



## Happiness Index in ASEAN-9 2015-2021: Macroeconomic and Demographic Perspectives

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### Article Information    Abstract

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The ASEAN happiness index is low compared to the world happiness index because it was ranked 6<sup>th</sup> out of 10 other regions in 2021. From Frey's theory perspective, research on the happiness index in ASEAN is needed using economic and non-economic variables. Therefore, this research aims to analyze the effect of GDP per capita, inflation, population density, and dependency ratio on the happiness index in ASEAN-9 and examines the most influential variables. The secondary data was obtained from the World Happiness Report in the Sustainable Development Solutions Network, the World Bank, and the Asian Development Bank. Data were analyzed using panel regression with the random effect model method selected. Found that GDP per capita, inflation, population density, and dependency ratio simultaneously affect the happiness index in ASEAN-9. Partially, GDP has a positive and significant effect on the happiness index in ASEAN-9. Meanwhile, inflation, population density, and dependency ratio are not significant to the happiness index in ASEAN-9. GDP per capita is the most influential variable to the happiness index in ASEAN-9. The finding is that during 2015-2021, in ASEAN-9 countries, there has been GDP per capita growth of 23%, with the average happiness index increasing from 5,339 to 5,431. The implication is that each government of ASEAN countries needs to pay attention to efforts to increase per capita income so that ASEAN people can live more prosperously and happily.

## INTRODUCTION

Welfare measures based on the achievement targets of the Millennium Development Goals (MDGs) program from 2000 to 2015 are measured using a quality-of-life index that focuses on the Human Development Index (HDI). There are three HDI dimensions: health is measured by life expectancy, the average length of schooling measures education, and standard of living is measured by Gross National Income (GNI) or Gross Domestic Product (GDP) per capita (UNDP, 2022)

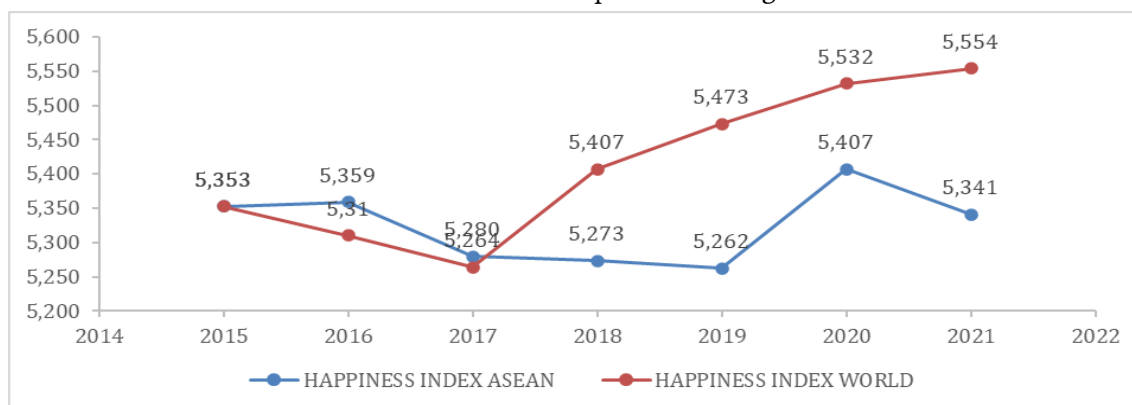
The HDI welfare indicator is weak in not guaranteeing the concept as a whole because it does not include subjective quality of life dimensions. According to the World Health Organization, quality of life should be more subjective because individuals measure their feel perceptions. Therefore, an integrated index of objective and subjective quality of life measurement is needed economically capable people (objective) do not necessarily feel happy (subjective) (Jamaruddin & Sudirman, 2022).

The government of Bhutan has initiated the concept of Gross National Happiness (GNH) as a measure of development success (Vikash, 2019). The General Assembly of the United Nations (UN) offered the concept of happiness as a new measurement tool to support development policies in July 2011. The welfare index that became the focus of policymakers at that time was the happiness index. The United Nations launched its first meeting in April 2012 to discuss happiness and well-being led by the Prime

Minister of Bhutan. They published the first-ever World Happiness Report (WHR) to measure the world's happiness index. This momentum coincides with the development of data collection standards, causing elements of happiness to integrate into the 2015 – 2030 Sustainable Development Goals (SDGs).

