The Limitations of the Gini Coefficient and Its Ability to objectively Reflect the Real Gap between the Rich and the Poor: A Case Study of Hong Kong

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Abstract

This article aims to explore the limitations of the Gini coefficient in measuring the gap between the rich and the poor, and analyze whether it can objectively reflect the actual situation of the gap between the rich and the poor, conducting in-depth research with Hong Kong as a specific case. Through the analysis of the theoretical basis, calculation method and influencing factors of the Gini coefficient, combined with the characteristics of Hong Kong's social and economic structure, housing, taxation, social security and other aspects, this paper reveals the predicaments faced by the Gini coefficient in the application process in Hong Kong, and then explores more comprehensive and accurate methods and indicators for measuring the wealth gap, providing more targeted reference basis for policy-making.

Keywords: Gini coefficient; The gap between the rich and the poor; Limitations; Hong Kong.

1. Introduction

The gap between the rich and the poor is an important issue that has drawn much attention in the process of social development. Accurately measuring the gap between the rich and the poor is of great significance for formulating reasonable economic policies and promoting social fairness and stability. The Gini coefficient, as an internationally recognized indicator for measuring the degree of income distribution disparity among residents, is widely applied in the analysis of the wealth gap in various countries and regions. However, with the continuous development and changes of the social economy, the Gini coefficient has gradually exposed some limitations when reflecting the real gap between the rich and the poor. On the one hand, the economic structure of modern society is becoming increasingly complex, and the sources of income and the composition of wealth for residents are more diversified. Besides the traditional wage income, it also includes property income, investment income, welfare subsidies, etc. The Gini coefficient only focuses on the total income of residents and is difficult to comprehensively reflect these complex income and wealth distribution relationships [1]. On the other hand, the gap between the rich and the poor is not only reflected in monetary income, but also includes differences in non-monetary fields such as housing, education and medical care. The Gini coefficient cannot incorporate these non-monetary factors, and thus cannot accurately measure the actual living standards and welfare status of residents [2].

In recent years, the issue of the wealth gap in Hong Kong has attracted widespread attention. Some studies have shown that the Gini coefficient in Hong Kong has remained at a relatively high level, indicating that the problem of income distribution inequality is rather serious. However, there is still controversy over whether the Gini coefficient alone can comprehensively and accurately reflect the actual wealth gap in Hong Kong. Therefore, it is of great theoretical and practical significance to deeply explore the limitations of the Gini coefficient and whether it can objectively reflect the wealth gap in Hong Kong.

2. Theoretical Basis and Calculation Method of the Gini Coefficient

2.1 Theoretical Basis

The theoretical basis of the Gini coefficient originated from the Lorenz curve, a concept proposed by the American statistician Max O. Lorenz in 1905 [4]. The Lorentz curve is a graphical tool used to describe the equality of social income distribution. It sorts a country's total population from low to high in terms of income, then calculates the relationship

between the cumulative income percentage and the cumulative population percentage, and plots these points on a coordinate graph. The curve obtained by connecting these points is the Lorentz curve [5].

If income distribution is completely equal, that is, everyone's income is the same, then the Lorentz curve will be a straight line that coincides with the diagonal. On this straight line, the percentage of cumulative income always equals the percentage of cumulative population, meaning that as the population increases, income also increases at the same rate. However, in real society, income distribution often shows inequality. The proportion of the high-income group in the population is relatively small, but the proportion of income they own is relatively large. The low-income group accounts for a larger proportion of the population, but they have a smaller income share. Therefore, the actual Lorentz curve will bend downward and deviate from the diagonal. The greater the gap between the Lorentz curve and the diagonal, the more unequal the income distribution is. [6]

The Gini coefficient is an indicator that quantifies the degree of income distribution inequality reflected by the Lorentz curve. It is defined as the ratio of the area between the Lorentz curve and the diagonal to the total area below the diagonal. The Gini coefficient ranges from 0 to 1. When the Gini coefficient is 0, it indicates that income distribution is completely equal, that is, the Lorentz curve coincides with the diagonal. When the Gini coefficient is 1, it indicates that income distribution is completely unequal, meaning that all income is concentrated in one person's hands, while the income of the rest is 0 [7].

The Gini coefficient is proposed as an intuitive, concise and comparable indicator for measuring income distribution inequality. It is not affected by population size or income level, enabling the income distribution among different countries and regions to be compared under the same standard. For instance, by comparing the Gini coefficients of different countries, it is possible to intuitively see which countries have more equal income distribution and which ones have more severe income distribution inequality problems. This holds significant reference value for international organizations to formulate global development policies and for governments of various countries to assess the implementation effects of their own economic policies.

