

Direct Taxes and Income Inequality: An Analysis of China Experiences

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To Link this Article: <http://dx.doi.org/10.6007/IJARAFMS/v14-i3/22506> DOI:10.6007/IJARAFMS/v14-i3/22506

Published Online: 30 August 2024

Abstract

This paper examines the impact of direct taxes on income inequality, focusing on how the proportion of direct taxes in total tax revenue affects the Gini coefficient. The core issue of income inequality in China stems from the tax structure and social security system's inadequacies, which place a heavier burden on low-income groups and hinder effective wealth redistribution. The study's primary objective is to explore the relationship between tax structure and income inequality, and to assess whether economic growth, education investment, and the social security system can alleviate this issue. Using quantitative analysis, the study analyzes data from 2013 to 2023 on China's Gini coefficient and direct tax proportion. A fixed effects model controls for variable heterogeneity, and regression analysis confirms that increasing the proportion of direct taxes significantly reduces income inequality. This research is significant as it provides new insights into the role of tax policies in reducing income inequality, particularly in China, a major developing country. The findings offer empirical support for policymakers to design fairer and more effective tax systems. Future research should consider longer timeframes and other factors such as technological advancements, globalization, and demographic changes to better understand the complex relationship between tax policies and income inequality.

Keywords : Tax Structure, Income Inequality, Direct Taxes, Gini Coefficient

Introduction

Background of the Study

China is experiencing a central national development contradiction due to the country's continued social inequality and fast economic growth. In recent decades, China has undergone significant economic progress, yet an increase in income inequality has accompanied this. Since the early 21st century, China's Gini index has continuously surpassed 0.4, which is the internationally acknowledged threshold for income inequality. This not only emphasizes the significant inequality in the inequality of wealth but also emphasizes the fundamental socioeconomic obstacles that threaten social stability and potentially limit future economic opportunities. In light of this context, it is crucial to develop efficient tax

policies, as they serve as a primary means for the government to adjust income inequality and reduce social inequality.

The choice to concentrate on China for this case study is warranted due to its unique position in the global economy and its exceptional tax system. China, as the second-largest economy globally, offers a significant empirical basis for studying the impact of tax policies on income inequality by analyzing its reliance on direct and indirect taxation. In recent times, the Chinese government has taken proactive measures to modify its tax system, with the goal of reducing income inequality by increasing the proportion of direct taxes. This change reflects China's specific developmental requirements and its dedication to improving public well-being. Therefore, examining China's tax policies and their effect on the Gini coefficient provides a significant case study for assessing the effectiveness of tax policies globally. It also enhances our comprehension of how policies influence income inequality in rapidly changing economies, providing valuable insights and reform strategies for other countries.

Problem Statement

China's tax system has traditionally been primarily composed of indirect taxes, including value-added tax. This heavy dependence on indirect taxes may have a disproportionate impact on the tax burdens of various income groups, thus exacerbating income inequality. Although direct taxes, such as personal and corporate income tax, are theoretically fairer in redistributing income, data from China's Ministry of Finance shows that they only make up a small portion of total tax revenue. As a result, their ability to reduce income inequalities is limited. Hence, it is imperative to conduct a comprehensive examination and assessment of the tangible effects of China's tax system on income equality in order to formulate strong tax policies.

In recent decades, China has implemented substantial reforms with the goal of improving the fairness and effectiveness of its tax system. Measures have been taken to gradually decrease indirect taxes and raise the proportion of direct taxes, starting in the early 2000s. Significant reforms have been made, such as the 2008 revision to the personal income tax law, which raised the threshold for tax exemption and implemented a more progressive rate structure. Additionally, the 2016 corporate income tax reform was implemented to improve the taxation of corporations. Although attempts have been made, the rise in direct taxes has yet to match the pace of economic expansion, making the tax structural improvements only partially successful.

China's tax reform shares similarities with tax reforms in other emerging nations but also has distinct features. Many developing nations need help finding the right balance between direct and indirect taxes in order to achieve fiscal equity and effectiveness. India and Brazil aim to increase their share of personal and corporate income taxes in order to reduce their dependence on consumption taxes. However, the extent and speed at which China is implementing reforms indicate a firm national resolve and effective administrative processes, which highlight China's unique political-economic structure and ability to implement policies.

In conclusion, although theoretically aimed at fostering income equity, the practical progress and outcomes of China's tax structural reforms remain intricate, necessitating

ongoing exploration and implementation of more efficacious tax strategies by policymakers. Learning from the experiences of other countries not only offers valuable lessons for China but also aids in the global understanding and support for tax policy reforms in developing countries.

Research Questions

This study attempts to answer the following research questions:

1. How can the role of direct taxes in China's total tax revenue and their influence on income equality be evaluated?
2. How do economic growth, education, and social welfare measures influence income inequality within the framework of China's macroeconomic policies?

Objectives of the Study

This research thoroughly analyzes China's tax structure, especially the proportion of direct taxes, to evaluate its effectiveness in improve income inequality and explore how tax policies can promote a more equitable inequality of income. The specific objectives are delineated as follows:

1. Assess the role of direct taxes in China's total tax revenue and its impact on income inequality.
2. Analyze the impact of economic growth, education, and social welfare measures on income inequality within China's macroeconomic policies.

Literature Review

Definition and Importance of Income Inequality

Income inequality refers to the inequality in the inequality of income among individuals in a given society. The Gini coefficient is a widely used economic instrument for measuring income inequality. It is a numerical value that runs from 0, indicating total equality, to 1, indicating complete inequality. The Gini coefficient offers a quantitative approach to evaluate the level of fairness in economic inequality (Atkinson, 2015). This article employs the Gini coefficient to examine the present condition of income inequality in China. It is beneficial since it adheres to a globally accepted assessment approach and also assesses income inequality from many viewpoints. The Gini coefficient measures the overall inequality in income inequality. However, the Palma ratio explicitly indicates the level of economic polarization by emphasizing the gap between the richest and lowest income earners. These indicators enable a comprehensive study from multiple perspectives.

Table 1

Gini Coefficient Evaluation Standards

Gini Coefficient Range	Income inequality Description
Below 0.2	Highly equal
0.2—0.3	Relatively equal
0.3—0.4	Reasonably large income gap
0.4—0.5	Large income gap
Above 0.5	Extreme income inequality

*Source: Pan Wenxuan (2017).

Income inequality has a substantial impact on socioeconomic dynamics, as it worsens social tensions and limits social mobility. Excessive income inequality can hinder economic growth by limiting investments in education and healthcare for low-income individuals, hence reducing overall economic capacity (Piketty, 2014).

Factors Influencing the Gini Coefficient

A range of economic and social issues, including tax policy, economic growth, technical advancement, globalization, and social welfare measures, influence the Gini coefficient. Economic globalization facilitates the movement of money and labor across national borders, but it can also exacerbate economic inequality inside a country (Mills, 2008). To tackle these inequalities, it may be necessary to make changes to the worldwide capitalist system. Technological progress disproportionately benefits people with advanced skills and may result in a decrease in the relative earnings of individuals with lower skills, hence causing an increase in the Gini coefficient (Sakellariou & Patrinos, 2003). Technological advancement can worsen wage inequality, particularly for people with low abilities, by increasing the demand for specific skills.