The Human Development Index (HDI) and the Happiness Index (HI) aim to measure community welfare. The difference is that HI has a more complex component in objectively and subjectively measuring people's welfare. HI in the World Happiness Report is based on life satisfaction indicators: the Gross Domestic Product (GDP) per capita, life expectancy, social support, public perceptions of corruption, freedom to make life choices, and generosity (Helliwell et al., 2013).

ASEAN (Association of Southeast Asian Nations) is a geopolitical organization declared by five countries in Bangkok on August 8, 1967. There are eleven membership countries: Thailand, Indonesia, Philippines, Malaysia, Singapore, Brunei Darussalam, Vietnam, Laos, Myanmar, Cambodia, and Timor Leste. Based on the happiness index report published by World Happiness from 2015 to 2021, ASEAN member countries ranked 6th out of 10 world regions. It is still under the regions of North America, Western Europe and Northern Europe, Latin America and the Caribbean Islands, Central Europe and Eastern Europe, and East Asia (Helliwell et al., 2021). A comparison of the ASEAN and world happiness indices is presented in Figure 1.



**Figure 1.** Comparison of the Average World and ASEAN Happiness Indexes for 2015-2021  
Source: World Happiness Report, 2015-2021 (Processed)

Many factors influence the happiness index, including economic and social factors (BPS, 2017). This is supported by Frey's theory that happiness is influenced by economic factors, which include per capita income, inflation, and government policies (Frey et al., 2008). Furthermore, happiness is also influenced by non-economic variables such as individual characteristics (demographics), including age, marital status, and gender. In theory, life happiness will increase if income increases. Angela (2017) proved that GDP per capita has a significant positive effect on happiness because if GDP per capita increases, there will be a change in people's consumption patterns, thereby increasing their happiness. However, there is a paradox finding by (Easterlin, 1974) and (Easterlin et al., 2017) that income does not significantly affect the happiness of residents in developed countries such as the United States and China. Moreover, Suparta & Malia (2020) also found that GDP per capita significantly negatively affected the ASEAN happiness index from 2013-2018.

This issue is interesting because ASEAN's HI is relatively low compared to other regions worldwide. Therefore, this research examines the paradox of Easterlin (1974) and Easterlin et al. (2017) when applied to the majority of Developing Countries (DC) in ASEAN. This research also reviews the ASEAN happiness index in research conducted by Suparta & Malia (2020) because of contradictory results with previous researchers. The novelty of this research is using demographic factors, according to the perspective of Frey's theory, in the form of population density and dependency ratios as HI indicators. Apart from Easterlin's paradox (1974), which highlights that at a certain level, economic growth has no direct effect on individual happiness (after a certain threshold is reached), there are several gaps and important research areas in the study of happiness index, including measurement and methodology, factors- Factors influencing happiness, policy and intervention implications, and happiness in the workplace and organizations.

The Happiness Index has become an increasingly important research topic due to the desire to understand broader aspects of subjective well-being than just economic growth. Although this index is complex to measure objectively, focusing on happiness has become an exciting subject for researchers to understand the factors that influence it and its implications in public policy and societal well-being.

## RESEARCH METHODS

Data were collected from September to December 2022 using a quantitative method with a descriptive and verification approach. The population data for 2015-2021 consists of variables X1 (GDP per capita), X2 (inflation), X3 (population density), X4 (dependency ratio), and variable Y (happiness index). Secondary data was collected from the official websites of the World Bank, the World Happiness Report, and the ASEAN Development Bank. The sample was selected through purposive random sampling of 9 ASEAN member countries: Thailand, Indonesia, the Philippines, Malaysia, Singapore, Vietnam, Laos, Myanmar, and Cambodia. Due to insufficient data, Brunei Darussalam and Timor Leste are excluded from the sample.

