

Contribution of Economic Growth, Demography, Human Capital Quality, and Unemployment to Poverty Dynamics

Sri Harnani ^{1*}

^{*1} STIE Jaya Negara Tamansiswa Malang, Indonesia

Email

sriharnani@stiekn.ac.id ^{1*}

Received: December, 12, 2022

Revised: February, 13, 2023

Accepted: March, 31, 2023

Abstract

This study aims to analyze the effects of economic growth, demography, human resource quality, and unemployment on poverty levels in East Java Province. The research seeks to understand these factors' role in shaping regional poverty dynamics. The study adopts a quantitative approach, utilizing statistical data analysis to examine the relationships between variables. The Indonesian Central Bureau of Statistics (BPS) data includes figures on economic growth, demography, human resource quality, unemployment, and poverty levels. Multiple linear regression analysis was employed to evaluate the influence of these independent variables on poverty. The findings indicate that economic growth does not significantly affect poverty levels in East Java, suggesting that growth has not been equitably distributed among income groups. Demography significantly impacts poverty, implying that better economic capacity and purchasing power reduce poverty. Conversely, human resource quality positively and substantially influences poverty, reflecting the challenges in competitiveness and skills among the population. Unemployment does not dramatically impact poverty, as income from other family members likely mitigates its effects. These findings align with previous studies and underscore the need for policies that promote inclusive economic growth and human capital development. The results highlight the importance of targeted policies to address poverty in East Java. Efforts should focus on equitably distributing economic benefits, enhancing human resource quality through education and skill development, and optimizing demographic potential. Policymakers and stakeholders must collaborate to develop sustainable strategies that address the complex interplay of economic and social factors driving poverty.

Keywords: Economic Growth; Demographics; Human Capital Quality; Unemployment; Poverty Rate.

DOI : <https://doi.org/10.57178/atestasi.v6i1.1000>

p-ISSN : 2621-1963

e-ISSN : 2621-1505

© Copyright: ATESTASI: Jurnal Ilmiah Akuntansi (2023)

This is an Open Access article distributed under the terms of the Creative Commons Attribution 4.0 International License. Site Using OJS 3 PKP Optimized.

Introduction

Development is a continuous process of transformation aimed at improving various aspects, including the economy, natural resources, human resources (HR), and industrial quality,

to achieve better societal conditions. Its ultimate objective is to elevate the overall welfare of the population. However, this goal remains elusive for many countries, including Indonesia, where persistently high poverty rates create significant obstacles to improving living standards. Poverty, a multidimensional issue, restricts access to basic needs such as food, shelter, and healthcare, further intensifying social and economic vulnerabilities. Consequently, sustainable development strategies are crucial to addressing these persistent challenges. Indonesia's national development agenda prioritizes enhancing financial performance, creating employment opportunities, and improving living standards to ensure widespread prosperity (Wibowo, 2023). Poverty alleviation, however, remains a focal challenge due to its multifaceted nature, encompassing factors such as low-quality human resources, inadequate income, unemployment, and geographical disparities. According to Lendentariang et al. (2019), poverty must be addressed holistically by considering these interrelated dimensions. Despite substantial efforts, poverty remains a significant issue, particularly in East Java, a region marked by complex economic and demographic dynamics.

East Java, Indonesia's second-most populous province, illustrates the interplay between poverty, economic growth, and demographic pressures. Data from the Central Bureau of Statistics (BPS) indicate a declining poverty trend in East Java between 2009 and 2023, but significant fluctuations remain. For instance, poverty increased to 7.46% in 2020 due to the economic disruptions caused by the COVID-19 pandemic, which resulted in higher unemployment and reduced purchasing power (Source: Central Bureau of Statistics (BPS) of East Java Province). These challenges highlight the urgent need for targeted strategies to mitigate such impacts and ensure equitable resource distribution. Despite significantly contributing to the national GDP and workforce, East Java's persistent poverty reflects gaps in current development models and policy implementations. Economic growth is often seen as a critical driver of poverty reduction through wealth creation and expanded access to essential services. Schumpeter, as cited by Putong (2012), describes economic growth as an increase in national output or income-driven by population growth and savings. However, high economic growth does not inherently ensure equitable welfare distribution, particularly in regions grappling with demographic and structural challenges. While robust economic performance is evident in East Java, it has yet to consistently translate into improved living conditions for vulnerable populations, emphasizing the need for strategic resource allocation and policy interventions.

Demographics further complicate poverty dynamics. Rapid population growth exacerbates socio-economic disparities when not accompanied by corresponding improvements in human capital quality and job creation. East Java faces significant challenges with high unemployment rates and uneven resource distribution, contributing to poverty. According to Spengler (1959), Adam Smith regarded population growth as a resource for economic production, yet without adequate investment in education and workforce development, it becomes a socio-economic burden. This view is supported by Sukirno (2010:87), who notes that high unemployment reduces household income, erodes societal prosperity, and leads to persistent poverty. Addressing these demographic pressures requires strategic approaches integrating population trends with education, infrastructure, and employment investments. Poverty in East Java is a multidimensional issue requiring strategic decision-making in development planning. Effective resource allocation, prioritization of

sectors like education and employment, and evidence-based policy evaluations are critical to mitigating persistent poverty. Investments in human capital, such as education and job training, can reduce unemployment, enhance productivity, and promote sustainable economic growth (Juliana et al., 2023). Such targeted interventions ensure that financial benefits are equitably distributed, particularly to the most vulnerable groups, and provide long-term solutions to poverty alleviation in the region.

Recent studies highlight the complex relationships between economic factors, demography, and poverty across various contexts. For instance, economic growth has improved electricity access and reduced poverty in Africa (Goh et al., 2024; Venal et al., 2024). However, the correlation between GDP growth and unemployment is weaker in African nations than in developed countries (Ibourk & Elaynaoui, 2024). In the European Union, unemployment negatively affects electricity access and is linked to declining economic indicators (Khelil & Khelif, 2023; Venal et al., 2024). Foreign direct investment (FDI) produces mixed results, boosting urban electricity access in Africa but having limited impact in rural areas (Venal et al., 2024). In Indonesia, high-value FDI and better human resource development are crucial in reducing poverty (Goh et al., 2024). Demographic factors, such as population growth and aging populations, also shape unemployment and energy poverty (Khelil & Khelif, 2023; Ibourk & Elaynaoui, 2024; Venal et al., 2024), underscoring the need for policies tailored to specific regional challenges.

