

CHINA'S REGIONAL DISPARITY IN 1981–2000: OPENNESS AND DEVELOPMENT OF NON-STATE-OWNED ENTERPRISES AND FISCAL DECENTRALIZATION

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ABSTRACT: While China's economic growth has been impressive since 1978, regional disparity in terms of provincial per capita GDP has been increasing. On the other hand, this rapid but uneven growth was accompanied by China's deepening openness and structural reforms including the development of non-state-owned enterprises (non-SOEs) and fiscal decentralization. Based on quantitative analyses, this paper tries to explore the features of regional disparity in China and the relationships between regional growth and China's openness and economic structure reforms in the period from 1981 to 2000. The paper finds that the catching-up of the coastal region to the initially rich provinces, which are mainly located in inland areas, brought about a convergence of the growth pattern across provinces in the 1980s. The subsequent divergence in the provincial growth rates between the coast and the interior generated an enlarging regional disparity in China in the 1990s. The ever-faster growth in the coastal region was benefited by China's openness and the development of non-state-owned enterprises. The development of non-state-owned enterprises underlies the higher operational efficiency in the coastal region. Additionally, with the insignificant regression results, fiscal decentralization was observed to facilitate faster growth in the coast region. The findings justify the initiative of the "West Region Development Strategy" and offer some policy implications for China.

KEY WORDS: regional disparity; convergence; divergence; structural reforms; non-state-owned enterprises; fiscal decentralization

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1 INTRODUCTION

Researches relating to China's regional disparities have been lively since the 1990s. Several recent studies (CHEN and FENG, 2000; FUJITA and HU, 2001; DAYAL-GULATI and HUSAIN, 2000; AZIZ and DUENWALD, 2001; ZHANG and ZOU, 1998) examine the difference of regional economic growth in the post-reform era and further investigate the role of openness, structural reforms including the development of non-state-owned enterprises (non-SOEs), and fiscal decentralization on regional growth. Based on the literature, it seems that the following two hypotheses can be postulated. Firstly, China's regional growth dynamics can be roughly divided into two time periods: the 1980s and the 1990s, with the former period characterized by convergence and the latter by divergence. Secondly, during these processes, while openness, represented by increasing international trade and inflows of FDI, and the development of non-state-owned enterprises exert

positive effects on regional growth, meanwhile the fiscal decentralization also plays an important role. This paper, based on quantitative analyses on the data in the period of 1981–2000, aims to examine these two particular hypotheses. Then descriptively analyzes the evolution of the regional disparity in 1981–2000 and the effects of openness, development of non-state-owned enterprises and fiscal decentralization reforms on the growth pattern in China. Eventually the statistical significance of the findings is tested by OLS regression analysis.

2 REGIONAL DISPARITY AND EFFECTS OF OPENNESS AND ECONOMIC STRUCTURAL RE- FORMS

2.1 General Trend and Characteristics of Regional Disparity in 1981–2000

Table 1 shows that, in general, the regional gap, measured by the ratio of real per capita GDP in the richest

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Table 1 Ratio of real per capita GDP in the richest province to that in the poorest province (1980 constant prices)

| | 1981 | 1990 | 2000 |
|---------------------------------------------------|--------|--------|---------|
| Per capita GDP in the richest province (1) (yuan) | 2853.3 | 4957.2 | 15300.0 |
| Per capita GDP in the poorest province (2) (yuan) | 229.3 | 464.2 | 1000.9 |
| Ratio of the richest to the poorest (1)/(2) | 12.4 | 10.7 | 15.3 |

Note: Tibet is excluded.

province^① to that in the poorest has been widening from 1981 to 2000. Yet, the dispersion falling in the 1980s before rising subsequently suggests that the regional disparity pattern differs in the two decades.

This situation can be confirmed by the evolution of the coefficient of variation (CV)^② of provincial per capita GDP from 1981 to 2000. The CV has been widely used to measure the regional disparity, and the larger the CV, the larger the disparity among regions. Fig. 1 shows the calculated CV of per capita GDP across provinces. As indicated by the figure, the provincial disparity decreased in the 1980s, followed by an increasing trend in the 1990s. Thus, from the time-trend perspective, China regional growth is characterized by the convergence in the 1980s, followed by subsequent divergence in the 1990s, which consists with the first hypothesis.

