

Міжнародні економічні відносини

UDC 332.14:330.34

**WU QI**

*a third-level higher education Candidate 'Doctor of Philosophy' (PhD)*

*in the specialty 292 International economic relations*

*West Ukrainian National University*

**У Ці**

*здобувач третього рівня вищої освіти «доктор філософії»*

*за спеціальністю 292 Міжнародні економічні відносини*

*Західноукраїнського національного університету*

**Науковий керівник:**

**Гомотюк Вікторія Олександрівна**

*кандидат економічних наук, доцент*

*Західноукраїнський національний університет*

## **EMPIRICAL ANALYSIS OF ECONOMIC INEQUALITY IN CHINA**

## **ЕМПІРИЧНИЙ АНАЛІЗ ЕКОНОМІЧНОЇ НЕРІВНОСТІ В КИТАЇ**

**Summary.** *Introduction. In the current context of globalization and the transformation of the global economy, the issue of economic inequality is becoming increasingly relevant, as the growth of socio-economic disparities generates systemic risks for the stable development of society. The relevance of this study is driven by the need for an in-depth analysis of the factors influencing the level of economic inequality under conditions of intensive economic growth, particularly in developing countries such as the People's Republic of China.*

*Purpose. The purpose of the study is to analyze the impact of macroeconomic indicators on the poverty level in China, taking into account the dynamics of income, GDP per capita, and other key indicators of economic development.*

*Materials and methods.* The study used official statistical data from the World Bank, the National Bureau of Statistics of China, and other international institutions. The methodological basis is economic and statistical methods, in particular regression analysis, correlation analysis, and one-way analysis of variance (ANOVA), which allowed us to determine the degree of influence of individual indicators on the poverty level of the population.

*Results.* The conducted study revealed a direct and statistically significant relationship between the growth of GDP per capita and the reduction of poverty levels. At the same time, it was found that the increase in average income does not always lead to a decrease in inequality, indicating deep structural imbalances. The constructed regression model confirmed the strong influence of GDP and average wages on poverty indicators, while other factors proved to be statistically insignificant.

*Discussion.* The results of the study can be used to justify state socio-economic policies in the People's Republic of China aimed at reducing inequality and lowering poverty levels. A promising direction for further research is the analysis of regional income disparities and the examination of the impact of the digital transformation of the economy on the distribution of resources within Chinese society.

**Key words:** economic inequality, income distribution, economic development, income disparity, socio-economic factors, economic growth, Gini Index, China.

**Анотація.** Вступ. У сучасних умовах глобалізації та трансформації світової економіки проблема економічної нерівності набуває особливої актуальності, оскільки зростання соціально-економічних диспропорцій спричиняє виникнення системних ризиків для стабільного розвитку суспільства. Актуальність дослідження зумовлена необхідністю поглибленого аналізу факторів, що впливають на рівень економічної

нерівності в умовах інтенсивного економічного зростання, зокрема у країнах, що розвиваються, таких як Китайська Народна Республіка.

*Мета.* Метою дослідження є аналіз впливу макроекономічних показників на рівень бідності населення в Китаї, з урахуванням динаміки доходів, ВВП на душу населення та інших ключових індикаторів економічного розвитку.

*Матеріали і методи.* У дослідженні використано офіційні статистичні дані Світового банку, Національного бюро статистики Китаю та інших міжнародних інституцій. Методологічну основу становлять економіко-статистичні методи, зокрема регресійний аналіз, кореляційний аналіз та однофакторний дисперсійний аналіз (ANOVA), що дозволили визначити ступінь впливу окремих показників на рівень бідності населення.

*Результати.* Проведене дослідження показало наявність прямого статистично значущого зв'язку між зростанням ВВП на душу населення та зниженням рівня бідності. Разом з тим, встановлено, що зростання середніх доходів не завжди супроводжується зменшенням нерівності, що свідчить про глибинні структурні дисбаланси. Побудована регресійна модель підтвердила високий вплив ВВП та середньої заробітної плати на показники бідності, тоді як інші фактори виявилися статистично незначущими.

