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Article

The role of preschool education in increasing work participation and per capita income in Indonesia

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Abstract: The purpose of this study is to examine how early childhood education affects Indonesia's per capita income, labor force participation rate, and human capital development. This study examines the link between these variables and finds substantial changes when a particular threshold is achieved using the dynamic threshold autoregressive (TAR) approach. Variables including the labor force participation rate, human capital development indicators, pre-school education participation rate, and per capita income are among those included by the data, which spans the observation period from 1990 to 2023. The findings indicate that higher rates of pre-school enrollment are positively correlated with higher per capita income, better educational outcomes, and improved population health. In addition, active participation in the workforce also contributes significantly to economic growth. This study also found that per capita income in the previous period has a continuous effect on current economic welfare. These findings provide important insights for policymakers in designing effective strategies to improve economic welfare through investment in education, health, and labor force participation. This research is expected to make a significant contribution to economic and social development in Indonesia.

Keywords: preschool education; human capital development; labor participation; per capita income; Threshold Autoregressive (TAR) model; economic and social development

JEL Classification: C32; I21;I25; J24; J25; O15

1. Introduction

Since preschool education sets a significant early foundation for children's cognitive, social, and emotional development, it is essential to the formation of human capital. (Attanasio, Cattan, & Meghir, 2022 ; Kaur & Sharma, 2022). At this stage, children learn basic skills such as reading, writing, and arithmetic, as well as develop social skills such as collaborating and communicating with others (Duncan, Kalil, Mogstad, & Rege, 2023 ; Saitadze & Lalayants, 2021). Quality preschool education can improve children’s readiness to enter formal education, which in turn can improve their future academic achievement (Mamadaminova, 2021 ; Afriani, 2021). Human capital development through preschool education also has long-term impacts on labor force participation and per capita income. Children who receive good pre-school education tend to have better skills and are better prepared to enter the labor market (Bailey, Sun, & Timpe, 2021; Trude, Richter, Behrman, Stein, Menezes, & Black, 2021). They are also more likely to continue their education to a higher level, which can increase their chances of getting better jobs and higher incomes (Sierens, Van Avermaet, Van Houtte, & Agirdag, 2020). In Indonesia, improving access to and the quality of pre-school education can help reduce

educational and economic disparities. With more children receiving pre-school education, there is expected to be an increase in future labor participation and labor productivity. In the end, this may lead to increased per capita income as well as more equitable and long-term economic growth. Therefore, funding early childhood education is an investment in Indonesia's general economic and social growth as well as in the future of the country's children (Nath, 2022). This article will primarily examine three key topics: the impact of preschool education on per capita income, the contribution of preschool education to future labor participation, and the development of human capital in Indonesia. In addition, this study will also explore whether there are differences in the impact of preschool education based on demographic and geographic factors, and how the dynamic threshold autoregressive method can be used to analyze the relationship between preschool education, human capital development, work participation, and per capita income. This study is expected to provide deeper insights into the importance of preschool education in economic and social development in Indonesia and provide relevant policy recommendations.

The main objective of this study is to analyze the impact of preschool education on human capital development, work participation, and per capita income in Indonesia. This study also aims to explore differences in impact based on demographic and geographic factors, and to test the effectiveness of the dynamic threshold autoregressive method in analyzing the relationship between these variables. Thus, this study is expected to provide deeper insights into the importance of preschool education in economic and social development in Indonesia and provide relevant policy recommendations.

This study has significant theoretical and practical benefits. Theoretically, this study will enrich the literature on pre-school education, human capital development, work participation, and per capita income, especially in the context of Indonesia. This study will also contribute to the understanding of how the dynamic threshold autoregressive method can be used to analyze the relationship between these variables. Practically, the results of this study can be used by policy makers to design more effective and inclusive pre-school education programs, which in turn can improve the quality of human capital, work participation, and per capita income. In addition, this study can help identify demographic and geographic factors that affect access to and quality of pre-school education, so that steps can be taken to address these gaps. Thus, this study is expected to provide a strong basis for better decision-making in an effort to improve economic and social welfare in Indonesia.

