

論文

Measuring Income Disparity for International Comparison Using Regional Data

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Abstract

Comparison of income inequality across countries is important for both theoretical and practical purposes. One example is to examine how income inequality shifts as the economy develops. However, measuring inequality for international comparison poses a challenge for researchers, since the data and methodology differ from country to country. This study addresses this issue through the use of publicly available data, specifically, the regional income account data of four countries: China, Japan, Korea, and Thailand. Although there are still issues regarding the validity of this method, it may prove useful in cases such as business cycle correlation and income inequality.

1. International comparison of income disparity

Income disparity continues to be an important issue in economic development; recently, the attention is more focused on international comparison. By comparing time-series data of each county and cross-country data, we can more closely examine the relationship between economic development and income disparity. One such example is the famous Kuznets curve, which postulates that income disparity first increases with economic development but later decreases.

In order to verify this claim, it is necessary to have a relatively coherent time-series and cross-country data.

The measurement of income disparity, however, is tricky. Even within one country, it is often difficult to obtain reasonably reliable data with the limitation of obtaining income figures, which is rather sensitive. International comparison poses even greater difficulty

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because of the diverse methods employed by each country.

2. Survey of methodology

One of the most comprehensive dataset of income disparity is found in the World Income Inequality Database - WIID3.4. This includes Gini coefficient, decile, quantile, top and bottom 5%, as well as mean and median figures. Of these, Gini coefficient is the most important for comparison because it is expressed in one figure and is independent of the level of income.

Gini coefficient: China

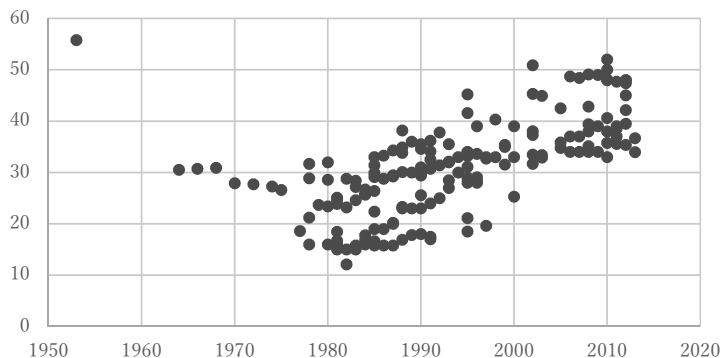


Figure 2-1 Gini coefficient in China

(Source) United Nations University, World Income Inequality Database

Gini coefficient: Japan

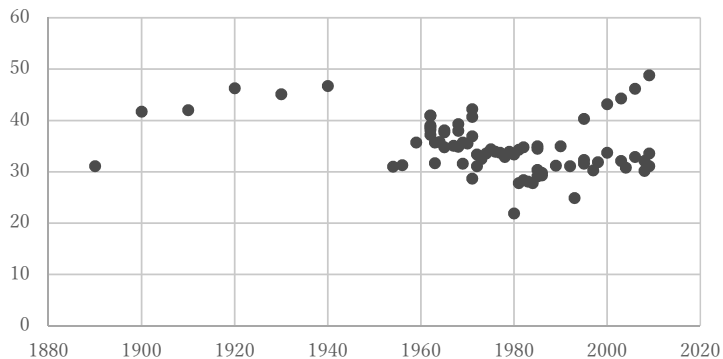


Figure 2-2 Gini coefficient in Japan

(Source) Same as above



Figure 2-3 Gini coefficient in Korea

(Source) Same as above

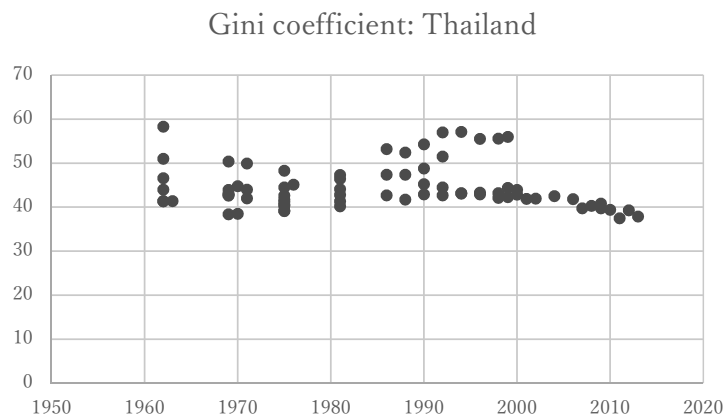


Figure 2-4 Gini coefficient in Thailand

(Source) Same as above

The database also shows the source of the figure and the explanation is given for each country and the sources. Since various sources are used, there may be discrepancy among the figures from different sources even for the same year.

