

Analysis of Human Development Index, Government Expenditure, Exports and Imports on Economic Growth in ASEAN-5

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Abstract

This study aims to conduct an analysis of the impact of the Human Development Index, Government Expenditure, Exports, and Imports on Economic Growth in five Southeast Asian countries: Singapore, the Philippines, Malaysia, Thailand, and Indonesia, over the period of 2010-2021. The chosen method for this analysis is a quantitative approach employing Panel Data Regression. The results obtained from the panel data regression reveal a positive and significant relationship between the export variable and economic growth. These findings emphasize the importance of enhancing export performance as a means to foster economic growth. Enhancing export performance can be achieved through a variety of strategies, including but not limited to improving export administration systems, increasing investment in research and product development, enhancing infrastructure facilities, ensuring stability in exchange rates, and expanding into non-traditional markets.

Abstrak

Penelitian ini bertujuan untuk melakukan analisis dampak Indeks Pembangunan Manusia, Pengeluaran Pemerintah, Ekspor, dan Impor terhadap Pertumbuhan Ekonomi di lima negara Asia Tenggara: Singapura, Filipina, Malaysia, Thailand, dan Indonesia, selama periode 2010-2021. Metode yang dipilih untuk analisis ini adalah pendekatan kuantitatif dengan menggunakan Regresi Data Panel. Hasil yang diperoleh dari regresi data panel menunjukkan adanya hubungan yang positif dan signifikan antara variabel ekspor dan pertumbuhan ekonomi. Temuan ini menekankan pentingnya meningkatkan kinerja ekspor sebagai sarana untuk mendorong pertumbuhan ekonomi. Peningkatan kinerja ekspor dapat dicapai melalui berbagai strategi, termasuk namun tidak terbatas pada perbaikan sistem administrasi ekspor, peningkatan investasi di bidang riset dan pengembangan produk, peningkatan fasilitas infrastruktur, memastikan stabilitas nilai tukar, dan ekspansi ke pasar non tradisional.

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INTRODUCTION

Economic growth stands as a paramount concern in every nation across the globe. The rate of economic growth serves as a pivotal indicator of a region's developmental success. It gauges the progress of economic development over time, measuring the expansion of production capacity and the attainment of additional output, primarily assessed through metrics such as Gross Domestic Product (GDP) and Gross Regional Domestic Product (GRDP) within a specific region (Kurniasih, 2020). High and sustainable economic growth is a fundamental prerequisite for the ongoing sustenance of economic development. Given the ongoing population growth, a continual increase in income becomes imperative with each passing year.

Table 1.
GDP Growth in ASEAN Countries 2015-2021 (Percent)

Countries	2015	2016	2017	2018	2019	2020	2021
Brunei Darussalam	-0.39	-2.48	1.33	0.05	3.87	1.13	-1.61
Indonesia	4.88	5.03	5.07	5.17	5.02	-2.07	3.69
Cambodia	6.97	6.93	7	7.47	7.05	-3.1	3.03
Lao PDR	7.27	7.02	6.89	6.25	5.46	0.5	2.53
Myanmar	3.28	10.51	5.75	6.4	6.75	3.17	-17.98
Malaysia	5.09	4.45	5.81	4.84	4.44	-5.65	3.13
Philippines	6.35	7.15	6.93	6.34	6.12	-9.52	5.7
Singapore	2.98	3.56	4.66	3.66	1.1	-4.14	7.61
Thailand	3.13	3.44	4.18	4.22	2.15	-6.2	1.57
Vietnam	6.99	6.69	6.94	7.2	7.15	2.94	2.59

Sumber: World Bank (2022)

Economic growth in ASEAN countries has displayed significant volatility, with a notable downturn in GDP growth occurring in 2020, marked by a sharp contraction in six countries. The global COVID-19 pandemic, affecting ASEAN nations as well, has exerted a profound impact on their economies. Government-imposed regional restrictions, aimed at curbing the virus's spread, have impeded economic activities across all countries (Irmawan et al., 2021). In 2021, as the spread of the COVID-19 virus began to wane due to government-initiated vaccination campaigns, community and economic activities gradually resumed, signaling the onset of an economic recovery. Notably, Singapore recorded the highest economic growth in 2021 at 7.61 percent, followed by the Philippines at 5.70 percent, and Indonesia at 3.69 percent. However, some countries experienced economic contractions in 2021, with Myanmar at -17.98 percent and Brunei Darussalam at -1.61 percent (ASEAN. Secretariat., 2019).

