

The Effect of Urbanization on Vietnam's Unequal Income Distribution

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ABSTRACT: This study analyzes the impact of urbanization on income inequality in Vietnam using panel data regression methods, specifically applying the Random Effects Model (REM) and Feasible Generalized Least Squares (FGLS) to assess the effects of urbanization on income inequality. The dataset comprises information from 63 provinces and cities in Vietnam from 2013 to 2023, ensuring the study's feasibility and reliability by capturing diverse socio-economic characteristics. The estimation results indicate an inverted U-shaped relationship between urbanization and income inequality. In the initial stages, urbanization increases income inequality; however, after surpassing a certain threshold, further urbanization helps reduce inequality. Based on these findings, the authors propose relevant policy implications to mitigate income inequality at different stages of urbanization across localities.

KEYWORDS: Urbanization, income inequality, inverted U-shaped relationship, Kuznets.

1. INTRODUCTION

Urbanization is the process of forming and developing urban-based living conditions, production forces, and population distribution while simultaneously enhancing existing urban areas in all aspects of life, economy, society, and culture. Urbanization is considered an inevitable consequence of development (Annez & Buckley, 2009; Castells-Quintana, 2018; Kuznets, 1955). However, urbanization has also led to significant socio-economic challenges, among which inequality has become a primary research concern. In particular, income inequality is regarded as a crucial dimension of social inequality and is a pressing issue for many countries worldwide. Numerous studies indicate that income inequality is intricately associated with other dimensions of inequality, hence serving as a reflection of its total magnitude and trajectory (Maasoumi, 1999).

Empirical studies have frequently examined the inverted U-shaped Kuznets hypothesis (Kuznets, 1955), which posits a relationship between economic development and income inequality. Research findings often support the existence of this inverted U-shaped pattern in both low- and high-middle-income countries. Based on this theory, several empirical studies have also explored the relationship between urbanization and income inequality (Wu & Rao, 2017; Ali et al., 2022; Maket et al., 2023).

In Vietnam, rapid urbanization has been observed, with the proportion of the population living in urban areas increasing from 32% in 2013 to over 41% in 2023. However, urbanization remains unevenly distributed across provinces and cities. While major urban centers such as Hanoi and Ho Chi Minh City have experienced significant development, regions such as the Central Coast, Central Highlands, and Northern mountainous areas continue to face challenges, leading to significantly lower levels of urbanization. According to the authors' synthesis, although income levels have increased, the income growth rate of the poorest group consistently lags behind that of the wealthiest group. This results in a widening income gap between the richest quintile (Group 5) and the poorest quintile (Group 1). The income disparity coefficient during this period remains relatively high, ranging from 2.72 to 15.91 across 63 provinces. At the national level, this coefficient increased from 9.3 in 2012 to a peak of 10.2 in 2019 before declining to 7.5 in 2023. These trends indicate that wealth disparity is still a significant problem that requires the Vietnamese government to continue paying attention to it and implementing legislative changes.

In general, many authors in the world have studied the issue of inequality, the relationship between economic development and income inequality, in Vietnam, the issue of income inequality is still ongoing but has not been exploited by many authors. Therefore, further research on this topic is necessary to ensure that urbanization progresses in alignment with the country's development objectives, particularly in the context of economic fluctuations and the impact of the COVID-19 pandemic.

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In this study, we utilize data from 63 provinces and cities in Vietnam to assess the impact of urbanization on income inequality. Income inequality is measured using the income disparity coefficient, which is calculated as the ratio of the income of the highest 20% of the population to that of the lowest 20% in each province or city. This coefficient is widely used in previous studies on inequality and is expected to provide concrete figures illustrating the extent of income disparity, thereby offering a clear perspective on the effects of urbanization on income inequality in this study.

This paper is structured as follows: Section 1 introduces the research problem. Section 2 reviews the literature on the relationship between urbanization and income inequality. Section 3 describes the data and research methodology. Section 4 presents the research findings and discusses the results. Finally, Section 5 concludes the study and provides policy implications based on the findings.