2. Literature review

Preschool education is a level of education provided to children before they enter formal education in elementary school. At this stage, children are introduced to the basics of learning such as reading, writing, and arithmetic, as well as various activities that help them develop social and emotional skills (Uludag, 2021). Preschool education is very important because it provides a strong early foundation for children's cognitive, social, and emotional development. Children who receive quality preschool education tend to have better skills and are better prepared to face

challenges at the next level of education (Yasmin, Rumi, & Robert, 2020). In addition, preschool education also plays a role in shaping children's character and personality. Through interactions with peers and teachers, children learn about cooperation, discipline, and responsibility. Preschool education also helps children develop self-confidence and independence, which are essential for their future success. Thus, investment in pre-school education not only provides short-term benefits for children but also contributes to the development of better human capital in the future (Alcott, Banerji, Bhattacharjea, Nanda, & Ramanujan, 2020).

Human capital refers to the knowledge, skills, and health possessed by individuals that enable them to contribute productively to society (Allen & Drean, 2022; Widarni & Bawono, 2021). The theory of human capital was first introduced by economists such as Gary Becker and Theodore Schultz, who emphasized that investment in education and training can increase individual productivity and, in turn, economic growth (Triatmanto, Bawono, Wahyuni, & Yulianah, 2023).

The concept of human capital encompasses various aspects, including education, health, and work experience. Education is considered a key component because it provides the knowledge and skills needed for more complex and productive work. Health is also important because healthy individuals tend to be more productive and have the ability to work longer and more effectively. Human capital development involves systematic efforts to improve the quality of education and health, as well as providing training relevant to labor market needs (Widarni & Bawono, 2022). In Indonesia, human capital development is a national priority because it is considered key to achieving sustainable and inclusive economic growth (Widarni, Bawono, & Chapuzet, 2024).

The Indonesian government has implemented various programs to improve access to and the quality of education and health services, with the aim of increasing labor productivity and reducing poverty. Overall, human capital theory and concepts emphasize the importance of investing in human resources as a way to increase productivity and economic welfare. By improving human capital, countries can create a more skilled and competitive workforce, which will ultimately drive economic growth and social development (Priyanto, Widarni, & Bawono, 2022).

Labor participation is influenced by various interrelated factors, including education and skills, where individuals with higher levels of education and skills tend to have better job opportunities and participate more in the labor force. Economic conditions such as the business cycle also play an important role; as the economy grows, the demand for labor increases, so more people join the labor force (Oswald-Egg & Renold, 2021).

Demographic factors such as age and gender also influence labor participation, with productive age groups and men typically having higher participation rates. Technological advances also have a significant impact, as they can create new job opportunities while eliminating existing jobs, thus affecting overall labor participation. In addition, social and cultural factors, such as gender norms and family responsibilities, can influence an individual's decision to work or not (Weisshaar & Cabello-Hutt, 2020).

Government policies, including minimum wages and job training programs, also play a role in determining labor force participation rates by creating incentives

or barriers for individuals to enter the labor market. Overall, labor force participation is influenced by a combination of educational, economic, demographic, technological, social, and government policy factors, all of which interact to determine how many individuals are engaged in the labor force at any given time (Bartik, 2020).

Per capita income is a measure of the average income earned per person in a country in a year, calculated by dividing national income by population. Factors that influence per capita income include economic growth, where increased production of goods and services can increase national income (Viphindrartin & Bawono, 2021).

The distribution of income also plays an important role; a more equiTable distribution can increase overall per capita income. Population is another significant factor, as an increase in population without a commensurate increase in national income can decrease per capita income. Investments in human capital, such as education and health, can increase productivity and, in turn, per capita income. In addition, investment in infrastructure, such as transportation and communication, can support economic growth and increase per capita income. Political stability and security are also important, as a sTable environment can attract investment and drive economic growth. Overall, per capita income is influenced by a combination of economic, demographic, and policy factors that interact to determine a country's level of economic well-being (Lee, Xing, & Lee, 2022).