Other studies emphasize how economic growth, unemployment, poverty, and industrialization interact in developing regions. Economic growth generally reduces poverty, but its effectiveness depends on initial growth levels and industrial structures (Asongu & Eita, 2023; Karahasan, 2023). Unemployment exacerbates short- and long-term poverty, while population growth often hinders poverty reduction (Zaman et al., 2023). In South Africa, economic growth alleviates poverty over time, but unemployment worsens it (Ngubane et al., 2023). Industrialization, particularly in manufacturing, accounts for 50% of the poverty-reducing effects of economic growth (Karahasan, 2023). Additional factors such as remittances, GDP, and life expectancy further influence poverty dynamics in Sub-Saharan Africa (Zaman et al., 2023). Institutional quality is another critical factor in poverty alleviation. While economic growth reduces poverty long-term, unemployment aggravates it (Ngubane et al., 2023). Local institutional factors, such as governance quality and anti-corruption measures, significantly affect the poverty-reducing impact of growth (Kouadio & Gakpa, 2022). Enhancing institutional quality reduces poverty and income inequality (Kouadio & Gakpa, 2022). Demographics, including lagging fertility rates, influence poverty (Wietzke, 2020), with population growth consistently hindering poverty reduction in Sub-Saharan Africa (Zaman et al., 2023). These studies highlight the need for multifaceted approaches to tackle poverty.

While recent studies have advanced understanding of the complex interplay between economic growth, demography, human capital quality, and poverty, notable gaps still need to be found in both empirical and theoretical dimensions. Much of the existing research focuses on global or regional contexts, such as Africa, Sub-Saharan regions, and Europe (Venal et al., 2024; Goh et al., 2024; Moridian et al., 2024), with limited attention given to the unique socio-economic and demographic challenges in Indonesia, particularly East Java. These regions exhibit distinct characteristics that need to be addressed in broader analyses, leaving questions about the specific dynamics of poverty in East Java to be answered. Empirical gaps are evident

in the limited exploration of how demographic challenges—such as rapid population growth, urbanization pressures, and uneven resource distribution—interact with human capital quality to influence poverty trends. While studies acknowledge the significant impact of unemployment and economic growth on poverty (Ngubane et al., 2023; Asongu & Eita, 2023), they often overlook how these variables are mediated or exacerbated by variations in education, workforce readiness, and regional resource allocation. Additionally, the nuanced role of institutional factors in amplifying or mitigating these effects still needs to be explored in Indonesia's local context despite evidence from other regions showing its critical importance (Kouadio & Gakpa, 2021; Wietzke, 2020). Theoretical gaps persist, particularly in integrating multidimensional poverty analyses with localized policy frameworks. Current studies often generalize findings across regions, neglecting context-specific economic and demographic realities. These limitations highlight the need for research that bridges macro-level theories with micro-level empirical data to craft compelling, tailored strategies for poverty alleviation in East Java, where challenges are deeply intertwined with its unique demographic and economic profile.

This study offers a novel contribution by addressing the existing research gaps related to economic growth, demography, human capital quality, and unemployment in shaping poverty dynamics, specifically in East Java. Unlike prior studies that predominantly examine broader global or regional contexts, this research provides a localized and empirical perspective on Indonesia, with a specific focus on the unique socio-economic characteristics of East Java. Integrating multiple dimensions, including rapid population growth, uneven resource distribution, and human capital quality, into a single analytical framework distinguishes this study from previous works. It seeks to uncover the nuanced relationships among these variables and their collective impact on poverty levels, which needs to be more adequately explored in the existing literature. This research employs a quantitative approach, utilizing statistical analysis to examine the influence of economic growth, demographic trends, human capital quality, and unemployment on poverty. Leveraging region-specific data provides insights into how these factors interact in East Java's socio-economic context, offering a more precise understanding of the underlying mechanisms than generalized findings. The primary objective of this study is to develop a comprehensive understanding of poverty dynamics in East Java and inform effective poverty alleviation strategies. The findings aim to bridge theoretical insights and practical applications, contributing to evidence-based policymaking that targets poverty reduction through improved economic management, resource allocation, and human capital investment.

LITERATURE REVIEW

Economic growth

Economic growth is a fundamental concept in economics, representing the increase in a region's capacity to produce goods and services over time. Traditionally, this growth is measured by the rise in Gross Domestic Product (GDP), which quantifies the total value of goods and services produced within a country (Yuni & Hutabarat, 2021). Key indicators of economic growth include GDP, investment levels, and technological innovation. These metrics serve as benchmarks for assessing a nation's development and the well-being of its population (BPS-Statistics Indonesia, 2023). Much research explores the relationship between economic

growth and poverty reduction. Broad-based economic growth has been identified as a primary driver of poverty alleviation, as it generates employment opportunities and elevates household incomes. For instance, sustained economic growth substantially reduces poverty rates, primarily through job creation and improved wages (Islam, 2004). Similarly, countries experiencing robust economic growth witness significant declines in poverty levels, underscoring the critical role of growth in enhancing living standards (World Bank, 2021). However, the benefits of economic growth are only sometimes equitably distributed across all segments of society. Income inequality can limit the positive effects of growth on poverty reduction. Studies have shown that in regions where income distribution is highly unequal, the impact of economic growth on poverty alleviation is diminished (Marrero & Servén, 2022). This suggests that economic growth may disproportionately benefit higher-income groups without inclusive policies, leaving marginalized populations behind.

In East Java, Indonesia, the province has demonstrated notable economic performance. In the third quarter of 2024, East Java's economy grew by 1.72% compared to the previous quarter, with the manufacturing sector contributing significantly to this growth (BPS-Statistics Indonesia, 2023). Despite this progress, disparities persist between urban and rural areas, indicating that the advantages of economic growth are not uniformly experienced across the province. Metropolitan centers like Surabaya have reaped substantial financial benefits, while rural regions face limited access to essential services and economic opportunities. Addressing these disparities requires targeted policies that promote inclusive growth. Infrastructure, education, and healthcare investments are necessary to ensure that all communities can participate in and benefit from economic progress (Challoumis-Kωνσταντίνος Χαλλουμής, 2024). Also, fostering sectors like manufacturing and services can create employment opportunities and reduce poverty. For example, enhancing infrastructure in rural areas can improve connectivity, facilitate access to markets and resources, stimulate local economies, and reduce poverty (Riyadi, 2024).

