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The effect of economic freedom, economic complexity and population growth rate on per capita income

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Abstract
Purpose: This study investigates the effects of economic freedom, economic complexity, and population growth on per capita income across different groups of countries classified by income level, namely, high-, upper-middle-, lower-middle-, and low-income countries**.**
Methodology: This study applies panel data regression using a cross-sectional dataset covering 102 countries. Per capita income is employed as the dependent variable, while the independent variables consist of indicators of economic freedom, complexity, and population growth. Separate analyses were conducted for each income group to identify heterogeneous impacts.
Results: The findings revealed diverse effects across income levels. In high-income countries, only trade freedom significantly and positively influences the per-capita income. For upper-middle-income countries, none of the variables demonstrated significant effects. In lower-middle-income countries, monetary freedom is positively related to per capita income, whereas economic complexity is negatively related. In low-income countries, business freedom is the only factor that significantly enhances per capita income. Collectively, all independent variables significantly influenced per capita income across all income groups, with adjusted R^2 values ranging from 28.2% to 59.6%.
Conclusions: The study concludes that the drivers of per-capita income vary across income classifications. The structural differences among country groups necessitate context-specific policy approaches rather than one-size-fits-all strategies.
Limitations: The use of secondary cross-sectional data and a limited set of explanatory variables may not capture the full dynamics influencing income levels.
Contribution: This research enriches the discourse on economic development by offering empirical evidence of differentiated impacts across income groups, providing valuable insights for policymakers in designing tailored economic strategies.

Keywords: *Economic Freedom, Economic Complexity, Per Capita Income, Population*

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1. Introduction

To date, studies on economic growth processes, viewed through per capita income and its determining factors, have been based on economic theories that emphasize factors such as production, labor, capital, and investment. Over time, many researchers have pointed out that fluctuations in per capita income can also be caused by non-economic factors. Non-economic factors play an important role in changes

in social structure, society, national institutions, public attitudes, income inequality, and the business environment. Experts believe that further research is needed to explore the role of non-economic factors in increasing a country's per-capita income (Hussain & Haque, 2016). According to Barro and Sala-i-Martin (1992), developing countries (as defined by the World Bank as low- and middle-income countries) tend to have faster economic growth than developed countries (high-income countries). This is related to the Solow-Swan neoclassical growth model, which predicts that capital formation flows from high-to low-income countries. As a result, it is assumed that diminishing returns to capital occur, leading to a higher input of capital to developing countries compared to the capital output received in developed countries (Endi, Fanggidae, & Ndoen, 2023).

In the context of the state, economic freedom is reflected in the principle of economic independence, which includes several desires to engage in economic activities to improve the general welfare. If a country supports economic freedom, the government must ensure the security of private property and individuals and uphold the rule of law. This freedom makes it easier for economic actors to increase their productivity, thus improving welfare, reducing poverty, enhancing human development, promoting democracy, and advancing the economy to become more dynamic and inclusive. Moreover, economic freedom is a non-economic factor widely studied by experts because it can significantly impact economic growth. In addition to the index of economic freedom, another variable that explains non-economic factors is economic complexity. Economic complexity is an economic development index that is strongly related to economic growth. According to (Hidalgo & Hausmann, 2009), economic complexity is a reflection of national production capability and is defined as non-tradable inputs. The non-tradable capacity of inputs available in a country determines its productivity. When a country's production structure becomes more complex, its production capacity increases. A country with greater capability can participate in social production activities with higher productivity, allowing it to grow faster (Ferrarini & Scaramozzino, 2016).

Another non-economic factor influencing per capita income, which has been the focus of many researchers, is population growth. Population size is a crucial factor in increasing a country’s per-capita income. This is related to Adam Smith's theory of output growth, which stems from the labor force. Another theory suggests that a continuously increasing population leads to the law of diminishing returns, meaning that continuous population growth cannot increase per capita income beyond a certain point (Kurbani, Novalia, & Nuarly, 2023). This is because marginal production decreases, causing national income to slow its growth. Additionally, high population growth causes wages for labor to decrease and can increase land rent (Wa, Desriyantika, Hasbullah, Et, & Indrianni, 2024).