The following figures depict the movement of Gini coefficients of China, Japan, Korea, and Thailand, respectively. Note that they are extracted from multiple sources and that the consistency within one country is not guaranteed.

3. What are the issues?

The figures for the same country and the same year show discrepancy, sometimes

large, since they are from different sources.

As for the methodology to calculate these numbers, although there is a simple description of each data, the detail is not clear. This is more so if the data is based on a survey, in which case the access to the original datasheet is very often limited. The difficulty of checking the individual data implies that there is no way of either verifying its validity or limiting it to a more sophisticated analysis. In this study, we address this issue and explore possibilities.

4. Comparison of various methods

There are several methods for income inequality evaluation. Gini coefficient is the most widely used criteria, since it is theoretically sound and the income data for all the families or individuals are used. However, it has its drawbacks. One such difficulty is the cost of collecting the data; in most cases, individual data is not accessible to outside researchers. Other methods to measure income disparity include the share of income of the highest income group and the ratio of income of the top and bottom earners. These have advantages such as easy calculation, intuitive interpretation, and the accessibility to data; however, they are sensitive to the fineness of the division. Is there any justification for taking top 1 percent instead of 5 or 10 percent? Is it better to use decile than quintile? These methods also neglect the data on how the income is distributed among the middle-income group.

5. Use of distributional statistics

The approach in this study addresses these shortcomings of conventional methods by using publicly available data which has distributional characteristics. One such example is regional data, specifically gross regional product (GRP). One of the merits of GRP is that it is based on the standard of national accounts, which is roughly based on the United Nations standard.

The actual procedure is as follows: First, per capita GRP is presented in an increasing order, assuming that the per capita income in each region is the same. Then, the usual procedure for calculating the Gini coefficient is employed.

However, this also has deficiencies; namely, it is sensitive to the number of divisions within a country (the finer the division, the greater the Gini coefficient calculated) and the

under estimation due to the assumption that the income is uniform within each region. Nevertheless, it is still useful since in most cases, it can be calculated in a relatively long time series.

6. Case studies

We analyze four countries and test whether the procedure is useful or not. The data used and the results are as follows.

6-1 Japan

The Cabinet Office compiles and publishes the regional accounts, which are created by each prefecture¹. Since it is not intended to be a comprehensive breakdown of the national account, the sum of the regional income is slightly larger than that of the national income.

Figure 6-1 shows the results calculated from various versions of the SNA (System of National Accounts). The figures are compared with the growth rate. We notice that the figures are influenced by the difference in the base year and the versions of the SNA. This is particularly noticeable in the most recent data, which is based on the new account system. In spite of the difference in the level, the direction seems to be relatively unaffected. In relation to the business cycle, we observe a tendency for the inequality to rise during the boom years and fall during recession. One example is the large fall in

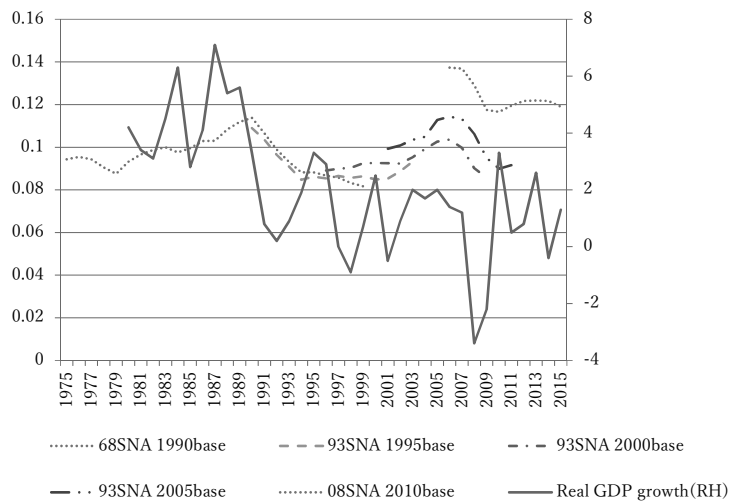


Figure 6-1 Growth and inequality in Japan

(Source) Author's calculation based on Cabinet Office data

growth after the Lehman crisis is associated with reduced inequality.