The data were analyzed using panel data regression because it combines cross-section and time series data types. First, an estimation of the three models is carried out, namely the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM). Furthermore, the best model was selected from several tests, namely the Chow, Hausman, and Lagrange Multiplier tests. Then, classical assumption testing was carried out to ensure that the data from the selected model in this study were normally distributed, especially without symptoms heteroscedasticity, multicollinearity, and autocorrelation. Panel data regression in this study is expressed in the general equation model as follows:

$$HI_{it} = \beta_0 + \beta_1 \ln GDP_{it} + \beta_2 INF_{it} + \beta_3 \ln PD_{it} + \beta_4 DR_{it} + e_{it} \dots \dots \dots (1)$$

By deriving the CEM model the formula becomes:

$$HI_{it} = \beta_0 + \alpha_i + \beta_1 \ln GDP_{it} + \beta_2 INF_{it} + \beta_3 \ln PD_{it} + \beta_4 DR_{it} + e_{it} \dots \dots \dots (2)$$

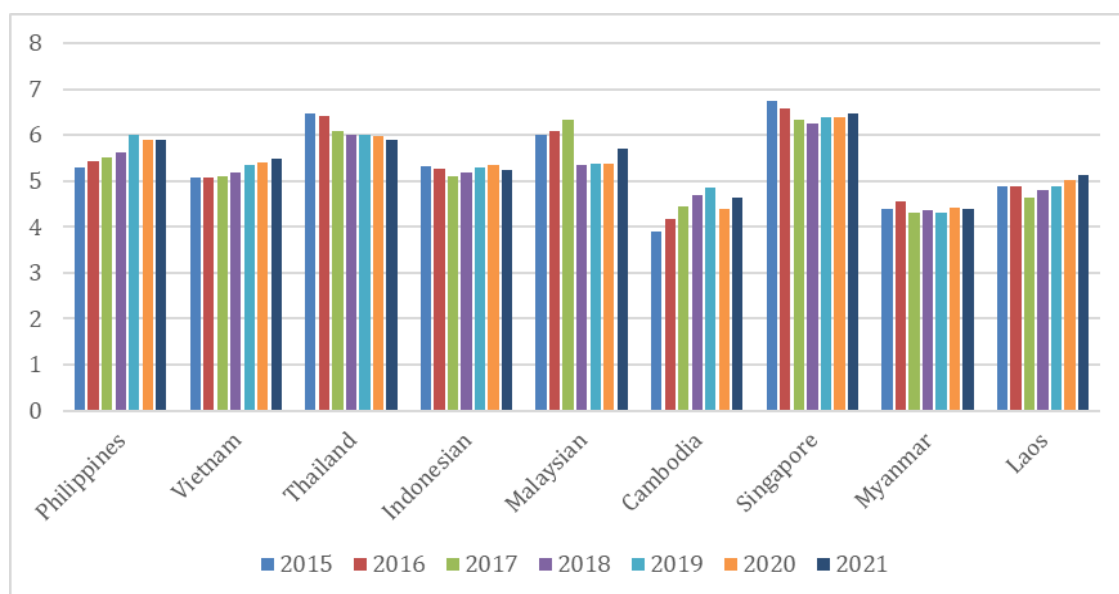
Where HI is a happiness index,  $\beta_0$  is an intercept coefficient,  $\alpha_i$  is a fixed effect for the entity,  $\beta_1-5$  is a regression coefficient, GDP is a GDP per capita, INF is inflation, PD is a population density, DR is a dependency ratio,  $i$  is a research area,  $t$  is a research timeframe, and  $e$  is an error term.

Hypothesis tests were carried out using simultaneous, partial, and elasticity methods. Simultaneous test to determine the effect of GDP per capita, inflation, population density, and dependency ratio simultaneously on the happiness index in ASEAN-9. A partial hypothesis test was used to determine the effect of GDP per capita, inflation, population density, and the partial dependency ratio on the happiness index in ASEAN-9. The elasticity test was used to determine the variables that most significantly influence the happiness index in ASEAN-9..

## RESULTS AND DISCUSSION

ASEAN (Association of Southeast Asian Nations) is a geopolitical organization of Southeast Asian countries founded in Bangkok on August 8, 1967. It has eleven official members: Thailand, Indonesia, Malaysia, Singapore, Vietnam, Philippines, Brunei Darussalam, Myanmar, Laos, Cambodia and Timor Leste. The limitations of economic indicators in measuring people's welfare make policymakers aware of the need for social aspects in development. It is undeniable that today, the measure of people's welfare is not only a material measure.

The happiness index helps measure progress and sustainable social welfare by combining the level of community happiness (Helliwell et al., 2022). Various components are correlated in a complex life, so the measurement of happiness also includes several dimensions. Feelings, meaning in life, and satisfaction are fundamental dimensions of human life. The ASEAN happiness index based on the World Happiness Report is still low compared to the world average because it is in 6th position out of 10 world regions. Figure 2 presents the happiness index of ASEAN member countries in 2015-2021.

