



Income inequality and economic growth: Provincial evidence from Vietnam

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Abstract

This study examines the relationship between income inequality and economic growth across 63 Vietnamese provinces and centrally administered cities from 2018 to 2024. Using provincial panel data, the study applies pooled OLS, fixed effects, random effects, and feasible generalized least squares estimations. A non-linear specification is included to capture potential threshold effects, while control variables such as provincial competitiveness, labor quality, and average income are used to account for regional differences. The results reveal a non-linear relationship between income inequality and economic growth. Moderate inequality is associated with higher growth, whereas excessive inequality negatively affects provincial economic performance. Institutional quality and human capital also significantly contribute to regional growth. The findings suggest that inequality can support growth only up to a certain level, beyond which it becomes harmful to sustainable development. Policymakers should focus on preventing excessive inequality while improving institutional quality, competitiveness, and labor quality to promote inclusive and sustainable regional growth.

Keywords: Economic growth, Income inequality, Provincial evidence, Vietnam.

JEL Classification: C23; O15; O47.

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Contribution of this paper to the literature

This study offers original sub-national evidence by examining the non-linear impact of income inequality on economic growth across all 63 Vietnamese provinces during 2018-2024, using recent panel data and multiple econometric estimations to identify threshold effects and regional institutional differences.

1. Introduction

Income inequality and economic growth have long been central topics in development economics. While economic growth is often viewed as a key driver of poverty reduction and improved living standards, rising income inequality has become a growing concern in many developing and emerging economies. Theoretical and empirical studies provide mixed evidence on whether income inequality promotes or constrains economic growth. On the one hand, inequality may encourage savings, investment, and capital accumulation. On the other hand, excessive inequality can undermine human capital formation, social cohesion, and institutional quality, thereby hindering long-term growth.

The ambiguity in existing findings suggests that the relationship between income inequality and economic growth is highly context-dependent and potentially non-linear. The seminal work of Kuznets (1955) proposes an inverted U-shaped relationship, in which inequality initially increases during early stages of development and declines as economies mature. Subsequent empirical studies, however, have produced divergent results across countries and periods, reflecting differences in economic structure, institutional capacity, and levels of development.

In Vietnam, rapid economic growth over the past decades has been accompanied by increasing regional disparities and income inequality. Despite this trend, empirical research examining the inequality-growth nexus in Vietnam remains limited, particularly at the sub-national level. Most existing domestic studies rely on qualitative approaches or outdated datasets, while empirical analyses using recent provincial-level panel data are scarce. Moreover, many studies assume a linear relationship between income inequality and economic growth, potentially overlooking important non-linear dynamics suggested by both theory and international evidence.

This study contributes to the literature on income inequality and economic growth in several important ways.

First, the paper provides new sub-national evidence on the inequality-growth nexus using provincial panel data from Vietnam covering the period 2018-2024. While a large body of literature has examined this relationship at the cross-country level, empirical studies using recent provincial-level data from emerging Southeast Asian economies remain limited. By focusing on regional variation within a rapidly transforming economy, this study offers new insights into how inequality and growth interact at the sub-national level.

Second, the study explicitly investigates the potential non-linear relationship between income inequality and economic growth by incorporating a quadratic specification of the Gini coefficient. This approach allows the identification of a threshold level of inequality beyond which its effect on growth becomes negative, thereby providing empirical support for the Kuznets-type non-linear relationship within a regional development context.

Third, the analysis highlights the role of institutional quality and labor characteristics in shaping provincial economic performance. By integrating measures such as the Provincial Competitiveness Index and trained labor ratios, the study demonstrates how governance quality and human capital influence the inequality-growth relationship across regions.

Overall, the findings contribute to the growing literature on inclusive growth in emerging economies and provide new evidence from Southeast Asia on the complex interaction between income distribution, institutional conditions, and regional economic development.

2. Literature Review

2.1. Income Inequality and Economic Growth: Evidence from Previous Studies

The relationship between income inequality and economic growth has been widely examined in the economic literature, yet no clear consensus has been reached. Empirical findings remain mixed, reflecting differences in theoretical frameworks, levels of development, data structures, and econometric approaches. Broadly, existing studies can be classified into three main strands: those identifying a positive relationship between inequality and growth, those emphasizing a negative relationship, and those highlighting non-linear or context-dependent effects.

One strand of the literature argues that income inequality can promote economic growth under certain conditions. Early panel-data studies provide empirical support for this view. Li and Zou (1998), using a large cross-country panel dataset, find a positive and statistically significant association between income inequality and economic growth. They argue that panel data techniques better capture within-country dynamics than cross-sectional analyses, which may produce biased results. Similarly, Forbes (2000), employing high-quality panel data and controlling for unobserved country-specific effects, reports a positive short-term relationship between increases in inequality and subsequent growth within countries. From this perspective, inequality may stimulate growth by encouraging savings, investment, and individual effort, particularly in the short run. Evidence from advanced economies further supports this argument. Frank (2009), analyzing state-level data in the United States, finds that rising income concentration among higher-income groups is associated with stronger long-term economic growth. Rubin and Segal (2015) also document a positive correlation, suggesting that income gains at the top of the distribution tend to be more responsive to overall economic expansion. These studies imply that inequality may foster growth by concentrating resources among groups with higher propensities to invest, although the long-term sustainability of this mechanism remains debated.