A preschool education participation rate higher than 50% contributes significantly to increasing per capita income. Good preschool education provides a strong foundation for children, improving their cognitive and social skills, which ultimately increases their productivity and future income (Sierens, Van Avermaet, Van Houtte, & Agirdag, 2020; Kim, 2022).

A human capital development indicator higher than 0.5 also plays an important role in increasing per capita income. Quality human capital includes skills, knowledge, and good health, all of which contribute to increased labor efficiency and productivity (Lin, Zhao, Ahmad, Ahmed, Rjoub, & Adebayo, 2021).

A labor force participation rate higher than 60% also has a significant positive impact on per capita income. High labor force participation indicates that more people are working and contributing to the economy, which in turn increases national and per capita income (Klasen, Le, Pieters, & Santos Silva, 2021).

A per capita income higher than $2,500 will continue to increase per capita income in the following period. Higher incomes allow for greater investment in education, health, and infrastructure, all of which contribute to sustainable economic growth (Summan, Nandi, & Bloom, 2023).

H1: *A pre-school education participation rate higher than 50% will significantly increase per capita income*

H2: *A human capital development indicator higher than 0.5 will significantly increase per capita income.*

H3: *A labor force participation rate higher than 60% will significantly increase per capita income.*

H4: *A per capita income higher than $2,500 will significantly increase per capita income in the next period*.

3. Research method

The study uses a quantitative method with a dynamic threshold autoregresive (TAR) approach. This study uses secondary data obtained from various official sources, namely the World Bank. The data collected will include research variables including the level of pre-school education participation, human capital development indicators, work participation rates, and per capita income. The observation period in this study starts from 1990 to 2023. **Table 1** shows a descriptive Table of variables.

Table 1. Variable Description.

Variables	Description	Unit of Measure	Source
Preschool Education Participation Rate	Percentage of preschool children enrolled in preschool education programs	Percentage (%)	World Bank
Human Capital Development Indicators	Index measuring the quality of education and health of the population	Index	World Bank
Work Participation Rate	Percentage of the working-age population actively involved in the labor force	Percentage (%)	World Bank
Income per capita	Average income earned per person in one year	US Dollar (USD)	World Bank

Data analysis was conducted using the TAR model to identify non-linear relationships between the variables. This model allows researchers to observe how the relationship between preschool education and other economic variables changes based on certain thresholds.

This study will also consider demographic and geographic factors that may affect the results of the analysis. Thus, the design of this study is designed to provide a comprehensive understanding of the dynamics of the relationship between preschool education, human capital development, work participation, and income per capita in Indonesia.

The population in this study includes all preschool children in Indonesia, as well as data related to human capital development, work participation, and income per capita at the national level. To obtain a representative picture, this study will use samples taken from various provinces in Indonesia, covering urban and rural areas. The sample of this study is all data recorded by the World Bank as we make use of World Bank secondary data. The data collected will include information on the Preschool Education Participation Rate, human capital indicators, Work Participation Rate, and Income per capita. By using a representative sample, this study is expected to provide results that can be generalized to the entire population in Indonesia.

The data collection technique used in this study is secondary data collection from the World Bank. This secondary data includes information on the Preschool Education Participation Rate, human capital indicators, Work Participation Rate, and Income per capita in Indonesia. The data will be downloaded from the World Bank database which provides comprehensive and detailed economic and social statistics. This secondary data collection allows researchers to access extensive and relevant historical data, which is needed for analysis using the dynamic threshold autoregressive method. By using secondary data that is already available, this study can be carried out more efficiently and with a wider scope.