*Перспективи.* Результати дослідження можуть бути використані для обґрунтування державної соціально-економічної політики в КНР, спрямованої на подолання нерівності та зниження рівня бідності. Перспективним напрямом подальших досліджень є аналіз регіональних диспропорцій у доходах та вивчення впливу цифрової трансформації економіки на розподіл ресурсів у китайському суспільстві.

**Ключові слова:** економічна нерівність, розподіл доходів, економічний розвиток, нерівність доходів, соціально-економічні фактори, економічне зростання, Індекс Джині, Китай.

**Formulation of the problem.** In the current context of globalization, digitalization, and the transformation of economic systems, the issue of economic inequality extends beyond individual national economies and has become a global challenge. The widening socio-economic gap, both between and within countries, leads to developmental imbalances, slows down the improvement of living standards, hinders the achievement of sustainable development goals, and provokes social tensions. The rise in economic inequality is directly linked to challenges such as the marginalization of certain social groups, reduced access to basic services, the concentration of capital in the hands of a narrow elite, and diminished efficiency of public governance.

Amid constant changes in the socio-economic landscape, there is a growing need for in-depth scientific analysis of the nature, causes, and consequences of economic inequality, as well as the search for effective tools to address it. From a scientific perspective, the issue requires an interdisciplinary approach that integrates economic theory, statistical analysis, sociological research, and elements of public policy. From a practical standpoint, it involves ensuring social justice, promoting economic mobility and stability, creating effective mechanisms for the redistribution of income and opportunities, and strengthening the institutional capacity of the state.

This issue is particularly relevant in countries experiencing rapid economic growth, such as China, where structural imbalances related to urbanization, labor market transformation, and unequal access to social benefits hinder the implementation of the principles of social equity. In this context, scientifically grounded mechanisms for reducing inequality are crucial for

developing effective socio-economic policies at both national and international levels.

**Analysis of recent research and publications.** Many researchers have focused on the issue of the impact of high income inequality on economic growth. Among them are scholars such as Easterly, W. [1], Berg, A. and Ostry, J. [2], Berg, A. and Zettelmeyer, J. [3], Ostry, J. D., Berg, A. and Tsangarides, C. [4:5], Dabla-Norris, E., Kochhar, K., Ricka, F., Suphaphiphat, N. and Tsounta, E. [6], Galor, O. and Zeira, J. [7], among others. Their works substantiate that significant income inequality has a negative impact on the pace and sustainability of economic development. Furthermore, it is emphasized that heightened inequality leads to inefficient resource allocation, particularly in the areas of healthcare and education, which in turn hampers long-term economic growth.

**The aim of the article** is to identify the main trends and factors influencing the dynamics of economic inequality in China, as well as to assess the relationships between macroeconomic indicators and the poverty level of the population. The analysis will examine the interdependence between population income, GDP per capita, and the poverty level.

**Presentation of the main material.** At the current stage of development, the problem of economic inequality has gained particular significance, as its intensification contributes to the formation of the preconditions for economic and social instability. On the one hand, it is a source of social tension and instability within the state, while on the other hand, it can act as a factor stimulating economic activity among the population. Inequality in the level of welfare is an inherent characteristic of the global economy's development, as global processes such as disproportionality, cyclicity, asymmetry, and other manifestations of globalization only deepen the gap in the socio-economic development of different countries.

Inequality is a universal issue in almost all countries. It is a complex and multi-dimensional phenomenon that can be analyzed at three levels: national, regional, and global. Economic inequality refers to the uneven distribution of financial resources, such as income, assets, property, wealth, and capital, both among different social groups within a country and between states and regions of the global economy. It can manifest both within individual countries and on an international level.

Inequality between countries is reflected in differences in economic indicators such as GDP per capita, the level of economic development, access to education, healthcare, and infrastructure. Based on these criteria, countries are divided into developed nations with high living standards (USA, EU, Japan), developing countries (China, India, Brazil), and least developed countries, which are characterized by low incomes and dependence on external aid (some countries in Africa and Asia). This classification is conditional and may change depending on specific assessment criteria.

Inequality within countries manifests itself in the uneven distribution of income, wealth, opportunities, and other resources among different social groups. It can be observed between the rich and the poor, urban and rural populations, as well as among different ethnic or social groups. For example, in some countries, there is a large gap between the elite and people living in poverty. Both types of inequality—between countries and within them—have serious socio-economic consequences, and overcoming them requires comprehensive policies and programs aimed at a more equitable distribution of resources.

