Jurnal Pemberdayaan Masyarakat
Volume 4 Nomor 4 Tahun 2025 | Hal. 813–825
ykgm.org

ISSN 2962-8091
DOI: 10.46843/jpm.v4i4.551

Mapping Regional Economic Resilience: Analysis of Volatility and GRDP Recovery of Poverty Reduction in Indonesia

Sutrisno[1*], Hardian Mursito[2], Muhamad Nur El Farabi[3], Anna Nurfarkhana[4]
[1]Digital Business Study Program, Faculty of Education and Social Sciences, Universitas Indraprasta PGRI, Indonesia
[2,4]Economic Education Study Program, Faculty of Education and Social Sciences, Universitas Indraprasta PGRI, Indonesia
[3]Informatics Engineering Study Program, Faculty of Engineering and Computer Science, Universitas Indraprasta PGRI, Indonesia

ABSTRACT

Regional economic resilience in the face of internal and external economic shocks plays a central role in shaping the standard of living for a community and creating sustainable regional development. The purpose of this study is to map regional economic resilience by analyzing GRDP volatility, the level of post-pandemic economic recovery, and the relationship between economic growth and poverty indicators. Using a quantitative and descriptive-analytical approach, the analysis of economic volatility, recovery rates, and growth rates produced the following findings: (1) Economic resilience varies across Indonesia. Provinces with diversified economies show lower volatility, while regions that rely on extractive sectors tend to have high volatility; (2) The use of both constant and current price bases for GRDP calculations, bases ADHK and ADHB, showed similar growth trends at the macro level. However, these different methods yielded significant variations in detail, offering distinct perspectives on each region's economic performance. (3) Structural and methodological factors influence the results, which are then used to assess the strength of each economic sector. By understanding these methodological differences and the dynamics of growth, volatility, and recovery, policymakers can formulate targeted intervention strategies to support integrated community welfare and optimize resource allocation, thereby promoting economic stability and growth.

ARTICLE INFORMATION

Keywords:
COVID-19; Economic growth; economic volatility; gross regional domestic product; recovery rate

Correspondent Author:
Sutrisno

Email:
sutrisno3831@gmail.com

Recommended citation: Sutrisno., Mursito, H., Farabi, M. N. E., & Nurfarkhana, A. (2025). Mapping Regional Economic Resilience: Analysis of Volatility and GRDP Recovery of Poverty Reduction in Indonesia. *Jurnal Pemberdayaan Masyarakat, 4*(4), 813-825.

INTRODUCTION

Economic growth at the regional level plays a central role in shaping people's standard of living and creating sustainable regional development. Economic growth measures the extent to which economic activity generates additional income for the community over a specified period. High economic growth and its sustainable process are crucial for the sustainability of economic development, particularly in regions (Adao et al., 2024). Regional development is an effort to continually improve the quality of life for the Indonesian people, leveraging regional and national capabilities to utilize existing technological advances (Giannakis et al., 2024). The principles of sustainable development encompass economic, social, and environmental considerations. Jie et al. (2023) show that natural net financial accounts, natural resources, and economic growth are positively associated with the ecological footprint. Environmental sustainability is a long-term result of socio-economic development. Economic development is a process of investment activities aimed at altering the structure and balance of inter-sectoral linkages to enhance long-term economic growth and overall public welfare in a country or region (Ngubane et al., 2023). To further strengthen the

foundation and resilience of the regional economy through future development planning, it is deemed necessary to identify factors that influence economic growth (Tabash et al., 2024).

One of the key strategic issues in Indonesia's economic development is poverty alleviation (Erlando et al., 2020). Poverty is defined as a person's inability to meet their basic needs due to a lack of power in accessing or controlling economic resources (Affandi et al., 2025). According to a release by Badan Pusat Statistik (BPS) on July 25, 2025, the poverty rate was recorded at 8.47%, a decrease from 8.57% in September 2024 (BPS, 2025). The number of poor people also fell to 23.85 million. However, 18 provinces still have a poverty rate below the national average. Unequal economic development is a significant contributor to poverty. Therefore, poverty alleviation and equitable development are important aspects of the government's policy agenda. Various poverty alleviation programs and policies have been implemented, which is evident in the decline in the number of people living in poverty. According to Badan Pusat Statistik, Indonesia has made significant progress in reducing its poverty rate, which decreased to 9.36 percent in March 2023, compared to its peak of 10.2 percent during the pandemic (World Bank, 2023). This indicates that sustainable economic growth and targeted support initiatives can enhance people's welfare, particularly in sectors such as agriculture (USAID, 2023).

However, the poverty reduction rate in Indonesia is multidimensional, so its definition and measurement also vary (Erlando et al., 2020). This is due to the decline in the global economy, unsuccessful policies of a country, and natural disasters or calamities that affect a region. If this issue is not addressed immediately, the shocks can have direct and long-term negative impacts on the livelihoods of people in the area (Bristow & Healy, 2020). Regional economic resilience is a crucial indicator of a region's ability to withstand economic shocks, such as the COVID-19 pandemic that affected the world in 2020. Indonesia achieved economic growth of 5.0 percent in 2023, driven by robust private consumption and increased public spending (IMF, 2024). However, global challenges such as economic uncertainty and commodity price volatility remain a threat to national economic stability (World Bank, 2024).