Theoretical basis

The **inverted U-shaped hypothesis** proposed by Kuznets (1955) serves as a foundational theory in studying the relationship between income inequality and urbanization. Kuznets' hypothesis posits that, during the early phases of urbanization, economic progress results in increasing inequality. However, after reaching a certain threshold, continued economic growth contributes to reducing inequality. This theory has been widely applied to analyze the impact of urbanization on inequality in various studies (Jaumotte et al., 2013; Azziamonti et al., 2014; Wu & Rao, 2017; Ali et al., 2022; Sagala et al., 2014). Additionally, this framework has been used to explain the mediating role of government policies in managing urbanization effectively to ensure income redistribution (Sulemana et al., 2019).

Moreover, **Lewis' dual-sector model** (1954) suggests that as the traditional agricultural sector becomes overcrowded, surplus labor transitions into the industrial sector, driving industrial growth. As a result, economic production increases, fostering economic growth and gradually reducing wage disparities between the two sectors. This model provides insights into rural-to-urban migration dynamics in developing economies.

Similarly, the **Harris-Todaro migration model** (1970) emphasizes that migration is influenced by 'pull' factors related to destination areas, including expected wage differentials between rural and urban areas, employment opportunities, differences in living standards, and urban lifestyle preferences (Lee, 1966; Ngoc et al., 2017). Industrialization and urbanization (Lewis, 1954), along with migrant social networks (Dang Nguyen Anh, 1998), further shape migration patterns.

Furthermore, the **New Economics of Labor Migration (NELM)** posits that migration decisions depend not only on individual migrants but also on household characteristics (Stark & Bloom, 1985; Stark & Taylor, 1991). Factors such as economic conditions at both origin and destination locations significantly influence migration 'push' and 'pull' dynamics (Mayda, 2007; Kim & Cohen, 2010; Ackah & Medvedev, 2012).

Although the theories of **Lewis (1954)**, **Harris and Todaro (1970)**, and the **New Economics of Labor Migration (NELM)** acknowledge the impact of urbanization on income inequality, they do not provide concrete results regarding the extent of income disparity.

2. LITERATURE REVIEW

The study by Wu and Rao (2017) confirmed the existence of an inverted U-shaped relationship between urbanization and income inequality in the period from 1987 to 2010 across 20 provinces in China. Specifically, the early stages of urbanization increased the wealth gap, but when the urbanization rate reached 53%, it began to reduce the wealth disparity. The study also demonstrated that income inequality tends to rise as urbanization increases.

On the other hand, Sulemana et al. (2019) pointed out that urbanization has a positive effect on income inequality. The authors used panel data from 48 sub-Saharan African countries during 1996-2006, employing econometric regression methods (FEM, REM, FGLS, and GMM). Their findings showed an inverted U-shaped relationship between urbanization and income inequality, in line with Kuznets' hypothesis. The study also highlighted that to achieve a fair society, effective government policies are required to manage urbanization in a way that ensures fair income distribution. Similar results were found in previous studies (Castells-Quintana et al., 2015; Adams & Klobodu, 2019).

According to Ali et al. (2022), urbanization affects income disparities to varying degrees depending on whether the country has low, middle, or high income. The study observed 67 countries during 1990-2014, using the Moment Quantile Regression (MMQR) method. The results indicated that urbanization tends to increase inequality from the third quantile in high-income countries (HIC); urbanization has no impact on inequality at lower and middle quantiles but significantly increases inequality at higher quantiles in upper-middle-income countries (UMIC); and urbanization reduces inequality across all quantiles in lower-middle-income countries (LMIC). By applying the MMQR model, the study found evidence of the Kuznets inverted U-shaped curve in both UMIC and LMIC.

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In Vietnam, Nguyen Thi Hoai Thu (2024) conducted a study confirming the inverted U-shaped relationship between urbanization and income inequality. The study used a fixed-effects model (FEM) to analyze data from 63 provinces in Vietnam during 2015-2019. The results showed that when the urbanization rate exceeded 35.1%, income inequality tended to decrease, reflecting the inclusive nature of urbanization in Vietnam. Additionally, the inverted U-shaped relationship was confirmed by Ha et al. (2019) in a study from 2006-2016. According to the research, urbanization significantly reduces income inequality in the long run, while it has a negligible effect in the short term.