In contrast, a substantial body of research identifies a negative relationship between income inequality and economic growth. Political economy theories highlight redistribution pressures and social instability as key transmission channels. Torsten and Tabellini (1994), using both long-run historical data and post-war cross-country samples, find that greater income inequality is associated with slower economic growth, particularly in democratic settings where redistribution demands are stronger. Clarke (1995) similarly reports a robust negative relationship across various model specifications and inequality measures. Related studies emphasize political instability as an important mechanism linking inequality to weaker growth outcomes. Alesina and Perotti (1996)

argue that high income inequality increases social unrest and policy uncertainty, discouraging investment and slowing economic growth. Sub-national evidence also supports this view. Oyama (2014), using prefecture-level panel data for Japan, finds that income inequality negatively affects economic growth by reducing investment in human capital and lowering overall living standards.

A third strand of the literature reconciles these conflicting findings by emphasizing non-linear and context-dependent relationships between income inequality and economic growth. Barro (2000) provides early empirical evidence of such non-linearity, showing that inequality tends to hinder growth in low-income countries but may support growth in higher-income economies. This suggests that the growth effects of inequality depend on a country's stage of development and structural characteristics. Similar conclusions emerge from sub-national studies in developing countries. Balcilar, Gupta, Ma, and Makena (2021) agree with the non-linear relationship; however, the authors argue that increasing inequality can lead to higher tax rates, thereby both reducing private investment and creating resources for public capital investment. When the benefits from public investment outweigh the negative impact of taxes, economic growth is boosted. Conversely, if inequality is too high, leading to sharp tax increases and hindering private investment, growth will decline. Evidence from Vietnam also points to the existence of threshold effects. Yen (2015) finds that income inequality affects economic growth differently depending on its level, suggesting that inequality may promote growth up to a certain threshold, beyond which its impact becomes negative. However, due to data limitations, existing studies on Vietnam have largely relied on national-level or incomplete sub-national datasets and have paid limited attention to recent dynamics and regional heterogeneity.

Overall, the literature suggests that the relationship between income inequality and economic growth is complex, non-linear, and highly context-specific. While significant progress has been made, empirical evidence at the sub-national level in emerging Asian economies remains limited. In particular, there is a need for updated provincial-level analyses that explicitly account for non-linear effects and regional heterogeneity. This study seeks to address these gaps by examining the inequality growth relationship across Vietnamese provinces using recent panel data, thereby contributing to ongoing debates on inequality and inclusive growth in developing economies.

2.2. Research Gap

Although the relationship between income inequality and economic growth has been extensively examined, empirical evidence remains far from conclusive. While some studies suggest that income inequality may promote growth by encouraging investment and capital accumulation, others emphasize its adverse effects through channels such as social instability, unequal access to education, and inefficient resource allocation. Taken together, these mixed findings suggest that the growth-inequality relationship is highly context-specific, varying across countries, development stages, and institutional settings.

In the Vietnamese context, empirical evidence on this relationship remains relatively limited. Much of the existing literature relies on qualitative approaches or outdated datasets, while studies employing recent provincial-level panel data are scarce. Moreover, many empirical analyses assume a linear relationship between income inequality and economic growth, despite theoretical arguments, most notably the Kuznets hypothesis, pointing to potential non-linear effects. To the best of the author's knowledge, no previous study has systematically examined the non-linear impact of income inequality on economic growth across Vietnamese provinces during the period 2018-2024. Overall, existing studies provide mixed evidence on the relationship between income inequality and economic growth, suggesting that the effect is highly context-dependent and potentially non-linear. However, empirical evidence at the sub-national level in Vietnam remains limited, particularly using recent panel data. This study addresses this gap by investigating the non-linear impact of income inequality on economic growth across Vietnamese provinces during 2018-2024, thereby contributing sub-national evidence from an emerging Southeast Asian economy to the broader Asia-Pacific literature on inequality and development.

3. Theoretical Framework

3.1. Income Inequality: Concept and Measurement

3.1.1. Concept of Income Inequality

Income inequality refers to the uneven distribution of income among individuals or groups within a society or across regions. According to Kuznets (1955) income inequality reflects a situation in which a large proportion of the population earns below the average income, while a relatively small group receives substantially higher incomes. More broadly, income inequality captures disparities in income and wealth between individuals, social groups, or geographic units.

Income inequality is a common feature of both developed and developing economies and has attracted significant attention due to its potential implications for economic performance and social stability. In the Vietnamese context, income inequality persists across provinces and regions, reflecting differences in economic structure, development levels, and access to opportunities (GSO of Vietnam, 2021).

3.1.2. Measurement of Income Inequality

Various indicators are used to measure income inequality, each with its own advantages and limitations. Among these, the Lorenz curve and the Gini coefficient are the most widely applied in empirical research.

The Lorenz curve, introduced by Lorenz (1905), provides a graphical representation of income distribution by plotting the cumulative share of income against the cumulative share of the population. The greater the deviation of the Lorenz curve from the line of perfect equality, the higher the level of income inequality. While useful for visual comparison, the Lorenz curve does not provide a precise quantitative measure of inequality.