Over the seven-year period from 2015 to 2021, Indonesia consistently emerged as the leading contributor to ASEAN's total GDP, accounting for the largest share at 34.75 percent. This was followed by Thailand at 16.02 percent, Singapore at 11.89 percent, the Philippines at 11.73 percent, and Malaysia at 11.36 percent. Indonesia's sustained prominence in contributing to ASEAN's GDP highlights its significant economic role within the region. While measuring economic growth through GDP is essential, it's also imperative to assess the well-being of a nation's populace through other indicators, such as the quality of human resources in each country (Ahuja & Pandit, 2020).

Table 2.
Contribution of GDP in ASEAN Countries 2015-2021 (Percent)

Countries	2015	2016	2017	2018	2019	2020	2021	Average
Brunei Darussalam	0.51	0.43	0.42	0.44	0.42	0.39	0.42	0.43
Indonesia	34.08	35.18	35.55	34.02	34.55	34.36	35.48	34.75
Cambodia	0.71	0.76	0.78	0.80	0.84	0.84	0.81	0.79
Lao PDR	0.57	0.60	0.60	0.59	0.58	0.62	0.56	0.59
Myanmar	2.50	2.28	2.15	2.19	2.12	2.56	1.95	2.25
Malaysia	11.93	11.37	11.17	11.71	11.28	10.94	11.15	11.36
Philippines	12.13	12.03	11.50	11.32	11.63	11.74	11.79	11.73

Countries	2015	2016	2017	2018	2019	2020	2021	Average
Singapore	12.19	12.04	12.01	12.30	11.59	11.21	11.87	11.89
Thailand	15.89	15.61	15.97	16.54	16.80	16.22	15.13	16.02
Vietnam	9.47	9.71	9.85	10.08	10.20	11.14	10.85	10.18
ASEAN	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Note: Using GDP Current US\$

Source: World Bank, 2022 (Processed)

The measurement of the quality of human resources is often conducted through the Human Development Index (HDI). The United Nations Development Programme (UNDP) introduced the Human Development Index in 1991 as a means to assess the level of success in human development. Since 1990, the HDI has been employed by the UNDP to evaluate a country's efforts towards achieving human development. While it may not encompass all dimensions of development, the HDI can effectively gauge the key aspects of human development that reflect the fundamental well-being of a population (Bhakti et al., 2017). The Human Development Index is calculated based on data that can describe four components, namely life expectancy in the health sector, literacy rate and average length of education that measures educational development achievements, and the balance of people's purchasing power for various basic needs. From the perspective of average per capita expenditure, this is an income method that represents the development of a decent life (Dinh et al., 2019). The Human Development Index offers a comprehensive view of a nation's development progress by considering not only economic aspects but also key indicators related to health and education. This holistic approach allows for a more nuanced evaluation of human development achievements.

Table 3.
Human Development Index in 2019

Countries	HDI Rank	HDI (value)
Singapura	11	0.938
Malaysia	62	0.810
Thailand	79	0.777
Indonesia	107	0.718
Filipina	107	0.718
Vietnam	117	0.704

Source: United Nations Development Programme, 2021 (Data Processed)

In the 2020 Development Report, five countries—Singapore, Malaysia, Thailand, Indonesia, and the Philippines—were ranked within the top 100 out of 189 nations according to the Human Development Index (HDI). Among these countries, Singapore and Malaysia stood out for their notably high HDI values compared to the global average. However, it is worth noting that all three of the latter countries experienced a decrease in their Human Development Index values compared to the previous year. In contrast, Thailand, the Philippines, and Indonesia secured positions in the category of relatively high Human Development Index rankings worldwide, whereas Vietnam fell within the medium Human Development Index category. This observation highlights the existence of numerous countries that have yet to attain a high Human Development Index rating, indicating the need for improvement in the quality of human resources within those nations. To assess the level of welfare through the Human Development Index, several dimensions are taken into account, including life expectancy as an indicator of a long and healthy life, educational attainment measured by expected years of schooling, and economic well-being assessed through decent living standards (Mohamed, 2020; Statistics Indonesia, 2020).

