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Income Inequality and its Effect on Economic Growth in Peru

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ABSTRACT

This research explores the relationship between income inequality and economic growth in Peru, focusing on the decade from 2007 to 2017. Using the Gini coefficient as a measure of income inequality and GDP annual growth rates as an indicator of economic performance, this study analyses the impact of wealth disparities on Peru's economic trajectory. Peru, with its rapidly growing economy, provides a compelling case to examine whether economic expansion leads to reduced inequality or exacerbates social disparities. The results reveal that, while early periods of strong economic growth coincide with reductions in inequality, this trend stagnates in later years, suggesting that growth alone may not be sufficient to further alleviate income disparities and vice versa. The study highlights the importance of government interventions, social safety nets, and redistributive policies in ensuring that the benefits of economic growth are equitably across different socioeconomic groups. The findings challenge the assumption that economic growth automatically reduces inequality, emphasizing the need for targeted policies in developing countries. This research contributes to the broader understanding of the complex dynamics between income inequality and economic growth, offering policy recommendations aimed at fostering a more equitable distribution of wealth in Peru.

Keywords: Economic growth, income inequality, human capital, Gini coefficient.

1. Introduction

Income inequality is widely known as a major issue with profound implications for social stability and economic growth. This problem is one of the seventeen Sustainable Development Goals the ONU has stablished (2016). In addition to being a matter of social justice, growing wealth disparities between the rich and the less fortunate present serious obstacles to long-term sustainable economic growth. Different economic theories take various positions on this issue. While some argue that inequality promotes innovation and investment and thus accelerates

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economic growth, others argue that it undermines social cohesion and limits opportunities for the less fortunate.

This research examines how income inequality affects economic growth, focusing specifically on Peru in the ten-year period between 2007 and 2017. Peru presents a compelling case for analyzing the relationship between income inequality and economic performance in developed and developing contexts, as it is one of the most dynamic and complex economies in the world. Over the past years, the Peruvian economy has grown, but this growth has been accompanied by income inequality and a series of factors that may have been involved in conclusions and addressing of the problem. It is imperative for policymakers to understand the impact of inequality on economic growth, and if economic growth means less inequality, to design strategies that balance social equity and economic progress.

This research focuses on the following main research question: What is the effect of income inequality on economic growth in Peru between 2007 and 2017? To answer this question, the study will examine the relationship between Peru's economic growth and income inequality using tools such as graphs and tables to display analyse and discuss data to identify the mechanisms through which inequality affects or not economic performance.

The study will include data between 2007 and 2017, providing an in-depth understanding of how Peru's economic growth has been affected by income inequality. The study aims to reveal the complex relationships between economic development and income distribution, focusing on macroeconomic indicators and socioeconomic data. The study, however, has some limitations. Obstacles such as missing data and the possibility of subjective and unmeasurable variables may compromise the accuracy of the results.

Introduction, literature review, methodology, results, discussion, and conclusions are the six sections that make up the structure of the article, which provides a structured analysis. To provide the basis for the analysis, the literature review will examine current theories and empirical research on income inequality and economic growth. The methodology section will describe the data analysis strategy and research design. The results will be presented in the Results section and then interpreted in the context of the existing literature in the Discussion section. Finally, the conclusion provides the most important results and statements aimed at fostering more equitable economic growth in Peru.

2. Literature Review

Diverse theoretical viewpoints exist regarding the relationship between economic growth and income inequality. Traditional economic theories propose an inverse U-shaped relationship between economic growth and income inequality, as seen in Simon Kuznets' hypothesis. Kuznets

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(1995) argues that as a nation develops and becomes more affluent, inequality initially rises during initial stages of growth but eventually declines as wealth is more evenly distributed. Similarly, Solow's growth model (1956) emphasizes the significance of capital accumulation in driving growth, suggesting that inequality can incentivize the wealthy to invest, which in turn promotes economic expansion. However, these models were introduced more than 65 years ago and often oversimplify the intricate relationships between growth and inequality.

More complex viewpoints are introduced by modern economic theories. For instance, the technological progress theory posits that economic growth is primarily driven by profit-maximizing investments. Romer (1990) suggests that sustained growth hinges not merely on population size but on sufficient human capital, which fosters research and reaps the benefits of global markets. In this view, unequal access to education and research opportunities hinders the development of human capital, thereby constraining a society's overall growth potential.

Empirical investigations provide mixed results on the relationship between inequality and growth. Barro (2000) finds little evidence of a clear correlation, noting that "evidence from a broad panel of countries shows little overall relation between income inequality and rates of growth and investment." In contrast, Persson and Tabellini (1991) argue that high inequality hampers growth, suggesting that "in societies where distributional conflict is more prominent, political decisions tend to produce economic policies that diminish private incentives for capital accumulation and knowledge development." These conflicting findings underscore the complexity of the relationship between inequality and economic progress, highlighting the intricate cause-and-effect dynamics.