The Gini coefficient, developed by Gini (1912), quantifies income inequality based on the Lorenz curve. It ranges from 0 to 1, where 0 indicates perfect equality and 1 represents absolute inequality. Lower values of the Gini coefficient indicate a more equal income distribution, while higher values reflect greater inequality. Despite its widespread use, the Gini coefficient has limitations, as different income distributions may yield the same Gini value while exhibiting distinct distributional patterns. Nevertheless, due to its comparability and availability, the Gini

coefficient remains the most commonly used indicator in cross-country and sub-national analyses and is therefore adopted in this study.

3.2. Economic Growth: Concept and Measurement

3.2.1. Concept of Economic Growth

Economic growth refers to an increase in an economy's output of goods and services over time, typically measured by changes in real income or output indicators. Growth occurs when the productive capacity of an economy expands, allowing higher levels of income and consumption. In empirical studies, economic growth is commonly proxied by changes in real gross domestic product (GDP) or income per capita.

At the sub-national level, economic growth is measured using Gross Regional Domestic Product (GRDP), which captures the value of final goods and services produced within a province or centrally administered city over a given period. GRDP reflects regional production performance and provides a suitable indicator for analyzing growth dynamics across localities (GSO of VietNam, 2023).

3.2.2. Measurement of Economic Growth

In line with the empirical literature, economic growth in this study is measured by the growth rate of real GRDP per capita. Using per capita measures allows for meaningful comparisons across provinces with different population sizes and better reflects improvements in living standards. Growth rates are calculated as the percentage change in real GRDP per capita between consecutive periods.

3.3. Theoretical Linkages between Income Inequality and Economic Growth

Theoretical perspectives on the relationship between income inequality and economic growth are diverse and often yield conflicting predictions. These perspectives can be broadly categorized into three groups: theories suggesting a positive effect of inequality on growth, theories emphasizing negative effects, and theories proposing non-linear relationships.

3.3.1. Kuznets' Inverted-U Hypothesis

Kuznets (1955) proposed that the relationship between income inequality and economic development follows an inverted-U shape. In the early stages of development, inequality tends to increase as labor shifts from low-productivity agricultural sectors to higher-productivity industrial and urban sectors. Over time, as industrialization matures and broader segments of the population benefit from growth, inequality is expected to decline. This hypothesis implies that the impact of inequality on growth depends on the stage of development and suggests the possibility of non-linear effects.

3.3.2. Positive Channels: Incentives, Savings, and Investment

Several theoretical arguments suggest that income inequality may promote economic growth. Traditional economic theory highlights a trade-off between equity and efficiency, whereby redistributive policies may distort incentives to work and invest (Mankiw, 2004). From this perspective, higher inequality can enhance growth by strengthening incentives for effort and entrepreneurship.

The Stiglitz hypothesis further argues that higher-income individuals have a greater propensity to save. When savings are a key driver of capital accumulation, a more unequal income distribution may increase aggregate savings and, consequently, economic growth (Stiglitz, 1969). Additionally, in the presence of indivisible investment projects and imperfect capital markets, the concentration of wealth may facilitate large-scale investments that would otherwise be difficult to finance, thereby supporting growth.

3.3.3. Negative Channels: Human Capital, Institutions, and Stability

Conversely, a large body of theory emphasizes the growth-inhibiting effects of income inequality. Human capital theories argue that high inequality limits access to education and healthcare for low-income groups, reducing labor productivity and long-term growth (Todaro, 1998). These effects are particularly pronounced in developing economies with underdeveloped credit markets.

Political economy models suggest that inequality increases redistribution pressures and policy uncertainty, which may discourage investment and slow growth (Torsten & Tabellini, 1994). Moreover, socio-political instability theories highlight that high inequality raises the risk of social conflict and crime, undermining property rights and investment incentives (Alesina, Özler, Roubini, & Swagel, 1996).

3.3.4. Non-Linear and Context-Dependent Effects

Taken together, these theories imply that the relationship between income inequality and economic growth is unlikely to be linear. Moderate levels of inequality may support growth by providing incentives and facilitating investment, while excessive inequality may hinder growth by constraining human capital accumulation and increasing social and political instability. This theoretical ambiguity motivates the empirical examination of non-linear effects, particularly in developing and transition economies.

3.4. Proposed Analytical Framework

Drawing on the theoretical arguments above, this study hypothesizes a non-linear relationship between income inequality and economic growth at the provincial level in Vietnam. Income inequality is expected to influence growth through multiple channels, including investment incentives, institutional quality, labor force characteristics, and income levels. The empirical model therefore incorporates both linear and quadratic terms of income inequality, alongside key control variables, to capture potential threshold effects and regional heterogeneity.