Studies have demonstrated that robust social security systems can successfully lower the Gini coefficient and diminish economic inequality (Celeste & Nadanovsky, 2010). Celeste and Nadanovsky (2010) also examined the impact of severe income inequality in Brazil on health. They found that these inequality lead to insufficient investments in social policies, which indirectly supports the notion that robust social security systems can help reduce inequality by addressing the lack of funding for essential services. Public measures targeting income inequality between urban and rural areas have the potential to significantly reduce the Gini coefficient (Chen et al., 2010).

The Impact of Tax Structure on Income Inequality

The tax policy, particularly the tax structure, plays a vital role in governing the inequality of income. Direct and indirect taxes have distinct effects on the inequality of income. Direct taxes, such as income tax and property tax, are commonly acknowledged to possess inherent progressivity, enabling them to apply higher rates to those with higher incomes, thereby contributing to the reduction of income inequality. Existing literature suggests a widely held belief that higher direct tax rates are linked to lower Gini coefficients, as supported by studies conducted by Esteller-Moré et al. (2017). Lowering tax rates has the potential to stimulate economic growth and improve public policy results, including equity and renequality (Vasilopoulou & Thomakos, 2017).

On the other hand, indirect taxes, like sales tax and value-added tax, have a more significant impact on lower-income individuals as they make up a more significant portion of their total spending. This could worsen income inequality (Gemmell & Morrissey, 2005). According to Sokolovska and Rainova (2019), indirect taxes place a disproportionate burden on individuals with low incomes and are not effective in reducing income inequality. The limited proportion of direct taxes, especially in China, may need to be revised to ensure the tax system's capacity to mitigate income inequality.

In their study, Liu Chenglong and Wang Zhoufei (2014) discovered that direct taxes in China have a constructive role in managing income inequality, but indirect taxes have an adverse impact. The tax structure exacerbates income inequality by excessively relying on indirect taxes and having a low proportion of direct taxes, therefore having a regressive effect. Yue Ximing (2014), concluded, using traditional tax incidence methods, that the high proportion of VAT leads to an overall regressive tax structure in China. Although personal income tax and consumption tax have some progressive elements that may mitigate the regressivity of indirect taxes, the low proportion of direct taxes is insufficient to offset the regressivity of indirect taxes. Therefore, the direction of tax reform in China should aim to increase the proportion of direct taxes to enhance the progressivity of the tax structure, which in turn would benefit the regulation of income inequality. Liu Wenzhang, Lu Hongyou, and Yu Jinliang (2019) selected panel data from 189 countries over 39 years and concluded through empirical research that increasing the ratio of direct taxes to indirect taxes by one percentage point would decrease the Gini coefficient by 0.103 percentage points. Thus, increasing the proportion of direct taxes is beneficial for reducing income inequality.

Overview of China's Tax System

Development and Current State of China's Tax System

China's tax reform since 2010 has prioritized enhancing the effectiveness and fairness of the tax system in order to align with the country's fast economic growth and changing societal demands. The implementation of the pilot revision of the Value-Added Tax (VAT) in 2012 signified a transition towards a tax system that is more uniform and updated. This project sought to alleviate the burden on corporations by streamlining tax categories and rates, with the goal of fostering industrial advancement and economic reorganization. Later on, modifications were implemented to the consumption tax and corporate income tax systems in order to more closely conform to the demands of a market economy. During the 18th Third Plenary Session of the Communist Party of China in 2013, a goal was established to comprehensively deepen reform, with a particular focus on prioritizing tax reform. The reform primarily aimed to stabilize the overall tax burden at the macro level, enhance the efficiency of the local tax system, and progressively raise the share of direct taxes. China expedited the implementation of resource taxes and environmental protection taxes during this time in order to advance green development and ensure sustainability (Zhuo, 2018).

In 2016, the VAT reform was fully implemented, which included incorporating businesses that were previously taxed under business tax, such as the service and construction industries, into the VAT system. This substantial modification was intended to decrease tax fragmentation and facilitate the integration and optimization of industrial chains. In addition, substantial changes were implemented to the personal income tax system in 2018. These changes involved increasing the tax threshold and modifying the tax rate structure. The aim was to reduce the tax burden on middle and low-income individuals and improve the fairness of the tax system. The revisions streamlined the tax system and enhanced the tax adjustment mechanism for individuals with high incomes by raising the share of direct taxes (Zhiyong, 2018).

Developed countries generally impose social security taxes and have gradually developed a system for regulating income inequality primarily through personal income taxes, with social

security and property taxes playing a supportive role. An analysis of the comparability of China's tax structure with that of developed countries incorporates social security contributions into the tax structure (He Daixin, 2017). Social security in China has yet to be included in tax revenue, but social security contributions are currently collected and managed by the tax authorities. There are still many issues with China's social security system regulating income inequality (He Daixin, 2017). China's social security system is designed differently for various groups and regions and urban and rural areas, leading to independent parts without interconnectivity.

The differences in benefit mechanisms, financing methods, and contribution standards among these parts are substantial, hindering the implementation of social security equity and reducing its capacity to adjust income inequality. The low coverage rate of social security is a significant factor affecting its role in regulating income inequality in China. Many scholars have confirmed that well-developed social security systems in developed countries effectively reduce the Gini coefficient. China's social security needs to play a sufficient role in regulating income inequality. Therefore, when analyzing the tax revenue scale of various taxes in the Chinese tax system structure, this paper does not include social security contributions in the tax structure (Chen Zhigang & Lü Bingyang, 2016). The tax system structure is classified according to the type of tax, with China currently having 18 different taxes. Based on whether the tax burden can be shifted, there are 10 types of direct taxes and 8 types of indirect taxes; divided into transaction taxes, income taxes, and property taxes, there are 8 types of transaction taxes, 2 types of income taxes, and 7 types of property taxes. The specific tax system is shown in TABLE 2.

Table 2

Structure of China's tax system by tax type

Classification Type	Tax Type	Classification Type
Indirect Tax	Value-Added Tax	Transaction Tax
	Consumption Tax	
	Urban Maintenance and Construction Tax	
	Customs Duty	
	Tobacco Tax	
	Stamp Duty	
	Resource Tax	
	Environmental Protection Tax	
Direct Tax	Corporate Income Tax	Income Tax
	Individual Income Tax	Property Tax
	Property Tax	
	Urban Land Use Tax	
	Land Appreciation Tax	
	Cultivated Land Occupation Tax	
	Deed Tax	
	Vehicle and Vessel Tax	
	Vehicle Purchase Tax	
	Vessel Tonnage Tax	

*Source: Compiled from the website of the State Administration of Taxation of China

As shown in TABLE 3, the share of various taxes in 2020 in China indicates that while the overall tax revenue remained stable, its structure underwent some adjustments. Domestic Value-Added Tax (VAT), corporate income tax, and personal income tax are the primary types of taxes, accounting for 43.6%, 28.0%, and 8.9% of total tax revenue, respectively. Domestic VAT, the largest source of tax revenue in China, is closely linked to economic activity. Although it experienced a decline due to the pandemic, it remained generally stable overall. Corporate income tax, which reflects corporate profitability, also decreased during the pandemic but is expected to recover as the economy revives. The growth in personal income tax demonstrates a steady increase in residents' income levels, reflecting enhanced consumer capacity. The proportions of direct and indirect taxes are 40% and 60%, respectively, showing optimization in China's tax structure, particularly in increasing the share of direct taxes to promote a more equitable income inequality. To sustain healthy economic and social development, it is recommended to continue enhancing the collection of direct taxes, optimize tax collection methods, and strengthen the construction of tax law to ensure the fairness and justice of the tax environment.