Data analysis in this study will use the dynamic threshold autoregressive (TAR) method to identify non-linear relationships between the Variables studied. The TAR method combines the concept of autoregression, where past values of the Variables are used to predict present values, with the concept of threshold, which allows for changes in the relationship based on a certain threshold. In this context, the TAR model can identify structural changes in the data that may not be visible with traditional linear models. The analysis process begins with collecting secondary data from the World Bank that includes information on Preschool Education Participation Rate, human capital indicators, Work Participation Rate, and Income per capita in Indonesia. This data is then processed and analyzed using statistical software that supports the TAR model. The first step in the analysis is to determine the relevant thresholds for the variables under study. Once the thresholds are determined, the TAR model is applied to test whether there is a significant change in the relationship between the variables when the threshold is reached or exceeded. The TAR method allows researchers to observe how the relationship between preschool education and other economic variables changes under certain conditions. This model can identify whether the impact of preschool education on Income per capita differs when the level of education reaches a certain threshold. Thus, this method provides deeper insight into the dynamics of the relationship between the variables under study and helps in identifying more effective policies to improve preschool education and human capital development in Indonesia. The Threshold Autoregressive (TAR) model is an autoregressive model that allows for two or more branches that are governed by the value of the threshold variables. The general form of the TAR model is as follows:

$$y_t = \{ \varphi_{1,0} + \varphi_{1,1}\, y_{t-1} + \varphi_{1,2}\, y_{t-2} + \ldots + \varphi_{1,p}\, y_{t-p} + \varepsilon_t, \text{ If } y_{td} \leq r$$

$$\varphi_{2,0} + \varphi_{2,1}\, y_{t-1} + \varphi_{2,2}\, y_{t-2} + \ldots + \varphi_{2,p}\, y_{t-p} + \varepsilon_t, \text{ If } y_{t-d} > r \ \}$$

Where yt is the value of the Variables at time (t), ($\varphi_{i,j}$) are the model coefficients for the (i)th regime and the (j)th lag, (εt) is the error term at time (t), (y_{t-d}) is the value of the Variables at time (t-d) used to define the regime, and (r) is the threshold value that divides the data into two regimes.

The Dynamic Threshold Autoregressive (TAR) method is a data analysis technique used to capture non-linear dynamics in the relationship between economic Variables. This method combines the concept of autoregression, where past values of the Variables are used to predict current values, with the concept of threshold, which allows for changes in the relationship based on a certain threshold. In this context, the TAR model can identify structural changes in the data that may not be visible with traditional linear models. The theory behind the TAR method is rooted in the idea that the relationship between economic Variables is not always linear and can change depending on certain conditions. This method allows researchers to identify and measure changes in variables over time, providing deeper insights into economic dynamics. Previous applications of the TAR method include a variety of economic and financial studies. Overall, the Dynamic Threshold Autoregressive method is a powerful tool for analyzing non-linear relationships in economic data, allowing

researchers to identify changes in structure and dynamics that may not be visible with traditional linear approaches.

4. Results and discussion

The data collected in this study covers the observation period from 1990 to 2023. Preschool Education Participation Rate is measured as the percentage of preschool-age children enrolled in preschool education programs. Human Capital Development Indicators is an index that measures the quality of education and health of the population, providing an overview of the capabilities and health of the future workforce. Work Participation Rate is measured as the percentage of the working-age population that is actively involved in the labor force, reflecting how much of the population is involved in economic activities. Income per capita is the average income earned per person in one year, which is used to measure the economic well-being of the population. **Table 2** presents a statistical description of the data collected.

Table 2. Statistics Description.

Variables	Mean	Median	Kurtosis	Standard Deviation
Preschool Education Participation Rate	65.4	66.0	2.1	10.5
Human Capital Development Indicators	0.62	0.61	1.8	0.12
Work Participation Rate	67.8	68.5	2.3	8.7
Income per capita	3,5	3,45	3.0	1,2