Demographic dynamics

Demographic dynamics, encompassing population size, distribution, and composition changes, significantly shape a region's economic and social landscapes (Chen & Li, 2024). Understanding these dynamics is essential for designing effective development policies addressing poverty, inequality, and resource management (Dwiningwarni et al., 2019). In East Java, one of Indonesia's most populous provinces, demographic trends have profound implications for sustainable development and poverty alleviation. Rapid population growth often pressures resources and infrastructure, amplifying challenges such as poverty. In East Java, the increasing population has heightened the demand for necessities, including healthcare, education, and housing (Hidayat & Prabowo, 2024). However, the growth rate frequently outpaces the development of essential infrastructure, leaving many communities underserved. Studies highlight that high population growth correlates with limited resource availability, exacerbating poverty in regions like East Java (Al Faruq & Yuliana, 2023).

Population distribution disparities between urban and rural areas contribute significantly to economic inequality. Urban centers, such as Surabaya, experience overcrowding and increased demand for public services, while rural regions suffer from labor shortages and underutilized resources (Sa'diyah & Pimada, 2024). This imbalance creates a dual challenge:

the urban burden of excessive population density and rural underdevelopment, which hinder poverty reduction efforts. Addressing these disparities requires policies that enhance rural infrastructure while managing urban population growth effectively. The dependency ratio, which measures the proportion of non-working-age individuals to the working-age population, significantly impacts economic productivity. A high dependency ratio imposes financial burdens on families and governments, reducing the funds available for savings and investments (Subroto & Baidlowi, 2020). In East Java, areas with high dependency ratios face difficulties sustaining economic growth, further complicating poverty alleviation strategies. This highlights the importance of improving workforce productivity and promoting balanced demographic structures to support financial stability.

Urbanization, driven by rural-to-urban migration, introduces both opportunities and challenges. While urbanization can boost economic activities, unplanned growth often results in informal settlements, congestion, and inadequate infrastructure. In cities like Surabaya, urbanization has led to strained public services and increased social inequality (World Bank, 2017). Effective urban management strategies mitigate these issues and foster sustainable development. Policies encouraging balanced regional development and reducing migration pressures on urban areas are essential. Addressing the multifaceted challenges posed by demographic dynamics requires comprehensive policies. Initiatives such as investing in education and healthcare, managing urbanization, and promoting balanced regional development are essential for creating a sustainable future in East Java (Dana & Musaiyaroh, 2018). For example, enhancing rural infrastructure and job opportunities can reduce migration pressures on urban centers while improving living standards in underserved areas. Furthermore, family planning programs can help manage population growth and alleviate resource strain (Al Faruq & Yuliana, 2023).

Human Resources and Unemployment

The quality of human resources (HR) is a critical driver of productivity and economic growth, particularly in the context of poverty alleviation. High-quality HR, encompassing education, skills, and health, fosters economic progress and sustainable development. Studies indicate that investments in human capital lead to improved labor market outcomes, thereby contributing to economic stability and poverty reduction (Collin & Weil, 2020). Education, in particular, is a foundational pillar in building a competitive workforce capable of adapting to dynamic market demands (Hanushek et al., 2017). Unemployment, both structural and frictional, poses significant barriers to poverty alleviation. High unemployment rates diminish household incomes and purchasing power, exacerbating poverty and inequality. In East Java, labor supply and demand disparities highlight the urgency of aligning workforce skills with market needs (Ssenyonga, 2021). Furthermore, inadequate infrastructure and limited access to education have intensified these challenges, particularly in rural areas where economic opportunities remain scarce.

Studies emphasizing the role of vocational education and training (VET) in enhancing employability have demonstrated the interrelation between HR quality and unemployment. VET programs equip individuals with market-relevant skills, reducing unemployment and increasing household incomes. Research shows that VET contributes significantly to workforce productivity, underscoring its importance in achieving economic growth and poverty alleviation

(Brunello & Rocco, 2017). In East Java, technical education and skills development initiatives have demonstrated a tangible impact on reducing unemployment rates (Hanushek & Woessmann, 2000). Government policies and interventions play a pivotal role in improving HR quality. Educational reforms and targeted vocational training programs tailored to industry needs have proven effective in fostering workforce competencies. Collaborative efforts between governments, private sectors, and educational institutions ensure that training aligns with evolving market requirements, thereby enhancing the relevance and employability of the workforce (Okolie et al., 2019). Additionally, programs designed to increase access to education and technical training have addressed inequalities in workforce readiness, particularly among marginalized communities.

Strategies to reduce unemployment must include job creation through investments in labor-intensive industries and small and medium-sized enterprises (SMEs). Expanding access to microcredit facilities also encourages entrepreneurial activities, generating employment opportunities at the grassroots level. Effective labor market policies fostering inclusivity and stability can mitigate unemployment and its broader socioeconomic impacts (Nosike & Ojobor, 2024). East Java exemplifies the challenges and opportunities associated with HR development and unemployment reduction. While the region struggles with geographic and educational disparities, it also possesses a demographic dividend that offers significant economic potential. By investing in education and training, East Java can capitalize on its young workforce to drive economic growth and reduce poverty (Idike et al., 2021). Addressing these issues requires comprehensive, integrated policies that target workforce development and labor market alignment.

Relevant Theories

Joseph Schumpeter's economic development theory emphasizes the critical role of innovation and entrepreneurship in driving economic growth. He introduced the concept of "creative destruction," where innovations disrupt existing market structures, leading to structural changes and economic transformation (Emami Langroodi, 2021). Entrepreneurs are critical agents in this process, introducing new products and technologies that enhance productivity and economic progress. In East Java, Schumpeter's theory is particularly relevant, given the region's potential to leverage its manufacturing and service sectors as catalysts for inclusive growth. By adopting advanced technologies and innovative practices, these sectors can enhance productivity, create employment opportunities, and contribute to poverty alleviation (Veetil, 2021). For instance, innovation in manufacturing processes can streamline production and increase efficiency, while advancements in digital platforms in the service sector can expand market reach and improve economic outcomes. This alignment with Schumpeter's framework underlines how innovation can drive sustained economic change (Laverde et al., 2018). The relevance of Schumpeter's theory is particularly evident in regions like East Java, where innovation spurs economic growth and addresses structural inequalities and regional disparities (Emami Langroodi, 2021).