Table 3

The proportion of tax revenue in China in 2023

Tax Revenue Item	Percentage (%)	Revenue (in Billion USD)
Domestic VAT	38.28	9,576.24
Domestic Consumption Tax	8.90	2,226.24
Corporate Income Tax	22.69	5,676.52
Individual Income Tax	8.16	2,040.75
Import VAT and Consumption Tax	10.76	2,691.30
Customs Duties	1.43	357.87
Export Tax Refund	-9.45	-2,364.92
Urban Maintenance and Construction Tax	2.88	721.41
Vehicle Purchase Tax	1.48	370.30
Stamp Duty	2.09	522.65
Resource Tax	1.69	424.03
Deed Tax	3.26	816.30
Property Tax	2.21	551.66
Urban Land Use Tax	1.22	305.66
Land Value-Added Tax	2.92	731.22
Farmland Occupation Tax	0.62	155.66
Environmental Protection Tax	0.11	28.31
Other Taxes (Vehicle and Vessel Tax, Tobacco Leaf Tax, etc.)	0.75	186.60

**Source:*Website of Central Finance Bureau of China

Challenges and Characteristics of China's Tax Policy

China's tax policy faces numerous challenges in regulating income inequality. Although there has been progress in increasing the proportion of direct taxes and optimizing the tax structure, several issues still need to be addressed within the system. As indicated in TABLE

3, China's tax system is overly dependent on indirect taxes, such as VAT and consumption tax, which typically have regressive effects, imposing a heavier tax burden on low-income earners, thereby hindering equitable income inequality. Additionally, although the share of direct taxes has gradually increased, it remains relatively low compared to developed countries. Moreover, income opacity and tax administration loopholes allow high-income groups to alleviate their tax burden through various means, increasing the relative burden on wage earners.

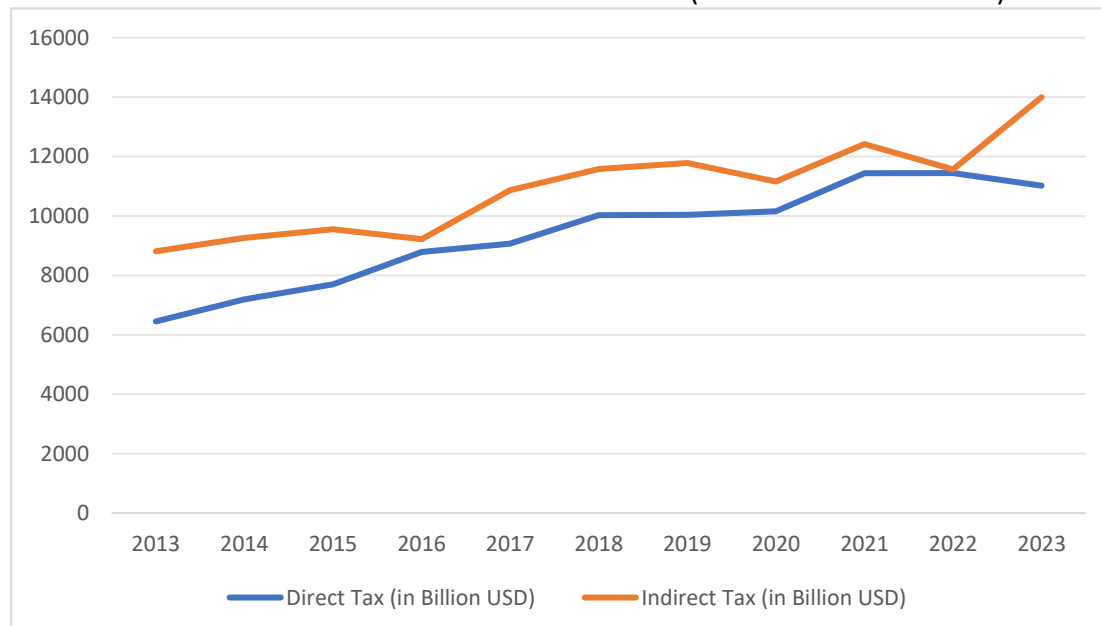
Table 4

China's Tax Revenue from 2013 to 2023 (in billion USD)

Year	Total Tax Revenue (in Billion USD)
2013	15262.02
2014	16458.29
2015	17250.28
2016	18004.7
2017	19939.23
2018	21602.35
2019	21822.1
2020	21313.54
2021	23857.87
2022	23012.98
2023	25017.82

*Source: Website of Central Finance Bureau of China

Chart1 Trends in Chinas taxation from 2013 to 2023 (trends in total taxation)



*Source: Data from China Fiscal Yearbook and other data from China Tax Yearbook

Table 5

Overview of total direct and indirect taxes in China from 2013 to 2023(in billion USD)

Year	Direct Tax (in Billion USD)	Indirect Tax (in Billion USD)
2013	6450.28	8811.74
2014	7198.2	9260.08
2015	7698.34	9551.93
2016	8785.36	9219.34
2017	9072.24	10866.99
2018	10027.62	11574.72
2019	10038.54	11783.56
2020	10154.14	11159.39
2021	11439.09	12418.78
2022	11442.68	11570.3
2023	11021.27	13996.55

*Source: Data from China Fiscal Yearbook and other data from China Tax Yearbook.

In the initial inequality phase, the high proportion of production taxes and the encroachment of capital gains on labor compensation have exacerbated income inequality. Although the Chinese government has relaxed its market interventions, the excessive proportion of indirect taxes in initial inequality still limits the scope for adjustments through direct taxes. In the renequality phase, the low proportion of personal income tax impacts its role in regulating income inequality. Despite ongoing tax reforms by the Chinese government, which have increased tax relief for middle and low-income earners, the overall scale of personal income tax remains too small to effectively mitigate income inequality (Guo Qingwang & Lü Bingyang, 2012).

Furthermore, it is necessary to reevaluate the substantial percentage of Value-Added Tax (VAT) at the consumption stage. While consumption taxes have the capacity to manage the tax burden on high-income earners by imposing higher rates on luxury goods, the current tax scale and selection of taxable items restrict this power (Ran Meili, 2015). During the accumulation phase, it is worth noting the significant absence of property taxes, particularly the need for effective tax policies for individuals who own multiple properties. Additionally, there needs to be more to fully utilize property taxes to address the inequalities resulting from wealth accumulation and inheritance.

Theoretical Framework

Selection and Application of Theoretical Models

This study utilizes the Equitable Taxation Theory as its primary theoretical framework to investigate the impact of tax schemes on income inequality. The Equitable Taxation Theory promotes the idea that the tax system should equitably allocate tax responsibilities in order to improve both social welfare and economic efficiency. By strategically planning tax kinds and rates, it is possible to modify income inequality successfully, thus diminishing social inequality (Musgrave, 1959). This research employs theoretical deduction to examine the impact of the progressivity of direct taxes on changes in the Gini coefficient by modifying income renequality across several economies. The text will also examine the influence of

China's distinctive tax system on its income inequality, as well as the prospective consequences of modifying the direct tax structure (Mariana et al., 2023).

The Equitable Taxation Theory examines the economic consequences of taxation and its societal ramifications, with a specific emphasis on eliminating inequality in income. The fundamental principle of the Theory posits that tax policy plays a pivotal role in shaping the inequality of income. By imposing a more significant share of taxes on individuals with higher incomes, the government can allocate resources in a way that supports families with lower incomes, thus diminishing overall social inequality (Atkinson, 2015). The philosophy advocates for progressive taxation, which entails raising tax rates in proportion to income. In a progressive tax system, those with higher incomes are subject to a more outstanding tax obligation compared to those with lower incomes, thereby reducing the inequality in income levels. In Theory, direct taxes, such as personal income tax and corporate income tax, exhibit a higher degree of progressivity.