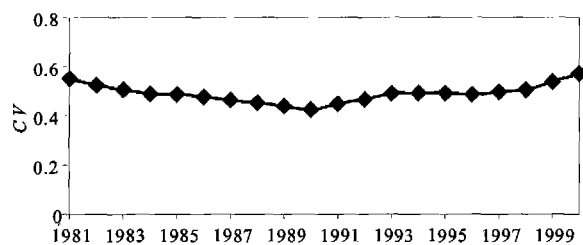


Fig. 1 Provincial disparity: coefficient of variation (CV) of per capita GDP (in current prices)

To further explore the nature of provincial disparity during 1981–2000, the Theil Index^③ can be employed to decompose the total provincial disparity into inter-regional disparity and intra-regional disparity, after grouping all provinces in China into two regions, coastal provinces and interior provinces. The inter-regional Theil Index measures the disparity between the coastal and interior regions, whereas the intra-regional index shows a weighed average of provincial disparities within the coast and within the interior.

The results of decomposition, illustrated in Fig. 2, indicate that the total disparity declined in the 1980s

mainly because of the decrease in the intra-regional disparity. The disparity between the two regions, however, rose steadily. The faster growing inter-regional disparity outstripped the intra-regional disparity in the 1990s, accounting for the rebounding of the total regional disparity in this period.

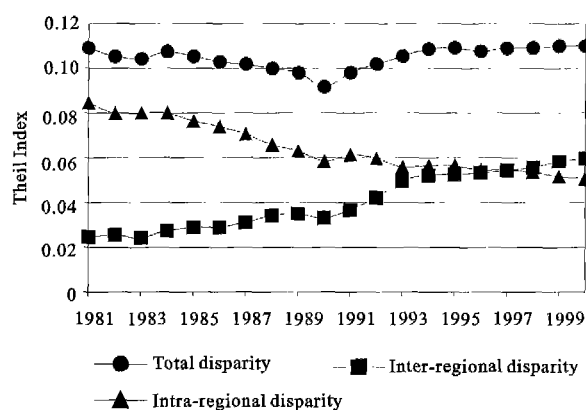


Fig. 2 Theil Index in 1981–2000: decomposition of China's regional disparity

The major reason for this regional growth pattern can be explained by the ever-faster growth of the coastal provinces in 1981–2000. In the pre-reform period, large-scale investments from the central government were prioritized to the interior region. As a result, some inner provinces, such as Heilongjiang, were initially affluent provinces in China on the eve of reforms. In the subsequent reform era, the coastal provinces, particularly the southeastern provinces including Guangdong, Jiangsu, Zhejiang, and Fujian, starting from the relatively lower level of per capita income, caught up with the traditionally richer provinces, bringing about a convergence trend in regional growth in the 1980s. As economic growth in the coastal provinces accelerated in the 1990s, the convergence process came to an end, and regional incomes began to exhibit widening trends of divergence.

The comparison of per capita GDP growth pattern in 1981–2000 between three coastal provinces, Jiangsu,

① Throughout this paper, the term of "provinces" refers to the set of 22 provinces, 5 autonomous regions, and 3 original municipalities in China's mainland. Chongqing, the newly established municipality, is included in Sichuan Province in this paper due to the unavailability of data about Chongqing before 1997.