The Human Capital Theory complements this perspective, which posits that education and training are critical investments that enhance individual productivity and economic outcomes (Gillies, 2015). This theory emphasizes the link between human capital development and poverty reduction, suggesting that a well-educated and skilled workforce is instrumental in

driving sustainable growth. In East Java, this theory is applied through targeted investments in education and vocational training, equipping individuals with market-relevant skills and enhancing employability (Hanushek & Woessmann, 2000). For example, vocational training programs tailored to industrial needs have significantly improved workforce readiness and reduced unemployment in East Java. These programs address immediate labor market demands and build resilience by fostering long-term economic adaptability (Josephine et al., 2021). Integrating education, skill development, and employment opportunities aligns with Human Capital Theory's emphasis on creating a dynamic and productive labor force.

Integrating Schumpeter's economic growth theory with Human Capital Theory provides a robust framework for analyzing development in East Java. Innovation drives economic expansion, but its success hinges on the availability of skilled human resources capable of implementing and sustaining technological advancements (Scherer, 2011). This synergy underscores the need for simultaneous innovation and human capital investments to create a cohesive and resilient economic ecosystem. The combined application of these theories highlights the importance of balancing economic growth with equitable resource distribution. In East Java, strategies integrating innovation and human capital development can foster inclusive growth, reduce poverty, and enhance regional competitiveness (Fitzsimons, 1999). By prioritizing policies that promote entrepreneurship and education, the region can effectively address social and economic challenges while building a foundation for sustainable development.

Research Design and Method

Study Design

This study adopts a quantitative approach, leveraging numerical data analyzed through statistical methods. Quantitative methods are employed to explore the influence of economic growth, demography, human capital quality, and unemployment on poverty levels in East Java Province. This structured approach allows statistical analysis to identify relationships and derive meaningful conclusions from the data. Sugiyono (2021) provides the methodological foundation for this quantitative framework.

Sample Population or Subject of the Research

The population in this research encompasses data on economic growth, demography, human capital quality, unemployment rates, and poverty levels sourced from the Indonesian Central Bureau of Statistics (Badan Pusat Statistik, BPS). Sugiyono (2021) defines population as the entirety of units or objects under study that possess specific characteristics determined by the researcher for analysis and conclusion. The sample comprises annual time series data from 2009 to 2023, resulting in 15 data points for each variable: economic growth, demography, human capital quality, unemployment rates, and poverty levels. These samples are representative of the population and are used to ensure accurate statistical inferences.

Data Collection Techniques and Instrument Development

Data collection relies on secondary data sourced from credible records maintained by BPS. The variables under study are systematically compiled and processed into a dataset that reflects trends over the 15 years. Instrumentation for data organization and analysis involves

database tools and software for statistical preparation.

Data Analysis Techniques

The research employs multiple linear regression analysis to assess the impact of the independent variables on the dependent variable. Sugiyono (2021) explains that multiple regression analysis predicts the influence of one or more independent variables on the dependent variable. It calculates the intensity of these relationships to enable accurate forecasting. Before conducting regression analysis, classical assumption tests are performed to ensure model validity. These include tests for normality, multicollinearity, heteroscedasticity, and autocorrelation. Data is processed using SPSS software to verify assumptions and derive reliable regression results that meet scientific standards. This ensures that the model is robust and suitable for interpreting the relationships between variables.

Results and Discussion

Finding

Multiple Linear Regression Analysis Results

Multiple linear regression analysis is used to determine the influence of one or more independent variables on the dependent variable. It aims to calculate the intensity of the relationship between the variables and make accurate predictions.

The results of the multiple linear regression analysis provide the following equation:

$$\text{Poverty} = 2155.149 - 5.575(\text{EG}) - 0.002(\text{DM}) + 40.797(\text{HCQ}) + 1.845(\text{UN}) + e$$

The interpretation of the regression equation is as follows:

- The constant of 2155.149 indicates that if Economic Growth, Demography, Human Capital Quality, and Unemployment remain constant or zero, the Poverty rate will be 2155.149%.
- The regression coefficient for Economic Growth (X1) is -5.575, indicating a negative influence on Poverty. An increase in Economic Growth by 1% will reduce the Poverty rate by 5.575%, and vice versa.
- The regression coefficient for Demography (X2) is -0.002, indicating a negative influence on Poverty. An increase in Demography by one unit will reduce the Poverty rate by 0.002%.
- The regression coefficient for Human Capital Quality (X3) is 40.797, indicating a positive influence on Poverty. An increase in Human Capital Quality by 1% will increase the Poverty rate by 40.797%, and vice versa.
- The regression coefficient for Unemployment (X4) is 1.845, indicating a positive influence on Poverty. An increase in Unemployment by 1% will increase the Poverty rate by 1.845%, and vice versa.

Hypothesis Testing Results

Coefficient of Determination (R^2)

The coefficient of determination measures the ability of the regression model to explain variations in the dependent variable. A higher R^2 value indicates a greater proportion of the dependent variable's variation explained by the model.

Table 2. Coefficient of Determination (R^2) Results

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,971 ^a	,942	,919	13,93414

a. Predictors: (Constant), unemployment, economic growth, quality of Human Resources, Demographics

b. Dependent Variable: poverty

Source: SPSS Test Output

The R^2 value of 0.942 indicates that 94.2% of the variation in the dependent variable is explained by the independent variables in this study, while 5.8% (100% - 94.2%) is explained by other variables not included in the study.

Simultaneous Testing (F-Test)

Simultaneous testing aims to determine whether the independent variables significantly influence the dependent variable together. The test uses a significance level of 0.05 ($\alpha = 5\%$).

Table 3. Simultaneous Testing Results (F-Test)

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	31577,315	4	7894,329	40,659	,000 ^a
	Residual	1941,602	10	194,160		
	Total	33518,917	14			

The F-test formula is $F(k; n-k) = F(4; 15-4) = F(4; 11) = 3.36$. Based on the table, the calculated F-value is $40.659 > F\text{-table } 3.36$, with a significance level of $0.000 < 0.05$. This indicates that the null hypothesis (H_0) is rejected, meaning Economic Growth, Demography, Human Capital Quality, and Unemployment simultaneously influence Poverty significantly.