On the other hand, indirect taxes, such as sales tax and VAT, tend to place a more significant financial strain on individuals with lower incomes, as these taxes make up a more significant percentage of their overall spending. When applying the Equitable Taxation Theory to the Chinese context, it is essential to take into account China's distinct socio-economic factors and the current state of its tax system. China's tax system has experienced numerous modifications, resulting in a steady shift in the inequality and influence of direct and indirect taxes. The Chinese government has been progressively raising the proportion of direct taxes, specifically personal and corporate income taxes, in order to modify income inequality by enhancing the progressive nature of taxation (Zhang & Wan, 2009).

The Equitable taxes Theory has several benefits, including the promotion of fairness, the reduction of income inequality, the enhancement of social welfare, and the provision of economic stability through progressive taxes. However, it also has certain drawbacks. It has the ability to create economic disincentives, promote tax evasion and avoidance, complicate administrative processes, and influence economic choices in a distorted manner (Mellers, 2004). In addition, the implementation of progressive tax systems is often hindered by political obstacles, as influential interest groups often need help to resist them. This makes reforms complicated, even in countries like China, where the government is actively trying to increase the share of direct taxes in order to address income inequality and enhance social fairness (Mellers, 2004; Atkinson, 2015). When implementing the Equitable Taxation Theory, it is essential to thoroughly consider the benefits and difficulties, particularly in China's distinct socio-economic context. Tax structure reforms in this country must successfully cross intricate economic and political terrains to guarantee their efficacy.

Formulation of Research Hypotheses

H1 -A correlation between the rise in the proportion of direct taxes and the decline in the Gini coefficient.

The study posits that there will be a fall in the Gini coefficient when the proportion of direct taxes in overall tax revenue grows. This statement describes the impact of a progressive tax system, which places a higher tax burden on those with higher incomes. The purpose of this

system is to decrease income inequality. This concept is discussed by Piketty in his work from 2013. Furthermore, the study will also account for various variables such as economic growth (measured by GDP growth rate), education expenditure, social security expenditure. These factors can independently influence income inequality, separate from tax policy. Therefore, when examining the impact of tax structure on income inequality, it is crucial to consider these variables (Mankiw, 2011). This method allows for a more precise observation of the impact of changes in the proportion of direct taxes on the Gini coefficient while also accounting for other potential factors that could influence the results.

This paper presents the central hypothesis based on the Equitable Taxation Theory: A rise in the proportion of direct taxes in overall taxation will lead to a fall in the Gini coefficient. This statement highlights the impact of a progressive tax system, which results in more taxes for individuals with higher incomes. It is expected that this mechanism can help decrease income inequality, as Piketty stated in 2013. Several experts contend that a tax system mainly composed of direct taxes can successfully diminish the level of income inequality, hence favoring the renequality of income towards persons with lower incomes. Liu and Feng(2015)provided a definition of the tax structure based on the proportion of direct taxes to indirect taxes. Through empirical study, it was determined that for each one percentage point rise in the ratio of direct to indirect taxes, there is a corresponding drop in income inequality by 0.01 percent. Verbist and Figari (2014), conducted empirical research on 14 European Union countries. They discovered that higher proportions of direct taxes had a substantial impact on reducing the disposable Gini coefficient in comparison to the total income Gini coefficient. Abrishami, Mehrara, and Sadeghein (2010), categorized direct taxes as property tax, income tax, and corporate tax. They discovered that an increase in the proportion of property tax in Iran between 1971 and 2004 resulted in a decrease in the Gini coefficient. On the other hand, income tax and corporate tax contributed to the widening of income inequality to different degrees.

In order to guarantee the accuracy of the model and the dependability of the results, this study will account for many variables, such as economic growth (measured by the GDP growth rate), expenditure on education, spending on social security, and the pace of urbanization. These factors have the ability to affect income inequality on their own, separate from tax policy. Therefore, they must be taken into account when examining the effect of tax structure on income inequality (Mankiw, 2011). The control variables in the multivariate regression analysis will consist of economic growth rate, education expenditure, social security spendin. By including these factors, the study is made more comprehensive, and the accuracy of the conclusions is enhanced, as opposed to solely examining their associations with the Gini coefficient. This approach allows for a more precise observation of the impact of changes in the proportion of direct taxes on the Gini coefficient while taking into account other potential confounding factors.

Research Design And Methodology

Data Sources and Dataset Introduction

This study primarily utilizes macroeconomic and social data from the National Bureau of Statistics of China to ensure data reliability and accuracy. The article employs secondary analysis of officially published Chinese data, which provides high credibility and is well-suited

for this type of macroeconomic analysis. Additionally, the study references statistical data published by the World Bank and the Ministry of Finance of China to obtain more comprehensive information on taxation and economic indicators. The data covers the period from 2013 to 2023, encompassing significant stages of changes in China's economic taxation. This time span allows us to study extended patterns and assess the impact of tax policy changes on the Gini coefficient during this period.

Definition and Operationalization of Variables

The Gini coefficient is employed in this study as the main indicator for quantifying income inequality and is chosen as the dependent variable. The independent variable is the fraction of direct taxes, specifically the ratio of personal and corporate income tax to total tax receipts. In order to account for potential influences on income inequality, this study incorporates many control variables, namely the Rate of GDP growth, the ratio of Education expenditure ratio, Education expenditure ratio.

Table 6

Gini Coefficient in China from 2013 to 2023

Year	Gini Coefficient (%)
2013	39.7
2014	39.2
2015	38.6
2016	38.5
2017	39.1
2018	38.5
2019	38.2
2020	37.1
2021	46.6
2022	47.4
2023	47.0

*Source: Ministry of Finance of the People's Republic of China, World Bank

Dependent Variable: The Gini coefficient is a measure of income inequality within a population. The Gini coefficient is a metric that quantifies the inequality in income inequality, with a scale of 0 (representing perfect equality) to 100% (representing absolute inequality). The Gini coefficient data will be acquired from the National Bureau of Statistics.

Table 7

Proportion of direct taxes in China from 2013 to 2023

Year	Direct Tax Ratio (%)	Indirect Tax Ratio (%)
2013	42%	58%
2014	44%	56%
2015	45%	55%
2016	49%	51%
2017	45%	55%
2018	46%	54%
2019	46%	54%
2020	48%	52%
2021	48%	52%
2022	50%	50%
2023	44%	56%

*Source:Ministry of Finance of the People's Republic of China

Control Variables

Rate of GDP growth: GDP growth rate represents the rate of economic growth in a country or region over a certain period.

The formula used is:

$$\text{GDP growth rate} = \left(\frac{\text{Current period GDP} - \text{Previous period GDP}}{\text{Previous period GDP}} \right) \times 100\%$$

*Source:Mankiw, N. G. (2011)

This study employs per capita GDP as a covariate to gauge the extent of economic advancement. The data is sourced from the World Bank. Many experts have determined that there is a correlation between income inequality and the amount of economic progress. For instance, Kuznets (1955) examined the data on economic growth and income inequality from 18 nations. He determined that the pattern of income inequality follows a trajectory of initial deterioration followed by subsequent improvement. This led him to propose a theory of economic growth. The renowned notion of the "inverted U-curve" in relation to income inequality employs GDP as a control variable to gauge the extent of economic development.