Based on the data and theories explained above, testing the hypothesis that economic freedom, economic complexity, and population growth affect per capita income in each country is an interesting area for further study, particularly in the case of high-, upper-middle-, lower-middle-, and low-income countries. In line with production theory, most high-income countries are already at a saturation point for economic growth because they focus on capital flows and the quality of their economic development. Meanwhile, middle-income and low-income countries are in the early stages of development, moving towards modern economic growth integrated with the global economy. Therefore, through the indices of economic freedom and complexity, these can support international competition by focusing on each country’s non-economic factors.

2. Literature review

2.1. Per Capita Income

A country's economic growth can be observed through an increase in per capita income, which allows society to consume more and diverse goods and services. Per capita income can be measured by Gross Domestic Product (GDP) or the national income of a country divided by its population (Manurung & Putro, 2024). Rostow and Solow believed that economic growth stems from activities involving labor, capital accumulation, and modern technology. Gross domestic product (GDP) is the most commonly used measure of a country's growth (Wijayanti & Wahyudi, 2025).

According to Solow's theory, factors that can boost per capita income include an increase in both the quantity and quality of labor through population growth and improved education quality, an increase in capital from savings and investments, and technological progress (Ramanayake R.A, 2020). Remittances also act as capital that can influence output and economic growth. An increase in per capita income can be supported by higher income within society, which increases savings and consumption. Based on the Solow model, higher savings lead to higher capital stock, which further benefits the economy.

2.2. Economic Freedom

Economic freedom in a country can be considered an important indicator of its welfare level. Economic freedom must provide room for countries to empower their citizens to work, produce, trade and invest according to their personal choices. Many countries still measure the success of economic development by calculating per capita income. An increase in per capita income indicates the success of economic development. According to Sari, Susilowati, and Arifin (2020), economic growth is the process of increasing per capita output in the long term. Meanwhile, Lincoln (1998) defines economic growth as an increase in GDP/GNP without regard to whether this increase is larger or smaller than the growth rate of the population and whether there is a change in the economic structure (Adil, Sapar, & Jasman, 2023).

Miller, Holmes, and Feulner (2012) explain that economic freedom is a condition in which individuals can act autonomously in pursuit of a better livelihood and well-being. Economic freedom is at the core of individual independence, with the main issue being the freedom of individuals to choose and use goods and economic resources. The basic assumption of those who uphold economic freedom is that every individual understands their needs and desires and leads their life based on their own philosophy and priorities, rather than being governed by the state or technocratic elites, which is the foundation for fulfilling their existence.

2.3. Economic Complexity

Economic complexity is an indicator that shows the sophistication level of an economy to assess the number of production processes and diversification of economic activities. Economic complexity is measured using the Economic Complexity Index (ECI). The ECI is an economic development index developed by Harvard University that shows the relationship between one economic system and another, each with different performance and effectiveness. Key macroeconomic indicators can be used to measure and compare the performances of different economies. The ECI sees the success of a country as the product it produces. A product is the output of the knowledge possessed by economic subjects within a country. According to Hartmann, Guevara, Jara-Figueroa, Aristarán, and Hidalgo (2017), an economic system that produces apples has a set of complex knowledge regarding the proper cultivation of apples. Similarly, every country possesses a set of practical and productive knowledge for creating prosperity.

2.4. Population Growth

Population refers to people within a region governed by existing laws and who continually interact with each other. In sociology, a population is a group of people occupying a specific geographic area (Liny & Purnama, 2024). Factors affecting population growth include birth rates, death rates, and migration (Gu, Andreev, & Dupre, 2021). Population growth is a dynamic balance between the forces of increase and the supporting forces. An increased population is caused by a rise in birth rates, while the population is simultaneously reduced by deaths at various ages (Bongaarts, 2009). The same situation applies to migration, where population growth occurs because the number of migrants entering a country is greater than the number of those leaving. Population explosion is an obstacle to economic development in developing countries and a characteristic of these nations (Brunow, Nijkamp, & Poot, 2015). The goal of economic development is to improve the standard of living of a country's population. The population drives the economy, as population growth allows the labor force to increase over time (Peterson, 2017). Subsequently, the increase in population and the provision of education to them before they become part of the workforce allow a society to acquire not only skilled labor but also educated and trained labor (Qi, Ali, Li, Chen, & Tan, 2022).