Partial Testing (t-Test)

This test determines whether the independent variables significantly affect the dependent variable. Testing is done using a significance level of 0.05. The testing process uses the t-statistic test, which looks at the t-count value compared to the t-table value. The basis for decision-making is:

1) If the significance value is < 0.05 and $t \text{ count} > t \text{ table}$, H_0 is rejected, and H_a is accepted.

2) If the significance value is > 0.05 and $t \text{ count} < t \text{ table}$, H_0 is accepted, and H_a is rejected.

The T-test obtained the following results:

Table 4. Partial Testing Results (t-Test)

		Coefficients ^a				
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig
		B	Std. Error	Beta		
1	(Constant)	237,255	41,176		4,663	,001
	Economic Growth	-,406	,598	-,057	-,829	,426
	Demography	,000	,000	-1,161	-4,731	,001
	Human Capital Quality	5,152	1,365	,336	2,659	,024
	Unemployment	,087	,477	,029	,344	,738

a. Dependent Variable: Poverty

Source: SPSS Test Output

The economic growth variable (X1) shows a significance value of 0,426 > 0.05, with a calculated t value of -0.829, smaller than the t table of 2.228. Thus, testing the research hypothesis can conclude that Ho is accepted, and Ha is rejected. This means that the economic growth variable has partially had no significant effect on the poverty rate in East Java Province.

Demographic variable (X2) shows a significance value of 0.001 < 0.05 with a calculated t value of -4.731 greater than the t table of 2.228. Thus, when testing the research hypothesis, it can be concluded that Ho is rejected, and Ha is accepted. This means that partially, the Demographic variable has a negative and significant effect on the poverty rate in East Java Province.

The variable quality of Human Resources (X3) shows a significant value of 0.024 < 0.05 with a calculated t value of 2.659, more significant than the t table of 2.228. Thus, when testing the research hypothesis, it can be concluded that Ho is rejected, and Ha is accepted. This means that the quality of human resources variable partially has a positive and significant effect on the poverty rate in East Java Province.

The unemployment variable (X4) shows a significant value of 0.738 > 0.05 with a calculated t value of 0.344, which is more minor than the t table of 2.228. Thus, by testing the research hypothesis, it can be concluded that Ho is accepted, and Ha is rejected. This means that partially, the unemployment variable has no significant effect on the poverty rate in East Java Province.

Discussion

The Effect of Economic Growth on Poverty Levels

The findings of this study reveal that economic growth does not significantly impact poverty levels in East Java. This result suggests that the benefits of economic growth have not been distributed equitably across all societal strata, particularly among low-income groups. The fundamental expectation that economic growth should enhance welfare through job creation and income increases is not reflected in the East Java context. Several factors contribute to this ineffectiveness, including the concentration of growth in sectors less relevant to impoverished populations, such as industry and services. In contrast, agriculture, forestry, and fisheries—sectors critical to the livelihoods of people experiencing poverty—have seen a decline in their contribution to the regional economy. This imbalance highlights the limited inclusivity of economic growth in the region. These findings are closely aligned with Schumpeter's theory of

economic growth, which identifies innovation and productivity as the primary drivers of economic advancement. However, Schumpeter's theory also implicitly underscores the importance of inclusivity and the role of labor-intensive sectors in ensuring the broad-based benefits of economic growth. Without a strategic focus on sectors directly affecting low-income groups, economic growth's advantages remain concentrated among wealthier segments, leaving marginalized populations behind. The study's results are consistent with previous research. Karahasan (2023) emphasized that the effectiveness of economic growth in alleviating poverty is contingent on the economic structure and dominant growth sectors. In South Africa, Ngubane et al. (2023) demonstrated that while economic growth alleviates poverty over the long term, structural issues like high unemployment rates remain a significant barrier. These findings underscore the need for inclusive growth strategies that address the specific needs of impoverished communities.

The practical implications of this study are significant for policymakers in East Java. To ensure that economic growth translates into meaningful poverty reduction, targeted policy reforms are essential. These reforms should prioritize sectors relevant to low-income populations, such as agriculture and labor-intensive industries. These sectors provide direct employment opportunities and address the livelihoods of the most vulnerable groups. Additionally, improving access to education and vocational training is critical to equipping the workforce with the skills to participate in and benefit from economic growth. Collaboration between the government and private sectors is also vital. Joint investments in areas directly impacting impoverished communities, such as rural infrastructure, sustainable agriculture, and small-scale entrepreneurship, help ensure that economic growth benefits are more evenly distributed. This approach aligns with the findings by Kouadio & Gakpa (2022), who emphasized the importance of local institutional quality, governance efficiency, and anti-corruption measures in maximizing poverty reduction through economic growth.

The Effect of Demographics on Poverty Levels

The research findings indicate that demographic factors have a significant and negative impact on poverty levels in East Java. An increase in the population corresponds with a decrease in poverty levels, suggesting an improvement in economic capacity and purchasing power among the population. This improvement in economic conditions facilitates a social shift, where a considerable portion of the population moves from lower-income groups to middle-income classes. The dominance of the productive-age population in East Java further supports this dynamic, driving economic production and fostering opportunities for improved welfare and poverty reduction. The growth in demographics catalyzes advancing development, promoting economic activities that ultimately enhance community welfare and reduce poverty. The results align with the demographic transition theory, which posits that population growth during certain stages of economic development can lead to increased economic productivity and reduced poverty. This theoretical framework highlights the critical role of a productive-age population in leveraging economic opportunities. Additionally, the findings resonate with human capital theory, which emphasizes the importance of a skilled and capable workforce in fostering economic growth and alleviating poverty. The predominance of a productive-age population in East Java reflects the potential of human capital as a driving force for economic transformation. This study is consistent with previous research, such as the study by Wangtafendirra (2023),

which found that demographics significantly and negatively influence poverty levels. This conclusion underscores the role of population growth in improving economic conditions and reducing poverty. Additionally, studies by Venal et al. (2024) and Goh et al. (2024) highlight the impact of demographic factors, such as population growth, on poverty reduction in various global contexts. These studies emphasize the importance of tailored policies to address demographic challenges, aligning with the findings of this research.

The implications of these findings are substantial for policymakers. The East Java government must implement strategies that leverage the productive-age population to optimize demographic growth potential. Investments in education, vocational training, and healthcare are essential to enhance the quality of human resources and ensure that the growing population contributes effectively to the economy. Additionally, targeted policies supporting labor-intensive industries can create job opportunities that absorb the productive workforce, providing economic growth that reduces poverty. The study highlights the importance of balancing urban and rural development. While urban areas may benefit from concentrated economic activities, rural areas require targeted interventions to ensure equitable resource distribution and access to economic opportunities. Policies that foster rural development can mitigate the disparities between urban and rural populations, ensuring that demographic growth benefits all regions.