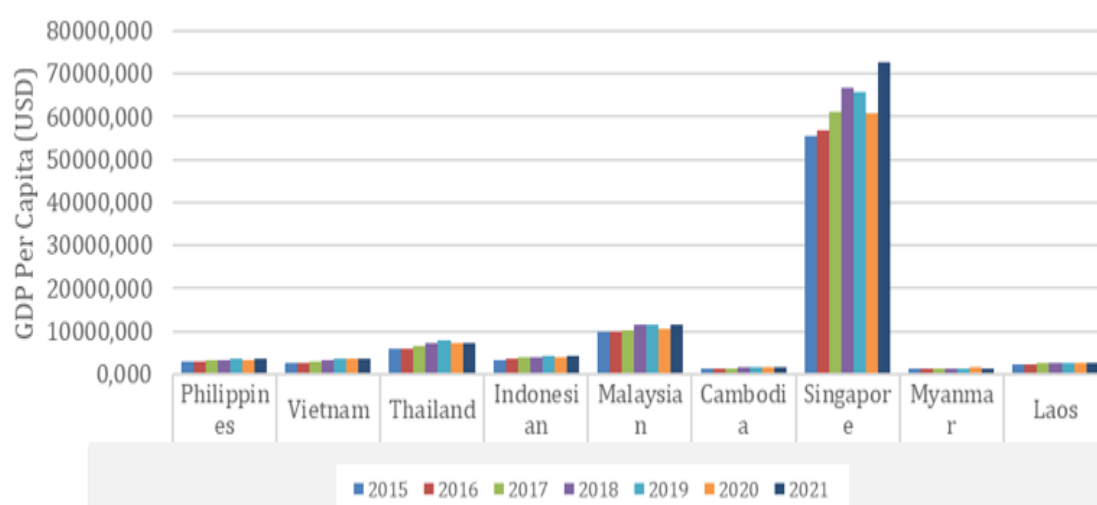


**Figure 2.** The average happiness index of ASEAN member countries  
 Source: World Happiness Report, 2015-2021 (Processed)

Based on Figure 2, Singapore has the highest average happiness index compared to other ASEAN member countries from 2015 to 2021. Over the same year, Myanmar has the lowest average happiness index. As for other countries, the development of a fluctuating happiness index. The data also shows that the majority of countries in ASEAN, such as Indonesia, Laos, Vietnam, Myanmar, and Cambodia, still have a low average global happiness index. According to Rachmawati (2021), Singapore has long been an example of other countries because of its successful control of COVID-19 cases. Based on the latest data

released by the World Happiness Report 2022, Myanmar's happiness index is not only the lowest in ASEAN but also very low globally because it ranks 126 out of 156. This is because Myanmar is facing various issues, such as the Rohingya and a coup by the military in 2021, which ultimately raises concerns and is far from happiness for its people (Martinus, 2021)

Generally, GDP is a parameter to determine a country's income level. GDP is the total product, including goods and services, from domestic production units in a year (Wibowo, 2015). The development of ASEAN's diverse GDP per capita is illustrated in Figure 3.