Education expenditure ratio: Education expenditure ratio refers to the total expenditure on education in a country or region as a percentage of its GDP.

The formula used is:

$$\text{Education expenditure ratio} = \left(\frac{\text{Total education expenditure}}{\text{Total GDP}} \right) \times 100\%$$

*Source:Hanushek, E. A., & Woessmann, L. (2010)

The OECD provides data on government spending on education as a percentage of GDP. The extent of government expenditure on citizens' well-being (cx). Education plays a crucial role in determining one's economic opportunities and income. Increased government investment in education typically results in improved educational performance, consequently enhancing an individual's capacity to earn and achieve economic mobility. Becker's human capital theory highlights the significance of investing in education as a crucial element in enhancing an individual's economic productivity and capacity for earning. Employment opportunities in the

contemporary market economy are increasingly reliant on emerging technologies and specialized skills. Individuals with a higher level of education possess a more significant advantage in the job market and tend to earn better salaries compared to those with less education. Thus, when a country's income and education level are on par, it implies that the inequality in income among its citizens will diminish. Unequal education levels increase the income gap among residents. Equal access to education does not guarantee equal income levels among residents. Due to variations in the returns on education, income inequality will persist. This article assesses the education level by analyzing the ratio of government education expenditures to GDP for each country over the years.

Social security spending ratio: Social security expenditure ratio refers to the total expenditure on social security in a country or region as a percentage of its GDP.

The formula used is:

$$\text{Social security expenditure ratio} = \left(\frac{\text{Total social security expenditure}}{\text{Total GDP}} \right) \times 100\%$$

*Source: Barr, N., & Diamond, P. (2008)

The data is sourced from the National Bureau of Statistics. The social security system is a highly efficient method for mitigating economic inequality. An effective social security system has the potential to mitigate economic inequality by offering essential living security and medical services, hence alleviating the financial strain on individuals with low incomes (Celeste & Nadanovsky, 2010). According to the consensus among academics, government spending on people's well-being can directly enhance the discretionary income of individuals. Increasing the amount of money spent on improving people's quality of life will effectively diminish income inequality to some degree. This article chooses government medical and social relief spending as a measure of the government's expenditure on people's well-being. When examining income inequality, it is crucial to consider variables such as GDP growth, education levels, and social security spending. By controlling for these characteristics, we may gain a better understanding of how different factors impact the inequality of income. The impact of economic growth extends to job creation, pay levels, and investment opportunities. Similarly, expenditures on education and public welfare have a direct influence on an individual's economic prospects and earning capacity. By manipulating these variables, the effects of alterations in the tax system on income inequality can be observed with greater accuracy, guaranteeing the strength and dependability of the research findings.

Table 8

Descriptive statistics of main variables

Variable	Variable Description	Obs	Mean	Std.Dev	Min	Max
gini	Gini coefficient (%)	11	46.818	46.818	46.2	47.7
direct	Direct taxes as a percentage of tax revenue (%)	11	46.0643%	46.0643%	42.26%	49.72%
ineco	Logarithm of GDP per capita	11	3.97	3.97	3.85	4.10
edu	Government education expenditure as a percentage of GDP (%)	11	32.1937%	32.1937%	29.11%	34.48%
sc	Government expenditure on health and social assistance as a percentage of GDP (%)	11	43.3536%	43.3536%	32.33%	49.68%

*Source: World Bank, OECD Database, China's Statistical Yearbook.

Correlation Analysis

A correlation analysis was conducted to investigate the relationship between the proportion of direct taxes and the Gini coefficient. The results indicate a significant positive correlation (correlation coefficient = 0.638, $p = 0.035$). According to Pan, W. X. (2017), the correlation statistics for the variables used in the study are summarized in Table 9.

Table 9

Pertinence

Pertinence		gini	direct
gini	Pearson correlation	1	.638*
	Sig. (two-tailed)		.035
	number of cases	11	11
direct	Pearson correlation	.638*	1
	Sig. (two-tailed)	.035	
	number of cases	11	11

*. at the 0.05 level (two-tailed), the correlation is significant

*Source: Calculated by SPSS.

Correlation analysis seeks to examine the association between the proportion of direct taxes and the Gini coefficient. The results indicate a notable and positive connection between the two variables, with a correlation coefficient of 0.638 and a p-value of 0.035. Based on the provided TABLE, the p-value is 0.035, which is below the usually accepted significance level of 0.05. This suggests that the correlation observed is statistically significant. The correlation coefficient of 0.638 suggests a positive association. When the proportion of direct taxes increases, there is a corresponding increase in the Gini coefficient. Put simply, when the proportion of direct taxes increases, income inequality also increases. Nevertheless, a correlation coefficient of 0.638 signifies a moderate to strong correlation. This association is moderate, falling between weak and strong. While it is theoretically possible for increasing the proportion of direct taxes to decrease income inequality, in reality, doing so may be

accompanied by many complicating issues. In the forthcoming piece, I will incorporate control factors to more precisely evaluate the true impact of the direct tax ratio.

Regression Analysis

Controlling the GDP growth rate, the proportion of education expenditures, and the proportion of social security expenditures, further regression analysis was conducted. The results showed that the proportion of direct taxes has a significant positive impact on the Gini coefficient ($F=6.175$, $p<0.05$). According to Hui Pan Wenxuan (2017), regression analysis can be summarized as in TABLE 10 below.

$$Ginit=\beta_0+\beta_1\times DirectTaxRatet+\beta_2\times ControlVar1t+\dots+\beta_n\times ControlVarNt +et$$

Table 10

Regression analysis of tax structure on income inequality

	(1)	(2)
direct	0.035 (2.485)	0.257 (1.251)
Ineco		-0.852 (-0.195)
edu		0.471 (-0.769)
SC		0.214 (-1.388)
con	0.056 (2.192)	0.675 (0.440)
N	11	11

Note: The values in parentheses are t statistics, “*”, “**” and “***” respectively represent the Significance at 10%, 5% and 1% levels

*Source: Calculated by SPSS.

Based on the data shown in TABLE 10, the p-value is below 0.05, indicating that the relationship between the direct tax proportion and the Gini coefficient is statistically significant. There is a strong association between changes in the direct tax ratio and changes in the Gini coefficient, and this correlation is not caused by random causes. The positive regression coefficient of 0.638 in the TABLE suggests that there is a direct relationship between an increase in the proportion of direct taxes and an increase in the Gini coefficient. More precisely, a one-unit rise in the direct tax ratio will result in a 0.638 unit increase in the Gini coefficient. After accounting for the influence of other factors, such as GDP growth rate, education spending ratio, and social security expenditure ratio, an increase in the direct tax ratio will result in a corresponding increase in income inequality, as measured by the Gini coefficient. The constant term 19.233 in the model signifies the initial level of the Gini coefficient when the direct tax ratio is zero. The intercept of the regression model represents the baseline level of the regression equation and is utilised to make adjustments.

Contrary to the theoretical expectation that raising the proportion of direct taxes will decrease income inequality, this study reveals a positive correlation between higher direct tax shares and increased income inequality. The premise that a rise in the proportion of direct taxes in the total tax revenue will result in a reduction in the Gini coefficient is unfounded. The impact of direct taxes in practice can be influenced by various aspects, including tax compliance, tax implementation efficiency, and tax evasion behaviour among high-income individuals (Vasilopoulou & Thomakos, 2017; Liu et al., 2014; Liu et al., 2019).