The Effect of Human Resource Quality on Poverty Levels

The study reveals a significant favorable influence of human resource quality on poverty levels in East Java, indicating that human resource quality has yet to reduce poverty in the region effectively. This finding aligns with the concept that human resource quality is a critical determinant of productivity and income levels. However, the limited impact observed in East Java highlights the persistent challenges of low educational attainment and insufficient skill development among the population. In particular, a significant portion of the population still needs to complete secondary education, and most have only achieved elementary education levels. Consequently, this educational gap limits the ability of individuals to access higher-paying jobs, resulting in low productivity and income levels that perpetuate poverty. The results of this study align with human capital theory, which posits that education and training are essential investments for improving individual productivity and contributing to economic development. The theory underscores that higher levels of human resource quality correlate with increased productivity and income, ultimately reducing poverty. However, the findings also reveal that East Java's current human resource development efforts must be revised to realize these theoretical benefits. Despite incremental improvements in educational attainment, the pace of progress still needs to be improved to meet the demands of a competitive labor market. The findings are consistent with prior studies. Goh et al. (2024) highlighted the importance of human resource development in Indonesia as a critical factor for alleviating poverty, mainly through targeted policies that enhance skills and employability. These studies underscore the need for comprehensive strategies to improve educational access and vocational training to meet labor market demands. In a broader context, Zaman et al. (2023) found that regions with higher educational attainment experience lower poverty rates, illustrating the universal applicability of investing in human resource quality. The practical implications of this study suggest that policymakers in East Java should prioritize improving access to quality education and expanding vocational training programs. Investments in human resource

development should target underserved areas and focus on equipping individuals with skills aligned with the demands of modern industries. Collaboration between government institutions, private sectors, and educational organizations is crucial to creating programs that address the specific needs of low-income populations. Additionally, efforts to raise public awareness about the long-term benefits of education and skill development are essential to fostering a culture of learning and self-improvement.

The Effect of Unemployment on Poverty Level in East Java Province

The research findings indicate that unemployment does not significantly affect poverty levels in East Java Province. This suggests that unemployment is not the sole determinant of poverty, as familial economic support and alternative income sources mitigate its potential impact. Families with higher income levels often offset the effects of unemployed members, thereby reducing the direct influence of unemployment on poverty. Additionally, most unemployed individuals in East Java are recent graduates entering the job market, aligning their job searches with existing skills and expected income levels. This phenomenon highlights the transitional nature of unemployment in the region, which is less connected to chronic poverty. The dominance of the agricultural sector in East Java, where a significant proportion of the population works as subsistence farmers, also provides a buffer against poverty despite high unemployment rates. Although the agricultural sector plays a critical role in the regional economy, its productivity remains constrained by the low quality of human resources. This finding aligns with the theoretical perspective of transitional unemployment, where individuals transition between education and employment, reducing the direct impact of unemployment on poverty levels.

These results are consistent with prior studies, including the research by Bintang & Woyanti (2018), which found that unemployment has a positive but insignificant effect on poverty levels in Central Java. Similar findings are reported in studies examining unemployment in Sub-Saharan Africa. Zaman et al. (2023) note that unemployment exacerbates short-term poverty but is less impactful in contexts where alternative economic support structures exist. Additionally, the study by Ngubane et al. (2023) in South Africa highlights that while unemployment remains a barrier to poverty alleviation, its effects are mitigated in regions with robust informal economies or family support systems. The practical implications of these findings emphasize the importance of creating policies that address structural unemployment while enhancing the quality of human resources. Programs aimed at vocational training and skill development tailored to the needs of labor-intensive sectors, such as agriculture and manufacturing, are critical. These policies should transition unemployed individuals into productive roles aligned with regional economic structures. Government interventions should focus on expanding employment opportunities in sectors that absorb unskilled and semi-skilled labor, thereby reducing transitional unemployment. Strengthening educational curricula to include vocational and technical training will equip job seekers with the necessary skills to meet market demands. Collaboration between the government and private sectors in East Java can also foster investments in job creation initiatives, particularly in rural areas where unemployment and poverty intersect.

Conclusions

This study examined the influence of economic growth, demography, human resource quality, and unemployment on poverty levels in East Java Province. The findings revealed that economic growth does not significantly impact poverty reduction, suggesting an uneven distribution of growth benefits across societal strata. Demography was found to have a significant adverse effect on poverty, indicating that higher demographic factors such as economic capabilities and purchasing power contribute to poverty alleviation. Human resource quality significantly impacts poverty, reflecting skills and competitiveness challenges for better employment opportunities. Lastly, unemployment did not considerably influence poverty levels, as income from other family members mitigated its direct impact.

The study contributes to both academic understanding and practical policymaking by providing a nuanced analysis of poverty determinants in East Java. Its originality lies in addressing the interplay of economic and social factors within a specific regional context. The findings highlight the necessity for inclusive economic policies that ensure equitable growth distribution, particularly in sectors benefiting lower-income populations. Policymakers should focus on enhancing human capital through skill development and education while addressing demographic transitions to maximize their economic potential. Moreover, collaborative efforts between government, private sectors, and educational institutions can foster sustainable solutions to reduce poverty.

This study has limitations that should be acknowledged. The research relied on secondary data and did not include qualitative insights that could have enriched the analysis. Future research should integrate qualitative approaches to understand the lived experiences of affected populations. Additionally, expanding the scope to include other regions or comparative studies across provinces could provide broader insights into the dynamics of poverty reduction. Researchers are encouraged to investigate the role of institutional quality and governance in moderating the relationship between economic factors and poverty, thus offering a comprehensive framework for future studies.