The analysis of economic inequality typically begins with a quantitative study of the disproportions in the distribution of income and welfare, provided that the available data allows for it. Unequal access to financial resources is often a result of deeper socio-economic disparities. Therefore, reducing

economic inequality is considered one of the key factors in sustainable development.

One of the most commonly used indicators of inequality is the Gini coefficient, which measures the degree of uneven distribution of income or consumption among the population and households of a country. It reflects the deviation of the actual income distribution from absolute equality and is expressed on a scale from 0 to 1 (or as a percentage). The higher the Gini coefficient, the greater the income inequality [8, p. 3].

Modern economic theory indicates that economic growth is almost always accompanied by an increase in the level of inequality. For example, in the United States, the share of post-tax income going to the richest 10% of citizens increased from 7.5% in 1980 to 14% in 2004. In 1976, the wealthiest 1% of Americans controlled 9% of the country's total income, but by 2007, this share had risen to 24%, leading to a 25% increase in the Gini coefficient [9]. A similar trend is observed in China, where rapid economic growth has been accompanied by an increase in socio-economic inequality. In the 1980s, China's Gini coefficient was around 0.3, but by 2023, it had risen to over 0.46, indicating significant income differentiation between various segments of the population, particularly between urban and rural residents [10]. Even more pronounced changes have occurred in the countries of the CIS, Asia, Latin America, and Africa. Currently, the highest level of economic inequality is recorded in South Africa, where the Gini coefficient has reached 0.82 [11]. Table 1 presents the main indicators of income inequality in developing countries.

*Table 1*

**Main Indicators of Income Inequality in Developing Countries**

Country	Gini Index
South Africa	0.82
Brazil	0.81



UAE	0.77
Saudi Arabia	0.77
India	0.73
Mexico	0.72
Indonesia	0.68
China	0.46

*Source:* compiled by the author based on [12; 13; 14]

The People's Republic of China is one of the largest economies in the world, continuing to show high growth rates. At the same time, despite significant economic achievements, the country faces a number of social challenges, particularly the issue of income inequality. China's Gini index indicates a moderate level of inequality, which is typical for many rapidly developing countries where there is a significant gap between the incomes of the richest and the poorest segments of the population.

Economic inequality in China is driven by a combination of structural and socio-economic factors that have been exacerbated by the transformational processes initiated with the market reforms beginning in 1978. First, a significant factor has been the rapid enrichment of the elite, especially in large cities and along the eastern coast. Economic liberalization created conditions for the accumulation of significant capital by certain groups—business elites, politically connected individuals, and investors. An example of this is the growing wealth of the founders of leading tech companies (Alibaba, Tencent, ByteDance), as well as the concentration of profitable assets in the hands of high-ranking officials and their families. Property owners and shareholders also earn profits that far exceed the incomes of the middle class. Second, the monopolization of markets by large corporations, both state-owned and private, creates barriers to economic mobility. State-owned enterprises receive significant subsidies and dominate in strategic sectors (energy, banking, transportation), while small and medium-sized businesses face challenges in



accessing financing. Tech giants control substantial market shares, further intensifying structural inequality.

The third factor is the social vulnerability of migrant workers from rural areas, who number nearly 290 million. Their incomes are significantly lower than those of urban residents, and the household registration system (hukou) restricts access to basic social services—education, healthcare, social insurance. For example, in Shanghai, the average salary exceeds 10,000 yuan, while in inland provinces, it is about 4,000 yuan.

The consequences of economic inequality manifest in reduced consumption, which restrains domestic demand, as well as in increased social tension due to unequal opportunities. The decline in birth rates, particularly among the youth, is driven by high costs for housing, education, and healthcare. China's government policy aimed at reducing economic inequality is based on the implementation of the "Common Prosperity" concept (共同富裕). In particular, tax reforms have been introduced to limit excessive profits, and large companies are required to invest in social initiatives. At the same time, anti-monopoly measures are being implemented against tech corporations, the hukou system is being reformed to expand the rights of migrant workers, and the minimum wage is being raised in certain regions. Table 2 below presents the key demographic and economic indicators for China from 2015 to 2023, including population size, the share of the population living in poverty, GDP per capita, and average wages.