Evaluating a nation's or region's progress goes beyond simply measuring Gross Domestic Product (GDP). It involves assessing human quality, which encompasses educational factors like the average length of schooling and expected years of education, as well as health, as reflected in the life expectancy of its population (Hickel, 2020). Health is a critical component of human development, as acknowledged by the United Nations Development Programme (UNDP) in 1990.

In line with the research conducted by Johnson et al., (2022), their findings suggest that both life expectancy (AHH) and the average level of education (RS) exert a negative and significant impact on poverty rates. Furthermore, as Kahn (2019) contends, health lies at the core of human well-being and serves as a primary driver of productivity. Individuals with higher productivity tend to enjoy a better standard of living. Achieving a high life expectancy hinges on a country's ability to provide sufficient healthcare facilities to enhance the quality of its human resources. Government intervention is crucial in supporting these efforts, as emphasized by (Mohamed, 2020), who argues that health takes precedence over education in the context of economic growth due to its potential influence on overall economic development. Additionally, Yefriza (2015) underscores the importance of government spending in the healthcare sector, as it plays a pivotal role in reducing infant and child mortality rates while increasing life expectancy.

Table 4.
Government Expenditures on Health in 2018

Countries	Government Expenditures on Health (US\$)
Singapura	2.234,97
Malaysia	611,02
Thailand	551,21
Indonesia	185,06
Filipina	128,62
Vietnam	200,50

Source: World Bank, 2020

Government contributions in the form of high government spending in the health sector can play a crucial role in enhancing labor productivity and, subsequently, boosting economic growth. This can be achieved by providing essential facilities and infrastructure for public health. However, an intriguing phenomenon emerges when examining the relationship between economic growth, the Human Development Index (HDI), and Government Expenditure on Health in various countries. An illustration of this can be found in the 2018 data on general government health expenditure across six countries, as reported by the World Bank. Among these nations, only one country, Singapore, allocated a substantial total government expenditure of US\$ 2,234.97 to the health sector, demonstrating a notable investment in public health. Surprisingly, when assessing life expectancy, an important indicator of health outcomes, in relation to GDP among ASEAN countries in 2018, Indonesia, despite having a GDP of 1.0 trillion, exhibited a life expectancy of only 71.51 years with a total government expenditure of US\$ 185.06. This figure falls significantly short of the corresponding figures for Malaysia and Thailand.

The economic dynamics of a country are intrinsically linked to its export and import activities. In the case of Indonesia, its export growth in 2017 reached 16.4 percent, surpassing Thailand's growth of 9.9 percent and Malaysia's growth of 15 percent, while also outpacing Singapore's export growth of 10.4 percent. Import growth in Indonesia during the same year was similarly robust at 16.0 percent, with Malaysia following at 15.6 percent, Thailand at 14.1 percent, and Singapore at 12.3 percent.

Research conducted by Ismalisa & Anis (2019) has identified a one-way causality relationship between the Human Development Index (HDI) and economic growth in West Sumatra Province. These findings align with the results obtained by Sari et al., (2021), which demonstrate a similar one-way causality relationship between HDI and economic growth in Jambi Province. Furthermore, Muslikhati (2018) has reported a significant one-way relationship between HDI and economic growth, consistent with the research conducted by Fidelia (2020), who also found a one-way causality relationship between HDI and economic growth.

Dianaputra & Aswitari (2017) have shown that government funding for the health sector positively influenced the Human Quality Index and economic growth in districts/cities within Bali Province from 2011 to 2015. Similarly, Mahulauw et al. (2017) found that government spending

in the health sector significantly affects the Human Development Index in Maluku Province. In contrast, Novela & Aimon (2019) found a one-way relationship between government spending and economic growth, where economic growth influences government spending, but the reverse is not observed.