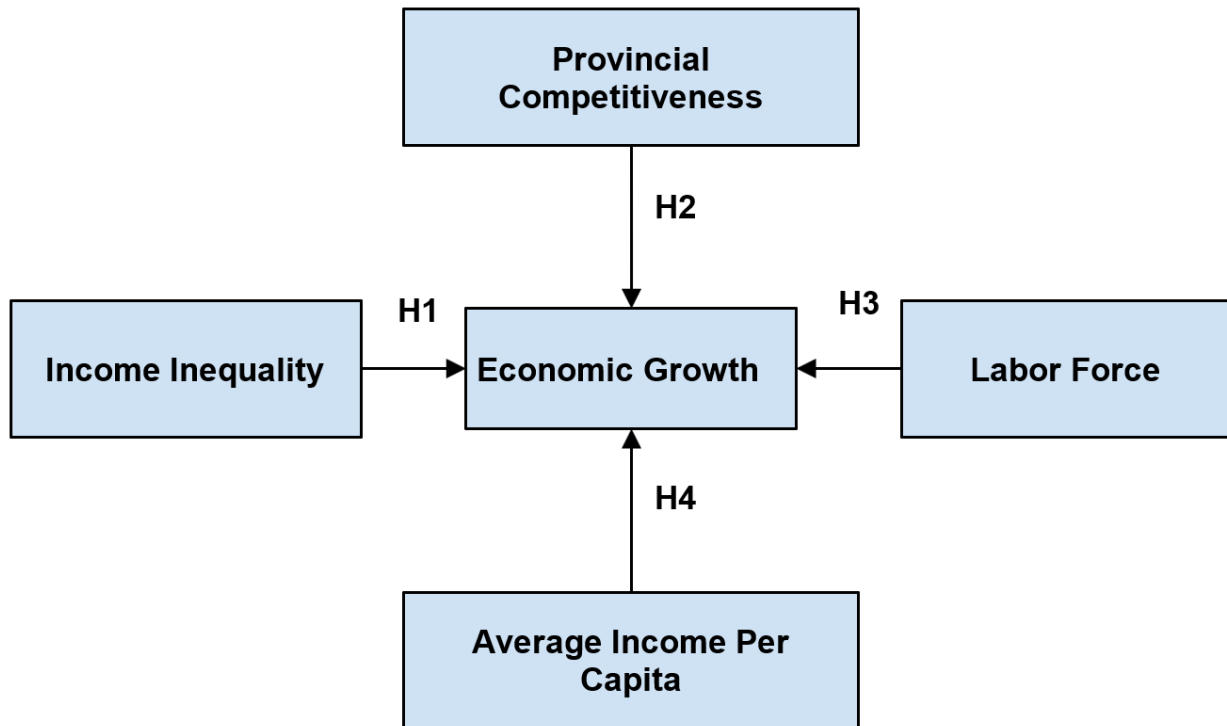


Figure 1. Relationship between income inequality and economic growth.

4. Methodology

4.1. Model Specification and Research Hypotheses

Drawing on the theoretical framework and the empirical literature, this study investigates the impact of income inequality on economic growth at the provincial level in Vietnam. Given the mixed theoretical predictions and growing empirical evidence suggesting non-linear effects, the analysis explicitly allows for a non-linear relationship between income inequality and economic growth.

Economic growth is proxied by real GRDP per capita. To reduce potential heteroskedasticity and facilitate interpretation, the dependent variable is expressed in logarithmic form.

Income inequality is measured by the provincial Gini coefficient. To capture potential non-linear effects, the squared term of the Gini coefficient is included in the model. This specification allows the identification of threshold effects, consistent with the Kuznets hypothesis and recent empirical studies.

Several control variables are incorporated to account for other determinants of provincial economic growth. Institutional quality is represented by the Provincial Competitiveness Index (PCI), which reflects local governance quality and the business environment. Labor market conditions are captured by the proportion of trained labor in the workforce, while average income per capita is included to reflect domestic demand and income effects.

Based on these considerations, the following hypotheses are proposed.

H₁: Income inequality has a non-linear impact on provincial economic growth in Vietnam.

H₂: Higher institutional quality, as measured by the PCI, positively affects economic growth.

H₃: A higher proportion of trained labor is associated with higher economic growth.

H₄: Higher average income per capita contributes positively to economic growth.

4.2. Empirical Model

To test the proposed hypotheses, the following panel data model is estimated.

$$\lngrdp = \beta_0 + \beta_1 gini + \beta_2 gini^2 + \beta_3 \lnpci + \beta_4 \lnlab + \beta_5 inc + \mu \quad (1)$$

Where:

lngrdp: Logarithmic value of gross regional product per capita by locality (million VND).

gini: Coefficient measuring inequality in income distribution at the local level (%).

gini2: The square of the coefficient measures inequality in the income distribution of each locality (%).

lnpci: Logarithmic value of the provincial competitiveness index for each locality.

lnlab: Percentage of trained labor force aged 15 and over by locality (%).

inc: Average monthly income per person in the locality (thousand VND).

4.3. Estimation Strategy

The study employs panel data estimation techniques to account for both cross-sectional and time-series variation in the data. As a benchmark, the pooled ordinary least squares (POLS) estimator is first applied. However, POLS does not control for unobserved provincial heterogeneity and may therefore yield biased estimates.

To address this issue, both fixed effects (FEM) and random effects (REM) models are estimated. The Hausman test is used to determine the appropriate specification. Diagnostic tests indicate the presence of heteroskedasticity and serial correlation in the panel data. Consequently, feasible generalized least squares (FGLS) estimation is employed to obtain efficient and robust coefficient estimates.