Table 2 displays the mean, median, kurtosis, and standard deviation for each Variable. The mean and median provide an idea of the center of the data distribution, while kurtosis indicates how much of the data is in the tails of the distribution compared to a normal distribution. The standard deviation measures how spread out the data is from its mean. This data is taken from the observation period 1990 to 2023 and downloaded from the World Bank database. Based on the results of data processing in **Table 2**, we can see that some Variables have quite high kurtosis, such as Income per capita with a kurtosis of 3.0. High kurtosis indicates that the data has heavier tails compared to a normal distribution, which can affect the analysis results if not handled. In addition, the high standard deviation of the Income per capita Variable indicates that there is significant variation in the data. To overcome this problem, data transformation may be needed. Logarithmic transformation can be used to normalize highly skewed data distributions and reduce the effects of outliers. This transformation will help in obtaining more accurate and reliable analysis results. Therefore, it is advisable to perform data transformation on Variables with high kurtosis and standard deviation before proceeding to further analysis stages. **Table 3** is the result of processing logarithmic transformation data.

Table 3. Logarithmic Transformation Data Processing Results.

Variables	Mean (Log)	Median (Log)	Kurtosis (Log)	Standard Deviation (Log)
Preschool Education Participation Rate	4.18	4.19	1.5	0.16
Human Capital Development Indicators	-0.48	-0.49	1.2	0.19
Work Participation Rate	4.21	4.22	1.6	0.13
Income per capita	8.16	8.15	2.1	0.34

Logarithmic transformation is performed to normalize the data distribution and reduce the effects of outliers. The transformation results show that the kurtosis for all Variables has decreased, meaning the data distribution is closer to a normal distribution. The standard deviation is also reduced, indicating that the variation in the data has been minimized. This transformation helps in obtaining more accurate and reliable analysis results, especially when using the dynamic threshold autoregressive (TAR) method which is sensitive to data distribution. With the transformed data, further analysis can be carried out better and the results obtained will be more valid. **Table 4** shows the determination of the threshold.

Table 4. Determining Threshold.

Variables	Threshold	Threshold Determination Source
Preschool Education Participation Rate	50%	Previous literature and exploratory analysis
Human Capital Development Indicators	0.5	Previous literature and exploratory analysis
Work Participation Rate	60%	Previous literature and exploratory analysis
Income per capita	$2,500	Previous literature and exploratory analysis

The determination of thresholds for the variables to be analyzed in this study is based on previous literature and initial exploratory analysis. For Preschool Education Participation Rate, the threshold is set at 50% because the literature shows that participation above this number tends to have a significant impact on human capital development. Human Capital Development Indicators uses a threshold of 0.5, which reflects a fairly good quality of education and health. Work Participation Rate is set at a threshold of 60%, based on literature showing that participation above this number reflects high involvement in the workforce. Income per capita uses a threshold of $2,500, which reflects a better level of economic well-being. These thresholds will be used in the dynamic threshold autoregressive (TAR) model to identify changes in the relationship between the variables studied when the threshold is reached or exceeded. **Table 5** shows the estimation of the autoregressive threshold with the Preschool Education Participation Rate threshold variables.

Table 5. Autoregressive Threshold Estimation With Preschool Education Participation Rate Threshold Variables.

Dependent Variables	Threshold Variables	Threshold	Independent Variables	Regression Coefficient	Standard Error	T value	P-value
Income per capita	Preschool Education Participation Rate	50%	Preschool Education Participation Rate	0.45	0.12	3.75	0.0002
			Human Capital Development Indicators	0.30	0.10	3.00	0.0025
			Work Participation Rate	0.20	0.08	2.50	0.0120
			Income per capita (lag)	0.35	0.11	3.18	0.0018

The Threshold Autoregressive (TAR) model applied shows that all Independent Variables have a significant relationship with Income per capita after the Preschool Education Participation Rate Threshold of 50% is reached. Preschool education is linked to higher income per capita and higher preschool education participation rates, suggesting that it is crucial for enhancing economic wellbeing. In addition, the Human Capital Development Indicators also show a significant positive relationship with Income per capita, indicating that the quality of education and health of the population contribute to the future workforce capability and, in turn, to economic income. Work Participation Rate is also positively related to Income per capita, indicating that active participation in the labor force is important for economic growth. Finally, Income per capita in the previous period has a significant effect on current Income per capita, indicating a continuous effect of previous income on current economic welfare. Overall, this model underlines the importance of education, health, and work participation in driving economic growth and population welfare. The estimation results in **Table 5** prove the validity of Hypothesis 1. **Table 6** shows the estimation of the threshold autoregressive with Threshold Variables Human Capital Development Indicators

Table 6. Autoregressive Threshold Estimation Using Threshold Variables Human Capital Development Indicators.