Previous studies shed light on the complex connection between economic development and income inequality. While contemporary viewpoints highlight the critical role that human capital and access to technological innovations play, conventional theories offer fundamental insights into how inequality may impede growth. Empirical research provides deeper insights by presenting contradictory findings and suggesting that both excessive inequality and unequal access to resources may have significant and varied influences on economic performance. These conflicting results underscore the importance of incorporating a broader range of factors, historical contexts, and perspectives to fully understand how income inequality affects long-term economic development.

3. Data and Methodology

The data for this analysis is derived from reliable national and international institutions, including the World Bank and the Instituto Nacional de Estadística e Informática (INEI). The

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variables in this study are the Gross Domestic Product (GDP) growth rate, and the Gini coefficient, which measures income inequality.

The primary dataset covers the years 2007 to 2017, a period selected to capture significant economic fluctuations and structural changes in Peru. For robustness, the study also investigates time-specific variations within this period, providing additional insights into the consistency of income inequality's impact on economic growth across distinct phases of economic expansion and contraction.

The GDP growth rate is a key indicator of Peru's long-term economic performance. It reflects the annual percentage change in GDP, which measures the economy's expansion and its capacity to create wealth and opportunities for its population. As Tim Callen (2020) points out, GDP is crucial because it provides insights into both the size of the economy and its overall health. Real GDP growth is commonly used as a barometer for economic vitality, though it fluctuates in cycles—sometimes experiencing booms, and at other times facing slowdowns or recessions. By focusing on this growth rate, the study seeks to evaluate how income inequality may shape the broader dynamics in a developing country.

The Gini coefficient variable is a widely used metric to measure income inequality. The Gini coefficient ranges from 0 to 1, with values closer to 0 standing for greater equality in income distribution and values closer to 1 showing higher levels of inequality. This variable serves as a proxy for the degree of income disparity within Peru and is crucial for understanding how economic disparities may change overall economic growth.

While it serves as a useful indicator of income disparity, Osberg (2016) cautions that relying solely on the Gini index can be misleading. He highlights that the rich-to-poor income ratio can vary by a factor of over 12, and the income share of the top one percent can differ by more than 16 times, even with the same Gini coefficient. This suggests that focusing exclusively on the Gini index may obscure important nuances in inequality, potentially distorting the accuracy and interpretation of its impact. By analyzing changes in the Gini coefficient over time, the study aims to uncover whether reducing inequality can contribute to a dynamic and complex economy.

Together these variables provide a comprehensive framework for analyzing the relationship between income inequality and economic growth in Peru, ensuring that the analysis captures not only the direct effects of inequality but also the broader economic and social context.

The econometric model used in this study is based on an analysis, where the variables are the GDP growth and the Gini coefficient. The general form of the regression equation is as follows:

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$$GDP\ Growth = \beta\ 0\ \ + \beta\ 1\ \ Gini\ Coefficient + \beta\ 2\ \ Education\ Investment + \beta\ 3\ \ Health\ Expenditure + \beta\ 4\ \ Unemployment\ Rate + \epsilon$$

Where:

β_0 is the intercept.
β_1, β_2, β_3, β_4, are the coefficients for the independent and control variables.
ϵ is the error term.

The results of the Gini Coefficient Variable data were gathered from the Instituto Nacional de Estadística e Informática (INEI).

Table 1.Evolution of Income Inequality (Gini Coefficient), by Geographic Areas and Domains, 2007 – 2017

Geographical Areas and Domains	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
National	0.50	0.48	0.47	0.46	0.45	0.45	0.44	0.44	0.44	0.44	0.43
Urban	0.46	0.43	0.43	0.42	0.41	0.41	0.40	0.40	0.40	0.40	0.40
Rural	0.44	0.44	0.43	0.42	0.43	0.43	0.42	0.41	0.41	0.41	0.40

Source: INEI – Encuesta Nacional de Hogares 2007 – 2017

This table shows the evolution of income inequality in Peru, measured by the Gini coefficient. The Gini coefficient is a widely used measure of income distribution, where higher values indicate more inequality. From 2007 to 2017, the national Gini coefficient declined steadily, indicating a reduction in inequality from 0.50 to 0.43. Both urban and rural areas saw improvements, with urban areas decreasing from 0.46 to 0.40, and rural areas dropping from 0.44 to 0.40. This table highlights the gradual decline in inequality across Peru and offers a detailed view of how income distribution has changed in different regions. The data comes from the National Household Survey (Encuesta Nacional de Hogares), conducted by the Instituto Nacional de Estadística e Informática (INEI) from 2007 to 2017, which is a key and reliable source for analyzing socioeconomic trends in Peru, including poverty and inequality. The Gini coefficients are based on data from these surveys, offering an accurate picture of income distribution.