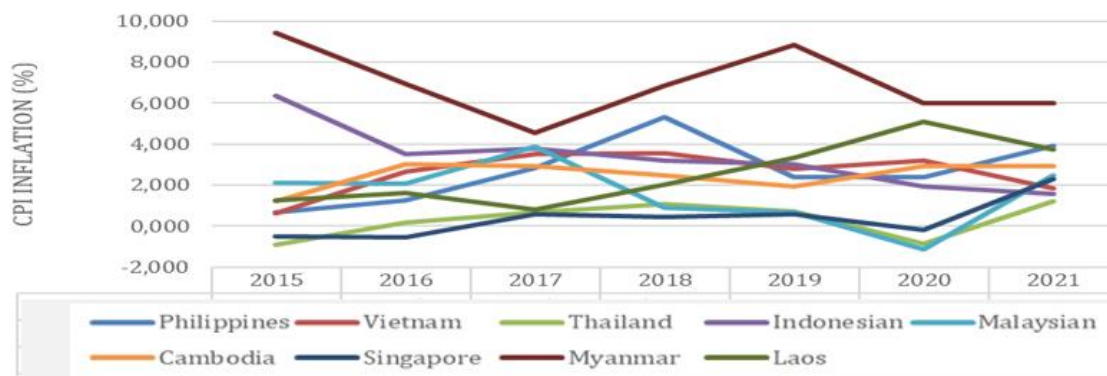


**Figure 3.** GDP per capita of ASEAN countries  
Source: World Bank, 2015-2021 (Processed)

Singapore is the wealthiest country in the ASEAN region, and its per capita GDP growth trend has continued to increase (Wahana News, 2022). It experienced a decline in 2019 and 2020 due to the global pandemic, but it increased again in 2021 drastically to 72,794 USD (World Bank, 2022b). Meanwhile, Myanmar has the lowest average GDP per capita in ASEAN and is a developing country classified as a “low-income” economy by the World Bank. Over the last seven years, 2015-2021, eight ASEAN countries have

experienced growth, but only Myanmar has experienced a downward trend.

Domestic chaos impacts market fluctuations, so the economy experiences rising inflation (Baasir, 2003). The Consumer Price Index (CPI) can measure the inflation rate. An increase in the CPI indicates rising prices, which gives people additional bank income to help with their daily needs (Cristanti et al., 2020). The inflation rate of ASEAN countries is depicted in Figure 4.



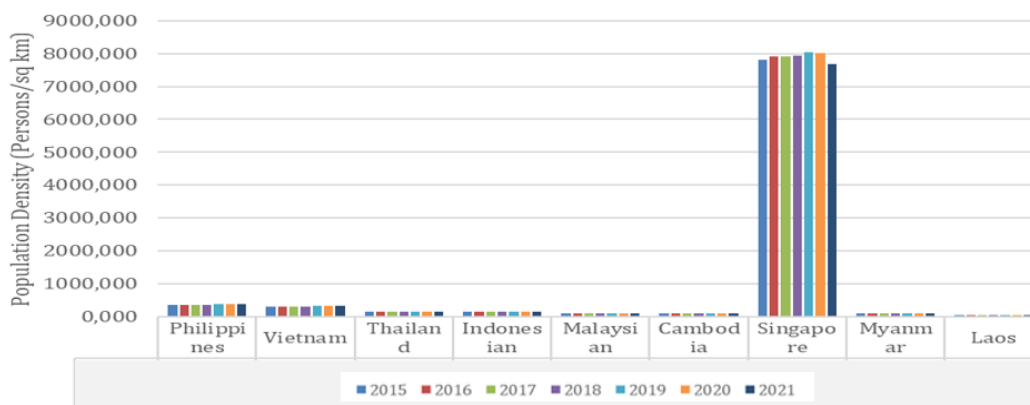
**Figure 4.** The inflation rate of ASEAN countries

Source: World Bank and ASIAN Development Bank, 2015-2021 (Processed)

Myanmar experienced the highest inflation rate in ASEAN in 2019. The military regime that controls this country devalued the kyat because the central bank lacked foreign exchange. The impact was increasing the price of rice and other daily necessities. These conditions result in a vicious cycle as people spend less money amid uncontrolled inflation, and the economy becomes more destroyed (Nikkei, 2022). Meanwhile, from 2015 to 21, Thailand had the lowest average inflation rate, although it experienced a slump in inflation in 2015 due to political turmoil in 2014 (Bhavsar, 2017).

Thailand's inflation rate has fluctuated substantially in recent years but has tended to decrease during 2002 - 2021 and became 1.23 at the end period (Knoema, 2021)

Population density is the number of residents compared to the area they inhabit (Waidah & Pernanda, 2020). The increasing number of residents causes high population density and inequality resulting in conflicts and decreased levels of welfare (Nurwati & Sabiq, 2021) ASEAN population density growth is depicted in Figure 5.



**Figure 5.** ASEAN population density growth

Source: World Bank, 2022 (Processed)