This multi-step estimation strategy enhances the reliability of the empirical results and ensures that the findings are not driven by model-specific assumptions.

4.4. Data Sources

The dataset covers the period 2018-2024 and consists of panel data for Vietnamese provinces and centrally administered cities. Data on real GRDP per capita, income inequality, labor force characteristics, and average

income per capita are obtained from the GSO of Vietnam. Information on institutional quality is sourced from the PCI. All monetary variables are expressed in real terms. Descriptive statistics are used to summarize the main characteristics of the data. All estimations are conducted using Stata.

Table 1. Statistical description.

Variables	Obs.	Mean	Std. dev.	Min.	Max.
grdp	441	77.755	47.531	26.1	372.1
gini	441	0.359	0.054	0.2	0.53
pci	441	65.394	3.061	56.287	75.086
lab	441	22.543	8.393	8.2	53.9
inc	441	3921.803	1270.306	1477	8937

5. Results and Discussion

5.1. Descriptive Statistics

Table 1 presents descriptive statistics for all variables used in the empirical analysis. Considerable variation is observed across provinces in terms of economic performance, income inequality, and institutional quality during the period 2018-2024. The logarithm of GRDP per capita exhibits substantial dispersion, reflecting pronounced differences in income levels and development capacity among localities. Income inequality, measured by the Gini coefficient, shows moderate variation across provinces and over time, suggesting that while inequality is a common feature nationwide, its intensity differs across regions. This variation provides a suitable basis for examining the relationship between inequality and economic growth at the provincial level. Similarly, institutional quality, proxied by the Provincial Competitiveness Index, displays notable differences across provinces, highlighting heterogeneity in governance and business environments. For the lab variable, Table 1 shows a relatively clear difference in labor characteristics between provinces and cities in Vietnam. This difference reflects disparities in the size of the workforce, population structure, and the concentration of labor in industrial and service sectors. The large dispersion of income indicates significant differences in living standards between provinces and cities. This result reflects differences in income-generating capacity and job quality between localities. Provinces with more developed economies and a high proportion of the industrial and service sectors generally achieve higher average incomes, while many localities still heavily rely on agriculture, the informal sector, and low-productivity industries, resulting in lower average incomes. The large difference between the minimum and maximum income values shows a clear differentiation in living standards among provinces during the study period.

Table 2. Results of POLS, FEM and REM model regression.

Variables	POLS	FEM	REM
gini	4.841** [2.36]	2.541** [2.26]	2.553** [2.29]
gini2	-5.767** [-2.03]	-4.474*** [-2.78]	-4.381*** [-2.76]
lnpci	1.671*** [5.44]	0.895*** [5.68]	0.928*** [5.97]
lnlab	0.304*** [7.86]	0.310*** [7.64]	0.314*** [8.32]
inc	0.000*** [17.10]	0.000*** [18.27]	0.000*** [19.34]
_cons	-5.561*** [-4.33]	-1.608** [-2.44]	-1.773*** [-2.72]
N	441	441	441
R-sq	0.718	0.806	0.806

Note: t-statistics in brackets.
** p<0.05, *** p<0.01.

5.2. Baseline Regression Results

The baseline regression results obtained from pooled ordinary least squares (POLS), fixed effects (FE), and random effects (RE) estimations are reported in Table 2. The Hausman test strongly favors the fixed effects specification, indicating that unobserved provincial characteristics are correlated with the explanatory variables. Accordingly, the fixed effects results are emphasized in the subsequent analysis.

Across specifications, the coefficient of the Gini coefficient is statistically significant, while the squared term of the Gini coefficient also remains significant with an opposite sign. This pattern provides robust evidence of a non-linear relationship between income inequality and economic growth at the provincial level in Vietnam. Specifically, the results suggest that income inequality may contribute positively to economic growth up to a certain threshold, beyond which further increases in inequality exert a negative effect on growth.

This finding is consistent with theoretical expectations derived from the Kuznets hypothesis and related non-linear growth-inequality frameworks, which argue that inequality may initially facilitate capital accumulation and investment but eventually constrain growth by limiting access to education, reducing social cohesion, and weakening human capital formation.

5.3. Effects of Control Variables

The control variables included in the model generally exhibit the expected signs and levels of statistical significance. The PCI has a positive and statistically significant effect on economic growth, underscoring the importance of institutional quality and a favorable business environment in promoting provincial economic performance. Provinces with higher PCI scores tend to experience faster growth, reflecting more efficient governance and stronger investment conditions. The labor force variable also shows a positive association with

economic growth, although its statistical significance varies across model specifications. This result suggests that while labor quantity and training contribute to growth, their effects may depend on complementary factors such as capital investment and institutional quality. Average income per capita is positively related to economic growth, indicating the role of household income and domestic demand in supporting provincial economic expansion. Higher income levels may stimulate consumption and production activities, thereby reinforcing growth dynamics.

Table 3. Regression results of the FGLS model.