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Table 2. GDP growth (annual %) - Peru (2007 – 2017)

Year	GDP growth (annual %)
2007	8.52
2008	9.13
2009	1.10
2010	8.33
2011	6.33
2012	6.14
2013	5.85
2014	2.38
2015	3.25
2016	3.95
2017	2.52

Source: World Bank and the Organization for Economic Co-operation and Development.

This table presents the annual percentage growth rate of Peru's Gross Domestic Product (GDP) from 2007 to 2017. The GDP growth rate is a crucial economic indicator, as it reflects the pace at which a country's economy is expanding or contracting over a given year. Higher growth rates show periods of rapid economic expansion, while lower or negative rates may point to economic slowdowns or recessions.

In the case of Peru, the table shows notable fluctuations in economic performance during this period. The country experienced growth in 2007 and 2008, with rates of 8.52% and 9.13%, respectively, followed by a significant slowdown in 2009, when the growth rate dropped to 1.10% due to the global financial crisis. After this dip, the economy rebounded, with robust growth rates between 2010 and 2013, peaking at 8.33% in 2010. However, from 2014 onward, there was a noticeable deceleration in growth, with rates falling to as low as 2.38% in 2014 and staying relatively modest through 2017.

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This table is critical for understanding the macroeconomic backdrop of the study, as it highlights key periods of economic boom and deceleration that may have influenced trends in income inequality during the same period.

Table 3. Peru GDP Growth (annual %) and Gini Coefficient (2007-2017)

Year	GDP growth (annual %)	Income Inequality (Gini Coefficient)
2007	8.52	0.5
2008	9.13	0.48
2009	1.10	0.47
2010	8.33	0.46
2011	6.33	0.45
2012	6.14	0.45
2013	5.85	0.44
2014	2.38	0.44
2015	3.25	0.44
2016	3.95	0.44
2017	2.52	0.43

Source: Banco Mundial - Data from the World Bank, the Organization for Economic Co-operation and Development and the INEI – Encuesta Nacional de Hogares 2007 – 2017

This table displays two core indicators over a decade: the annual GDP growth rate and the Gini coefficient. The GDP growth rate measures the annual change in the value of goods and services produced within the country, reflecting overall economic performance. The Gini coefficient, on the other hand, is a statistical measure of income inequality, with values ranging from 0 (perfect equality) to 1 (maximum inequality).

By presenting both variables together, this table provides insight into how the economy's growth was occurring alongside changes in income distribution. The inclusion of both the GDP growth rate and the Gini coefficient is essential for understanding the broader macroeconomic environment, which is central to analyzing potential correlations between inequality and growth.

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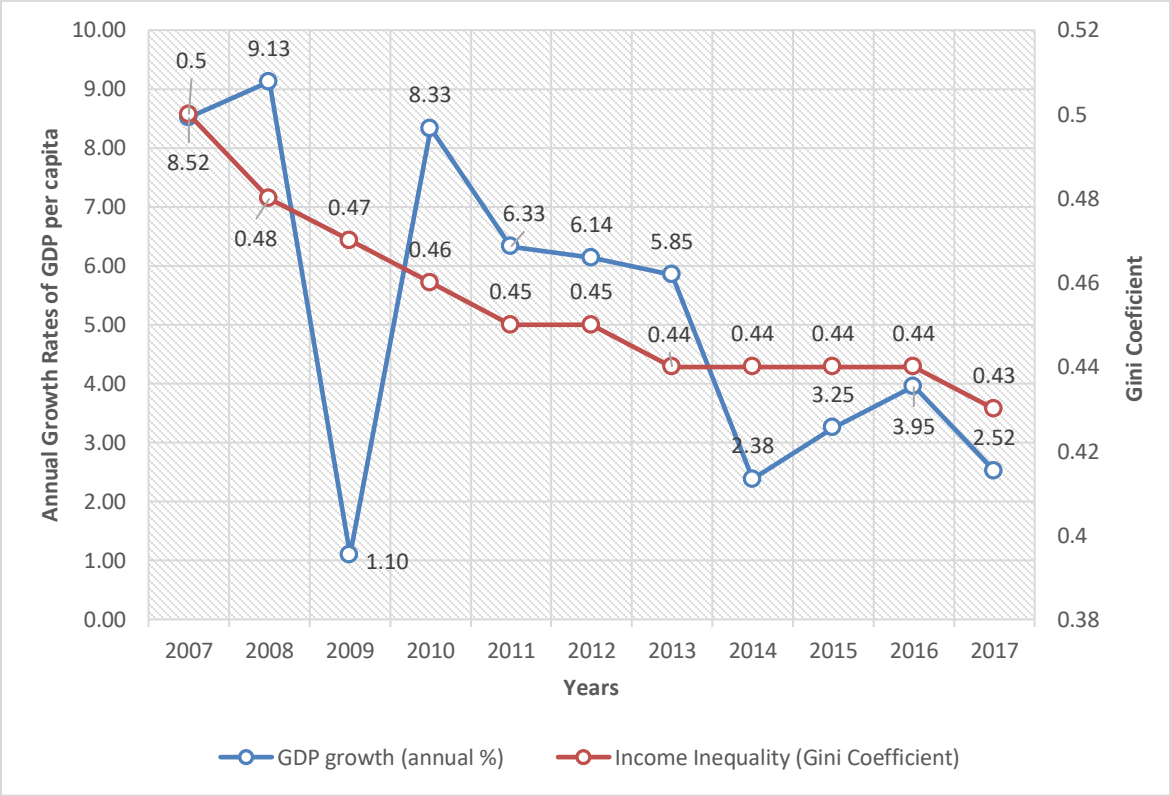
The table serves as a visual aid to follow the trends in these two key variables, easing the transition to more complex analysis in later sections of the study.