*Table 2*

**Key Demographic and Economic Indicators of China from 2015 to 2023**

Year	Population Size (millions)	Share of Poor (% of population)	GDP per Capita (USD)	Average Salary (USD/year)
2015	1,380	8.3%	8,028.83	9,960
2016	1,390	7.6%	8,123.18	10,548
2017	1,400	6.1%	8,827.00	11,004
2018	1,410	1.7%	9,976.00	12,456
2019	1,400	1.6%	10,261.00	13,512

2020	1,405	1.5%	10,500.00	14,112
2021	1,410	1.5%	11,000.00	14,628
2022	1,411.75	1.5%	11,555.93	15,612
2023	1,409	1.5%	12,175.20	16,704

*Source:* compiled by the author based on [15; 16]

Within the study, a correlation analysis was conducted between three key socio-economic indicators: the poverty rate, GDP per capita, and average salary. To assess the relationship between these variables, Pearson's correlation coefficients were calculated, which allow for determining the strength and direction of the relationships between the indicators. The results of the analysis are presented in Table 3.

*Table 3*

**Table of Pearson's Pairwise Correlation Coefficients**

	Poverty Rate (%)	GDP per Capita (USD)	Avg Salary (USD)
Poverty Rate (%)	1	-0,899328427	-0,866952791
GDP per Capita (USD)	-0,899328427	1	0,992234909
Avg Salary (USD)	-0,866952791	0,992234909	1

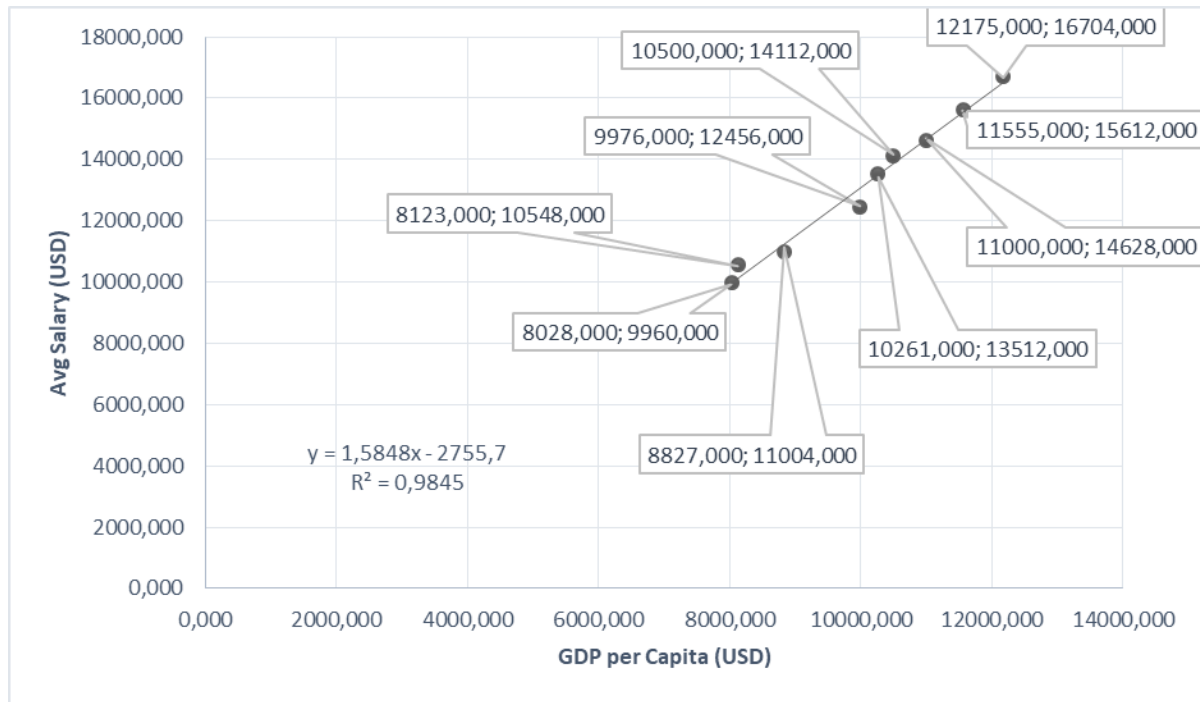
*Source:* calculated by the author based on data from the World Bank (2023) and NBS China (2023)

The most significant inverse relationship was found between the poverty rate and GDP per capita ( $r = -0.899$ ). This value of the coefficient indicates a strong negative correlation: an increase in GDP per capita is accompanied by a substantial decrease in the share of the poor population. A similar, though somewhat less pronounced, inverse relationship is observed between the poverty rate and average salary ( $r = -0.867$ ), which confirms that poverty decreases as income levels rise.