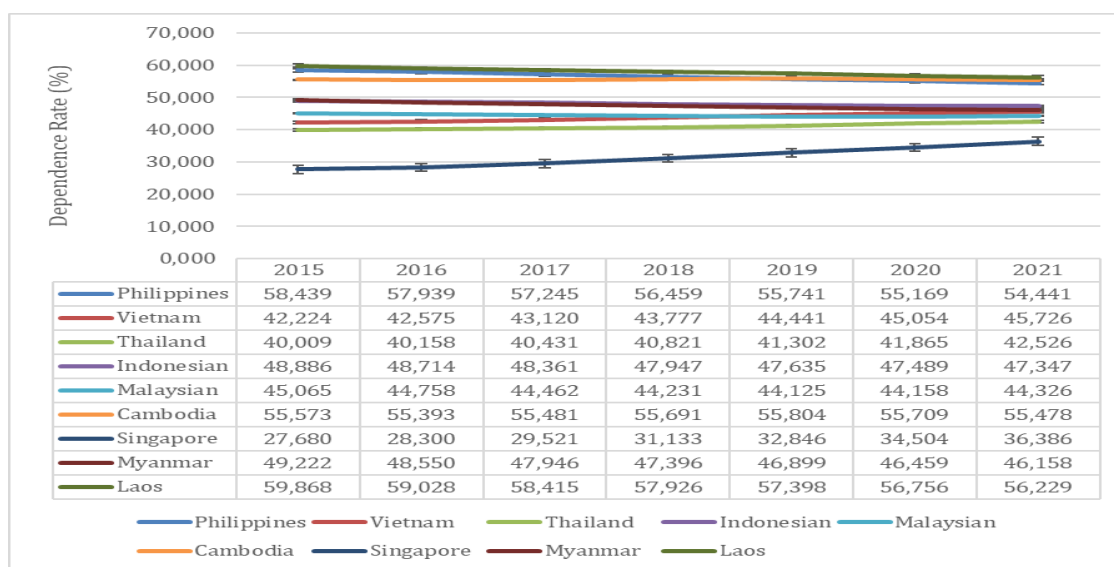
Singapore had the highest average population density in 2015-2021, far above other ASEAN countries. According to the World Bank, Singapore is also characterized as the third most populous country in the world. It is estimated that densely populated urban areas contribute up to 70 percent of emissions even though they cover only 2 percent of the world's

area. This worries environmentalists, as urban cities are rapidly displacing rural lands as globalization and population increase. However, The Singapore government has been planning to increase city quality through green initiatives since 2008. It is an incentive policy that mandates a 100 percent replacement of greenery. This program requires replacing any plant life lost and

destroyed by urban development with greenery grown in terraces and high step-up gardens. Meanwhile, the country with the lowest population density in Myanmar due to the high mortality rate caused by COVID-19, plus the high flow of refugee emigration and mortality due to the political chaos of the government coup by the military (Sorongan, 2021)

The dependency ratio is a comparison number between the not working-age population (0-14 years old and over 65 years old) and the working-age population (15-64 years old)

(Utami, 2020). The dependency ratio is low if the total population of productive age is more than the non-productive. However, if the productive age population does not take advantage of opportunities and is not accompanied by high birth rate control, in that case, it will add to the burden on the productive age population. Ultimately, the increased dependency ratio results in decreased welfare (Triyastuti, 2019). The dependency ratio for each ASEAN country is presented in Figure 6.



**Figure 6.** The dependency ratio for each ASEAN country

Source: World Bank, 2022 (Processed)

Laos has the highest dependency ratio in ASEAN for 2015-2021, ranked 63 out of 174 countries (Helgi, 2022). Meanwhile, Singapore is the country with the lowest dependency ratio in

ASEAN. This is because the birth of babies in Singapore is not enough to keep up with the aging population, which causes the fertility rate to fall (Khidhir, 2018).

**Table 1.** Random Effects Model (REM)

Variable	Coefficient	Std. Error	t-Statistic
C	2.692	1.640	0.106 (ns)
LN_GDP	0.452	0.170	0.010 (*)
INF	0.039	0.021	0.079 (ns)
LN_DP	-0.029	0.141	0.835 (ns)
ADR	-0.023	0.016	0.164 (ns)
R-squared	0.302		
F-statistic	6.299		