Solikin (2018) identified a causal relationship between government spending and economic growth in 72 developing countries, corroborated by Ichvani & Sasana (2019), who observed a positive effect of government spending on economic growth in five ASEAN countries from 1997 to 2016. Additionally, Hakim & Sukmana (2017) found that government spending positively impacted economic growth in 16 countries within the Organization of Islamic Cooperation from 2008 to 2011. Finally, Prasetyo & Sasana (2020) reported a two-way causality relationship between per capita health spending and economic growth in ASEAN from 2008 to 2017.

Building upon the existing body of research, this study aims to investigate the influence of the Human Development Index, government spending in the health sector, exports, and imports on economic growth in Indonesia, Thailand, Malaysia, the Philippines, and Singapore. While prior research has focused on specific variables and countries within the ASEAN region, this study seeks to provide a comprehensive understanding of the multifaceted factors influencing economic growth across these nations.

RESEARCH METHODS

The objective of this study is to examine the impact of the Human Development Index (HDI) and government spending in the health sector on economic growth in a selection of Southeast Asian countries, namely Indonesia, Singapore, Malaysia, Thailand, and the Philippines, over an 11-year period spanning from 2010 to 2020. The study utilizes secondary data in the form of time series data covering the years 2010 to 2020. Additionally, the research employs cross-sectional data to provide a regional perspective, encompassing the aforementioned countries in Southeast Asia. By investigating the relationship between HDI, government health sector expenditure, and economic growth in these countries over the specified timeframe, this study aims to contribute to our understanding of the factors influencing economic development and well-being in the Southeast Asian context. The data used as variables in this study are presented as follows:

Table 5.
Data and Data Source

Variable	Description	Measurement	Data Source
HDI	Human Development Index	value	UNDP
HE	Health Sector Government Expenditure	US\$, ADHK 2010	WDI, World Bank
GDP	Economic Growth	Percentage of GDP Growth	WDI, World Bank
EXP	Exports	US\$	World Bank
IMP	Imports	US\$	World Bank

In this study, a quantitative data analysis technique is employed to address the research problem, specifically employing a panel data regression model. Panel data regression is a robust methodology for analyzing complex datasets that incorporate both time series and cross-sectional data. It enables researchers to account for both time-specific and entity-specific effects, making it particularly suitable for examining relationships among variables over time and across different entities. Panel data estimation typically involves three primary approaches, namely common effects, fixed effects, and random effects by going through the testing stages, namely the Chow Test and Hausman Test. The panel data regression equation model in this study is as follows:

$$GDP_{it} = \alpha + \beta_1 HDI_{it} + \beta_2 HE_{it} + \beta_3 EXP_{it} + \beta_4 IMP_{it} + \varepsilon_{it} \dots\dots\dots 1$$

Where, GDP is economic growth, α is constant, HDI is Human Development Index, HE is Government Expenditure, EXP is Export and IMP is Import, $\beta_1, \beta_2, \beta_3, \beta_4$ is Partial regression coefficient, ε is Disturbance error (disturbing factor/residual), i is Countries analysis, t analysis from 2010-2021.

RESULTS AND DISCUSSION

The data analysis technique used to solve the problems in this study is a quantitative analysis technique using a model panel data regression. There are three methods of estimating panel data. First, the common effect or pooled least square (PLS). Second, fixed effects model or Fixed Effect Model (FEM), Third, random effects model or Random Effect Model (REM).

Table 6.
Panel Data Estimation Method

Variable	Common		Fixed		Random	
	Koefisien	Prob.	Koefisien	Prob.	Koefisien	Prob.
C	4.417346	0.0603	1.811322	0.7706	0.704885	0.6474
HDI	0.424981	0.8857	3.989577	0.6232	0.565545	0.7748
HE	0.065598	0.3394	-0.020424	0.7968	-0.041264	0.3682
EXP	0.067715	0.0243	0.062613	0.0292	0.006034	0.7572
IMP	0.010491	0.6996	0.016524	0.5440	0.018396	0.3137

Source: *Regression Results, Data Processed 2022*

To choose the best model to be used in analysing panel data regression, the Chow test and Hausman test were carried out. The test results are as follows:

Table 7.
Chow Test and Hausman Test

Uji Chow			
Effects Test	Statistic	d.f.	Prob.
Cross-section F	2.608237	(4,40)	0.0498
Cross-section Chi-square	11.3565	4	0.0228
Uji Hausman			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	10.43295	4	0.0337

Source: *Regression Results, Data Processed 2022*

The results of the Chow test reveal a probability value of the Chi-square Cross-section as 0.0228, which is less than the predefined alpha level of 5%. This outcome indicates the rejection of the null hypothesis (Ho) since the probability value is below the 5% alpha threshold. Consequently, the model selection based on this test favors the Fixed Effect model. Moving on to the Hausman test, the results demonstrate a probability value for the random cross-section as 0.0337, leading to the rejection of Ho. In this case, the hypothesis used for the Hausman test maintains a significance level of 5 percent ($\alpha = 5$ percent). Based on the calculations conducted, the probability value (p-value) for the random cross-section stands at 0.0337, which is less than the alpha value of 0.05, corresponding to a significance level of 95 percent ($\alpha = 5$ percent). Therefore, the decision derived from this test is to accept Ha and reject Ho, indicating that the most suitable method for this study is the Fixed Effect model. Based on the Chow test method and Hausman test, the model used in this study is the fixed effect model.

Table 8.
Fixed Effect Model Estimation

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.811322	6.170866	0.293528	0.7706
HDI	3.989577	8.058335	0.495087	0.6232
HE	-0.020424	0.078779	-0.259253	0.7968
EXP	0.062613	0.027678	2.262221	0.0292
IMP	0.016524	0.026998	0.612039	0.5440
Fixed Effects (Cross)				
_IND--C	0.536356			
_MLY--C	0.048658			
_PHI--C	1.360736			
_THAI--C	-1.485255			
_SGA--C	-0.511660			
R-squared	0.407812			
Adjusted R-squared	0.289374			
S.E. of regression	1.744240			
F-statistic	3.443260			
Prob (F-statistic)	0.004178			

Source: Regression Results, Data Processed 2022

Furthermore, from the results of the regression that has been carried out, the equation model can be formulated as follows:

$$GDP_{it} = 1.811322 + 3.989577HDI_{it} - 0.020424HE_{it} + 0.062613EXP_{it} + 0.016524IMP_{it} + \varepsilon_{it} \dots\dots 2$$

Based on the results of the F-statistical test presented in Table 8, the probability value of the F-statistic is 0.004178, which is less than the significance level of 0.05. Utilizing a critical F value (F-table) at a significance level of 0.05, with degrees of freedom $df_1 = 4$ and $df_2 = 245$, we find the F-table value to be 1.967. Consequently, the calculated F-statistic (3.443260) is greater than the F-table value (1.967). This leads to the conclusion that the combined influence of the Human Development Index, Government Expenditure on the Health Sector, Imports, and Exports significantly affects economic growth in ASEAN countries.

Regarding the specific influence of variables, the estimation results indicate that the Human Development Index (HDI) variable has a positive yet insignificant effect on economic growth. When considering the individual effect of HDI, the t-count probability value in the equation stands at 0.6232, exceeding the predetermined significance level of 5% ($0.232 < 0.05$). Therefore, it can be inferred that the HDI variable exerts a positive yet insignificant influence on economic growth. Furthermore, the regression coefficient value for HDI is 3.989577, suggesting that a 1 percent increase in HDI is associated with a 3.989577 percent increase in economic growth. It is important to note that these findings diverge from those of Utami (2020), whose research concluded that the HDI variable had a negative and significant impact on economic growth. This discrepancy may be attributed to the presence of other influencing factors, particularly the role of the consumption sector. Empirical observations suggest that in Aceh, income is predominantly allocated toward consumption rather than enhancing human resource productivity, thereby contributing to the differences in research outcomes.

Based on the estimation results, it is evident that Government Expenditure on the Health Sector exerts a negative and insignificant impact on economic growth. In isolation, the t-count probability value for this variable exceeds the 5% significance level ($0.7968 > 0.05$), indicating that government health sector expenditure lacks individual significance concerning economic growth. However, when considered collectively, the four variables, namely the Human Development Index, Government Expenditure on the Health Sector, Imports, and Exports, collectively wield a significant influence on economic growth. This is substantiated by the F-count value surpassing the F-table ($3.443260 > 1.967$), alongside the F-count probability value falling

below the 5% threshold ($0.004178 < 0.05$).