In contrast, between GDP per capita and average salary, an almost perfect positive correlation was established ( $r = 0.992$ ), indicating a strong interdependence between these economic indicators: an increase in one factor almost always accompanies a similar increase in the other. The results of the analysis confirm the hypothesis of the relationship between the population's well-being and the level of economic development. Growth in GDP per capita and average income significantly reduces poverty levels, indicating the effectiveness of macroeconomic factors in combating social inequality.

To assess the impact of macroeconomic indicators on poverty levels, a multiple linear regression analysis was conducted, where the dependent variable was the share of the poor population (%), and the explanatory variables were GDP per capita (X1) and average salary (X2), expressed in US dollars. A total of 9 observations were used in the analysis.

The model demonstrates a high level of consistency between the actual and calculated values of the dependent variable. The multiple correlation coefficient is  $R = 0.994$ , indicating a very strong relationship between the independent variables and the poverty rate. The coefficient of determination,  $R^2 = 0.988$ , indicates that 98.8% of the variation in the poverty rate is explained by the variation in GDP per capita and average salary (Figure 1).



**Figure 1. Relationship between Average Salary and GDP per Capita in China (2015–2023)**

*Note:* Based on linear regression. The coefficient of determination,  $R^2 = 0.9845$ , indicates a very strong correlation between the indicators.

The adjusted  $R^2$  value (Adjusted  $R^2 = 0.984$ ) takes into account the number of explanatory variables and confirms the high quality of the model with a small sample size. The standard error of the estimate is 297.73, indicating an acceptable level of deviation between the actual and predicted values (Table 4).

*Table 4*

#### General statistical indicators of the model

<i>Regression Statistics</i>	
Multiple R	0,993932684
R Square	0,987902181
Adjusted R Square	0,983869574
Standard Error	297,7291161
Observations	9

*Source:* calculated by the author

The analysis of variance confirmed the statistical significance of the model overall: F-statistic = 244.98, with a p-value =  $1.77 \times 10^{-6}$ , indicating that

at least one of the independent variables has a significant impact on the dependent variable (Table 5).

*Table 5*

**Variance analysis (ANOVA)**

ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	2	43431088,24	21715544,12	244,9785724	1,7706E-06
Residual	6	531855,7596	88642,6266		
Total	8	43962944			

*Source:* calculated by the author

The coefficient for the variable "average wage" is statistically significant ( $p < 0.001$ ) and indicates that with an increase in wages by 1 US dollar, the poverty rate decreases by an average of 1.78 percentage points, *ceteris paribus*. In contrast, the coefficient for the variable "GDP per capita" is not statistically significant ( $p = 0.243$ ), which may be due to multicollinearity between the explanatory variables or an insufficient number of observations (Table 6).

*Table 6*

**Interpretation of Regression Coefficients**

Variable	Coefficient	Standard Error	t-Statistic	p-Value	95% Confidence Interval (Lower – Upper)
Intercept (Constant)	-5040.13	1910.42	-2.64	0.039	(-9714.76; -365.50)
GDP per capita (X1)	10565.36	8169.86	1.29	0.243	(-9425.55; 30556.28)
Average wage (X2)	1.78	0.164	10.83	< 0.001	(1.37; 2.18)

*Source:* calculated by the author

The obtained results indicate that the model has high explanatory power and statistical significance. The main factor significantly influencing the reduction of poverty is the average wage level. Although GDP per capita is also positively associated with the level of well-being, its effect within this model is not statistically significant. This points to the need for further analysis, including

the examination of multicollinearity and expanding the sample size to enhance the reliability of the conclusions.