4. Results and Discussions

Graph N° 1. Annual GDP Growth and Income Inequality (National) in Peru (2007-2017)



The graph depicting Peru's GDP growth and the Gini coefficient from 2007 to 2017 reveals important trends and raises several points of discussion on the relationship between economic growth and income inequality. As GDP growth increased during the early years of this period, income inequality steadily declined. Then, the Gini coefficient consistently decreased while the economy experienced a decline, which could imply an inverse relationship between economic expansion and inequality. However, while this is visible, it does not necessarily imply causation, as other factors, such as social policies or public investments, may also have contributed to the observed decline in inequality.

Despite the first reduction in income inequality during years of robust growth, the graph also highlights an interesting stagnation in the Gini coefficient from 2014 to 2016. Although GDP growth remained positive and increasing during these years, income inequality barely changed,

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suggesting that economic growth alone may not be sufficient to further reduce inequality once a certain level of income distribution has been reached. This raises questions about whether the benefits of growth were equitably distributed across different socioeconomic groups or whether structural issues in the economy concentrated the gains among wealthier segments of society. Periods of economic slowdown, particularly in 2009 and 2014, offer further insights. During these years, GDP growth dropped significantly, yet the Gini coefficient did not show a corresponding increase. Instead, income inequality remained stable or even slightly improved, suggesting that Peru may have been able to mitigate the effects of economic downturns on income distribution. This could imply that redistributive policies or social safety nets helped shield lower-income groups from the worst impacts of economic slowdowns. These observations support the argument that government intervention plays a crucial role in keeping equity, even when growth is weak.

Finally, the graph invites debate on the effectiveness of growth-driven economic models, such as trickle-down economics. While growth appeared to coincide with reductions in inequality in the earlier years, the later period, in which inequality stagnated despite continued growth, challenges the idea that growth alone is enough to create broad-based improvements in income distribution. This suggests that while economic growth can contribute to reducing inequality to some extent, sustained and more fair outcomes likely require deeper structural changes to the economy. The trends in the graph offer a nuanced view of the relationship between growth and inequality, pointing to the complexity of achieving both economic prosperity and social equity.

5. Conclusion

This research has explored the intricate relationship between income inequality and economic growth in Peru, revealing that while economic expansion can alleviate poverty, the benefits are often unequally distributed. However, to fully understand this relationship, it is essential to consider the broader context in which Peru, as a developing nation, runs. Political instability, economic recessions, and global macroeconomic events, such as the 2008 financial crisis, play significant roles in shaping income distribution and growth trajectories. These factors can disrupt growth, deepen inequality, and make recovery more challenging for vulnerable populations. Peru's status as a developing country adds further complexity. Economic indicators, while useful, often do not capture the nuanced realities on the ground. For instance, GDP growth rates or income averages may not reflect the disparity experienced across different regions or social classes. These tools, though valuable for analysis, should be used with caution and complemented by qualitative data and a deep understanding of local conditions.

In conclusion, this research underscores the need for a multifaceted approach to addressing income inequality in Peru. By considering not only economic but also political and global

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factors, policymakers can develop more informed and effective strategies to ensure equitable growth. The findings of this study highlight that inequality is not a simple byproduct of growth but a complex issue that requires ongoing attention to foster long-term development.

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