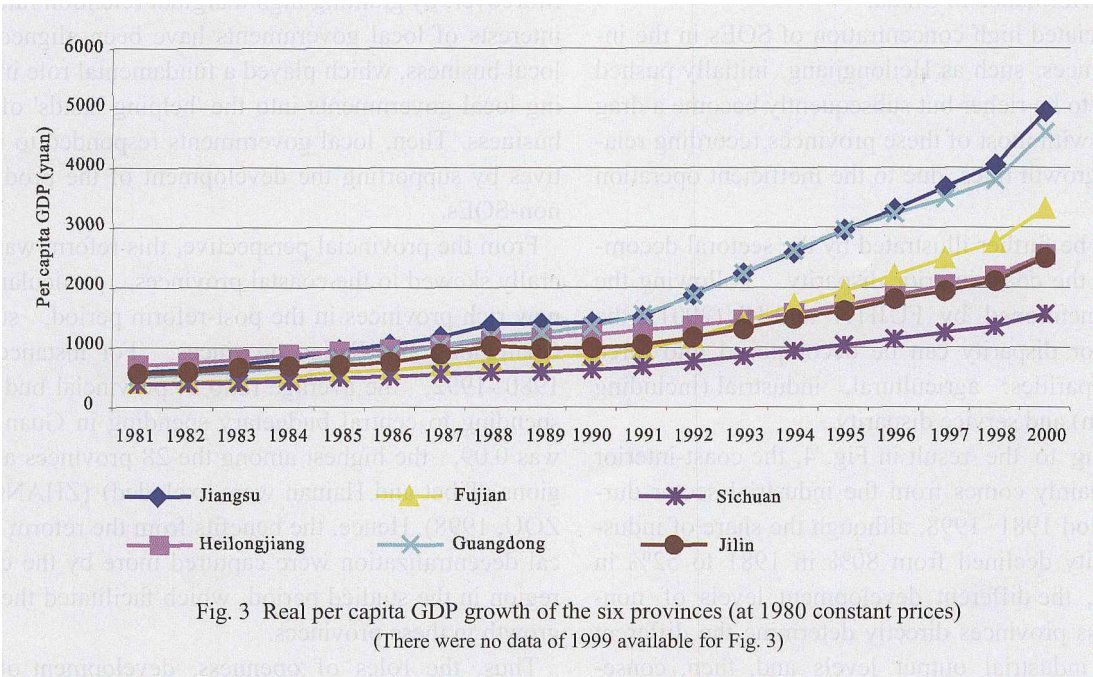
② See the Appendix 1 for the definition.

③ See the Appendix 2 for the definition.

Fujian, and Guangdong, and three interior provinces, Heilongjiang, Sichuan, and Jilin exemplifies this provincial growth dynamics. In 1981, per capita GDP in Heilongjiang and Jilin provinces were higher than that in Jiangsu and Guangdong provinces, and per capita GDP of Sichuan and Fujian were roughly the same. In the following years, however, the ever-faster growth in the three coastal provinces firstly served to reduce regional disparities and then led to the rising disparities, as displayed by Table 2 and Fig. 3.

Table 2 Comparison of per capita GDP in different provinces (yuan) (1980 constant prices)

| | | 1981 | 1991 | 2000 |
|--------------------|--------------|-------|--------|--------|
| Coastal provinces | Jiangsu | 593.5 | 1518.3 | 4950.4 |
| | Guangdong | 514.3 | 1552.8 | 4608.1 |
| | Fujian | 396.7 | 968.5 | 3311.2 |
| Interior provinces | Heilongjiang | 712.7 | 1291.1 | 2555.7 |
| | Jilin | 565.9 | 1051.8 | 2497.1 |
| | Sichuan | 391.6 | 681.2 | 1562.1 |



Thus, the outstanding growth performance of the coastal provinces explains the changing inter-regional disparity in China from 1981 to 2000.

2.2 Openness, Economic Structural Reforms and Regional Disparity

2.2.1 Openness and regional disparity

Doubtlessly, the coastal region has vigorous foreign trade and receives the lion’s share of the FDI inflows in China. The important role of trade and FDI in stimulating economic growth has been widely recognized. Particularly, two kinds of positive effects are observed in China: the multiplier effect and the technology diffusion effect (FUJITA and HU, 2001). However, since the trade and inward FDI unevenly distribute across regions, as the aforementioned, the two positive effects arising from the openness are mainly captured by the coastal provinces.

Exports and FDI contributed to economic growth through the multiplier effects, as the represent external

demands and capital investments. The fast growth of exports provides a big market, especially for industrial products in the coastal region, whose manufactured product exports accounted for 65% and 90% of its exports in 1985 and 1995. Recent studies (SUN, 2001) find that FDI inflows and exports are closely related in China. This export-promoting effect of FDI is stronger in the coastal region than in the central region, while this effect is not observed in the western region.

Regarding the technology transfer effect, empirical studies confirm that technology spillover through the import of capital goods and FDI contribute a great deal to domestic firms’ technology updating, and consequently generate a significant effect on regional productivity growth in the coastal provinces in China. A study by YAO and LYHAGEN (2000) found that one important underlying economic growth mechanism for China’s remarkable growth can be described by the trade-induced catch-up process towards the trading partners especially East-Asian economies and the countries in the Organiza-

tion for Economic Cooperation and Development (OECD).