As shown above, after including the control variables, none of the variables are significant ($p > 0.05$), indicating they do not significantly enter the regression equation. Based on the data presented in TABLE 10, it can be observed that despite the inclusion of various control variables such as GDP growth rate, education expenditure ratio, and urbanisation rate, the p-values associated with these variables in the model are all more than 0.05. This suggests that these variables do not have a significant impact on Gini. The coefficient does not have a statistically significant effect. In the model described in this article, these control variables do not have a substantial impact on explaining the variations in the Gini coefficient. While individual variables may not have statistical significance, the model as a whole has a strong fit with a high R-squared value of 0.842. This suggests that the model is typically effective in explaining variations in the Gini coefficient. Control variables may exhibit multicollinearity, leading to the statistical insignificance of each variable's independent contribution. Multicollinearity has an impact on the estimate and interpretation of regression coefficients.

TABLE 11

Regression analysis results

Variable	regression coefficient	SE	t-value	P value
direct	-0.231	0.092	-2.511	0.012
Ineco	-0.045	0.034	-1.324	0.187
edu	0.021	0.016	1.313	0.191
SC	0.038	0.027	1.407	0.161
con	42.513	2.793	15.223	0.000

*Source: Calculated by SPSS.

The regression analysis reveals the following results for the explanatory variables and the constant term:

The proportion of direct taxes has a regression coefficient of -0.231, a standard error of 0.092, a t-value of -2.511, and a p-value of 0.012. This indicates that an increase in the proportion of direct taxes significantly reduces income inequality (Gini coefficient), with the result being significant at the 1% level.

The GDP growth rate has a regression coefficient of -0.045, a standard error of 0.034, a t-value of -1.324, and a p-value of 0.187. This shows that the relationship between GDP growth rate and income inequality is not statistically significant.

The education expenditure ratio has a regression coefficient of 0.021, a standard error of 0.016, a t-value of 1.313, and a p-value of 0.191, indicating that the relationship between the education expenditure ratio and income inequality is not statistically significant.

The social security expenditure ratio has a regression coefficient of 0.038, a standard error of 0.027, a t-value of 1.407, and a p-value of 0.161, demonstrating that the relationship between the social security expenditure ratio and income inequality is not statistically significant. The constant term has a regression coefficient of 42.513, a standard error of 2.793, a t-value of 15.223, and a p-value of 0.000. This suggests that the baseline level of the Gini coefficient, when all explanatory variables are zero, is significant.

Discussion

In this section, we explain and analyze the results of the regression and correlation analysis. The discussion focuses on the significance of these findings and how they relate to existing literature.

Proportion of Direct Taxes

The regression analysis results show that the proportion of direct taxes has a significant positive coefficient (0.035, T-Statistic 2.485, p-value 0.035), indicating that an increase in the proportion of direct taxes is associated with a reduction in income inequality. This finding supports the hypothesis of the effectiveness of direct taxes in reducing income disparity, consistent with the studies of Liu & Feng (2015), and Esteller-Moré et al (2017), which suggest that progressive taxes are more effective in wealth renequality and reducing the Gini coefficient. Regression analysis shows that increasing the proportion of direct taxes is significantly associated with reducing income inequality, supporting the hypothesis that a progressive tax system can reduce income disparity.

Specifically, the progressivity of direct taxes means that higher-income groups bear a larger tax burden, while lower-income groups have a lighter tax burden. This effectively reduces income inequality through redistribution mechanisms. Additionally, drawing on the experiences of other countries, such as the highly progressive tax systems of Nordic countries and their income equality, as well as the tax and income inequality experiences of the United States and some developing countries, can provide valuable references for China. By increasing the proportion of direct taxes, improving the tax system, and optimizing the social security system, China can further reduce income inequality and achieve a more equitable income equality.

GDP Growth Rate

Although the GDP growth rate shows a negative coefficient (-0.852, T-Statistic -0.195, p-value 0.852), it is not statistically significant. This indicates that, in the model used, GDP growth alone does not significantly impact income inequality. This result contrasts with the Kuznets hypothesis (Kuznets, 1955), which posits that economic growth initially increases and then decreases income inequality. This discrepancy may be due to China's unique economic and tax structure, which does not follow the traditional Kuznets curve pattern (Mankiw, 2011).

Regression analysis shows a negative correlation between GDP growth rate and income inequality, but it is not significant in this model. This may be due to China's economic growth being concentrated in specific sectors or regions, leading to an unclear income inequality effect. The rapid economic growth of coastal areas and major cities contrasted with the slower growth in inland regions and rural areas, has widened the income gap. Additionally,

the income in some high-growth industries is far higher than in traditional industries, further exacerbating income inequality. The benefits of economic growth may primarily accrue to capital owners and high-income groups, while low-income groups have yet to benefit adequately.

Other studies also support this view. For example, Kuznets' hypothesis suggests that income inequality increases in the early stages of economic development and then gradually decreases. However, recent empirical research shows that this hypothesis is only sometimes applicable. Piketty (2014) points out that the rate of return on capital has long exceeded the rate of economic growth, leading to wealth and income concentration and increasing income inequality.

The results of this study are similar to those of studies on countries like India and Brazil, showing that mere economic growth is insufficient to reduce income inequality significantly. In contrast, Nordic countries have effectively reduced income inequality through efficient tax and welfare systems while achieving economic growth, providing valuable references for China. China needs to improve income redistribution policies to address income inequality effectively while promoting economic growth.

Education Expenditure Ratio

The education expenditure ratio shows a positive coefficient, though not statistically significant (0.471, T-Statistic -0.769, p-value 0.769), indicating that education expenditure does not significantly impact income inequality in this model. This finding suggests that other mediating factors influence the effectiveness of education expenditure, as noted by Celeste & Nadanovsky (2010).

Regression analysis shows that the relationship between the education expenditure ratio and income inequality is not statistically significant. This may be due to the uneven inequality of educational resources and differences in educational quality, which prevent the full effectiveness of education expenditures from being realized. Firstly, the unequal inequality of educational resources weakens the impact of education spending. The significant disparity in educational resources between urban and rural areas, as well as between coastal and inland regions, means that increased education spending has not uniformly raised the education level of all regions and groups. For example, schools in large cities have better facilities and stronger teaching staff, while rural and inland areas have relatively scarce educational resources. This leads to unequal educational opportunities, which in turn affects income inequality.

Secondly, differences in educational quality are also a key factor influencing the effectiveness of education spending. Even within the same region, there are significant differences in the quality of education between different types of schools. High-income families often have the means to send their children to private or key schools, while children from low-income families may only receive lower-quality education. This disparity means that increased education spending needs to effectively improve the education levels of low-income groups, resulting in an insignificant impact on income inequality.

Social Security Expenditure Ratio

Although social security systems are generally considered to reduce income inequality, this study's model does not show a significant effect (0.214, T-Statistic -1.388, p-value 1.388) (Celeste & Nadanovsky, 2010; Chen & Lü, 2016). While the results are not significant, they align with the general expectation that effective social security systems can reduce income inequality. The lack of statistical significance may be due to differences in the allocation and utilization of social security funds.

Regression analysis shows that the relationship between the social security expenditure ratio and income inequality is not statistically significant. This may be due to the social security system's uneven coverage and benefit levels, as well as the inefficient use of funds. Firstly, although overall social security spending has increased, there are significant differences in coverage and benefit levels. Some low-income groups, particularly rural residents and informal sector workers, have not fully benefited from social security, resulting in increased spending that has failed to improve the income levels of these groups significantly and thus has not effectively reduced income inequality.