2.5. The Relationship Between Per Capita Income and Economic Freedom

The primary goal of economic development is to achieve maximum growth, reduce or eliminate poverty, income inequality, and unemployment (Ahmad, Ahmad, & Ali, 2013; Thalib, Kuntuamas, Umar, & Sulastri, 2023). Development is not only focused on national income but also considers other issues such as social structure changes, public attitudes, national institutions, income inequality, income increases, and the improvement of people's welfare. Development must meet the basic needs of individuals and improve the standard of living of society, which is not only assessed from the material aspect (Dwiyanti, Luh Putu Agustini Karta, Cintya, & Bendesa, 2023; Sutama, Dewi, & Rahayu, 2024). In contrast, economic freedom concerns every individual within a country. According to Gwartney (2008), individuals with economic freedom are those who enjoy secure property (residence) free from violence, fraud, or threats and are protected from physical invasion by others. These individuals are free to use, trade, or give away their property to others as long as their actions do not violate the rights of others.

2.6. The Relationship Between Per Capita Income and Economic Complexity

Per capita income can lead to increased economic diversity if the government supports all aspects of the economy, including the monetary policy, fiscal policy, and infrastructure. Developing countries generally face several issues, such as high poverty rates, high unemployment, income inequality, lack of healthcare and education facilities, and technological dependence on foreign countries (Todaro & Smith, 2009). An increase in national income, which means an increase in the demand for goods produced, can expand product diversification. Economic complexity is an index calculated based on the number of production processes and the diversification of economic activity. Thus, an increase in a country's income enhances its economic complexity.

3. Research methodology

3.1. Type and Source of Data

The type of data used in this research is secondary data, which is processed in the form of panel data. The required panel data include both time-series and cross-sectional data. The time series data used in this study cover the period from 2011 to 2022. Cross-sectional data were classified according to per capita income by the World Bank (2022). Countries are classified based on per capita income as follows:

Table 1. Classification of Cross-Sectional Data Based on Income Size

No	Classification	Income Size	Data Cross Section
1.	High income countries	>$13,206	42 Countries
2.	High-middle income countries	$4,256 - $13,205	25 Countries
3.	Low-middle income countries	$1,086 - $4,255	25 Countries
4.	Low income countries	<$1,085	10 Countries

Source: World Bank (2022)

Several countries were excluded because of incomplete data required for the analysis. The data used in the regression model consist of the Economic Freedom Index, Economic Complexity Index, and population growth. The Economic Freedom Index comprises four components: business freedom, trade freedom, monetary freedom, and investment freedom, all measured on a scale from 0 to 100. These four components were chosen because they were the most impacted during the COVID-19 pandemic, and when viewed cumulatively, they showed a significant decline. The data used in this study, including the Economic Complexity Index, population growth, and GDP per capita, were obtained from various sources, such as the World Development Index, The Heritage Foundation, and the Observatory of Economic Complexity. The variables used in this study are as follows.

Table 2. Variables Used in the Research

Variable	Symbol	Unit	Source
GDP Per Capita	LnGDP	US$	World Development Index
Business Freedom	KB	Index	The Heritage Foundation
Trade Freedom	KP	Index	The Heritage Foundation

Monetary Freedom	KM	Index	The Heritage Foundation
Investment Freedom	KI	Index	The Heritage Foundation
Economic Complexity	KE	Index	Observatory of Economic Complexity (OEC)
Population Growth	POP	Percent	World Development Index

3.2. Operational Definitions of Variables

The following are the operational definitions of the variables used in this study.