According to data from Badan Pusat Statistik, economic disparities between regions continue to be a significant challenge to Indonesia's economic development. This is reflected in the significant differences in GRDP per capita between provinces, which indicates a gap in the distribution of economic activity and community welfare (BPS, 2023). Furthermore, the problem of poverty cannot be separated from other economic problems, namely income inequality. A strong relationship exists between poverty, inequality, and economic growth (Barro, 1999; Suryadarma et al., 2005). This increase is in line with the slowdown in poverty reduction that has occurred. This shows that improving economic growth is not accompanied by an even distribution of income. High economic growth that does not lead to a decrease in poverty rates results in a widening disparity in income and consumption between the poor and the rich. The human development factor plays a significant role in reducing income inequality (Arkum & Amar, 2022). Therefore, income inequality is another crucial aspect that warrants more attention in poverty alleviation efforts. High economic volatility in several regions, particularly those reliant on primary sectors such as mining and agriculture, underscores their vulnerability to external shocks (Haque et al., 2022). This is evident from the significant fluctuations in GRDP during the 2018-2023 period, which reflect the challenges in maintaining regional economic stability (Bank Indonesia, 2023). A study is needed that aims to analyze how economic resilience at the regional level can be measured, particularly through fluctuations or volatility in Gross Regional Domestic Product (GRDP), and how the regional economic recovery process contributes to poverty alleviation efforts.

Despite the advances made in the resilience literature over the past several decades, resilience has yet to develop into a comprehensive theory. Scholars have identified four main types of resilience

– engineering, ecological, evolutionary, and transformative – in the context of RER. In this context, economic resilience encompasses three primary dimensions: economic stability, adaptive capacity, and the speed of recovery (Martin & Sunley, 2020). Previous research has shown that metropolitan counties are more resilient than other types of areas. Related variety exhibits a strong positive effect on industrial resilience. This effect appears to be driven by intermediate and rural counties, which particularly benefit from related variety (Grabner & Modica, 2022). Mapping regional economic activities aims to determine the extent to which a region can withstand various economic shocks, both caused by external factors such as global crises and natural disasters and internal factors such as changes in economic policies and political instability (Becchetti et al., 2024). Regional economic resilience can be assessed by how well the region manages its economic resources and recovers from shocks. Economic volatility refers to fluctuations in a region's economic growth over a specific period. High volatility often reflects economic instability that can affect people's welfare (Ramey & Ramey, 1995). A highly volatile GRDP can indicate economic instability in the region, which can be caused by various factors, such as changes in commodity prices, crises in specific sectors, or dependence on vulnerable economic sectors (Aji, 2022). This volatility analysis is important because it highlights the regional economy's vulnerability to significant economic shifts, which could exacerbate poverty and other socio-economic issues. GRDP recovery measures the extent to which a region can return to a positive level of economic growth after a decline or stagnation (Feriyanto et al., 2020). This recovery can occur through fiscal policy, investment, increasing productivity in key sectors, or structural reforms that encourage inclusive and sustainable growth. Gnangnon (2025) shows that structural economic vulnerability reduces economic growth (in particular when it exceeds a certain level) and induces greater volatility of economic growth.

Economic recovery after the COVID-19 pandemic has become a significant focus in many regional economic studies. According to the World Bank (2023), the rate of economic recovery of a region is greatly influenced by its economic structure, fiscal policy, and level of digitalization. Regions with robust digital infrastructure tend to recover more quickly than those that lag in technology adoption (McKinsey, 2021). According to the trickle-down theory, high economic growth is expected to automatically reduce poverty through job creation and increased income (Todaro & Smith, 2020). However, Wan et al. (2021) demonstrate that growth played a significant role in achieving the remarkable reduction in poverty. Conversely, income inequality has played a minor role in exacerbating absolute poverty but a significant role in increasing relative poverty. Instead, government-led pro-poor policies must be instituted by providing employment, education, training, and other opportunities to the disadvantaged groups, in addition to the usual social assistance. Poverty often becomes a deeper problem when the regional economy experiences volatility or decline. Therefore, a stable economic recovery is essential in reducing poverty levels. Poverty alleviation requires policies that target sectors capable of creating jobs, enhancing people's skills, and distributing the benefits of economic growth more evenly (Balasubramanian et al., 2023).

Regions with high levels of volatility tend to have more difficulty in reducing poverty due to the difficulty in creating stable and sustainable growth (Chang & Li, 2024). Therefore, poverty alleviation strategies must include efforts to reduce volatility, such as through economic diversification, strengthening sectors that are more resilient to shocks, and increasing economic competitiveness (Zhang et al., 2022). Overall, mapping regional economic resilience using volatility analysis and GRDP recovery provides a clear picture of how well a region can survive and develop in the face of economic uncertainty (Arrafiqi & Arifin, 2024). This is crucial for designing economic policies that not only encourage growth but also effectively reduce poverty. Based on this, it is necessary to map regional economic resilience through an analysis of GRDP volatility and the level of economic recovery after the pandemic, as well as examining the relationship between economic growth and poverty indicators,

such as the depth (P1) and severity (P2) of poverty. By understanding these patterns, this study aims to provide more effective policy recommendations that support inclusive and sustainable economic development in each province of Indonesia.

METHOD

This study uses a quantitative approach with a descriptive-analytical method. The quantitative approach was chosen because this study focuses on analyzing numerical data to measure economic volatility and the level of regional recovery (Creswell & Creswell, 2023). The descriptive-analytical method is used to describe and analyze regional economic resilience patterns and their relationship to poverty indicators. In this study, volatility is measured using the standard deviation of GRDP per capita growth during the 2018-2023 period. Data collection utilizes regional GRDP data from Badan Pusat Statistik, as well as the Poverty Depth & Severity Index, along with related social and economic indicators.