Contrary to other studies, an investigation by the International Growth Centre (2017) using data from Tanzania found no significant relationship between urban concentration and income inequality. Similarly, Mdingi et al. (2023) examined data from South Africa from 1989 to 2018 and determined that urbanization has a long-term negative effect on inequality, despite the absence of a short-term impact. Overall, while many studies have explored the impact of urbanization on income inequality worldwide, the results remain inconsistent. Furthermore, research on this topic in Vietnam is still limited. Given these gaps in the literature, this study aims to contribute to filling the research void.

3. DATA DESCRIPTION AND RESEARCH METHODOLOGY

Data Sources

The research data was collected from the Statistical Yearbook of 63 provinces and cities in Vietnam for the period 2013–2023. This dataset includes income elasticity, the proportion of the urban population to the total population (representing the level of urbanization), GRDP growth, foreign direct investment, the industrial development index, and the human development index.

An exception is the Provincial Governance and Public Administration Performance Index (PAPI), which represents institutional quality. This index was obtained from research data by the Centre for Development Research and Community Support (CECODES), under the Vietnam Union of Science and Technology Associations, and the United Nations Development Programme (UNDP) in Vietnam. PAPI was initiated by the UNDP in Vietnam in 2009 to evaluate the effectiveness of administrative agencies by comparing citizen satisfaction levels.

Research Model

To assess the impact of urbanization on income inequality, the study is based on Kuznets' theory (1995) and previous research by Jaumotte (2013) and Nguyen Thi Hoai Thu (2024). In addition, control variables are included in the model to enhance its explanatory power and demonstrate the extent of their impact on income inequality during the study period.

The research model is constructed as follows:

$$HSCG_{i,t} = \beta_0 + \beta_1 Urban_{i,t} + \beta_2 Urban^2_{i,t} + \beta_3 GRDP_{i,t} + \beta_4 FDI_{i,t} + \beta_5 HDI_{i,t} + \beta_6 Industry_{i,t} + \beta_7 PAPI_{i,t} + \beta_8 TRADE_{i,t} + \beta_9 VUCA_{i,t} + \mu_{i,t} + \varepsilon_{i,t}$$

Where, for province i in year t :

HSCG: Measures income inequality using the income gap ratio between the richest 20% and the poorest 20% of the population.

Urban: The percentage of the urban population within the total population, representing the level of urbanization.

GRDP: Economic growth rate.

FDI: Foreign direct investment.

HDI: Human development index.

Industry: Industrial development index.

PAPI: Provincial Governance and Public Administration Performance Index.

TRADE: Trade openness.

VUCA: A dummy variable representing an unstable context.

β_0 : Intercept coefficient.

$\beta_1 - \beta_9$: Regression coefficients measuring the impact of independent and control variables.

μ_i : Province-specific unobservable characteristics that remain constant over time.

$\varepsilon_{i,t}$: Error.

Research Methodology

To assess the impact of urbanization on income inequality, this study employs a panel data regression model using the Random Effects Model (REM) and Feasible Generalized Least Squares (FGLS). The choice between REM and the Fixed Effects Model (FEM) is determined through the Hausman test. If the test results indicate that REM suffers from issues such as heteroskedasticity and autocorrelation, the FGLS method is applied to correct these problems and ensure the accuracy of the estimates.

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The research model is built upon Kuznets' theory, combined with previous empirical studies. The model formulation captures the relationship between income inequality (HSCG) and independent variables such as urbanization, economic growth, foreign direct investment, industrial development, governance efficiency, trade openness, and the impact of the COVID-19 pandemic. The variables are tested to ensure the absence of multicollinearity using the Variance Inflation Factor (VIF).

The study hypothesizes that urbanization follows an inverted U-shaped relationship with income inequality—initially increasing inequality in the early stages but eventually reducing it after surpassing a certain threshold.