2.2.2 Development of non-SOEs and regional disparity

As proved by the empirical studies about state-owned enterprises (SOEs) performance in China, either technical efficiency or allocative efficiency is lower in SOEs than the enterprises with other forms of ownership, including non-SOEs (OTSUKA *et al.*, 1998). Thus, the development of non-SOEs, has become another important determinant factor for the different regional economic performance in China.

The associated high concentration of SOEs in the interior provinces, such as Heilongjiang, initially pushed the regions to be richer but subsequently become a drag on growth, with most of these provinces recording relatively low growth rates, due to the inefficient operation of SOEs.

This can be further illustrated by the sectoral decomposition of the coast-interior disparity. Following the method^① mentioned by FUJITA and HU(2001), the coast-interior disparity can be decomposed into three sectoral disparities: agricultural, industrial (including construction) and service disparity.

According to the result in Fig. 4, the coast-interior disparity mainly comes from the industrial sector during the period 1981–1998, although the share of industrial disparity declined from 80% in 1981 to 52% in 1998. Thus, the different development levels of non-SOEs across provinces directly determine the different provincial industrial output levels and, then, consequently affect the magnitude of the regional disparity.

2.2.3 Fiscal decentralization and regional development

Fiscal decentralization is another important component of China's economic structural reforms, which was adopted during 1980–1993. In this period, the initially unified revenue collection and unified spending system were reformed into the so-called fiscal contracting system^②.

The positive effect of this reform on China's economic growth arises from the provision of local governments with incentives to pursue economic prosperity. Moreover, by granting high marginal retention rates, the interests of local governments have been aligned with local business, which played a fundamental role in turning local governments into the 'helping hands' of local business. Then, local governments responded to incentives by supporting the development of the productive non-SOEs.

From the provincial perspective, this reform was generally skewed to the coastal provinces, particularly the new rich provinces in the post-reform period, such as Guangdong and Fujian provinces. For instance, in 1980–1992, the average ratio of provincial budgetary spending to central budgetary spending in Guangdong was 0.09, the highest among the 28 provinces and regions (Tibet and Hainan were excluded) (ZHANG and ZOU, 1998). Hence, the benefits from the reform of fiscal decentralization were captured more by the coastal region in the studied period, which facilitated the rapid growth in these provinces.

Thus, the roles of openness, development of non-SOEs, and fiscal decentralization observed in this sec-

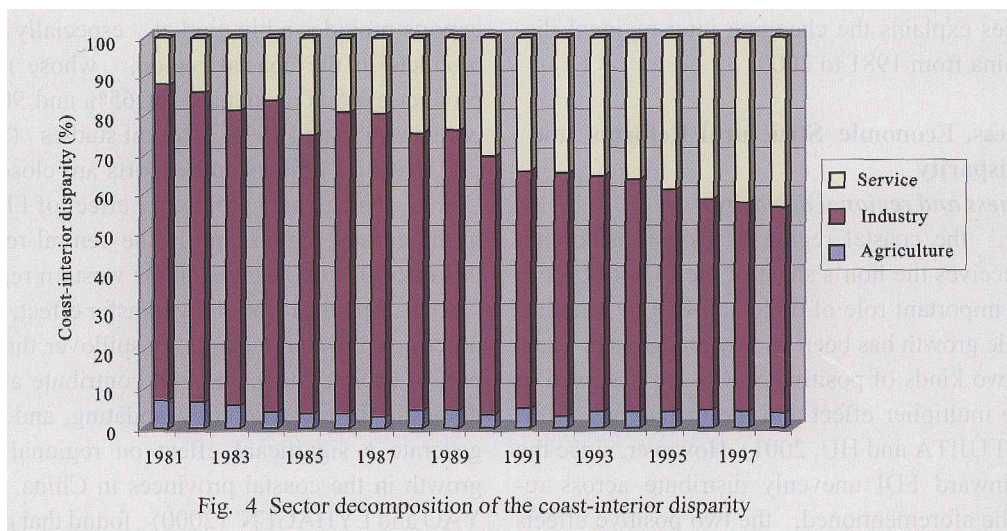


Fig. 4 Sector decomposition of the coast-interior disparity

① See Appendix 3 for the formulas and the definitions.