This study uses several data analysis techniques. For the initial stage of our analysis to measure regional economic resilience, one key indicator we used was the volatility of economic growth. To measure this volatility, we calculated the standard deviation of the Gross Regional Domestic Product (GRDP) growth. The calculation process began by collecting historical GRDP growth data. From this dataset, we first computed the average value (μ) of all GRDP growth figures. Next, we found the difference between each growth value (x) and the average, then squared that difference. All the squared results were summed up and then divided by the number of observations (n). The final result was then square-rooted to obtain the standard deviation (σ), which represents the level of volatility. The higher the value of σ, the greater the fluctuation or instability of a region's economic growth (Gujarati & Porter, 2023).

The second stage in measuring the level of economic recovery is to calculate the Recovery Rate. To do this, we compare the Gross Regional Domestic Product (GRDP) data from the most recent year with the GRDP from a base year. The calculation process is quite simple: we take the GRDP value of the most recent year (GRDPt) and subtract the GRDP of the base year (GRDPt-n). The result is then divided by the GRDP of the base year and multiplied by 100% to get a percentage. This figure provides a clear picture of how quickly and how effectively a region recovers its economy from a shock (World Bank, 2023).

The third step is to analyze the Growth Rate to measure economic performance over time by comparing the value in the current period (Vt) with the value from the previous period (Vt-1). The calculation begins by finding the difference between these two values, which is then divided by the value from the previous period. After that, the result is multiplied by 100% to get the percentage growth. This figure provides a clear picture of the magnitude of change, whether an increase or a decrease, that occurred between the two periods. In this way, we can see if a sector or the economy as a whole is expanding, stagnant, or contracting (Badan Pusat Statistik, 2023).

RESULTS AND DISCUSSION

Based on data obtained from BPS, the analysis of Indonesia's regional economic growth for the period 2018-2023 reveals significant variations between provinces. Based on GRDP per capita ADHK (At Constant Prices), the average national economic growth experienced significant fluctuations, especially during the COVID-19 pandemic period. Several important findings in the analysis of regional economic growth began with the highest average growth before the pandemic (2019), reaching 3.97%. In 2019, the period preceding the COVID-19 pandemic, global and domestic economic conditions remained relatively stable. Throughout 2019, Indonesia's economic growth was approximately 5%, with rates of 5.07%, 5.05%, and 5.02% in the first, second, and third quarters,

respectively (Normasyhuri et al., 2021). The average growth of 3.97% indicates a conducive investment climate and fiscal and monetary policies that support growth.

However, in the fourth quarter of 2019, when the COVID-19 outbreak began to spread and enter the Southeast Asia region, Indonesia's economic growth declined to 4.97% (Akhmad, 2022). This is partly because the Indonesian government has begun to implement restrictions on people's movements, resulting in a decrease in population activity. People also tend to hold back on spending or consumption due to concerns that economic conditions will worsen. Such phenomena must be understood in the context of long-standing critiques regarding the limitations of economic systems, their consumerist values, and their disconnection from biophysical reality. A critical reflection on the Coronavirus pandemic is combined with a review of how economists have defended economic growth as sustainable, Green, and inclusive, despite systemic limits and multiple crises – including the climate emergency, economic crash, and pandemic. Instead of rebuilding the old, flawed political economy, what the world needs now is a more robust, just, ethical, and equitable social-ecological economy (Spash, 2021).

Furthermore, the deepest economic contraction occurred in 2020, with an average decline of 2.47% (Badan Pusat Statistik, 2021). The COVID-19 pandemic has had a significant impact on all economic sectors. The implementation of increasingly widespread social restrictions and a decline in global economic activity have led to a slowdown in economic activity. The contraction of 2.47% reflects the direct impact of the health crisis on economic activity, with declining consumption, investment, and trade (Normasyhuri et al., 2021). This is similar to 2019, when every country was still adapting to the COVID-19 pandemic. At that time, no country was prepared to face COVID-19, resulting in economic collapse in every country (Hu et al., 2022). Economic recovery in Indonesia became evident in 2021, with a growth rate of 2.89% (Badan Pusat Statistik, 2022). In 2021, during the ongoing pandemic, the government took steps to manage and adapt the economy, which were widely implemented. These steps include providing social assistance to the community, providing tuition assistance for private campuses, and providing cash incentives to the lower middle class (Suhada et al., 2022). This has elicited reactions from various economic sectors, including stimulus payments, operational adjustments, and the easing of restrictions, which are gradually showing positive effects (Manik, 2022).

The recovery momentum continued in 2022 with a growth of 4.44% (Badan Pusat Statistik, 2023). In 2022, economic conditions showed a stronger recovery, with growth reaching 4.44%. This reflects the success of government policy measures and the adaptation of economic actors in overcoming the impact of the pandemic. Sectors that experienced a downturn, particularly tourism, manufacturing, and trade, showed increased activity in line with the easing of restrictions and the acceleration of vaccination rates. Since 2022 and then in 2023, the Indonesian economy has begun to show a more positive trend. Although starting from a high base in 2022, the Indonesian economy still managed to record strong growth of 5.04% in the fourth quarter of 2023 and 5.05% for the full year of 2023 (Badan Pusat Statistik, 2024).

Regional economic volatility analysis shows significant differences in economic resilience between provinces (Megaritis et al., 2025). This volatility value is based on the concept of standard deviation in macroeconomic theory, which measures the level of uncertainty or risk in a region's economic growth (Chen et al., 2024). Theoretically, the higher the standard deviation, the higher the volatility, which indicates significant economic fluctuations (Ullah et al., 2024). The standard deviation of economic growth approaching or exceeding 5% is considered quite high and indicates significant volatility. A value below 2% is considered a relatively low fluctuation, indicating stability (Hsu et al., 2023). Based on the calculation of the standard deviation of GRDP growth in 2024 (Bapenas, 2025), the following was found: 1) The provinces with the highest volatility are West Papua Province (18.48),

Papua Province (18.33), and North Maluku Province (8.33). Meanwhile, the provinces with the lowest volatility are Banten Province (0.73), South Kalimantan Province (0.85), and DI Yogyakarta Province (0.86). Several provinces show very high volatility, especially in eastern Indonesia, while provinces in Java tend to have low volatility with moderate growth. The volatility (measured by the standard deviation of growth) and the average economic growth of provinces in Indonesia are presented in Figure 1.