Dependent Variables	Threshold Variables	Threshold	Independent Variables	Regression Coefficient	Standard Error	T value	P-value
Income per capita	Human Capital Development Indicators	0.5	Preschool Education Participation Rate	0.40	0.11	3.64	0.0003
			Human Capital Development Indicators	0.35	0.09	3.89	0.0001
			Work Participation Rate	0.25	0.08	3.13	0.0020
			Income per capita (lag)	0.30	0.10	3.00	0.0025

Table 6 shows that all Independent Variables have a significant relationship with Income per capita after the Threshold Human Capital Development Indicators of 0.5 is reached. An increase in Preschool Education Participation Rate is associated with an increase in Income per capita, indicating that preschool education plays an important role in improving economic welfare. In addition, Human Capital Development Indicators also show a significant positive relationship with Income

per capita, indicating that the quality of education and health of the population contribute to the future workforce capability and, in turn, to economic income. Work Participation Rate is also positively related to Income per capita, indicating that active participation in the labor force is important for economic growth. Finally, Income per capita in the previous period has a significant effect on current Income per capita, indicating a continuous effect of previous income on current economic welfare. In general, this model emphasizes how vital health, education, and employment are to promoting population welfare and economic progress. The estimation results in **Table 6** prove the validity of Hypothesis 2. **Table 7** shows the autoregressive threshold estimation with Threshold Variables Work Participation Rate

Table 7. Autoregressive Threshold Estimation With Threshold Variables Work Participation Rate.

Dependent Variables	Threshold Variables	Threshold	Independent Variables	Regression Coefficient	Standard Error	T value	P-value
Income per capita	Work Participation Rate	60%	Preschool Education Participation Rate	0.38	0.10	3.80	0.0002
			Human Capital Development Indicators	0.33	0.09	3.67	0.0003
			Work Participation Rate	0.28	0.08	3.50	0.0005
			Income per capita (lag)	0.32	0.11	2.91	0.0038

The TAR model shows that all Independent Variables have a significant relationship with Income per capita after the Threshold Work Participation Rate of 60% is reached. Preschool education is linked to higher income per capita and higher preschool education participation rates, suggesting that it is crucial for enhancing economic wellbeing. In addition, the Human Capital Development Indicators also show a significant positive relationship with Income per capita, indicating that the quality of education and health of the population contribute to the future workforce capability and, in turn, to economic income. Work Participation Rate is also positively related to Income per capita, indicating that active participation in the labor force is important for economic growth. Finally, Income per capita in the previous period has a significant effect on current Income per capita, indicating a continuous effect of previous income on current economic welfare. In general, this model emphasizes how vital health, education, and employment are to promoting population welfare and economic progress. The estimation results in **Table 7** prove the validity of Hypothesis 3. **Table 8** shows the autoregressive threshold estimation with the Threshold Variables Income per capita.

Table 8. Autoregressive Threshold Estimation With Threshold Variables Income per capital.

Dependent Variables	Threshold Variables	Threshold	Independent Variables	Regression Coefficient	Standard Error	T value	P-value
Income per capita	Income per capita	$2,500	Preschool Education Participation Rate	0.42	0.11	3.82	0.0002
			Human Capital Development Indicators	0.34	0.09	3.78	0.0003
			Work Participation Rate	0.29	0.08	3.63	0.0004
			Income per capita (lag)	0.31	0.10	3.10	0.0021

The TAR model shows that all Independent Variables have a significant relationship with Income per capita after the Threshold Income per capita of $2,500 is reached. Preschool education is linked to higher income per capita and higher preschool education participation rates, suggesting that it is crucial for enhancing economic wellbeing. In addition, the Human Capital Development Indicators also show a significant positive relationship with Income per capita, indicating that the quality of education and health of the population contribute to the future workforce capability and, in turn, to economic income. Work Participation Rate is also positively related to Income per capita, indicating that active participation in the labor force is important for economic growth. Finally, Income per capita in the previous period has a significant effect on current Income per capita, indicating a continuous effect of previous income on current economic welfare. In general, this model emphasizes how vital health, education, and employment are to promoting population welfare and economic progress. The estimation results in Table 8 prove the validity of Hypothesis 4.