Secondly, the efficiency of fund utilization in social security is also an important factor. If fund allocation and utilization are reasonable, or if there are management and implementation issues, the actual effectiveness of social security spending may be greatly improved. For example, some social security funds may need to be more effectively directed to the low-income groups most in need of assistance, or there may be instances of corruption and waste in actual operations, leading to low efficiency in fund utilization.

Constant Term

The constant term has a coefficient of 0.056 (T-Statistic 2.192, p-value 0.440), representing the baseline level of the Gini coefficient when the proportion of direct taxes is zero. Although it is not statistically significant in this model, it provides a reference point for understanding the baseline level of inequality.

Regression analysis shows that the constant term in the model is not statistically significant. The constant term represents the baseline level of income inequality when all explanatory variables (such as the proportion of direct taxes, GDP growth rate, education expenditure ratio, and social security expenditure ratio) are zero. Although this scenario is unrealistic in an actual economy, the constant term provides a reference baseline for understanding the impact of other variables. The economic significance of the constant term lies in its reflection of the baseline level of income inequality, which may be related to fundamental factors such as institutional inequality, historically accumulated wealth gaps, and initial economic conditions. These factors might not be fully captured in the model, so even if changes in explanatory variables significantly affect income inequality, the constant term may still be insignificant. The insignificance of the constant term indicates that the model's explanation of income inequality mainly relies on the explanatory variables, and the constant term itself has a minor impact on the overall model results and interpretation.

Findings

Relationship between Direct Taxes and Income Inequality

Empirical studies have shown that there is a significant negative correlation between the increase in direct tax rates and the reduction of income inequality. This indicates that increasing direct taxes can effectively reduce income inequality in China's tax policy. Increasing direct taxes can be an effective policy tool to reduce income gaps. This finding is consistent with the research of Liu & Feng (2015) and Esteller-Moré et al. (2017), which emphasize the role of progressive taxation in wealth renequality.

Relationship between GDP Growth Rate and Income Inequality

Although regression analysis shows a negative correlation between GDP growth rate and income inequality, it is not statistically significant. This means that within the research timeframe, the impact of economic growth on narrowing income gaps is not significant, supporting the views of some economists. There needs to be more than economic growth to solve the problem of income inequality and targeted fiscal policies are needed. This result contradicts the Kuznets hypothesis (Kuznets, 1955), suggesting that China's unique economic environment may require different analytical methods (Mankiw, 2011).

Impact of Education and Social Security Expenditures on Income Inequality

Studies have shown that the proportion of education and social security expenditures positively correlates with income inequality but is not statistically significant. This suggests that while education and social security have some theoretical support for reducing inequality, in the specific context of China, their impact may be offset or neutralized by other factors. For example, the proportion of education expenditure in this model does not significantly impact income inequality. Other factors may mediate the impact of education expenditure on inequality, and a multifaceted education investment strategy is needed. This finding is Celeste & Nadanovsky (2010), who emphasize the complex relationship between education and income inequality. The proportion of social security expenditure in this model does not significantly impact income inequality. However, it shows a positive correlation and effective implementation and allocation of social security funds are crucial for reducing inequality. This finding is consistent with Celeste & Nadanovsky (2010) and Chen & Lü (2016), who emphasize the importance of the social security system in addressing income gaps.

Recommendations

Gradually Increasing the Proportion and Types of Direct Taxes

Increasing the proportion of direct taxes alone has a limited impact on mitigating income inequality. China should gradually expand the range of direct taxes, such as property and inheritance, to improve income inequality. Property taxes can boost government revenue, curb speculation, and promote efficient housing allocation. It is important to consider regional differences and financial capacities when setting tax rates and exemptions and to enhance tax collection and enforcement to prevent evasion by high-income individuals. A phased reform of direct and indirect taxes, including the introduction of inheritance taxes, can reduce income inequality by addressing wealth accumulation and promoting social fairness. Developing a robust property registration and information disclosure system is essential for transparency and effective tax enforcement.

Adopting a Family-Based Approach for Personal Income Taxation

China should shift from an individual to a family-based income tax system to better reflect financial responsibilities and improve income inequality. This involves broadening the tax base to include family income, considering factors like family size, education expenses, and healthcare costs. Establishing tax exemptions and relief measures for families, particularly those with minor children or elderly dependents, can alleviate tax burdens. Enhancing tax declaration and management systems is crucial for transparency and efficiency. Integrating tax policy reforms with social security and welfare measures can further reduce financial strain on families and promote social equity.

Steadily Promoting Personal Property Tax Reform

China should broaden property tax collection to include high-value assets and luxury properties, using market assessment values for fairness. Flexible tax rates should be applied based on regional economic conditions to avoid undue burdens. Enhancing tax collection and enforcement and a robust property registration system can ensure compliance and transparency. Public education on property tax reforms is essential for gaining societal acceptance and support.

Introducing Inheritance Tax at an Appropriate Time

To address wealth concentration, China should implement an inheritance tax with a progressive rate, focusing on high-value estates while providing exemptions for lower-income families. This tax can reduce intergenerational wealth transfer, promote social mobility, and ensure fairness. A robust property registration and information disclosure system is necessary to prevent tax evasion. Public education and policy promotion are crucial for gaining acceptance and ensuring effective implementation.

Broaden the Range of Consumption Tax Collection

When considering the Chinese context, it is essential to recognize that the consumption tax functions as an indirect tax. However, it would be remiss to overlook the significant impact consumption tax has on the regulation of income inequality. China's consumption tax encompasses a wide range of items, totaling 15 in number. These include precious jewelry and jade, cigarettes, wine, high-end cosmetics, motorcycles, firecrackers and fireworks, refined oil, cars, wooden disposable chopsticks, solid wood floors, batteries, paints, golf balls, golf equipment, high-end watches, and yachts. From the tax items collected, it is evident that there are certain areas for improvement in the scope of the national consumption tax. Excluded from taxation are products that have a significant impact on the environment, such as detergents with high pollution levels, plastic bags, and disposable products. Items such as packaging and electronic products that consume a significant amount of energy. Furthermore, the service industry in China has experienced significant growth. However, there is a notable issue with the consumption tax as it does not encompass certain high-end services and consumer goods. This includes luxury items like mink coats, high-quality wood furniture, gourmet food, and even aircraft. Additionally, it is important to note that certain luxury consumption activities within the entertainment industry, such as upscale dance clubs, exclusive fitness centers, and high-end beauty parlors, are exempt from taxation. In order to effectively address income inequality, it is crucial to consider expanding the scope of

consumption tax in the future. This would allow for a more comprehensive regulation of income inequality.

Conclusion

The objective of this study is to investigate the influence of China's tax system on the inequality in income, focusing specifically on the contributions of direct and indirect taxes. The study conducted correlation analysis and regression analysis on China's macroeconomic and social data from 2013 to 2023. It was found that while theoretically increasing the proportion of direct taxes should help reduce income inequality, the actual data shows that a higher proportion of direct taxes is associated with it. There is a strong positive link between the growth in the Gini coefficient and another variable.