Estimated covariances = 63 Estimated autocorrelations = 1 Estimated coefficients = 6			Number of obs. = 441 Number of groups = 63 Time periods = 7 Wald chi2(5) = 1856.29		
Ingrdp	Coefficient	Std. err.	z	P>z	[95% conf. interval]
gini	1.615	0.652	2.48	0.013	0.337 2.892
gini2	-2.662	0.921	-2.89	0.004	-4.467 -0.857
lnpci	0.453	0.098	4.62	0.000	0.261 0.646
lnlab	0.232	0.024	9.57	0.000	0.185 0.280
inc	0.000	7.48e-06	29.19	0.000	0.000 0.000
_cons	0.525	0.432	1.21	0.225	-0.322 1.372

5.4. Robustness and Estimation Efficiency

Diagnostic tests reveal the presence of heteroskedasticity and serial correlation in the panel data. To address these issues, feasible generalized least squares (FGLS) estimation is applied. The FGLS results, reported in Table 3, remain consistent with the fixed-effects estimates in terms of coefficient signs and statistical significance.

Importantly, the non-linear relationship between income inequality and economic growth persists under the FGLS specification, confirming the robustness of the main findings. This consistency strengthens confidence in the empirical results and supports the conclusion that the growth–inequality relationship in Vietnam is not linear and varies across levels of inequality.

The model estimation results are:

$$\lngrdp = 0.53 + 1.62gini - 2.66gini^2 + 0.45lnpci + 0.23lnlab + 0.0002inc \quad (2)$$

Considering the regression results, the FGLS model shows a high degree of fit through a large Wald chi² and statistically significant coefficients. According to the regression results, assuming other factors remain constant, income inequality has a non-linear impact on economic growth. This impact is calculated through the first derivative of GRDP with respect to Gini, expressed as follows:

$$H = 1.62 - 2 \times 2.66gini \quad (3)$$

Specifically, with $H < 0$ or $gini > 0.3045$, an increase in income inequality will lead to a decrease in economic growth. However, with $H > 0$ or $gini < 0.3045$, higher income inequality will result in higher growth. Based on using $gini = 0.3045$ as a benchmark, the study divided the data into two groups: provinces with $gini < 0.3045$ and provinces with $gini \geq 0.3045$. Therefore, the regression results show that income inequality has a non-linear impact on economic growth. The regression results also show that the Provincial Competitiveness Index (PCI) has a positive impact on the economic growth rate of localities at a significance level of 1%. Assuming other factors remain constant, a 1% change in the Provincial Competitiveness Index impacts economic growth by 0.45%. Furthermore, the regression results show that the labor force ratio has a positive impact on the economic growth rate of localities at a 1% significance level. Assuming other factors remain constant, a 1% change in the labor force ratio has a 0.23% impact on growth. Per capita income is significant at the 1% level and has a positive impact on GRDP. Assuming other factors remain constant, per capita GRDP increases by approximately 0.02% when income rises by an additional 100 thousand VND.

5.5. Summary of Key Findings

Overall, the empirical results indicate that income inequality has a non-linear impact on provincial economic growth in Vietnam during the period 2018–2024. While moderate levels of inequality may be associated with higher growth, excessive inequality appears to hinder economic performance. In addition, institutional quality, labor characteristics, and income levels play important roles in shaping provincial growth outcomes. These findings highlight the importance of considering regional heterogeneity and non-linear dynamics when analyzing the relationship between inequality and economic growth, providing a foundation for the discussion and policy implications presented in the next section.

6. Discussion

6.1. Interpreting the Non-Linear Relationship Between Income Inequality and Economic Growth

The empirical analysis reveals a non-linear relationship between income inequality, measured by the Gini coefficient, and provincial economic growth in Vietnam during 2018–2024. The results indicate that income inequality does not have a uniformly positive or negative effect on growth. At moderate levels, inequality may promote growth by encouraging savings, investment, and capital accumulation. Beyond a certain threshold, however, higher inequality constrains growth through reduced access to education, weaker human capital formation, and lower social cohesion. These findings are broadly consistent with the Kuznets hypothesis and its extensions emphasizing non-linear growth–inequality dynamics. In Vietnam's context of ongoing structural transformation, both growth-enhancing and growth-inhibiting mechanisms appear to operate simultaneously. This highlights the importance of considering inequality not only as a social outcome but also as a factor that actively shapes economic trajectories.

6.2. Regional Heterogeneity and Development Disparities

The analysis also reveals substantial regional heterogeneity in the growth–inequality relationship. Provincial-level results show that growth effects vary across regions depending on economic structure, institutional quality,

and development stage. Provinces with stronger industrial bases, higher urbanization, and better governance are more likely to benefit from moderate inequality, whereas less-developed provinces experience adverse effects at lower levels of inequality. This pattern aligns with observations from other rapidly developing Asian economies, including China, Indonesia, and Thailand, where growth has been concentrated in urban and coastal regions, leaving rural areas disadvantaged. The Vietnamese experience reinforces the argument that within-country disparities are crucial for understanding the growth-inequality nexus.

6.3. The Role of Institutions, Labor, and Income Dynamics

Institutional quality, measured by the PCI, exerts a positive and statistically significant effect on provincial growth. Strong institutions mitigate the negative impact of inequality by improving access to economic opportunities, reducing transaction costs, and encouraging investment. The labor force also positively contributes to growth, although the effect size is modest, indicating that quantity alone is insufficient; improvements in labor quality and productivity are necessary. Similarly, higher average income per capita supports growth by strengthening domestic demand. Together, these results suggest that the growth-inequality relationship is shaped by structural and institutional factors. Policies that enhance governance, human capital, and income levels can help maintain inequality within a range conducive to sustainable growth.