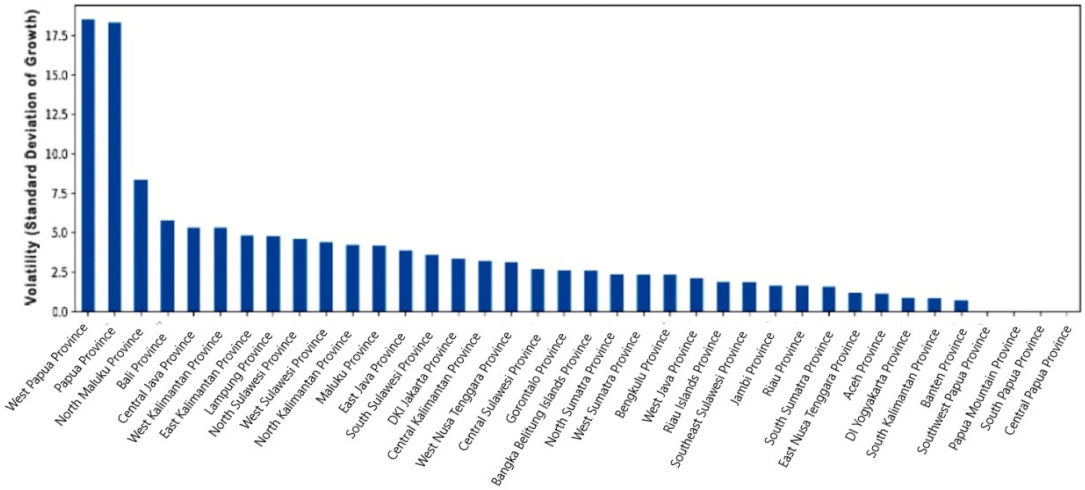

Figure 1. Volatility in Indonesia (Bapenas, 2025)

The recovery rate measures how quickly and effectively a region recovers from the impact of a recession or economic downturn. In this study, the recovery rate analysis focuses on the period after the contraction in 2020. Based on the analysis of ADHK's per capita GRDP data calculated using descriptive statistics, the average recovery rate was 3.39%, with a standard deviation of 12.06%. The results show an average recovery value of 3.39% with a standard deviation of 12.06, indicating that the recovery rate varies significantly, with substantial disparities between regions. Some regions can rebound quickly, while others struggle to recover economically. This disparity highlights the economic inequality between provinces. Factors such as economic diversification and local policies may be contributing causes (Goniewicz et al., 2023). In more detail, the provinces with the highest recovery rates are presented in Table 1.

Table 1. Provinces with the Highest Recovery Rates

Province	Recovery_Rate
Riau Islands	57.29
West Java	3.27
Bangka Belitung Islands	1.55
North Kalimantan	1.48
Central Kalimantan	1.14

As shown in Table 1, the highest recovery was observed in the Riau Islands Province at 57.29%. This indicates that after a period of contraction (with a negative growth value), the subsequent growth was significantly higher than the previous decline. This indicates a very rapid surge in economic recovery or a rebound effect from a sharp decline. Economic recovery can be done by increasing government spending to increase aggregate demand and government investment (Sunge et al., 2024). Increasing government spending in each country during the post-COVID-19 economic recovery is achieved by providing direct assistance to the community, either in the form of incentives or meeting

essential needs (Siddik, 2020). Another approach that can be taken is fiscal policy, specifically providing extensive credit or loan assistance to business actors, enabling them to survive during the pandemic (Cooray et al., 2023). Furthermore, the Provinces with the Lowest Recovery Rate are presented in Table 2.

Table 2. Lowest Recovery Provinces

Province	Recovery_Rate
West Nusa Tenggara	0.22
Lampung	0.20
East Kalimantan	0.20
West Sulawesi	0.17
West Papua	0.16

As shown in Table 2, the lowest recovery rate was observed in West Papua Province at 0.16. This indicates that the positive growth that occurred after the decline was unable to compensate for it, resulting in a very slow recovery process. This condition indicates a vulnerable economic structure or obstacles in the economic recovery process, such as inadequate infrastructure, insufficient investment, or less supportive policies (Sunge et al., 2024). The growth of the province with the highest recovery rate is presented in Table 3.

Table 3. Highest recovery rate growth

Province	2019	2020	2021	2022	2023	Recovery Rate
Riau Islands	-0.08	4.77	1.85	3.53	3.67	57.29
West Java	4.30	-0.77	2.50	4.24	3.83	3.27
Bangka Belitung Islands	3.95	-2.33	3.62	2.99	3.01	1.55

As shown in Table 3, West Java Province, with a recovery rate of 3.27, exhibits a growth trend that experienced a slight contraction in 2019 or 2020, followed by stronger positive growth. This pattern follows the concept of recovery rate, where a recovery phase follows the initial decline (contraction). Given the moderate recovery rate, West Java exhibits a stable recovery process, although the initial decline may cause the process to be slower compared to areas that rebound sharply. Based on the theory of economic growth, the factors that influence the rate of economic growth in a region can be grouped into two categories, namely supply factors, such as technological advances, increased human resources, the discovery of new materials, and demand factors, such as increased income and changes in economic structure (Akbar et al., 2022). This is what has not been studied in depth in this study. A more in-depth study is needed to analyze which factors are more dominant in Indonesia.