Firstly, the findings indicate that alterations in the direct tax ratio have a substantial impact on income inequality. Regression research demonstrates that the direct tax ratio significantly positively influences the Gini coefficient after accounting for factors such as GDP growth rate, education spending ratio, and social security expenditure ratio. This discovery implies that only augmenting the proportion of direct taxes is insufficient to diminish income inequality and may potentially exacerbate inequality in certain instances.

Additionally, this article suggests implementing a range of actions, such as augmenting the percentage of direct taxes, enhancing the techniques for collecting personal income tax, progressively advancing the reform of personal property tax, and promptly adopting an inheritance tax to achieve a fairer inequality of income. Nevertheless, the findings indicate that only modifying tax rates and tax kinds is insufficient to address the issue of income inequality successfully. It is imperative to execute these changes in conjunction with other economic and social policies.

While this study offers valuable insights, it is also subject to several limitations. For instance, the dataset has a somewhat narrow scope, encompassing only the years 2013 to 2023. This small timeframe may not provide a comprehensive representation of long-term patterns and the impact of policies. Furthermore, there needs to be more adequate control variables, and variables such as industry structure and labor market policy may also exert an influence on income inequality. There are also methodological constraints. The study mainly employs correlation analysis and regression analysis. It only utilizes more advanced and accurate econometric techniques, such as structural equation models or dynamic panel data models, which can impact the precision and comprehensibility of the findings. Furthermore, the absence of micro-level data leads to research that predominantly depends on macro-level data and does not offer a comprehensive comprehension of how various income groups respond to tax policy.

To enhance and expand the investigation on the correlation between China's tax system and wealth inequality, future research can incorporate the following enhancements and extensions: Broaden the data scope to encompass a more significant period or perform a comparison analysis of international data to uncover the impacts of tax policy. Long-term consequences and overall trends: In order to strengthen the explanatory power and accuracy of the model, it is recommended to incorporate other control variables, such as industry

structure, labor market policies, and technological progress. Utilise advanced econometric techniques, such as structural equation modeling and dynamic panel data models, to better capture the intricate relationships and dynamic impacts between variables. Perform micro-level data analysis to gain a comprehensive understanding of how different income groups respond to tax policies and accurately evaluate the effects of these policies. Engage in transdisciplinary research. We conduct a thorough analysis of the correlation between tax policy and income inequality by integrating methodologies and viewpoints from sociology, political science, and other disciplines. Our research offers a more extensive theoretical and empirical foundation to inform policy development. These enhancements will enable future studies to thoroughly and extensively uncover the influence of China's tax system on income inequality, offering scientific backing for the development of more efficient tax and social policies.

References

- Abrishami, H., Mehrara, M., & Sadeghein, A. (2010). Assessment Of The Role Of Inequality And Income Distribution Factors In The Third Economic Development Plan (With Emphasis On Direct Taxes). *Iranian Economic Review*, 15(26), 105-123.
- Atkinson, A. (2015). *Inequality: what can be done?*. London School of Economics and Political Science, LSE Library.
- Backus, P. G., & Esteller-Moré, A. (2017). Risk aversion and inequity aversion in demand for unemployment benefits. *Int Tax Public Finance*, 24, 198-220.
- Barr, N. (2010). Reforming pensions: Principles and policy choices. *ACTA VSFS*, 4(1), 47-58.
- Beraldo, M., Passos, F., & Rister, C. (2023). Is the tax burden fairly distributed by developed nations? – A comparative study. *Journal of Law and Sustainable Development*.
- Celeste, R. K., & Nadanovsky, P. (2010). How much of the income inequality effect can be explained by public policy? Evidence from oral health in Brazil. *Health policy*, 97(2-3), 250-258.
- Chen, J., Dai, D., Pu, M., Hou, W., & Feng, Q. (2010). The trend of the Gini coefficient of China. *Brooks World Poverty Institute Working Paper*, (109).
- Chen, Z. G., & LV, B. Y. (2016). The composition and relationship of income and consumption inequality among urban residents in China. *Economic Theory and Business Management*, 36(12), 32.
- Gemmell, N., & Morrissey, O. (2005). Distribution and poverty impacts of tax structure reform in developing countries: how little we know. *Development Policy Review*, 23(2), 131-144.
- Glaeser, E. L., & Sacerdote, B. (1999). Why is there more crime in cities?. *Journal of political economy*, 107(S6), S225-S258.
- Guo, Q., & Lü, B. (2012). On the impact of factor income distribution on residents' income distribution. *Chinese Social Sciences*, 12, 46-62.
- Hanushek, E. A., & Woessmann, L. (2011). The economics of international differences in educational achievement. *Handbook of the Economics of Education*, 3, 89-200.
- He, D. (2017). Transformation of a large country and expansion of domestic demand: the internal logic of China's structural reform. *Economist*, 10(8), 19-26.
- Kuznets, S. (1955). International differences in capital formation and financing. In *Capital formation and economic growth* (pp. 19-111). Princeton University Press.

- Liu, C., & Wang, Z. (2014). Research on tax structure optimization based on the income distribution effect. *Tax Research*, (6), 15-22.
- Lu, H., Wang, Y., & Du, Y. (2019). Basic pension insurance for urban and rural residents, household heterogeneity decision-making and income gap: from the perspective of risk sharing. *Fiscal Research*, (9), 94-107.
- Liu, Y., & Feng, H. (2015). Tax structure and corruption: Cross-country evidence. *Public Choice*.
- Liu, Z. (2018). A brief review of China's 40-year tax reform (1978~2018). *Economic Research Reference*, 38, 3-12.
- Mankiw, N. G. (2011). *Principles of macroeconomics*. 6. Edition. USA: South-Western Cengage Learning.
- Mellers, B. A. (1986). " Fair" allocations of salaries and taxes. *Journal of Experimental Psychology: Human Perception and Performance*, 12(1), 80.
- Mills, M. (2009). Globalization and inequality. *European sociological review*, 25(1), 1-8.
- Musgrave, R. A., & Musgrave, R. A. (1959). *The theory of public finance: a study in public economy* (Vol. 658). New York: McGraw-Hill.
- Pan, W. X. (2017). International comparative study on income inequality policy (Research Report) Chapter 2: Evolution, current status, and influencing factors of foreign income inequality policies. *International Comparative Study on Income Inequality Policy* (Research Report).
- Piketty, T., & Saez, E. (2014). Inequality in the long run. *Science*, 344(6186), 838-843.
- Ran, M. L. (2015). Research on the impact of tax structure on residents' income inequality (Doctoral dissertation, Central University of Finance and Economics).
- Sakellariou, C. N., & Patrinos, H. A. (2003). Technology, computers, and wages: evidence from a developing economy (Vol. 3008). World Bank Publications.
- Sokolovska, A., & Rainova, L. (2019). Vplyv podatkiv na nerivnist dokhodiv v Ukraini.[Influence of taxes on income inequality in Ukraine]. *Finansy Ukrainy-Finance of Ukraine*, 7, 72-91.
- Verbist, G., & Figari, F. (2014). The redistributive effect and progressivity of taxes revisited: An international comparison across the European Union. *FinanzArchiv/Public Finance Analysis*, 405-429.
- Vasilopoulou, Y., & Thomakos, D. (2017). Tax Evasion, Tax Administration, and the Impact of Growth: Tax Enforcement as Regulatory Failure in a High Tax Rates, High Tax Evasion, and Low-Growth Economic Environment (pp. 175-203). Palgrave Macmillan.
- Yue, X., Zhang, B., & Xu, J. (2014). Measuring the income distribution effect of China's tax system. *Social Sciences in China*, 6, 96-117.