a) GDP Per Capita
   GDP per capita is the national income obtained by dividing the national income by the population of the country. GDP per capita reflects each individual's ability to produce goods that will be consumed. This indicates that as GDP per capita increases, the population's well-being also increases.
b) Business Freedom
   Business freedom measures the extent to which regulations and infrastructure limit the efficient operation of a business. The quantitative score is derived from factors influencing the ease of creating, operating, and closing a business quickly and easily without cumbersome regulations. The quantitative score for this component ranged from 0 to 100. A higher score indicates a freer business environment, showing that the regulations are more effective.
c) Trade Freedom
   Trade freedom is a combination of tariff and non-tariff barriers that can affect both exports and imports. In other words, trade freedom includes the ability of citizens to interact freely as buyers or sellers in international markets, which is reflected in tariff and non-tariff trade barriers. The scores for this component ranged from 0 to 100. The higher the score, the lower are the trade barriers. The data for this were from to 2011-2022, published by The Heritage Foundation.
d) Monetary Freedom
   Monetary freedom measures a country's condition by combining price stability with price control assessments. It is expected that there will be a stable exchange rate and prices, with minimal government intervention and control. The score for this component ranges from 0 to 100, indicating that the higher the score, the more ideal it is for a country to have a free market.
e) Investment Freedom
   Investment freedom refers to market openness, where investors and those seeking capital can interact freely without government restrictions. This represents an open and free investment environment in China. The score for this component ranges from 0 to 100, indicating that a higher score indicates freer investment opportunities.
f) Economic Complexity
   Economic complexity is measured using the Economic Complexity Index (ECI). Economic complexity is an index that views the products produced by an economic system as an indicator of a country's competitive advantage compared to others.
g) Population Growth
   Population growth is the change in population over time, influenced by birth, death, and migration rates. Population growth was expressed as a percentage. It represents the potential labor force that produces output in the form of goods and services for consumption.

3.3. Research Model

To analyze the effect of economic freedom, economic complexity, and population growth on per capita income, the equation used adopts the research of (Hussain & Haque, 2016). The regression analysis used in this study is a static panel data regression. The dependent variable used is GDP per capita, which is classified by income according to the World Bank (2022). The general model used in this study is as follows:

$$\text{Ln}(GDP)_{it} = \alpha_0+\alpha_1(\text{Business Freedom})_{it}+\alpha_2(\text{Trade Freedom})_{it}+\alpha_3(\text{Monetary Freedom})_i t+ \alpha_4(\text{Investment Freedom})_{it}+\alpha_7(\text{Economic Complexity})_{it}+\alpha_8(POP)_{it}+\epsilon_{it}$$

Where:

α : Intercept

ε_{it} : Error term
Ln : Natural logarithm
GDP_{it} : GDP per capita in country i at year t (in US$)
Business $Freedom_{it}$: Business freedom index (unit) in country i at year t (index value 0-100)
Trade $Freedom_{it}$: Trade freedom index (unit) in country i at year t (index value 0-100)

3.4. Research Hypotheses

Based on the hypothesis from the research model, the following factors are proposed to influence economic growth.

a) It is hypothesized that the business freedom indicator has a positive effect on per-capita income ($\beta 1 > 0$).
b) It is hypothesized that the trade freedom indicator has a positive effect on per-capita income ($\beta 2 > 0$).
c) It is hypothesized that the monetary freedom indicator has a positive effect on per-capita income ($\beta 3 > 0$).
d) It is hypothesized that the investment freedom indicator has a positive effect on per-capita income ($\beta 4 > 0$).
e) It is hypothesized that the economic complexity indicator has a positive effect on per-capita income ($\beta 5 > 0$).
f) It is hypothesized that the population growth indicator has a positive effect on per capita income ($\beta 6 > 0$).

3.5. Data Analysis Method

This study uses a quantitative data analysis approach and panel data methods. The analysis statistically explains the effects of economic freedom, economic complexity, and population growth on per capita income using panel data from 120 countries for the period 2011-2022. The 120 countries will be grouped based on their income levels according to the World Bank and processed separately. Panel data processing was performed using Eviews 9 software and Microsoft Excel 2010.

3.6. Panel Data Regression Analysis

This study uses a pooled data approach in which the data structure consists of both time series and cross-sectional dimensions. Panel data provide better measurements than cross-sectional or time-series data alone. According to Firdaus (2011), there are three types of panel regression techniques: Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM). To determine the best method for panel data, several tests are needed, such as the Chow test to determine the PLS and FEM, the Hausman test to compare the FEM and REM, and the Multiplier test to compare the CEM and REM. Panel data analysis has the advantage of controlling for individual heterogeneity, minimizing multicollinearity issues among variables, and providing more diverse and efficient information.