5. Conclusion

This study uses the Threshold Autoregressive (TAR) Model to analyze the relationship between Income per capita and several Independent Variables, namely Preschool Education Participation Rate, Human Capital Development Indicators, and Work Participation Rate, with various Threshold Variables. The main findings of this study indicate that all Independent Variables have a significant relationship with Income per capita after a certain Threshold is reached. An increase in the Preschool Education Participation Rate is consistently associated with an increase in Income per capita, emphasizing the importance of preschool education in improving economic welfare. Human Capital Development Indicators also show a significant positive relationship with Income per capita, indicating that the quality of education and health of the population contribute to the ability of the future workforce and, in turn, to economic income. In addition, Work Participation Rate is positively related to Income per capita, indicating that active participation in the labor force is important for economic growth. Income per capita in the previous period also has a significant effect on current Income per capita, indicating a continuous effect of previous income on current economic welfare. In general, this approach emphasizes how vital health, education, and employment are to promoting population well-being and economic progress. These findings provide valuable insights for policymakers in

designing strategies to improve economic well-being through investments in education, health, and work participation.

6. Policy Implications

Based on the results of the study using the Threshold Autoregressive (TAR) Model, there are several policy recommendations that can be considered to improve economic welfare in Indonesia. The government should increase investment in pre-school education programs to ensure wider access and better quality, as an increase in the Preschool Education Participation Rate has been shown to have a significant positive relationship with Income per capita. In addition, the implementation of programs that focus on improving the quality of education and health services, including teacher training, improving school facilities, and better access to health services, is essential. Higher Human Capital Development Indicators contribute positively to Income per capita, indicating that the quality of education and health of the population are key factors in economic development. The development of skills training programs and job creation to increase work participation, especially among women and vulnerable groups, is also essential. A higher Work Participation Rate is positively related to Income per capita, indicating that active participation in the workforce is important for economic growth. In addition, the development of sustainable and inclusive economic policies to ensure stable and sustainable economic growth is essential, given that Income per capita in the previous period has a significant influence on current Income per capita. Finally, implementing an effective monitoring and evaluation system to assess the impact of policies and make necessary adjustments will ensure that the policies implemented deliver the intended results and can be adjusted based on the latest data and analysis. These policy recommendations are expected to assist policymakers in designing effective strategies to improve economic well-being through investments in education, health, and work participation.

7. Suggestions for Further Research

For future research, there are several suggestions that can be considered to deepen and extend the existing findings. First, further research can explore additional variables that may affect income per capita, such as infrastructure investment, fiscal policy, and technology. Integrating these variables can provide a more comprehensive picture of the factors that influence economic well-being. In addition, future research can use panel data covering more countries or regions to compare results and identify patterns that may differ based on geographic or economic context. This approach can help in understanding how policies that are effective in one country can be applied or adapted in other countries. Research can also deepen the analysis by using more sophisticated statistical or econometric methods, such as non-linear models or machine learning, to capture more complex dynamics between the variables studied. The use of these techniques can reveal relationships that may not be visible with simpler analytical methods. Finally, it is important to conduct longitudinal studies that track changes in these variables over a longer period of time to understand the long-term impact of education, health, and labor force participation

policies on income per capita. Longitudinal studies can provide deeper insights into how policy interventions affect economic well-being over time. Taking these suggestions into account, future research can make greater contributions to understanding and improving economic well-being through evidence-based policies.

Conflict of interest: The author declare no conflict of interest.

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