Note: Significant level \* = 5%, ns = not significant

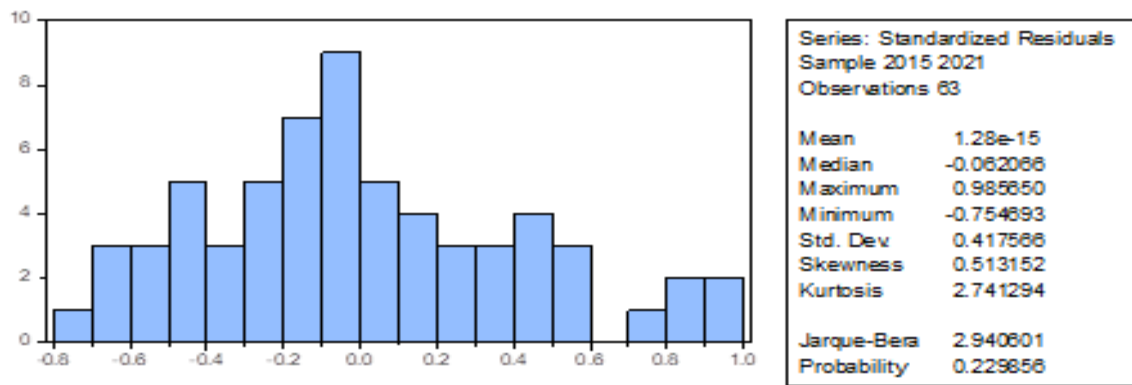
Source: Data Processed, 2022

Based on the test results to select the best model, a weighted Random Effects Model (REM) was obtained to estimate the happiness index in ASEAN-9, presented in Table 1 above. Based on Table 1, the happiness index model using REM can be written as follows:

$$\widehat{HI} = 2,70 + 0,45 \text{ LnGDP} + 0,04 \text{ INF} - 0,03 \text{ LnPD} - 0,02 \text{ DR} \dots\dots\dots(3)$$

Where HI is a Happiness Index, LnGDP is a GDP Per Capita, INF is an Inflation, LnPD is a population density, and DR is a Dependency Ratio.

In the classical assumption test, the most common problems are the non-fulfillment of autocorrelation & heteroscedasticity. However, REM is a model with the GLS (Generalized Least Square) method to produce an estimator to fulfill the Best Linear Unbiased Estimation (BLUE) characteristic. The nature of BLUE is a treatment to overcome the problem of heteroscedasticity and autocorrelation. This study uses REM, so it is not mandatory to perform heteroscedasticity and autocorrelation tests (Kosmaryati et al., 2019).



**Figure 7.** The Normality Test  
Source: Data Processed, 2023

Based on the estimation, the Jarque-Bera probability value is 2.940601, meaning the data is significant because it is more than  $\alpha$  0.05. Therefore, these results indicate that the data is

normally distributed or the model has no normality problems. Figure 7 shows the results of the normality test in this model.

**Table 2.** Multicollinearity test

Variable	LN_GDP	INF	LN_PD	ADR
LN_GDP	1.000	-0.580	0.780	-0.781
INF	-0.580	1.000	-0.351	0.338
LN_DP	0.780	-0.351	1.000	-0.708
ADR	-0.781	0.338	-0.708	1.000

Source: Data Processed, 202

Table 2 presents a multicollinearity test with estimated correlations between the independent variables GDP per capita, inflation, population density, and dependency ratios. The test results found that the collinearity value between the independent variables was less than 0.8, meaning that the data in this research model were free from multicollinearity problems.

Based on the regression analysis, the REM panel data obtained an Adjusted R-squared value of 0.2548 or 25.48 %. This value indicates that the independent variables GDP per capita, inflation, population density, and dependency ratio explain the dependent variable (happiness index) of 25.48 %. Meanwhile, the remaining 74.52 % is explained by other variables outside the research model.



Based on the data analysis from 2015-2021, the simultaneous test shows that GDP per capita, inflation, population density, and dependency ratio significantly influence the happiness index in ASEAN-9. Meanwhile, based on a partial test, GDP per capita significantly affects the happiness index in ASEAN-9. However, inflation, population density, and dependency ratio do not significantly affect the happiness index in ASEAN-9.

GDP per capita has a positive and significant effect on the happiness index in ASEAN-9 with the interpretation that if there is an increase in GDP per capita by 1 percent, there will be an increase in the happiness index by 0.46 index points. This is because the welfare of the people of a country is reflected in an increase in GDP, which means people's income also increases. This study's findings align with the research hypothesis and are based on Frey's theory (Frey et al., 2008). The results also align with the theory put forward by Todaro & Smith (2013) that the level of satisfaction will increase in line with a country's income. The findings of this study are also reinforced by several research results which say that GDP per capita has a positive and significant effect on happiness (Rahayu, 2016; Angela, 2017; Kamal, 2019; Suparta & Malia, 2020; Sapriyadi & Kartomo, 2022).