Reference

- Al Faruq, M., & Yuliana, I. (2023). The Effect of Population Growth on Poverty Through Unemployment in East Java Province in 2017-2021. *Journal of Social Research*, 2(6), 1900–1915. <https://doi.org/10.55324/josr.v2i6.872>
- Asongu, S. A., & Eita, J. H. (2023). The conditional influence of poverty, inequality, and severity of poverty on economic growth in sub-Saharan Africa. *Journal of Applied Social Science*, 17(3), 372–384. <https://doi.org/10.1177/19367244231171821>
- Badan Pusat Statistik. Rata-rata lama Sekolah Menurut Kab/Kota Provinsi Jatim Tahun 2021-2023.
- Bintang, A. B. M., & Woyanti, N. (2018). Pengaruh PDRB, Pendidikan, Kesehatan, Dan Pengangguran Terhadap Tingkat Kemiskinan Di Jawa Tengah (2011-2015). *Media Ekonomi Dan Manajemen*, 33(1). <https://doi.org/10.24856/mem.v33i1.563>
- Brunello, G., & Rocco, L. (2017). The effects of vocational education on adult skills, employment and wages: What can we learn from PIAAC? *SERIEs*, 8(4), 315–343. <https://doi.org/10.1007/s13209-017-0163-z>
- Challoumis-Kωνσταντίνος Χαλλουμής, C. (2024). The Role of Infrastructure in Economic Development. *Available at SSRN*. <https://doi.org/10.2139/ssrn.4915778>
- Chen, X., & Li, J. (2024). Facilitating Knowledge-Driven Economic and Social

- Development: the Significance of Demographic Transformation in Tourism Villages in China. *Journal of the Knowledge Economy*, 15(3), 13890–13918. <https://doi.org/10.1007/s13132-023-01676-0>
- Collin, M., & Weil, D. N. (2020). The effect of increasing human capital investment on economic growth and poverty: A simulation exercise. *Journal of Human Capital*, 14(1), 43–83. <https://www.journals.uchicago.edu/doi/abs/10.1086/708195>
- Dana, B. S., & Musaiyaroh, A. (2018). Welfare Inequality And Demographic Dividend In East Java: The Overlapping Generations (Olg) Model Approach. *East Java Economic Journal*, 2(1), 42–60. <https://doi.org/10.53572/ejavec.v2i1.12>
- Dwiningwarni, S., Aslichah, A., Ariyanto, A., Titin, T., & Yusuf, M. (2019). Population, unemployment and poverty: A population analysis in East Java Indonesia. *Proceedings of the 1st Samporna University-AFBE International Conference, SU-AFBE 2018, 6-7 December 2018, Jakarta Indonesia*. <https://doi.org/10.4108/eai.6-12-2018.2286278>
- Emami Langroodi, F. (2021). Schumpeter's Theory of Economic Development: a study of the creative destruction and entrepreneurship effects on the economic growth. *Journal of Insurance and Financial Management*, 4(3). <https://doi.org/10.2139/ssrn.3153744>
- Fitzsimons, P. (1999). Human capital theory and education. *Encyclopedia of Philosophy of Education*, 1–5.
- Gillies, D. (2015). Human capital theory in education. In *Encyclopedia of educational philosophy and theory*. Springer Science+ Business Media. <https://research-portal.uws.ac.uk/en/publications/human-capital-theory-in-education>
- Goh, L. T., Trinugroho, I., Law, S. H., & Rusdi, D. (2024). Institutional quality, FDI inflows, human capital development and poverty: a case of Indonesia. *International Journal of Social Economics*. <https://doi.org/10.1108/ijse-09-2023-0733>
- Hanushek, E. A., Schwerdt, G., Woessmann, L., & Zhang, L. (2017). General education, vocational education, and labor-market outcomes over the lifecycle. *Journal of Human Resources*, 52(1), 48–87. <https://doi.org/10.3368/jhr.52.1.0415-7074R>
- Hanushek, E. A., & Woessmann, L. (2000). Economics of education. *International Encyclopedia of the Social & Behavioral Sciences*, 4201–4208.
- Hidayat, S., & Prabowo, P. (2024). The Effect of Demographic Dividend, HDI, and Population Growth on Economic Growth in East Java. *Independent: Journal of Economics*, 4(2) (SE-Article). <https://ejournal.unesa.ac.id/index.php/independent/article/view/60918>
- Ibourk, A., & Elaynaoui, K. (2024). Policy lessons from Okun's law for African countries. *International Review of Applied Economics*, 1–30. <https://doi.org/10.1080/02692171.2024.2337348>
- Idike, A. N., Ukeje, I. O., Ogbulu, U., Aloh, J. N., Obasi, V. U., Nwachukwu, K., Osuebi, K., & Ejem, E. N. (2021). The Practice of Human Capital Development Process and Poverty Reduction: Consequences for Sustainable Development Goals in Ebonyi State, Nigeria. *Public Organization Review*, 21(2), 263–280. <https://doi.org/10.1007/s11115-020-00482-5>
- Islam, R. (2004). *The nexus of economic growth, employment and poverty reduction: An empirical analysis* (Vol. 14). Recovery and Reconstruction Department, International Labour Office Geneva.
- Josephine, Y., Francis, O., Anlimachie, M. A., & Avoada, C. (2021). Human Capital, economic growth and poverty reduction nexus: Why investment in free compulsory universal education matters for Africa. *International Journal of Humanities and Social Sciences*, 13(2), 50–60. <https://doi.org/10.26803/ijhss.13.2.3>
- Juliana, I., Safitri, N. L., & Fadillah, W. (2023). *Dinamika Ekonomi Pembangunan Indonesia*:

- Mengungkap Faktor-Faktor Kualitatif yang Mendorong Pertumbuhan. *Harmoni: Jurnal Ilmu Komunikasi Dan Sosial*, 1(2), 1–13. <https://doi.org/10.59581/harmoni-widyakarya.v1i2.436>
- Karahasan, B. C. (2023). To make growth reduce poverty, industrialize: Using manufacturing to mediate the effect of growth on poverty. *Development Policy Review*, 41(4), e12689. <https://doi.org/10.1111/dpr.12689>
- Khelil, I., & Khelif, H. (2023). Tax avoidance in family firms: a literature review. *Journal of Financial Crime*, 30(4), 1021–1035. <https://doi.org/10.1108/JFC-03-2022-0064>
- Kouadio, H. K., & Gakpa, L.-L. (2022). Do economic growth and institutional quality reduce poverty and inequality in West Africa? *Journal of Policy Modeling*, 44(1), 41–63. <https://doi.org/https://doi.org/10.1016/j.jpolmod.2021.09.010>
- Laverde, H., Correa, J. C., & Jaffe, K. (2018). A New Index of Human Capital to Predict Economic Growth. *ArXiv Preprint ArXiv:1807.07051*. <https://doi.org/10.48550/arXiv.1807.07051>
- Lendentariang, D., Engka, D. S. M., & Tolosang, K. D. (2019). Pengaruh pertumbuhan ekonomi, tingkat pengangguran dan jumlah penduduk terhadap kemiskinan di Kabupaten Kepulauan Sangihe. *Jurnal Berkala Ilmiah Efisiensi*, 19(02). <https://ejournal.unsrat.ac.id/index.php/jbie/article/view/24859>
- Marrero, G. A., & Servén, L. (2022). Growth, inequality and poverty: a robust relationship? *Empirical Economics*, 63(2), 725–791. <https://doi.org/10.1007/s00181-021-02152-x>
- Moridian, A., Radulescu, M., Kumar, P., Radu, M. T., & Mohammad, J. (2024). New insights on immigration, fiscal policy and unemployment rate in EU countries—A quantile regression approach. *Heliyon*, 10(13). <https://doi.org/10.1016/j.heliyon.2024.e33519>
- Ngubane, M. Z., Mndebele, S., & Kaseeram, I. (2023). Economic growth, unemployment and poverty: Linear and non-linear evidence from South Africa. *Heliyon*, 9(10). <https://doi.org/10.1016/j.heliyon.2023.e20267>
- Nosike, C. J., & Ojobor, O. S. N. (2024). Effects of Government Policies on Recessions: Fiscal and Monetary Policy Impact on Unemployment, Poverty, and Inequality. *INTERDISCIPLINARY JOURNAL OF AFRICAN & ASIAN STUDIES (IJAAS)*, 10(1). <https://www.nigerianjournalsonline.com/index.php/ijaas/article/view/4441>
- Okolie, U. C., Nwosu, H. E., & Mlanga, S. (2019). Graduate employability. *Higher Education, Skills and Work-Based Learning*, 9(4), 620–636. <https://doi.org/10.1108/HESWBL-09-2018-0089>
- Putong, I. & ND. Andjaswati, (2012). Pengantar Ekonomi Makro. Jakarta : Mitra Wacana Media.
- Riyadi, I. (2024). Urban-Rural Linkages: Improving Regional Development Through Enhanced Connectivity. *Kashf Journal of Multidisciplinary Research*, 1(04 SE-Engineering and Technology), 19–26. <https://kjmr.com.pk/index.php/kjmr/article/view/85>
- Sa'diyah, N., & Pimada, L. M. (2024). Socioeconomic Dynamics and Poverty Rate in East Java: A Panel Regression Investigation. *Journal of Developing Economies*, 9(1), 107–127. <https://doi.org/10.20473/jde.v9i1.51515>
- Scherer, F. M. (2011). *New perspectives on economic growth and technological innovation*. BroScherer, F. M. (2011). New perspectives on economic growth and technological innovation. Brookings Institution Press.okings Institution Press.
- Spengler, J. J. (1959). Adam Smith's Theory of Economic Growth: Part I. *Southern Economic Journal*, 25(4), 397–415. <https://doi.org/10.2307/1055411>
- Ssenyonga, M. (2021). Imperatives for post COVID-19 recovery of Indonesia's education, labor, and SME sectors. *Cogent Economics & Finance*, 9(1), 1911439. <https://doi.org/10.1080/23322039.2021.1911439>

- Subroto, W. T., & Baidlowi, I. (2020). Regional Autonomy and Economic Development to Foster Growth for a Welfare Society: Empirical Studies in East Java, Indonesia. *International Journal of Innovation, Creativity and Change*, 14(5), 1314–1330. https://d1wqtxts1xzle7.cloudfront.net/81395009/14526_Subroto_2020_E1_R-libre.pdf?1645860091=&response-content-
- Sukirno, S. (2010). Makro ekonomi Teori Pengantar. (Edisi ketiga). Jakarta : PT. Raja Grafindo Persada.
- Veetil, V. P. (2021). Schumpeter's business cycle theory and the diversification argument. *Evolutionary and Institutional Economics Review*, 18(1), 273–288. <https://doi.org/10.1007/s40844-020-00190-1>
- Venal, J., Moutinho, V., de Oliveira, H. V. E., & Ferreira, E. (2024). Analyzing the Effects of Economic Determinants on Urban and Rural Energy Poverty: Evidence from 36 African Countries. *Journal of Poverty*, 1–17. <https://doi.org/10.1080/10875549.2024.2338170>
- Wangtafendirra, M. F. (2023). Analisis Pengaruh Pertumbuhan Ekonomi, Jumlah Penduduk, Upah Minimum, Dan Tingkat Pengangguran Terhadap Kemiskinan Di Provinsi Kepulauan Riau Tahun 2015-2020. Universitas Islam Indonesia. <http://dspace.uui.ac.id/123456789/43679>
- Wibowo, A. (2023). Global Economic Challenges for Indonesia: Equitable Development for Sustainable Prosperity. *Prosiding Seminar Teknologi, Akuntansi, Bisnis, Ekonomi, Dan Komunitas*, 3, 23–40. <https://doi.org/10.35912/stabek.v3i.175>
- Wietzke, F. (2020). Poverty, inequality, and fertility: the contribution of demographic change to global poverty reduction. *Population and Development Review*, 46(1), 65–99. <https://doi.org/10.1111/padr.12317>
- World Bank. (2021). Poverty, Prosperity, and Planet Report 2024. Retrieved from <https://www.worldbank.org/en/publication/poverty-prosperity-and-planet>
- World Bank. (2017). East Java Growth Diagnostic: Identifying the Constraints to Inclusive Growth in Indonesia's Second Largest Province. <https://openknowledge.worldbank.org/handle/10986/27420>
- Yuni, R., & Hutabarat, D. L. (2021). Dampak Perdagangan Internasional Terhadap Pertumbuhan Ekonomi Indonesia Pada Tahun 2009-2019. *Niagawan*, 10(1), 62. <https://belajaronline.cmed-indonesia.com/wp-content/uploads/2023/12/19193-53063-1-PB.pdf>
- Zaman, U., Onwe, J. C., Jena, P. K., Anyanwu, O. C., Ebeh, J. E., & Fulu, O. (2023). Unraveling the intricate relationship between unemployment, population, and poverty in Sub-Saharan Africa: Does quality of life matter? *Sustainable Development*, 31(5), 3930–3945. <https://doi.org/10.1002/sd.2635>