② After 1994, the tax assignment system was implemented in China. Yet, the new reform was designed to be carried out in a progressive way over the span of a few years. Many of the elements in the contracting system still remain now and the vested interests of the local governments under the contracting system are guaranteed.

tion are consistent with the second hypothesis.

3 REGRESSION ANALYSES

Based on BARRO's (1991) cross-country growth approach, the paper adopts the following multivariable regression model to investigate the impact of openness, development of non-SOEs and fiscal decentralization on economic growth across provinces in China in the period of 1981–1990, and 1991–2000, respectively.

ln(Y_{i,t}/Y_{i,t-T}) = α + β₁lnG_{i,t-T} + β₂TR_{i,t-T} + β₃S_{i,t-T} + β₄SP_{i,t-T} + ε_i (1)

where *i* is province *i*, *t* is the ending year in the two decades, while (*t*–*T*) is the initial year, representing 1981 and 1991 respectively, ln(*Y_{i,t}/Y_{i,t-T}*) refers to the growth rate in real provincial per capita GDP, *G* is the initial level of per capita GDP, *TR* denotes the importance of international trade, measured by the ratio of the sum of import and export values to the provincial GDP in the initial years, *S* stands for the presence of state-owned enterprises, expressed by the industrial output value of the SOEs as a percentage of provincial total industrial output values in the initial years, *SP* represents fiscal decentralization, measured by the ratio of provincial budgetary spending to its own GDP in the initial years, and ε is the error term.

Due to the lack of data for FDI in the 1980s, the effect of FDI will only be tested for the 1990s by using the following equation:

ln(Y_{i,t}/Y_{i,t-T}) = α + β₁lnG_{i,t-T} + β₂F_{i,t-T} + β₃S_{i,t-T} + β₄SP_{i,t-T} + ε_i (2)

where, *F* stands of the inflows foreign direct investment, measured by the percentage of *F* to the total provincial investment in 1991, with the others being the same as in

the Equation (1).

According to the growth theory, if the initially poorer provinces have grown faster than those that were initially richer, β₁, the coefficient of the initial level of per capita GDP, should take a negative sign; and when the initially richer grows faster, resulting in divergence across regions, β₁ should take a positive sign. Thus, we expect that β₁ in the equation (1) is negative, while it is positive in equation (2). Based on the aforementioned observations, the coefficients for *TR* and *F* and *SP* are expected to take positive signs, whereas β₃, the coefficient for the presence for *S*, is expected to take a negative sign.

Data are mainly taken from the Statistical Data-base (1999) issued by the State Statistical Bureau, with the provincial per capita GDP in 2000 is taken from China Statistical Yearbook (2001) and the ratio of FDI to the provincial total investment are calculated from China Statistical Yearbook (1992). The provincial per capita GDP are converted into 1980 constant prices.

Three regressions are run, with 30 samples in the first two and 29 in the last one excluding Tibet. Table 3 presents regression results using ordinary least squares estimation. In the three regressions, all the variables take the signs as expected, and, except for *SP*, the all are statistically significant. The statistical insignificance of the variable of *SP* might be due to the inadequacy of data, since the extra-budgetary spending, another component of the consolidated provincial spending, is not included in this study.

As indicated by the results, economic growth across provinces converged in the 1980s and diverged in the following decade. While international trade and inflows of FDI have a positive effect on provincial growth, SOE

Table 3 Evolution of regional growth and the determining factors (estimated by OLS)

| Variable | Growth rate of real per capita GDP | | |
|-------------------------|------------------------------------|------------------|------------------|
| | 1981–1990 | 1991–2000 | |
| α | 3.23**(9.128) | 0.67(2.030) | 1.12**(3.197) |
| G | –0.29**(-6.339) | 0.15**(3.17) | 0.11*(2.258) |
| S | –0.0040**(-2.887) | –0.0081**(-6.07) | –0.0088**(-4.79) |
| T | 0.0037*(2.737) | 0.0020*(2.758) | – |
| F | – | – | 0.04**(4.18) |
| SP | 0.018(0.759) | 0.025(1.429) | 0.0027(0.125) |
| Number of observations | 30 | 30 | 29*** |
| Adjusted R ² | 0.59 | 0.72 | 0.67 |

Notes: *Significant at 5% level; ** Significant at 1% level; *** Tibet is excluded; Numbers in parentheses are *t*-statistics.

is found to be negatively associated with provincial economic growth. Furthermore, the declining coefficients of the *S* variable suggest that the role of non-SOEs in economic growth has been strengthened. The

relatively higher coefficient of *F* in the 1990s seems to show that FDI has become more important in promoting China's regional economic development.