(i) Common Effect Model (CEM), which is the simplest panel data technique that combines all the data. It only combines time series (T) with cross-section (N) to obtain N × T observations. This approach does not consider the individual or time effects. The regression equation for the common-effects model is as follows:

$$\ln Y_{it}=\alpha_i+\beta_1 \ln X1_{it}+\beta_2 \ln X_{2it}+\epsilon_{it}$$

This model assumes that the coefficients and intercepts are the same for every individual observed, so the assumptions become limited. According to Firdaus (2011), the limitation of this model is the bias in parameter estimation caused by its inability to distinguish between different observations within the same period.

(ii) Fixed Effect Model, This model is used in panel data to examine individual data differences, with each individual data having a specific intercept. The model allows for changes in the intercept; therefore, dummy variables can be added. This technique is often referred to as the least squares

dummy variable (LSDV) and within-group (WG) because it is used to estimate the fixed effect model. The regression equation is as follows:

$$Y_{it}=\alpha+\beta_1 X_{1t}+\beta D_1+\epsilon_{it}$$

(iii) Random Effect Model, This model uses a random intercept for each individual data point, where the intercept is a random or stochastic variable. This model is used when there is no relationship between the individual and time effects on Xit. It has two residual components: residuals from the overall model and residuals from the individual equation. The regression equation for this model is as follows:

$$Y_{it}=\alpha_i+\beta_1 X_{1t}+\beta D_1+V_{it}$$

Where $V_{it}=\epsilon_{it}+\mu_{it}$

According to Gujarati and Porter (2012), the Hausman, Chow, and LM (Breusch-Pagan) tests should be performed when determining the best panel data model. These tests are described below.

3.7. Hausman Test

The Hausman Test is a statistical test used to choose between the fixed-effect and random-effect models. The hypothesis for this test is as follows.
H0: Random Effect Model
H1: Fixed Effect Model

The basis for rejecting the null hypothesis is the Hausmann statistic, which is compared with the chi-square value. If the statistic value is greater than X^2 (k), there is enough evidence to reject H0, and the model to be used is the fixed-effect model, and vice versa. The Hausmann statistic value is obtained using the following equation:

$$H = (B\mathit{REM} + B\mathit{FEM})' (MREM + MFEM)^{-1} (\beta REM + BFEM) \sim x^2 (k)$$

βREM = vector of the random effect variable statistics
βFEM = vector of the fixed effect variable statistics
MREM = covariance matrix for the fixed effect model estimate
MFEM = covariance matrix for the random effect model estimate
k = degrees of freedom

3.8. Chow Test

The Chow Test or F-statistic test is a statistical test to decide between the Pooled Least Square (PLS) and fixed effect models. The hypothesis for this test was as follows:
H_0: Pooled Least Square Model (PLS)
H_1: Fixed Effect Model (LSDV)
If the F-statistic value is greater than the F-table value, H_0 is rejected, and the fixed-effect model is chosen.

3.9. LM Test (Breusch-Pagan)

The LM test was used to compare the CEM and REM models. The hypothesis for this test was as follows:
H_0: Pooled Least Square (PLS)
H_1: Random Effect Model
If the LM test statistic is greater than the chi-square table value, H0 is rejected, and the REM model is used.

3.10. Hypothesis Testing

Hypothesis testing was used to determine the relevance of the variables in the model, either individually or as a whole. Several tests were used for hypothesis testing as follows:

1. Coefficient of Determination (R^2)
   The R^2 coefficient was used to measure the percentage of variation in the dependent variable explained by the independent variables. If R^2 approaches 0, there is no relationship between the

independent and dependent variables. If R^2 approaches 1, it indicates a strong relationship between the variables.

2. Significance of Parameters (t-Test)
   A t-test was used to measure the significance of each independent variable on the dependent variable. If the t-statistic exceeds the critical value, the null hypothesis is rejected, and the independent variable is considered significant.
3. Overall Significance (F-Test)
   The F-test evaluates whether all independent variables significantly affect the dependent variable. If the F-statistic exceeds the critical value, the independent variables significantly affect the dependent variables.