6.4. Implications for the Asia-Pacific Literature

This study contributes to the Asia-Pacific literature by providing sub-national evidence of a non-linear growth-inequality relationship. While most studies focus on cross-country comparisons, the findings underscore the importance of provincial-level dynamics in emerging economies. The results demonstrate that inequality can both support and hinder growth depending on its level and regional context. Future comparative studies could explore how institutional quality, labor market conditions, and regional development policies interact with inequality to shape growth trajectories across Asian countries.

7. Solutions

7.1. Controlling Income Inequality Within a Reasonable Range to Support Economic Growth

The estimation results show that income inequality has a non-linear impact on economic growth, with a Gini coefficient transition point of approximately 0.3045. This implies that income inequality is not entirely a negative factor, but rather it only hinders growth when it exceeds a level appropriate for economic growth. Therefore, economic policy should not aim to eliminate inequality, but rather focus on controlling it within a reasonable range by implementing policies that focus on expanding opportunities and raising the income of the bottom. To make policies more effective, the principle of "the right people - the right support - at the right time" should be added. Accordingly, the same household or individual in the low-income group should have access to a continuous chain of support, including minimum income assistance, support for access to basic services, and support for integration into the formal labor market. Payment and verification of beneficiaries can be based on the electronic identification and authentication infrastructure according to Decree 59/2022/ND-CP and Project 06/QĐ-TTg, thereby standardizing beneficiary data and reducing duplication between programs. For localities with lower levels of inequality, the policy focus is not on complete liberalization but on maintaining preventive measures to avoid rapidly increasing inequality during growth. The appropriate approach is to ensure minimum social security and stable provision of basic services such as education, health, and social assistance, while establishing a mechanism for regular monitoring to intervene promptly when signs of increasing income inequality appear. A threshold-based approach helps the policy avoid two problems: not undermining growth momentum where inequality has not yet become a risk, and not allowing inequality to exceed a level that harms economic growth.

7.2. Improving the Quality of Institutions and the Business Environment to Promote Sustainable Economic Growth

The regression results show that the PCI has a positive and statistically significant impact on economic growth. This reflects the important role of institutional quality and the business environment in local economic growth. This requires the State to move beyond general administrative reform messages and instead design specific incentive mechanisms. Accordingly, localities that improve management quality, increase transparency in procedures, and reduce costs for businesses will be prioritized in accessing development resources, such as public investment, investment promotion, or piloting new mechanisms. Conversely, localities that are slow to reform will face greater pressure to explain and be held accountable. Furthermore, to improve the business environment, administrative procedure reforms need to be closely integrated with the digitalization of processes and a reduction in direct interaction, as these factors easily lead to informal costs. By combining digitalization with electronic identification and authentication, reforms can focus on key areas such as business registration, construction permits, land, taxes and customs, and labor procedures. This can significantly reduce transaction costs for businesses, especially small and medium-sized enterprises, improve competitiveness, and expand formal employment.

7.3. Developing the Workforce Towards Improving Quality and Productivity

In the current context, labor policy needs to prioritize improving quality rather than simply increasing the number of jobs. To avoid a scattered approach, the government should focus on the two most effective interventions, including developing skills aligned with market needs and connecting workers with formal employment. Based on this, it is necessary to promote demand-driven training between localities, businesses, and training institutions, while ensuring that training programs are linked to specific skill standards and certifications. This approach will help workers accumulate skill credits, making it easier for them to move within the formal labor market, instead of returning to work in the informal sector after completing their courses. For vulnerable groups, rural workers, and migrant workers, policies should reduce the opportunity cost of vocational training through tuition support and minimum living expenses during the training period, combined with short-term, flexible, and seasonal training courses. When training meets market needs and is standardized in terms of skills, labor policies

will simultaneously improve productivity and create conditions for sustainable income growth, thereby reducing the pressure of inequality in the long term.

7.4. Increase Per Capita Income to Stimulate Domestic Demand

Per capita income has a positive impact on economic growth. Although the magnitude of the impact is small, this result reflects the important role of household income and domestic demand in local economic growth. In the Vietnamese context, solutions to increase income should avoid an administrative approach and focus on two main channels: increasing income through stable employment and increasing income through improved labor productivity. When the business environment improves, businesses operate more efficiently and expand production; formal employment increases, thereby creating a foundation for stable income and domestic purchasing power. At the state level, this direction can be implemented through policies to develop local industry clusters and supply chains, aiming to create more productive jobs, combined with skills training and employment services so that local workers can participate directly. This approach will help avoid attracting projects that focus solely on large capital investments without creating significant income opportunities for the community. Furthermore, raising the real income of low-income groups must be accompanied by controlling the risk of rising living costs, because when essential costs increase rapidly, nominal wage increases do not translate into purchasing power. Therefore, income policy needs to be placed within an overall strategy aimed at improving labor productivity and reducing household transaction costs when accessing public services. When income is closely linked to employment, skills, and institutional reforms, domestic demand is strengthened more sustainably, contributing to narrowing income inequality.