6-2 Thailand

The National Economic and Social Development Board calculates, compiles, and publishes regional accounts. This is an integral account because the national figure is disaggregated into regional figures, and consequently the sum of the regional figures matches the national figure. The calculated result of the Gini coefficient is shown in figure 6-2. During the high growth period, income inequality increased. The Asian financial and economic crisis had a large effect on the growth, but it had some effect of reducing the income gap. The subsequent recovery was associated with increase in income disparity but subsequent inequality shows a declining trend. The global crisis also hit Thailand and reduced its growth. Currently, inequality is on the rise.

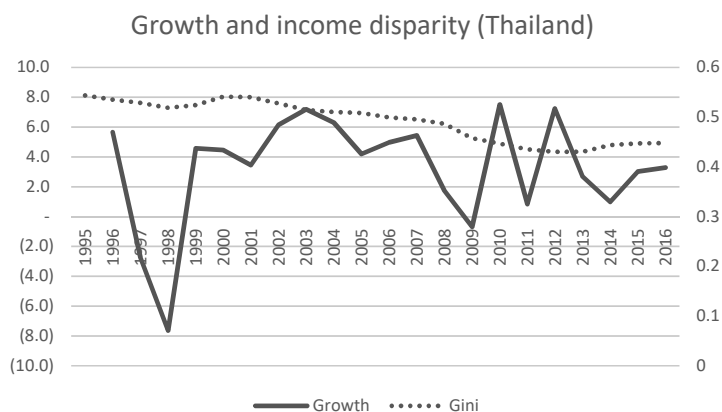


Figure 6-2 Growth and inequality in Thailand

(Source) Author's calculation based on NESDB data

6-3 China

During the acceleration of growth in the first half of the 2000s, inequality did not rise much. After the global crisis China's growth rate declined along with inequality. Although the decline in growth rate is recent, inequality is relatively the same. Thus, the link between economic growth and inequality is not so apparent as in other countries.

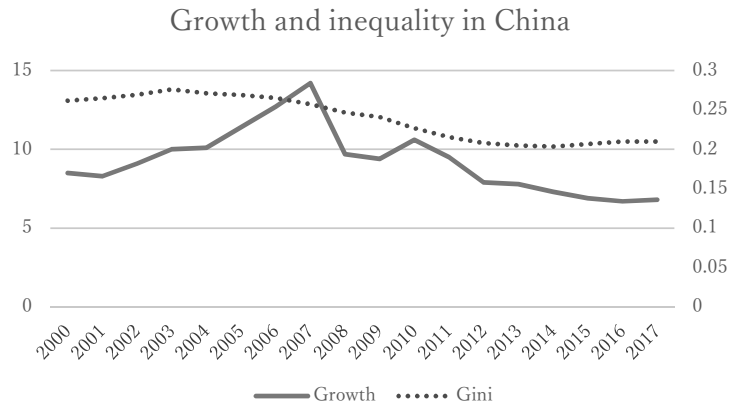


Figure 6-3 Growth and inequality in China

(Source) Author's calculation based on National Bureau of Statistics data

6-4 Korea

A gradual increase in inequality was observed after the Asian crisis and until the early 2010s, followed by a gradual decline. The relation with growth rate is not apparent.



Figure 6-4 Growth and inequality in Korea

(Source) Author's calculation based on Korean Statistical Information Office data

Evaluation and further possibility

For the four countries analyzed, it is shown that this approach has the following advantages: it includes publicly available data source, relatively easy calculation, and consistency over time. It is useful for analyzing the relationship between growth and

income inequality. In order to verify the usefulness of this approach, we examine how income inequality changes with business cycles. The Gini coefficient for each country is shown with GDP growth rate. Inequality is considered to increase during the boom years because at the early stage of economic upturn, the income grows faster in high income groups and then spreads to wider population; however, the results are not conclusive. Since most of the data is available at relatively low cost, extending the time horizon and including more countries may be a useful step in order to verify the usefulness of this approach.

Note

- 1 Some big cities also calculate regional accounts and they are included in the compilation published by the Cabinet Office.

References

United Nations University, *World Income Inequality Database*

National Bureau of Statistics of China database <http://data.stats.gov.cn/english/>

Korean Statistical Information Service <http://kosis.kr/eng/>