4. Results and discussions

4.1. General Overview of the Research Object

The World Bank classifies the global economy into four income groups: low, lower-middle, upper-middle, and high income. This classification is updated annually on July 1st and is based on the Gross National Income (GNI) per capita from the previous year (2021). GNI is measured in U.S. dollars (USD) and determined using a conversion factor calculated based on the Atlas method. The classification can change for two reasons.

a) Changes in Atlas GNI per capita: In each country, factors such as economic growth, inflation, exchange rates, and population growth influence the Atlas GNI per capita. Revisions to improve estimates and national account calculation methods can also impact this change.
b) Changes in the classification thresholds: To keep the income classification thresholds stable in real terms, these thresholds are adjusted annually for inflation using the Special Drawing Rights (SDR) deflator, which is the weighted average of the Gross Domestic Product (GDP) deflators from China, Japan, the UK, the US, and the Eurozone.

In this study, the research object refers to cross-sectional data based on income size sourced from the World Bank.

Table 3. Classification of Cross-Sectional Data Based on Income Size

No	Classification	Income Size	Data Cross Section
1.	High income countries	>$13,206	42 Countries
2.	High-middle income countries	$4,256 - $13,205	25 Countries
3.	Low-middle income countries	$1,086 - $4,255	25 Countries
4.	Low income countries	<$1,085	10 Countries

Source: World Bank (2022)

Thus, the total sample of countries used in this study was 102.

4.2. Research Results

4.2.1. Model Specification Testing

4.2.1.1. Chow Test

The Chow Test is used to determine the most suitable model between the Common Effect Model (CEM) and the Fixed Effect Model (FEM) in this research. This test was conducted by comparing the cross-section F probability value with a significance level (α) of 0.05 or 5%. The hypotheses used in this test were as follows:

a) **H0**: If the cross-section F probability is greater than α (0.05), the appropriate model is the Common Effect Model.
b) **H1**: If the cross-section F probability is less than α (0.05), the more suitable model is the fixed-effect model.

Table 4. Chow Test Results for High-Income Countries

Redundant Fixed Effects Tests			
Equation: Untitled			
Test cross-section fixed effects			
Effects Test	Statistic	d.f.	Prob.
Cross-section F	188.925512	(41,371)	0.0000
Cross-section Chi-square	1292.827512	41	0.0000

Data processing results from EViews 13, 2025

Table 5. Chow Test Results for High-Middle Income Countries

Redundant Fixed Effects Tests			
Equation: Untitled			
Test cross-section fixed effects			
Effects Test	Statistic	d.f.	Prob.
Cross-section F	91.198697	(24,219)	0.0000
Cross-section Chi-square	599.346008	24	0.0000

Data processing results from EViews 13, 2025

Table 6. Chow Test Results for Low-Middle Income Countries

Redundant Fixed Effects Tests			
Equation: Untitled			
Test cross-section fixed effects			
Effects Test	Statistic	d.f.	Prob.
Cross-section F	35.528984	(24,219)	0.0000
Cross-section Chi-square	396.981407	24	0.0000

Data processing results from EViews 13, 2025

Table 7. Chow Test Results for Low Income Countries

Redundant Fixed Effects Tests			
Equation: Untitled			
Test cross-section fixed effects			
Effects Test	Statistic	d.f.	Prob.
Cross-section F	787.374355	(9,84)	0.0000
Cross-section Chi-square	444.689562	9	0.0000

Data processing results from EViews 13, 2025

Referring to the results of the Chow Test displayed in the table above, the cross-section F probability value is recorded as smaller than the significance level $\alpha = 0.05$ (5%), at 0.0000. This indicates that the null hypothesis (H0) was rejected and the alternative hypothesis (H1) was accepted. Therefore, the most suitable model for this study is the fixed effects model (FEM). After determining the appropriate model, the next step was to perform the Hausman Test.

4.2.1.2. Hausman Test

The Hausman Test is used to select the most suitable model between the Random Effect Model (REM) and the Fixed Effect Model (FEM) in this research. This test was conducted by comparing the random cross-section probability value with a significance level of $\alpha = 0.05$ (5%). The decision criteria for this test were as follows:

a) If the random cross-section probability is greater than 0.05, the model used is the Random Effect Model (REM).
b) If the random cross-section probability is smaller than 0.05, the selected model is the fixed effects model (FEM).