8. Conclusion

This study examined the relationship between income inequality and economic growth in Vietnam using provincial-level panel data for the period 2018-2024. The findings indicate that the relationship between growth and inequality is non-linear and shaped by regional and institutional conditions. While economic growth remains a key driver of development, its distributional effects vary considerably across provinces, underscoring the importance of regional heterogeneity in shaping inclusive growth outcomes. By adopting a sub-national perspective, the study contributes to the Asia-Pacific economic literature by providing new empirical evidence from a rapidly transforming emerging economy. The Vietnamese case illustrates how growth, inequality and regional development interact in complex ways, offering insights relevant to other economies in the region facing similar development challenges. Several limitations should be acknowledged. The relatively short time span and data constraints may limit the ability to capture long-term trends, and other potentially relevant factors have not been fully incorporated into the analysis. Future research could extend the timeframe, include additional institutional and social variables, or conduct comparative sub-national studies across Asia-Pacific economies to further advance understanding of the growth-inequality nexus and the conditions for inclusive development.

References

- Alesina, A., Özler, S., Roubini, N., & Swagel, P. (1996). Political instability and economic growth. *Journal of Economic Growth*, 1(2), 189-211. <https://doi.org/10.1007/BF00138862>
- Alesina, A., & Perotti, R. (1996). Income distribution, political instability, and investment. *European Economic Review*, 40(6), 1203-1228. [https://doi.org/10.1016/0014-2921\(95\)00030-5](https://doi.org/10.1016/0014-2921(95)00030-5)
- Balcilar, M., Gupta, R., Ma, W., & Makena, P. (2021). Income inequality and economic growth: A re-examination of theory and evidence. *Review of Development Economics*, 25(2), 737-757. <https://doi.org/10.1111/rode.12754>
- Barro, R. J. (2000). Inequality and growth in a panel of countries. *Journal of Economic Growth*, 5(1), 5-32. <https://doi.org/10.1023/A:1009850119329>
- Clarke, G. R. G. (1995). More evidence on income distribution and growth. *Journal of Development Economics*, 47(2), 403-427. [https://doi.org/10.1016/0304-3878\(94\)00069-0](https://doi.org/10.1016/0304-3878(94)00069-0)
- Forbes, K. J. (2000). A reassessment of the relationship between inequality and growth. *American Economic Review*, 90(4), 869-887. <https://doi.org/10.1257/aer.90.4.869>
- Frank, M. W. (2009). Inequality and growth in the United States: Evidence from a new state-level panel of income inequality measures. *Economic Inquiry*, 47(1), 55-68. <https://doi.org/10.1111/j.1465-7295.2008.00122.x>
- Gini, C. (1912). *Variability and mutability: A contribution to the study of distributions and statistical relationships*. Bologna, Italy: Tipografia di Paolo Cuppini.
- GSO of Vietnam. (2021). *Trends in income inequality in Vietnam during the period 2016-2020*. General Statistics Office of Vietnam. Retrieved from <https://www.nso.gov.vn/du-lieu-va-so-lieu-thong-ke/2021/06/xu-huong-bat-binh-dang-trong-phan-phoi-thu-nhap-o-viet-nam-giai-doan-2016-2020/>
- GSO of Vietnam. (2023). *Provincial statistics office – gross regional domestic product (GRDP)*. General Statistics Office of Viet Nam. Retrieved from <https://www.nso.gov.vn/du-lieu-dac-ta/2019/12/hctctk-cap-tinh-tong-san-pham-tren-dia-ban-grdp/>
- Kuznets, S. (1955). Economic growth and income inequality. *The American Economic Review*, 45(1), 1-28.
- Li, H., & Zou, H.-F. (1998). Income inequality is not harmful for growth: Theory and evidence. *Review of Development Economics*, 2(3), 318-334. <https://doi.org/10.1111/1467-9361.00045>
- Lorenz, M. O. (1905). Methods of measuring the concentration of wealth. *Publications of the American Statistical Association*, 9(70), 209-219. <https://doi.org/10.1080/15225437.1905.10503443>
- Mankiw, N. G. (2004). *Principles of economics* (3rd ed.). Mason, OH: Thomson/South-Western.
- Oyama, M. (2014). *New evidence on income distribution and economic growth in Japan*. ISEER Discussion Paper, No. 917. Retrieved from <https://ideas.repec.org/p/dpr/wpaper/0917.html>
- Rubin, A., & Segal, D. (2015). The effects of economic growth on income inequality in the US. *Journal of Macroeconomics*, 45, 258-273. <https://doi.org/10.1016/j.jmacro.2015.05.007>
- Stiglitz, J. E. (1969). A re-examination of the Modigliani-Miller theorem. *The American Economic Review*, 59(5), 784-793.
- Todaro, M. P. (1998). *Economics for the third world*. Hà Nội, Vietnam: NXB Giáo dục.
- Torsten, P., & Tabellini, G. (1994). Is inequality harmful for growth? *The American Economic Review*, 84(3), 600-621.
- Yen, H. T. (2015). *The impact of income inequality on economic growth of Vietnam*. Master's Thesis. National Economics University, Hanoi, Vietnam.