Additionally, the estimation results highlight that the export variable exerts a positive and significant effect on economic growth. Analyzing this variable individually, the t-count probability value falls below the 5% threshold ($0.0292 < 0.05$), signifying that exports have a positive and significant impact on economic growth when assessed in isolation. Simultaneously, the four variables—namely the Human Development Index, Health Sector Government Expenditures, Imports, and Exports—jointly influence the acceptance of Health Service Retribution (Haque & Khan, 2019).

These findings align with the post-neoclassical theory, which posits that exports indeed play a pivotal role in driving economic growth. Research conducted by Sultanuzzaman et al. (2019) corroborated this notion by demonstrating that an increase in exports contributes positively to a country's economic growth. On the other hand, the results indicate that imports have a positive yet insignificant effect on economic growth. When evaluated individually, the t-count probability value surpasses the 5% threshold ($0.5440 > 0.05$), implying that the import variable lacks individual significance concerning economic growth. Nevertheless, when assessed collectively with the other four variables, namely the Human Development Index, Government Expenditure on the Health Sector, Imports, and Exports, they collectively exert a significant impact on economic growth. This is evidenced by the F-count value exceeding the F-table ($3.443260 > 1.967$), and the F-count probability value falling below the 5% threshold ($0.004178 < 0.05$).

Table 9.
ASEAN Countries Intercept Value

No.	Countries	Intercept Value
1	Indonesia	0.536356
2	Malaysia	0.048658
3	Philippines	1.360736
4	Thailand	-1.485255
5	Singapore	-0.511660

Source: Regression Results, Data Processed 2022

The results obtained from the Fixed Effect (FEM) model estimation, as presented in Table 9, reveal interesting insights regarding the intercept coefficients. These intercept values signify that each of the four ASEAN countries under consideration experiences distinct levels of economic growth, as indicated by their respective intercept values. Notably, the Philippines stands out with the highest intercept value at 1.360736, signifying that it boasts the most favorable economic growth rate among the four countries. This observation aligns with empirical data over the past decade, which illustrates the Philippines' remarkable economic growth trajectory characterized by consistent expansion.

Conversely, Thailand displays the lowest intercept value at -1.485255, followed closely by Singapore with -0.511660. These notably low intercept values suggest that these countries have faced challenges in sustaining economic growth. It is important to note that Singapore's economic growth has been particularly impacted by factors such as disruptions in export and import activities. Over the last decade, this decline can be attributed to the trade tensions between the United States and China, as well as a broader global economic deceleration. In summary, these intercept coefficients shed light on the divergent economic growth experiences within the ASEAN region, with the Philippines demonstrating robust growth, while Singapore and Thailand face unique challenges affecting their economic performance.

CONCLUSION

The panel data regression estimation results indicate a significant and positive relationship between economic growth and a specific independent variable, namely the export variable product. These findings highlight the importance of bolstering export performance as a key driver

of economic growth. To enhance export performance and, in turn, stimulate economic growth, a range of strategic measures can be undertaken. These include: 1) optimizing export administration: streamlining export-related administrative processes is essential to facilitate more efficient trade, reducing bureaucratic barriers and delays; 2) investing in research and product development: prioritizing research and innovation efforts can lead to the creation of high-value exportable products, enhancing a country's competitiveness in international markets; 3) upgrading infrastructure: improving infrastructure facilities and transportation networks can lower transportation costs and enhance the logistical efficiency of exporting goods; 4) ensuring exchange rate stability: maintaining a stable exchange rate can instill confidence among exporters and mitigate the risks associated with currency fluctuations; 5) diversifying market reach: exploring non-traditional export markets alongside traditional ones can open up new growth opportunities, especially in emerging economies. By implementing these multifaceted strategies, nations can actively work towards strengthening their export performance, thus playing a pivotal role in fostering sustained and robust economic growth.

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