The recovery rate is measured every time a region records a decline (negative growth). The recovery rate is calculated as the ratio of positive growth in the following year to the magnitude of the absolute decline in the year of contraction (Gambetti et al., 2019). A recovery ratio greater than 1 indicates that the growth rebound exceeds the previous decline, demonstrating a firm response. Meanwhile, a recovery value <1 indicates a slower recovery compared to the magnitude of the previous decline (Xie et al., 2018). Areas with very high recovery, such as the Riau Islands, indicate an extraordinary response to economic contraction. Meanwhile, areas with a low recovery rate indicate a need for additional support in overcoming economic contraction, allowing for faster recovery. Furthermore, the researcher conducted a descriptive analysis of the growth of the poverty index, which is presented in Table 4.

Table 4. The Growth of the Poverty Index

	Growth 2019	Growth 2020	Growth 2021	Growth 2022	Growth 2023
Mean	-7.65	4.59	4.47	-4.02	-4.91
Std Dev	9.45	14.58	10.83	12.04	11.76

As shown in Table 4, a fluctuating trend with a distinct pattern is observed each year. From 2019, when the pandemic began, to 2023, there was an increase and decrease in the poverty index, attributed to various factors. One of the factors contributing to the current world conditions and the recovery period following the COVID-19 pandemic is the economic crisis (Kharazi & Nuraini, 2024). Indonesia, whose economic policies are heavily influenced by global economic growth, as well as the IMF, World Bank, and the rupiah exchange rate against the dollar, is highly vulnerable to shocks. Therefore, the government issued various monetary policies to accelerate economic recovery (Iriyadi & Purba, 2022).

In 2019, the average negative growth rate was -7.65%, indicating a decrease in poverty. In 2022-2023, there was another decline, with an average of -4.03% and -4.91%, indicating a decrease in poverty. The highest variation occurred in 2020 at 14.58%, indicating an uneven impact of the pandemic. The COVID-19 pandemic has contributed significantly to the increase in poverty rates (Tisdell, 2020). Very little human mobility and demand for goods and services have decreased drastically, resulting in a decline in domestic production and an increase in unemployment (Turgel & Chernova, 2024). Furthermore, the researcher conducted a descriptive analysis of the growth of GRDP ADHK to examine the growth rate based on per capita indicators. The data source is from Bapenas 2025, and the results are presented in Table 5.

Table 5. Growth of GRDP ADHK Indonesia

	Growth 2019	Growth 2020	Growth 2021	Growth 2022	Growth 2023
Mean	3.86	-2.40	2.80	4.31	-
Std Dev	4.10	5.54	3.511	3.68	-

As shown in Table 5, it is evident that there is real economic growth, as the standard deviation value is relatively low compared to the average, indicating that economic growth is stable and consistent. The results of this analysis reflect the journey of the Indonesian economy during and after the COVID-19 pandemic. In 2019, there was positive growth with an average of 3.86%. This reflects an economy that was developing well before external disruptions, such as the pandemic (Aji, 2022). Economic stability this year can be interpreted as an indicator of a strong foundation in the Indonesian economy (Arrafiqi & Arifin, 2024). In 2020, the economy contracted by 2.40% due to the COVID-19 pandemic. The impact of this pandemic led to a significant slowdown in nearly all economic sectors, including tourism, trade, and manufacturing (Iriyadi & Purba, 2022). This contraction highlights the economy's vulnerability to the global crisis, as social restrictions and supply chain disruptions have led to a significant decline in economic activity (Akbar et al., 2022). The highest variation in 2020, at 5.54%, highlights the varying impact of the pandemic across regions. Some regions may be more affected than others, both in terms of declining economic output and unemployment rates. This could be due to dependence on the most affected sectors, such as tourism in Bali or industries that are highly dependent on export markets (Pham & Nugroho, 2022).

In 2021-2022, the economy experienced a recovery, with growth rates of 2.80% and 4.32%. This recovery reflects the economic recovery efforts undertaken, including fiscal stimulus, mass vaccination, and the gradual reopening of economic sectors. These growth figures indicate a process of adaptation and strengthening of economic sectors affected by the pandemic. Faster recovery in

specific sectors or regions can be observed from various growth figures. Sectors that adapt more quickly to the pandemic, such as the digital and e-commerce sectors, may show better recovery than other sectors (Deng, 2022). Furthermore, the researcher conducted a descriptive analysis of the growth of GRDP ADHB to examine the growth rate based on various factors, including interactions between regions. The analysis provides insights that lead to changes in nominal growth, influenced by fluctuations in value due to inflation, as well as the difference between real economic growth (ADHK) and nominal growth. The data source is from Bapenas 2025, and the results are presented in Table 6.

Table 6. Growth of GRDP ADHB Indonesia

	Growth 2019	Growth 2020	Growth 2021	Growth 2022	Growth 2023
Mean	6.02	-1.74	7.44	12.71	-
Std Dev	4.12	5.52	5.53	7.40	-

As shown in Table 6, it is evident that nominal growth, including inflation, exhibits a relatively high range and standard deviation, indicating a more significant fluctuation in the growth value. In nominal growth, fluctuations are typically not only due to changes in real economic activity but also to adjustments in value resulting from inflation. In 2019, there was a 6.03% growth. This reflects not only the growth of real economic activity but also the contribution of inflation. This figure shows a relatively stable economic condition, with an increase reflecting an increase in demand and production, as well as moderate inflationary pressures (Meiditambua et al., 2023).