4 CONCLUSIONS

The study in this paper explores the evolution and characteristics of regional disparity in China and the effects of openness and economic structure reforms on the regional growth in the period from 1981 to 2000. The findings show that the coastal provinces have experienced much higher economic growth than the inner provinces since 1980. The catching-up of the coastal region to the initially rich provinces, which are mainly located in inland areas, resulted in a convergence of the growth pattern across provinces in the 1980s. The subsequent divergence in the provincial growth rates between the coast and the interior rendered an enlarging regional gap in China in the 1990s.

The ever-faster growth in the coastal region was nurtured and sustained by China's openness and the development of non-SOEs. The openness allows the coastal provinces to tap into the international trading opportunities and to access new technology. The development of non-SOEs underpins the higher operational efficiency in the coastal region. Additionally, with the insignificant regression results, fiscal decentralization was observed to facilitate faster growth in the coast region.

Some policy implications can also be tentatively suggested from this study. In order to promote economic growth in the interior, development of non-SOEs should be encouraged by the local governments. The promotion of inter-regional trade between the coastal provinces and the inner provinces might be a practical way for the inner land to benefit from international trade, since the inner regions do not have a geographical advantage in international trade and attraction for the inflows of FDI.

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APPENDIX 1

The coefficient of variation (*CV*) of provincial per capita GDP is defined as:

$$CV = \frac{\sqrt{\sum_{i=1}^n \left(x_i - \frac{1}{n} \sum_{i=1}^n x_i \right)^2}}{\frac{1}{n} \sum_{i=1}^n x_i}$$

where, x_i refers to per capita GDP in the i th province, n is the number of provinces.

APPENDIX 2

According to Theil, the total inequality is defined as:

$$I(y:x) = \sum_{i=1}^N y_i \log \left(\frac{y_i}{x_i} \right)$$

where y_i =GDP of the i th province/the national total;
 x_i =population of the i th province/the national total;
 N =the number of provinces=30.

If the 30 provinces are classified into two groups: group 1=the coastal provinces; group 2= the interior provinces, then the inequality among provinces within each group can be defined as:

$$I_g(y:x) = \sum_{i=12,18} y_i \log \left(\frac{y_i}{x_i} \right) - \frac{y_g}{Y_g} \log \left(\frac{y_g/Y_g}{x_g/X_g} \right), \quad g=1, 2$$

where $Y_g = \sum y_i$, $g=1, 2$

$$X_g = \sum x_i, \quad g=1, 2$$

Analogously, the inequality between the two groups, $I_0(y:x)$ can be defined as:

$$I_0(y:x) = \sum_{g=1,2} Y_g \log \left(\frac{Y_g}{X_g} \right)$$

The total disparity among provinces can be expressed as the summation of the inter-regional disparity and the intra-regional disparity:

$$I(y:x) = I_0(y:x) + \sum_{g=1,2} Y_g I_g(y:x)$$

APPENDIX 3

According to FUJITA and HU(2001), the coast-interior disparity can be decomposed sectorally by the following derivation.

The regional disparity in per capita GDP comes from the three sectors: agriculture, industry (include construction), and services, namely,

$$y^i = y_A^i + y_I^i + y_S^i, \quad i=1,0 \quad (1)$$

where y denotes per capita GDP, superscripts 1 and 0 denote the coast and the interior, and subscripts A, I, and S denote agriculture, industry and services, respectively.

The overall relative coast-interior disparity in per capita GDP (D) can be shown as:

$$D = \frac{y^1}{y^0} - 1 \quad (2)$$

The coast-interior disparity in agriculture, industry, and services (D_j) can be shown as:

$$D_j = \frac{y_j^1}{y_j^0} - 1, \quad j=A, I, \text{ and } S \quad (3)$$

From equations of (1), (2), and (3), the following equation is obtained:

$$D = D_A \times \frac{y_A^0}{y^0} + D_I \times \frac{y_I^0}{y^0} + D_S \times \frac{y_S^0}{y^0} \quad (4)$$

Thus, the overall coast-interior disparity can be shown as contribution from the three sectors: disparity in each sector weighted by the sector's share in per capita.

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