2.2 Calculation Method

There are various methods for calculating the Gini coefficient, including the grouping calculation method and the regression curve method, among others. The group calculation method involves dividing the total population into several groups based on income levels, calculating the income and population proportions of each group, and then plotting the Lorentz curve and calculating the Gini coefficient based on these data. The regression curve rule is to establish a regression model between income and population and use the regression curve to calculate the Gini coefficient. In practical applications, different countries and regions may choose appropriate calculation methods based on their own data conditions and research purposes.

3. Limitations of the Gini Coefficient in Measuring the Gap between the Rich and the Poor

3.1 Ignore the Differences in Income Sources

The Gini coefficient only takes into account the total income of residents and does not distinguish the impact of different income sources on the gap between the rich and the poor. In real life, the sources of income for residents may include wage income, business income, property income and transfer income, etc. The nature and stability of different income sources vary. For instance, property income is often concentrated in the hands of a few high-income groups, which has a significant impact on the expansion of the wealth gap. However, the Gini coefficient cannot reflect the characteristics of the wealth gap caused by different income sources.

3.2 Non-monetary Factors were not Taken Into Account

The gap between the rich and the poor is not only reflected in monetary income, but also includes differences in non-monetary fields such as housing, education and medical care. The Gini coefficient only focuses on the distribution of monetary income and neglects the impact of these non-monetary factors on the quality of life and actual welfare level of residents. For instance, in some regions, residents may have spacious housing and high-quality educational and medical resources. Even if their monetary income is relatively low, their actual living standards may still be high. Conversely, some high-income groups may not have an ideal actual quality of life due to poor housing conditions, difficulties in their children's education and other issues. The Gini coefficient cannot fully reflect the gap between the rich and the poor caused by such non-monetary factors.

3.3 Insensitive to the Dynamic Changes in Income Distribution

The Gini coefficient is a static indicator that can only reflect the income distribution situation in a specific period and is difficult to accurately capture the dynamic change process of income distribution. In the actual economic operation, the income distribution pattern may change along with factors such as economic cycles and policy adjustments. For instance, during periods of economic prosperity, the income growth of high-income groups may be faster, leading to an expansion of the gap between the rich and the poor. During an economic recession, low-income groups may be more vulnerable to shocks, and the gap between the rich and the poor may also undergo new changes. The Gini coefficient cannot reflect these dynamic changes in a timely and accurate manner, thereby affecting the judgment of the trend of the wealth gap.

3.4 Affected by Data Quality and Statistical Standards

The calculation of the Gini coefficient relies on accurate income data, but in the actual statistical process, there may be problems such as low data quality and inconsistent statistical standards. On the one hand, some residents may have situations such as concealing income or having grey income, which leads to deviations between the statistical data and the actual situation. On the other hand, the statistical standards for income may vary among different countries and regions, such as whether in-kind income and welfare subsidies are included, which can affect the comparability and accuracy of the Gini coefficient.

4. The Current Situation and Characteristics of the Wealth Gap in Hong Kong

4.1 The Socio-economic Structure of Hong Kong

Hong Kong is a highly internationalized free-market economy, dominated by the service industry, especially with well-developed sectors such as finance, trade, logistics and tourism. This economic structure makes Hong Kong's economic growth highly dependent on external markets and international capital flows, and at the same time leads to the polarization of the employment structure. On the one hand, high-end service industries such as finance, law and accounting provide a large number of high-income positions; On the other hand, labor-intensive industries such as catering, retail and security mainly rely on low-income labor. This difference in employment structure is one of the important reasons for the formation of the wealth gap in Hong Kong.

4.2 Housing Problems in Hong Kong

Housing is an important issue in the lives of Hong Kong residents and one of the key factors leading to the widening gap between the rich and the poor. Land resources in Hong Kong are scarce and housing prices are high. Many middle and low-income families find it difficult to afford the cost of purchasing a house and can only live in small public housing or private buildings. The high-income group, on the other hand, owns multiple properties, and the appreciation of properties has become an important source of their wealth growth. The huge disparity in housing conditions not only affects the quality of life of residents, but also further exacerbates the sense of social inequality.

4.3 The Tax and Social Security System in Hong Kong

Hong Kong implements a simple tax system, with the main tax types including profits tax, salaries tax and property tax, etc. The design of the tax system focuses on efficiency, and the tax regulation for high-income groups is relatively limited. Meanwhile, Hong Kong's social security system is relatively weak, mainly relying on the Mandatory Provident Fund system and the Comprehensive Social Security Assistance Scheme, etc. The coverage and protection level of the Mandatory Provident Fund (MPF) system are limited, making it difficult to meet the pension and medical needs of residents. The Comprehensive Social Security Assistance Program mainly targets low-income families and vulnerable groups, with relatively low security standards. The imperfection of the tax and social security systems has limited Hong Kong's role in regulating the gap between the rich and the poor.