In 2020, there was a minor contraction of -1.75 compared to ADHK. 2020 exhibited a more minor economic contraction on the nominal side, compared to real growth, which recorded a larger decline of -2.40%. This nominal contraction of -1.75% means that inflation in that year decreased or was relatively lower compared to the decline in the real economy. This decline in inflation could be attributed to a decrease in aggregate demand resulting from the pandemic, which lowered the prices of goods and services (Ibrahim et al., 2024). The difference with ADHK, in nominal analysis, is that this fluctuation takes into account the impact of inflation, so that even though there is a decline in the real economy, falling prices (or price stability) can reduce the contraction in nominal figures.

In 2021-2022, there was high growth of 7.45% and 12.72%, respectively, including the effects of inflation. This finding reflects two things: 1) After a deep contraction in 2020, the Indonesian economy has begun to recover significantly. More normal economic activity and increased consumption and investment have led to higher nominal growth; 2) High nominal growth in 2022 was also influenced by rising inflation, which may have occurred due to spikes in the prices of goods and energy. This increase in prices contributed to an increase in the nominal value of output even though real output (ADHK) may have been lower. Higher inflation in 2022, reflected by the very high nominal growth rate, suggests that despite growing economic activity, people's purchasing power may be affected by significant price spikes (Aginta, 2022). This suggests a tension between economic recovery and the impact of inflation on people's welfare. The highest variation occurred in 2022, with a 7.40% increase, indicating a significant fluctuation in the Indonesian economy that year. This figure could indicate instability in the inflation rate or differences in the rate of economic growth between sectors or regions. High inflation and global uncertainty (especially related to energy and raw material prices) could increase this variation (Thorbecke, 2023). Some sectors may be more significantly impacted by inflation, while others may perform better. The high variation also indicates unevenness in the impact of inflation and economic recovery, which affects the Indonesian economy as a whole, with some sectors or regions perhaps more affected by inflation than others (Fibriyani et al., 2024).

CONCLUSION

Provinces with a diversified economic base tend to exhibit lower volatility, whereas regions that rely heavily on the extractive sector often experience higher volatility. This means that there is heterogeneity in the economic resilience of each region in Indonesia. Economic volatility has a positive and significant effect on both poverty indicators (P1 and P2). This means that the higher the economic volatility of a region, the greater the depth and severity of poverty that occurs. The volatility analysis of the GRDP calculation measures growth fluctuations, where high volatility indicates uncertainty or the presence of external shocks. The recovery rate analysis provides an overview of the speed and effectiveness of economic recovery from a sluggish economic cycle. Comparing these two indicators helps identify regions with more resilient economic systems versus those that remain vulnerable to fluctuations. The use of two GRDP calculation bases, ADHK and ADHB, reveals fundamental differences in how the data is collected and adjusted. Although both approaches exhibit similar growth trends at the macro level, the different methods yield significant variations at the level of detail, offering distinct perspectives on the economic performance of each region. The growth data shows that although there is a general trend of increasing economic output, the growth rate and dynamics of each region can differ. Analysis of both measurement bases indicates that structural and methodological factors influence the results, which are then used to assess the strength of each economic sector. Overall, the analysis emphasizes the importance of a multidimensional approach in measuring economic performance. By understanding the differences in methodology and the dynamics of growth, volatility, and recovery, policymakers can develop more targeted intervention strategies, optimize resource allocation to support economic stability and growth, and design policies that consider aspects of social welfare through integration between economic output and social indicators, such as the poverty index.

REFERENCES

Adao, B., Narajabad, B., & Temzelides, T. (2024). Renewable Technology Adoption Costs and Economic Growth. *Energy Economics, 129*, 107255.

Affandi, A., Purwaningsih, Y., Hakim, L., & Mulyaningsih, T. (2025). Interplay Between Poverty, Poverty Eradication and Sustainable Development: A Semi-Systematic Literature Review. *Glob. Transit, 7*, 1-20.

Aginta, H. (2022). Spatiotemporal Analysis of Regional Inflation in an Emerging Country: The Case of Indonesia. *Regional Science Policy & Practice, 14*(3), 667-689.

Aji, Y. I. T. (2022). The Effect of Village Income and Gross Regional Domestic Product on Poverty in Indonesia. *Jurnal Bina Praja, 14*(2), 315-328.

Akbar, K. A. K., Irsad, I., Kembaren, E. T. K. E. T., Tanjung, A. F. T. A. F., & Harahap, A. R. H. A. R. (2022). Dampak Pandemi Covid 19 pada Pertumbuhan Perekonomian Indonesia. *Jurnal Agriuma, 4*(2), 88-96.

Akhmad, T. (2022). Pertumbuhan Ekonomi Indonesia Di Masa Pandemi Covid-19. *Muttaqien, 3*(1), 67-77.

Arkum, D., & Amar, H. (2022). The Influence of Economic Growth, Human Development, Poverty and Unemployment on Income Distribution Inequality: Study in the Province of the Bangka Belitung Islands in 2005-2019. *Jurnal Bina Praja, 14*(3), 413-422.

Arrafiqi, L. A. F., & Arifin, A. (2024). The Effect of Gross Regional Domestic Product and Human Development Index on Economic Growth. *Jurnal Ilmiah Akuntansi Kesatuan, 12*(5), 803-810.

Badan Pusat Statistik. (2021). *Berita Resmi Statistik: Pertumbuhan Ekonomi Indonesia Triwulan IV-2020*.

Badan Pusat Statistik. (2022). *Laporan Perekonomian Indonesia 2021 (Dampak Adanya Program Pemulihan Ekonomi Nasional Terhadap Perekonomian Indonesia pada Masa Pandemi)*.

Badan Pusat Statistik. (2023). *Laporan Perekonomian Indonesia 2022*.

Badan Pusat Statistik. (2024). *Laporan Perekonomian Indonesia 2023*.