Symbol	Variable Name	Variable Description	Unit	Expected Sign
<i>Dependent Variable</i>				
HSCG	Income Elasticity Coefficient	Percentage ratio of income between the richest 20% and the poorest 20% of the population.	%	-
<i>Independent Variables</i>				
Urban	Urbanization Level	Urbanization rate measured as the percentage of the urban population over the total population of each province/city in Vietnam.	%	-
GRDP	Economic Growth Rate	Percentage increase/decrease in gross regional domestic product (GRDP) compared to the same period in the previous year.	%	-
FDI	Foreign Direct Investment	Total foreign direct investment in each province/city in Vietnam.	Million USD	-
HDI	Human Development Index	A composite index reflecting human development across three aspects: health (measured by life expectancy at birth), knowledge (education), and income (GNI per capita). HDI ranges from 0 to 1 ($0 \leq \text{HDI} \leq 1$).		-
Industry	Industrial Development Index	Percentage of industrial output produced in the current period compared to the base period, measured at the provincial level.	%	-
PAPI	Provincial Governance and Public Administration Performance Index	Measures citizens' experiences and perceptions of the effectiveness of governance and public administration.		-
TRADE	Trade Openness	Total import-export value divided by Vietnam's GDP for each year.	%	-

Source: Compiled by the Authors.

4. RESULTS AND DISCUSSION

Descriptive Statistics of Variables

Table 2 presents descriptive statistics, including the mean, standard error, minimum, and maximum values of the variables. The income elasticity coefficient ranges from 2.72 to 15.91, indicating a significant disparity in wages across different regions. Additionally, the urbanization rate varies from 9.8004% to 89.6696%, reflecting an uneven level of urbanization among provinces and cities. Other indices also demonstrate imbalances through their statistical values.

These findings highlight considerable disparities in income distribution, urbanization levels, gross regional domestic product (GRDP), foreign direct investment (FDI), industrialization, and the effectiveness of governance and public administration.

Table 2. Descriptive Statistics of Variables

Variables	Observations	Mean	Standard Error	Minimum	Maximum
HSCG	693	7.1501	1.4447	2.72	15.91
Urban	693	29.1405	17.3017	9.8004	89.6696

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GRDP	693	6.9301	4.1381	-14.58	43.2806
HDI	693	0.6824	0.0571	0.479	0.854
FDI	693	499.9583	1072.636	-98.4	8669.7
Industry	693	109.5547	14.7330	43.3	322.8
TRADE	693	0.9379	0.4950	0.1540	4.8110
VUCA	693	0.2727	0.4457	0	1
PAPI	693	39.8773	3.8783	25.26	4.881

Source: Estimation from Authors.

Regression Results

According to the Hausman test, the Prob > Chi2 value is 0.1690, which is greater than 0.05. Therefore, we accept the null hypothesis (H0), confirming that the Random Effects Model (REM) is appropriate for the analysis. Additionally, the Variance Inflation Factor (VIF) value is 1.58, which is less than 2, indicating that the data does not violate the assumption of multicollinearity.

However, both the heteroscedasticity and autocorrelation tests yield Prob = 0, which is less than 0.05. This suggests that the REM model suffers from both heteroscedasticity and autocorrelation issues. To address these problems, the Feasible Generalized Least Squares (FGLS) model is employed.

Table 3: Estimation Results

Independent Variables	Coef.	Std. Err.
Urban	0.027**	0.0138
Urban^2	-0.0003*	0.0001
GRDP	-0.00543**	0.0056
HDI	-7.365***	1.459
FDI	0.00001	0.00004
Industry	0.00249	0.0018
VUCA	0.0676*	0.060
PAPI	-0.0653***	0.00880
TRADE	0.0709	0.1288
Obs	693	
R-squared	0.873	
Multicollinearity Test	Mean VIF = 1.58	
Heteroscedasticity Test	Prob > Chibar2 = 0.0000	
Autocorrelation Test	Prob > F = 0.0000	
Hausman Test	Prob > Chi2 = 0.1690	

*, **, *** correspond to significance levels of 10%, 5%, and 1%, respectively; standard errors are in parentheses.

Source: Estimation from Authors.

The study indicates that urbanization has a positive impact on income inequality at a 5% significance level (B=0.027), meaning that as urbanization increases, the elasticity coefficient moves closer to 1. This result is consistent with the findings of Sulemana et al. (2019). However, when squaring the Urban variable, the result turns negative at a 90% confidence level (B= - 0.003), suggesting the existence of an inverted U-shaped relationship between urbanization and income distribution. Specifically, inequality increases up to a certain threshold and then decreases in the later stages of urban population growth. This finding complements previous studies both in Vietnam (Nguyen Thi Hoai Thu, 2024) and internationally (Wu Rao, 2017; Martinez-Vazquez et al., 2009).