China has achieved remarkable economic growth, but inequality remains a serious challenge. While the government has already taken measures to reduce the gap between the rich and the poor, the process will be complex and long-term.

**Conclusions from the conducted research.** The conducted research shows that economic inequality is a complex, multidimensional phenomenon with significant socio-economic consequences at both national and global levels. The growth of income inequality accompanies economic development processes, particularly in countries with high growth rates, such as China. Analysis of correlation coefficients and regression modeling confirmed a strong inverse relationship between poverty levels, average wages, and GDP per capita.

Specifically, it was established that the growth of average wages is a statistically significant factor contributing to the reduction of poverty. At the same time, the impact of GDP per capita was found to be statistically insignificant within the studied sample, which may indicate structural features of China's economic development or the presence of multicollinearity between independent variables. The constructed regression model demonstrates a high level of consistency, as confirmed by the coefficient of determination  $R^2 = 0.988$ .

The results of the empirical analysis allow us to conclude that macroeconomic factors have a significant impact on social inequality, particularly through the mechanisms of income formation. Wage level indicators serve as an effective tool for reducing poverty levels and can be used as a benchmark in shaping state socio-economic policies.

Considering the identified features of the influence of economic factors on poverty levels, further research should focus on deepening the analysis of household income structure, taking into account their distribution, expanding the

research sample, as well as studying regional disparities. It would also be valuable to examine the impact of educational, demographic, and institutional factors on social inequality, conduct comparative analysis between countries with different levels of development, and apply panel or multilevel models to account for spatial-temporal changes.

### References

1. Easterly, W. (2007). Inequality Does Cause Underdevelopment: Insights from a New Instrument. *Journal of Development Economics*, 84(2). p.755.
2. Berg, A., and Ostry, J. (2011). Inequality and Unsustainable Growth: Two Sides of the Same Coin?. IMF Staff Discussion Note 11/08. International Monetary Fund, Washington.
3. Berg, A. and Zettelmeyer, J. (2012). What Makes Growth Sustained? *Journal of Development Economics*, 98(2). p.149.
4. Ostry, J. D., Berg, A., and Tsangarides, C. (2014). Redistribution, Inequality, and Growth. IMF Staff Discussion Note 14/02, International Monetary Fund, Washington.
5. Ostry J. D., A. Berg and S. Kothari. (2018). Growth-Equity Trade-offs in Structural Reforms. IMF Working Paper No. 18/5 (Washington: International Monetary Fund).
6. Dabla-Norris, E., Kochhar, K., Ricka, F., Suphaphiphat, N., and Tsounta, E. (2015). Causes and Consequences of Income Inequality: A Global Perspective. IMF Staff Discussion Note 15/13, International Monetary Fund, Washington.
7. Galor, O., and Zeira, J. (1993). Income distribution and Macroeconomics. *Review of Economic Studies*. 60. pp.35–52.
8. Deaton A. Health, Inequality, and Economic Development. *NBER WorkingPaperSeries*. No. 8318. June 2001. PP. 3–772.



9. Piketty, T., & Saez, E. (2024). Income Inequality in the United States: A Comment. *Technical Note*. N°2024/04. URL: PSZ2024.pdf (date of access: 15.03.2025).
10. Wikipedia. Income inequality in China. URL: [https://en.wikipedia.org/wiki/Income\\_inequality\\_in\\_China](https://en.wikipedia.org/wiki/Income_inequality_in_China) (date of access: 15.03.2025).
11. World Bank. (2022). South Africa Economic Update: Inequality and Opportunity. URL: <https://www.worldbank.org/en/country/southafrica/publication/south-africa-economic-update> (date of access: 15.03.2025).
12. OECD. (2022). Income inequality (indicator). doi: 10.1787/459aa7f1-en.
13. UNU-WIDER. World Income Inequality Database (WIID). 2022.
14. World Bank. Gini Index (World Bank estimate) – China. 2023. URL: <https://data.worldbank.org/indicator/SI.POV.GINI?locations=CN> (date of access: 15.03.2025).
15. National Bureau of Statistics of China. (2023). China Statistical Yearbook 2023.
16. World Bank (2023). China – GDP per capita (current US\$). URL: <https://data.worldbank.org> (date of access: 15.03.2025).