Badan Pusat Statistik. (2025). *Persentase Penduduk Miskin Maret 2025*.

Balasubramanian, P., Burchi, F., & Malerba, D. (2023). Does Economic Growth Reduce Multidimensional Poverty? Evidence from Low-and Middle-Income Countries. *World Development, 161*, 106119.

Becchetti, L., Bellucci, D., & Pisani, F. (2024). The Fittest Survive: Regional Resilience and Exposure to Financial Crisis. *International Review of Economics & Finance, 96*, 103652.

Bristow, G., & Healy, A. (2020). *Handbook on Regional Economic Resilience*. Edward Elgar Publishing.

Chang, M., & Li, Y. (2024). Impact of Capital Market Volatility on Economic Growth-An Analysis Based on Stochastic Volatility Model. *Heliyon, 10*(3).

Chen, Y., Dong, S., Qian, S., & Chung, K. (2024). Impact of Oil Price Volatility and Economic Policy Uncertainty on Business Investment-Insights from the Energy Sector. *Heliyon, 10*(5).

Cooray, A., Gangopadhyay, P., & Das, N. (2023). Causality Between Volatility and the Weekly Economic Index During COVID-19: The Predictive Power of Efficient Markets and Rational Expectations. *International Review of Financial Analysis, 89*, 102792.

Creswell, J. W., & Creswell, J. D. (2023). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (Edisi ke-6). SAGE Publications.

Deng, M. (2022). China Economic Performance and Natural Resources Commodity Prices Volatility: Evidence from China in COVID-19. *Resources Policy, 75*, 102525.

Erlando, A., Riyanto, F. D., & Masakazu, S. (2020). Financial Inclusion, Economic Growth, and Poverty Alleviation: Evidence from Eastern Indonesia. *Heliyon, 6*(10).

Feriyanto, N., El Aiyubbi, D., & Nurdany, A. (2020). The Impact of Unemployment, Minimum Wage, and Real Gross Regional Domestic Product on Poverty Reduction in Provinces of Indonesia. *Asian Economic and Financial Review, 10*(10), 1088.

Fibriyani, V., Chamidah, N., & Saifudin, T. (2024). Estimating Time Series Semiparametric Regression Model Using Local Polynomial Estimator for Predicting Inflation Rate in Indonesia. *Journal of King Saud University-Science, 36*(11), 103549.

Gambetti, P., Gauthier, G., & Vrins, F. (2019). Recovery Rates: Uncertainty Certainly Matters. *Journal of Banking & Finance, 106*, 371-383.

Giannakis, E., Bruggeman, A., & Mamuneas, T. P. (2024). Regional Economic Resilience, Productivity Growth and Sectoral Interconnectedness. *Papers in Regional Science, 103*(2), 100010.

Gnangnon, S. K. (2025). Productive Capacities, Economic Growth and Economic Growth Volatility in Developing Countries: Does Structural Economic Vulnerability Matter?. *Journal of International Commerce, Economics and Policy, 16*(01), 2550001.

Goniewicz, K., Khorram-Manesh, A., Burkle, F. M., Hertelendy, A. J., & Goniewicz, M. (2023). The European Union's Post-Pandemic Strategies for Public Health, Economic Recovery, and Social Resilience. *Global Transitions, 5*, 201-209.

Grabner, S. M., & Modica, M. (2022). Industrial Resilience, Regional Diversification and Related Variety During Times of Crisis in the US Urban–Rural Context. *Regional Studies, 56*(10), 1605-1617.

Gujarati, D. N., & Porter, D. C. (2023). *Basic Econometrics* (Edisi ke-7). McGraw Hill.

Haque, M. E., Middleditch, P., & Zhang, S. (2022). Mitigating Economic Volatility: When Building Efficient Financial Markets Should Supersede Conventional Economic Policy. *Journal of Government and Economics, 8*, 100059.

Hsu, C. C., Chau, K. Y., & Chien, F. (2023). Natural Resource Volatility and Financial Development During Covid-19: Implications for Economic Recovery. *Resources Policy, 81*, 103343.

Hu, X., Li, L., & Dong, K. (2022). What Matters for Regional Economic Resilience Amid COVID-19? Evidence from Cities in Northeast China. *Cities, 120*, 103440.

Ibrahim, K. H., Handoyo, R. D., Kristianto, F. D., Kusumawardani, D., Ogawa, K., Zaidi, M. A. S., ... & Sarmidi, T. (2in. Exchange Rate Volatility and COVID-19 Effects on Indonesia's Food Products' Trade: Symmetric and Asymmetric Approach. *Heliyon, 10*(12).

IMF. (2024). *Indonesia: 2024 Article IV Consultation - Press Release*. International Monetary Fund.

Iriyadi, I., & Purba, J. H. V. (2022). Pertumbuhan Ekonomi Indonesia: Faktor Pendorong Pada Pandemi Covid-19. *Jurnal Ilmiah Manajemen Kesatuan, 10*(3), 529–544.

Jie, H., Khan, I., Alharthi, M., Zafar, M. W., & Saeed, A. (2023). Sustainable Energy Policy, Socio-Economic Development, and Ecological Footprint: The Economic Significance of Natural Resources, Population Growth, and Industrial Development. *Utilities Policy, 81*, 101490.

Kharazi, I. A., & Nuraini, I. (2024). Analisis Keterbukaan Ekonomi dan Pengeluaran Pemerintah Terhadap Pertumbuhan Ekonomi Indonesia. *Jurnal Simki Economic, 7*(1), 211-223.