On the other hand, the estimated coefficient of the GRDP variable is negative, reflecting that income distribution gradually becomes more equitable during periods of economic growth. This can be explained by the fact that economic growth often addresses unemployment issues, thereby providing the poor with opportunities to generate income and stabilize their livelihoods. However, this phenomenon is not uniform between rural and urban areas (Majumdar & Partridge, 2009).

At a 1% significance level, the regression coefficients of the PAPI and HDI variables are negative, indicating an inverse relationship with the dependent variable. This is attributed to the role of appropriate institutions and policies in fostering

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economic concentration, which contributes to reducing income inequality (Le et al., 2020). Moreover, effective policies improve infrastructure, enabling households to increase per capita consumption and reduce poverty gaps (Nchofoung & Asongu, 2022). Additionally, the rise in HDI in urban areas has created a better economic environment, reducing income inequality by improving living standards and income levels across social classes. This is consistent with the findings of Alvari (2009). Supporting this argument, Vietnam has achieved significant human development milestones, particularly between 2017 and 2022. The composite HDI index increased from 0.687 in 2017 to 0.703 in 2021 and 0.726 in 2022 (GSO). UNDP reports indicate a significant leap in Vietnam's Human Development Index (HDI), as the country moved from the medium category in 2016–2018 to the high category in 2019–2022. Simultaneously, HSCG gradually declined during this period (GSO), particularly in cities with high HDI levels such as Hanoi, Hai Phong, Ba Ria - Vung Tau, and Ho Chi Minh City.

Conversely, the dummy variable VUCA has a positive coefficient at a 90% confidence level. This issue aligns with the reality of the COVID-19 period, a time of global economic crisis. According to Guerrieri et al. (2020), supply shocks caused by worker layoffs and business closures during the pandemic may lead to shifts in aggregate demand. This, in turn, translates into increased unemployment, exacerbating wealth disparities.

Although the study incorporates variables such as foreign direct investment (FDI), industrialization (Industry), and trade openness (TRADE) to supplement previous research, the results indicate that these variables do not significantly affect income inequality between the richest 20% and the poorest 20% of the population. This contradicts the research group's initial expectations.

5. CONCLUSIONS AND POLICY IMPLICATIONS

This study assesses the impact of urbanization on income inequality in Vietnam using data from 63 provinces and cities over the 2013–2023 period. The estimation results confirm the existence of an inverted U-shaped relationship between urbanization and income inequality in Vietnam, consistent with Kuznets' hypothesis. Based on these findings, the authors propose several policy implications to mitigate income inequality while ensuring sustainable development.

Firstly, in regions with low urbanization rates, particularly in the Central region, Central Highlands, and Northern mountainous areas, priority should be given to infrastructure development and economic support policies. Efforts should be made to implement occupational transition plans and vocational training for rural workers to ensure their access to job opportunities in urbanized areas. Meanwhile, in regions with high urbanization rates, it is essential to maintain a balance between economic development and reducing income inequality through policies such as housing price controls, social welfare improvements, and equal employment opportunities.

Secondly, the study highlights the crucial role of job creation and workforce training in reducing income inequality. These factors are vital for the transition from agriculture to industry and services. The government should develop skill training programs and enhance educational curricula to improve workers' qualifications and competitiveness. Mechanisms for monitoring and evaluating the impact of urbanization on income inequality across different regions should also be established, with close coordination between central and local authorities to implement appropriate adjustments.

Thirdly, the findings emphasize the importance of strengthening multidimensional poverty reduction policies, supporting small and medium-sized enterprises in both urban and rural areas, and promoting green and sustainable economic models. These initiatives can create more jobs and narrow income disparities.

This study only evaluates the impact of urbanization on inequality in Vietnam during the 2013–2023 period. Since 2019, Vietnam's socio-economic conditions have been significantly affected by the COVID-19 pandemic, leading to fluctuations in income inequality. Additionally, this study uses the income gap coefficient, which has certain limitations and may not comprehensively capture inequality. Future research should incorporate additional inequality measures and multidimensional analyses for a more holistic perspective. Examining the effects of urbanization on income inequality beyond 2023 should also consider new factors such as technology, environmental changes, and demographic shifts. The proposed recommendations aim not only to reduce income inequality but also to contribute significantly to Vietnam's sustainable development goals.

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