016, representing the largest gap since 1953.

Table 4. Absolute disparity (standard deviation) of per capita fiscal revenue between southern and northern China. Data source: Calculated from National Bureau of Statistics website.

Phase Four: 2013–Present (Surge Phase)

Following the 2004–2012 adjustment, the north-south development gap narrowed somewhat. However, beginning in 2013, as China’s economic development entered a new stage, the north-south gap also entered a new phase of dramatic divergence, making 2013 a tipping point for regional economic disparity.

After the previous revitalization, transformation and upgrading in Northeast China and northern resource-based cities slowed, and northern China’s economic development again fell significantly behind southern China. The situation remains severe. The most prominent feature is the accelerated divergence in

shares of national GDP and fiscal revenue, with northern China's share declining rapidly [Figure 9: see original paper]. Northern China's share of national GDP (at current prices) fell from 47.6% in 1953 to 39.91% in 2016—the first time below 40%.

Figure 9. Trends in southern and northern China's GDP shares of national total since 2000. Data source: National Bureau of Statistics website.

The standard deviation of per capita GDP between the regions exceeded 100 in 2013 and surged to 624.50 within four years. Weighted coefficient of variation increased from 0.2 in 2013 to 0.4 in 2014, then to 0.8, exceeding 1.0 for the first time in 2016. This confirms that since 2013, China's north-south economic development has entered a new phase of greater disparity.

After 20 years of relatively stable disparity, relative gaps in fiscal revenue also began diverging dramatically from 2013. From 1993–2012, southern China's fiscal revenue remained between 58.88% and 60.33% of the national total, while northern China remained between 38.91% and 41.12%. From 2013–2016, southern China's share rose nearly 4 percentage points while northern China's fell nearly 4 percentage points—a fluctuation exceeding the previous 20 years. In 2016, southern China's public fiscal revenue was 1.7 times that of northern China, the largest gap since 1953.

Conclusions

Since 1953, China's economic development between southern and northern regions has evolved into a clear pattern of “strong south, weak north.” Whether measured by GDP or fiscal revenue, northern China's share of the national total has declined from nearly 50% to below 40% in 2016, while southern China now accounts for over 60%. The main conclusions are:

1. **1953–1978: Balanced Development Phase.** Guided by balanced development philosophy emphasizing comprehensive, sectoral, and regional balance, both regions maintained similar, stable, low-speed growth with minimal disparity. GDP shares fluctuated within 3 percentage points of 50%. Fiscal revenue shares averaged 53% (south) and 47% (north), with northern per capita fiscal revenue even exceeding southern levels.
2. **1979: Turning Point for Widening Disparity.** Post-reform opening-up, regional development shifted to a prioritized strategy. Leveraging geographic advantages and historical accumulation, southern China received more policy and financial support. The 1979–2003 period saw southern China's growth acceleration significantly exceed northern China's, opening the development gap.
3. **2004: Adjustment Point.** From 2004–2012, policies like Northeast Revitalization and Central China Rise became key national strategies, boosting northern China's economy. Northern growth rates exceeded southern

rates, narrowing the gap somewhat. However, this narrowing was unstable and unsustainable.

4. **2013: Tipping Point for Dramatic Divergence.** After the previous adjustment, transformation in Northeast China and northern resource-based cities slowed, and northern development fell behind again. Northern China's share of national GDP dropped nearly 3 percentage points in four years, reaching 39.7% in 2016—the lowest since 1953. The gap became the largest since 1953.

In conclusion, after experiencing “microscopic—expansion—adjustment—surge” phases, north-south economic development entered an unprecedented period of dramatic divergence beginning in 2013. The “north-south gap” has become a major change in China's current economy. Future research should focus on analyzing the causes and countermeasures to address this regional disparity and alleviate China's principal social contradiction.

References

- [2] Yang Kaizhong. Research on Regional Economic Disparities in China. *Economic Research*, 1994, (12): 28-33, 12.
- [3] Wang Zheng, Ge Zhaopan. Multiple Equilibrium States and Transition Precursors of China's Regional Economic Development. *Social Sciences in China*, 2002, (4): 31-39, 204.
- [4] Wen Ruihong. Study on the Relationship Between Guangdong's Economic Growth and Regional Economic Disparity. *Geography and Geo-Information Science*, 2012, 28(1): 90-93.
- [5] Luo Qing, Li Xiaojian, Yang Huimin. Research on the Spatial Distribution Pattern and Evolution of China's County-Level Economy: 1990–2010. *Economic Survey*, 2014, (1): 1-7.
- [6] Long Haiming, Ling Lian, Tan Congjie, et al. Regional Differences in Urban-Rural Income Gaps—An Empirical Analysis Based on China's Regional Data. *Financial Research*, 2015, (3): 74-84.
- [8] Theil H. *Economics and Information Theory*. Amsterdam: North Holland Publishing Company, 1967: 91-123.
- [9] Chen Qiting. Overview of China's Regional Economic Policies. *Development Research*, 1999, (5): 33-34.
- [10] Li Qingquan. *On Regional Coordinated Development Strategy*. Beijing: Party School of the Central Committee of the CPC, 2000.

Author Biographies

YANG Duogui, Professor at Institutes of Science and Development, Chinese Academy of Sciences. Research fields: green innovation and national health.
E-mail: yangdg@casipm.ac.cn

Responsible Editor: Yue Lingsheng

Note: Figure translations are in progress. See original paper for figures.

Source: ChinaXiv — Machine translation. Verify with original.