Manik, M. (2022). Pengaruh Perdagangan Internasional Terhadap Pertumbuhan Ekonomi Indonesia. *E-Mabis: Jurnal Ekonomi Manajemen Dan Bisnis, 23*(2), 13-20.

Martin, R., & Sunley, P. (2020). Regional Economic Resilience: Evolution and Evaluation. Dalam G. Bristow & A. Healy (Eds.), *Handbook on Regional Economic Resilience* (hlm. 10-35). Edward Elgar Publishing.

Megaritis, A., Bakas, D., Bermpei, T., & Triantafyllou, A. (2025). The Impact of Term Spread Volatility on Economic Activity. *Economics Letters, 247*, 112190.

Meiditambua, M. H., Centauri, S. A., & Fahlevi, M. R. (2023). Pengaruh Inflasi Terhadap Pertumbuhan Ekonomi: Perspektif Indonesia. *Jurnal Acitya Ardana, 3*(1), 17-26.

Moore, J. D., & Donaldson, J. A. (2016). Human-Scale Economics: Economic Growth and Poverty Reduction in Northeastern Thailand. *World Development, 85*, 1-15.

Ngubane, M. Z., Mndebele, S., & Kaseeram, I. (2023). Economic Growth, Unemployment and Poverty: Linear and Non-Linear Evidence from South Africa. *Heliyon, 9*(10).

Normasyhuri, K., Habibi, A., & Anggraeni, E. (2021). Studi Komparasi Pertumbuhan Ekonomi Indonesia Sebelum dan Ketika Terjadinya Pandemi Covid-19. *Jurnal Ekonomikawan, 21*(2), 229-233.

OECD. (2024). *OECD Economic Surveys: Indonesia 2024*. Organisation for Economic Co-operation and Development.

Pham, T., & Nugroho, A. (2022). Tourism-Induced Poverty Impacts of COVID-19 in Indonesia. *Annals of Tourism Research Empirical Insights, 3*(2), 100069.

Ramey, G., & Ramey, V. A. (1995). Cross-Country Evidence on the Link Between Volatility and Growth. *American Economic Review, 85*(5), 1138-1151.

Romarina, A. (2016). Economic Resilience pada Industri Kreatif Gunamenghadapi Globalisasi Dalam Rangka Ketahanan Nasional. *Jurnal Ilmu Sosial, 15*(1), 35-52.

Rose, A. (2004). Defining and Measuring Economic Resilience to Disasters. *Disaster Prevention and Management: An International Journal, 13*(4), 307-314.

Siddik, M. N. A. (2020). Economic Stimulus for COVID-19 Pandemic and Its Determinants: Evidence from Cross-Country Analysis. *Heliyon, 6*(12).

Spash, C. L. (2021). 'The Economy' as if People Mattered: Revisiting Critiques of Economic Growth in a Time of Crisis. *Globalizations, 18*(7), 1087-1104.

Suhada, D. I., Rahmadani, D. R., Rambe, M., Fattah, M. A. F., Hasibuan, P. F., Siagian, S., & Wulandari, S. (2022). Efektivitas Para Pelaku Ekonomi Dalam Menunjang Pertumbuhan Ekonomi Indonesia. *Jurnal Inovasi Penelitian, 2*(10), 3201-3208.

Sunge, R., Mudzingiri, C., & Mkhize, N. (2024). The COVID-19 Pandemic and Economic Recovery: The Mediating Role of Governance, a Global Perspective. *Heliyon, 10*(22).

Tabash, M. I., Ezekiel, O., Ahmed, A., Oladiran, A., Elsantil, Y., & Lawal, A. I. (2024). Examining the Linkages Among Financial Inclusion, Economic Growth, Poverty, and Inequality Reduction in Africa. *Scientific African, 23*, e02096.

Thorbecke, W. (2023). Sectoral Evidence on Indonesian Economic Performance After the Pandemic. *Asia and the Global Economy, 3*(2), 100069.

Tisdell, C. A. (2020). Economic, Social and Political Issues Raised by the COVID-19 Pandemic. *Economic Analysis and Policy, 68*, 17-28.

Todaro, M. P., & Smith, S. C. (2020). *Economic Development* (Edisi ke-13). Pearson Education.

Turgel, I. D., & Chernova, O. A. (2024). COVID-19 and Regional Resilience: Trends, Priorities, and the Geography of Research. *Journal of Safety Science and Resilience, 5*(3), 295-305.

Ullah, W., Zubir, A. S. M., & Ariff, A. M. (2024). Exploring the Moderating Effect of Regulatory Quality on the Relationship Between Financial Development and Economic Growth/Economic Volatility for Developed and Developing Countries. *Borsa Istanbul Review, 24*(5), 934-944.

USAID. (2023). *Economic Growth and Education in Indonesia*. United States Agency for International Development.

Wan, G., Hu, X., & Liu, W. (2021). China's Poverty Reduction Miracle and Relative Poverty: Focusing on the Roles of Growth and Inequality. *China Economic Review, 68*, 101643.

Wooldridge, J. M. (2024). *Introductory Econometrics: A Modern Approach* (Edisi ke-8). Cengage Learning.

World Bank. (2023). *Indonesia Overview: Development News, Research, Data*. World Bank Country Overview.

World Bank. (2024). *Indonesia Economy Projected to Remain Resilient*. World Bank Press Release.

Xie, W., Rose, A., Li, S., He, J., Li, N., & Ali, T. (2018). Dynamic Economic Resilience and Economic Recovery from Disasters: A Quantitative Assessment. *Risk Analysis, 38*(6), 1306–1318.

Zhang, Y., Wang, Q., Tian, T., & Yang, Y. (2022). Volatility in Natural Resources, Economic Performance, and Public Administration Quality: Evidence from COVID-19. *Resources Policy, 76*.