Inflation does not significantly affect the happiness index in ASEAN-9 because the inflation rate and happiness index in ASEAN fluctuated during the 2015-2021. This is also because most of the population in ASEAN still makes a living in the natural sector, including agriculture. When the price of essential commodities increases, low-income people are not always at a disadvantage but will instead increase the income of farming communities so that inflation can indirectly increase happiness. However, these findings contradict the research results by Majeed & Samreen (2021), which state that inflation negatively and significantly affects the happiness index. According to Akgun et al. (2023), the EU-27 countries found that the inflation rate positively correlated to the happiness index ratings. Meanwhile, this

research found that inflation influences the happiness index but not directly. When inflation increases, happiness will decrease, and vice versa. This is because when inflation rises, several groups of people are harmed, but on the other hand, several groups benefit.

Population density does insignificantly affect the happiness index in ASEAN-9 because most ASEAN member countries have a high population density. For example, Singapore has the highest population density in ASEAN but has the highest average happiness index in ASEAN. This result is supported by research by Suamba & Nurdiantoro (2014), which shows that density can increase the number of human resources (HR) in the region and increase productivity to drive the wheels of the country's economy. Although insignificant, population density negatively affects the happiness index, so it fits the hypothesis. David Ricardo and Robert Malthus put forward the theory that high population density impacts people's quality of life and hinders the increase in the welfare of a country. In line with the research of Triyastuti (2019), the highest impact of population density is a decrease in the population's quality (education, health, income, and employment), making it difficult for residents to achieve a prosperous or quality life. This is also supported by research using population density as the independent variable, where population density negatively and significantly affects the happiness index (Asri, 2018).

The dependency ratio did not significantly affect the ASEAN-9 happiness index during the 2015-2021 period. The dependency ratio is lower if the productive age population is more than the non-productive age (Panggabean, 2020). The insignificant dependency ratio on the happiness index occurs because the dependency ratio numbers vary. Therefore, it is not always reliable in increasing or decreasing happiness. Although insignificant, this result is in line with the research by Utami (2020), where the dependency ratio variable negatively affects welfare using the Gini index variable as the dependent variable. A high dependency ratio number results in unstable

financial flows to cover living expenses, so a high dependency ratio reduces happiness. However, the dependency ratio can have a positive effect based on research by Anggini & Pitoyo (2014), who found that an increasing percentage of the elderly population in a country indicates that the government has succeeded in increasing welfare. This result is due to increasing life expectancy, controlling high birth rates, and reducing mortality rates. Therefore, if the old age dependency ratio increases, people's happiness index also increases.

Based on the results of elasticity testing, the GDP per capita variable has an elasticity value of 0.08, meaning that if there is a one percent change in the GDP per capita level, there will be a change in the happiness index value of 0.08 percent (inelastic). These results indicate that GDP per capita greatly influences the happiness index. GDP per capita is essential in increasing the population's happiness, especially in developing countries (NSB). Any additional income earned in a country where it is pretty challenging to obtain additional income makes residents happier and more grateful when they get high additional income. Harumi & Bachtiar (2022) found a point of change between income and affective well-being over 19 years, that affective well-being is more dependent on income factors, especially for people in the poor and middle-class categories. Then, Nguyen (2022) researched the happiness index 2020 using the independent variables of healthy life expectancy, social support, and GDP per capita, and it was found that other factors affect the happiness index. Overall, GDP per capita has the most impact on the decline in the happiness index.

## CONCLUSION

Based on the results of the analysis and discussion using data for 2015-2021 in ASEAN-9 countries, GDP per capita has a positive and significant effect on the happiness index. Based on this research, the Easterlin Paradox is not proven in ASEAN countries, so income is essential in increasing the population's happiness. Furthermore, GDP per capita is the variable that most influences the happiness

index. Therefore, according to Frey's theory, economic factors are proven, while non-economic factors in demography are not proven to influence happiness. The government must pay more attention to increasing GDP per capita by improving the production process, encouraging MSMEs, encouraging investment, and various other economic activities to contribute added value to national income. In addition, low population growth must also be accompanied by high per capita incomes in ASEAN member countries. The government must adopt a policy to increase the transmigration program, equalize employment opportunities, etc. With these efforts, GDP per capita increases, and people live more prosperous and happier lives. In addition, each ASEAN member country's government must unite to increase GDP per capita. Strengthening cooperation programs are needed between countries, especially in carrying out economic activities with other countries. Thus, an economic union is formed that will bring ASEAN into a stable, high-growth, and prosperous region..

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