5. The Predicaments Faced by the Gini Coefficient in Its Application in Hong Kong

5.1 It is Difficult to Reflect the Impact of Housing Factors on the Gap between the Rich and the Poor

As mentioned earlier, housing is a significant manifestation of the wealth gap in Hong Kong. However, the Gini coefficient only takes into account monetary income and cannot incorporate the value of housing assets. In Hong Kong, the value of real estate accounts for a large proportion of family wealth. The differences in housing conditions have a significant impact

on residents' actual living standards and wealth accumulation. Therefore, relying solely on the Gini coefficient to measure the wealth gap in Hong Kong would underestimate the actual degree of inequality caused by housing factors.

5.2 Ignore Differences in Non-monetary Benefits and Public Services

The Hong Kong government provides certain non-monetary welfare and public services for its residents, such as education, healthcare, transportation, etc. However, the distribution of these welfare benefits and services is not completely balanced. There are differences in the quality and quantity of public services enjoyed by residents in different regions and among different income groups. For instance, high-quality educational resources are mainly concentrated in a few prestigious schools, and high-income families can often provide their children with better education by purchasing houses in good school districts or paying high tuition fees. Children from low-income families can only attend regular schools, and the inequality of educational opportunities may further affect their future income levels. The Gini coefficient fails to reflect the differences in these non-monetary welfare and public services, and thus cannot comprehensively and accurately measure the wealth gap in Hong Kong.

5.3 Affected by Cross-border Income and the Grey Economy

Hong Kong is an international city with frequent cross-border economic activities, and some residents have cross-border income situations. These cross-border incomes may be difficult to accurately calculate, resulting in incomplete income data and affecting the accuracy of the Gini coefficient. In addition, Hong Kong also has a certain scale of grey economy, such as underground casinos and illegal trade. These grey incomes are not included in official statistics, further exacerbating the distortion problem of income data and making the Gini coefficient unable to truly reflect the actual income distribution situation of Hong Kong residents.

6.   Suggestions for Improving the Measurement Index System of the Wealth Gap

6.1 Build a Comprehensive Indicator System

To measure the gap between the rich and the poor more comprehensively and accurately, a comprehensive indicator system that includes multiple indicators should be constructed. In addition to the Gini coefficient, other indicators can also be introduced, such as the wealth Gini coefficient (considering the property status of residents), the housing Gini coefficient (reflecting the degree of inequality in housing distribution), and the education Gini coefficient (measuring the inequality of educational opportunities), etc. By comprehensively analyzing these indicators, we can gain a more comprehensive understanding of the manifestations and causes of the wealth gap in different fields.

6.2 Consider the Indicators of Relative Poverty and Absolute Poverty

The Gini coefficient mainly focuses on the relative differences in income distribution, while the indicators of relative poverty and absolute poverty can reflect the poverty conditions at different levels. The relative poverty indicator usually takes a certain proportion of the average social income as the poverty line to measure the proportion of groups in a relatively poor state. The absolute poverty indicator is determined based on the minimum cost required to maintain a basic living standard, and the number of people in absolute poverty is counted. By combining the use of these indicators, the severity and distribution of poverty issues can be more accurately grasped, providing a basis for formulating targeted poverty alleviation policies.

6.3 Strengthen the Measurement of Non-monetary Factors

When measuring the gap between the rich and the poor, the influence of non-monetary factors should be fully considered. Special investigations can be carried out to collect data on residents' actual consumption and welfare enjoyment in areas such as housing, education and medical care, and corresponding non-monetary indicators can be constructed. For instance, the Gini coefficient of residents' housing area and the proportion of education expenditure to household income can be calculated. By combining these non-monetary indicators with monetary income indicators, a more comprehensive assessment of residents' actual living standards and the gap between the rich and the poor can be made.

7.   Conclusion

The Gini coefficient, as a commonly used indicator for measuring the gap between the rich and the poor, has certain scientificity and rationality. However, in practical application, it has also exposed many limitations. Take Hong Kong as an example. Due to its unique socio-economic structure, housing issues, tax and social security systems and other factors,

the Gini coefficient faces many difficulties in reflecting the actual wealth gap in Hong Kong and is difficult to comprehensively and accurately reveal the true situation of the wealth gap. To measure the gap between the rich and the poor more objectively, it is necessary to build a comprehensive indicator system, fully considering non-monetary factors and poverty conditions at different levels, and combining the use of multiple indicators for analysis. Only in this way can more scientific and accurate basis be provided for policy-making, promoting the fair and stable development of society. Meanwhile, the government should also formulate targeted policy measures based on the actual situation of the wealth gap, strengthen tax regulation, improve the social security system, promote educational equity, and improve housing conditions, etc., to gradually narrow the wealth gap and achieve common prosperity in society.

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