Table 8. Hausman Test Results for High-Income Countries

Correlated Random Effects - Hausman Test			
Equation: Untitled			
Test cross-section random effects			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	30.049944	6	0.0000

Data processing results from EViews 13, 2025

Table 9. Hausman Test Results for High-Middle Income Countries

Redundant Fixed Effects Tests			
Equation: Untitled			
Test cross-section fixed effects			
Effects Test	Statistic	d.f.	Prob.
Cross-section F	91.198697	(24,219)	0.0000
Cross-section Chi-square	599.346008	24	0.0000

Data processing results from EViews 13, 2025

Table 10. Hausman Test Results for Low-Middle Income Countries

Redundant Fixed Effects Tests			
Equation: Untitled			
Test cross-section fixed effects			
Effects Test	Statistic	d.f.	Prob.
Cross-section F	35.528984	(24,219)	0.0000
Cross-section Chi-square	396.981407	24	0.0000

Data processing results from EViews 13, 2025

Table 11. Hausman Test Results for Low Income Countries

Redundant Fixed Effects Tests			
Equation: Untitled			
Test cross-section fixed effects			
Effects Test	Statistic	d.f.	Prob.
Cross-section F	787.374355	(9,84)	0.0000
Cross-section Chi-square	444.689562	9	0.0000

Data processing results from EViews 13, 2025

Based on the results of the Hausman Test analysis shown in the table, the probability of the cross-section random is smaller than $\alpha = 0.05$ (5%), which is 0.0000. This indicates that H0 is rejected and H1 is accepted; therefore, the most suitable model for this research is the Fixed Effect Model (FEM). Because the model selected through the Hausman Test is FEM, the Lagrange Multiplier Test is not necessary for this analysis.

4.2.2. Model Estimation Results

4.2.2.1. Model Estimation with the Fixed Effect Approach

Based on the results of the model specification test using the Chow and Hausman tests, it was found that the most appropriate model for this research is the fixed effects model (FEM). This model was selected because it provides more optimal results than the Common Effect Model (CEM) or the Random Effect Model (REM).

Table 12. Fixed Effect Model Results for High Income Countries

Dependent Variable: ABSRES
Method: Panel Least Squares
Date: 02/13/25 Time: 22:50
Sample: 2011 2020
Periods included: 10

Cross-sections included: 42				
Total panel (unbalanced) observations: 419				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	84291.72	48618.58	1.733735	0.0838
X1	2.753384	16.37784	0.168116	0.8666
X2	27.34341	10.53376	2.595790	0.0098
X3	-2.463780	2.875333	-0.856868	0.3921
X4	50.52080	68.39195	0.738695	0.4606
X5	3417.042	1878.027	1.819485	0.0696
X6	-5684.427	2980.561	-1.907167	0.0573
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.641567	Mean dependent var		2470.047
Adjusted R-squared	0.596159	S.D. dependent var		2946.504
S.E. of regression	1872.459	Akaike info criterion		18.01534
Sum squared resid	1.30E+09	Schwarz criterion		18.47791
Log likelihood	-3726.214	Hannan-Quinn criter.		18.19819
F-statistic	14.12894	Durbin-Watson stat		1.234959
Prob(F-statistic)	0.000000			

Data processing results from EViews 13, 2025

The estimation equation for the model is as follows:

Ln(GDP)it = 84291.72 + 2.753384 (Business Freedom)it + 27.34341 (Trade Freedom)it -2.463780 (Monetary Freedom)it + 50.52080 (Investment Freedom)it + 3417.042 (Economic Complexity)it - 5684.427 (POP)it + εit

Based on the results of the panel data regression model estimation, the interpretation of the equation is as follows.

1. The coefficient or C value is 84291.72, which indicates the GDP per capita when other variables are constant or not influenced.
2. Business Freedom has no effect on GDP per capita, with a coefficient (C) of 2.753384. The Business Freedom variable has a probability value of 0.8666, meaning that the Business Freedom variable does not significantly affect GDP per capita because the probability value for the t-statistic of it is greater than 5% (> 0.05).
3. Trade Freedom has a positive effect on GDP per capita, with a coefficient (C) value of 27.34341. This means that when Trade Freedom increases by one unit (1%) in high-income countries, GDP per capita increases by 27.34341 percent (%). The Trade Freedom variable has a probability value of 0.0098, meaning that the Trade Freedom variable significantly affects GDP per capita because the probability value for the t-statistic of the Trade Freedom variable is smaller than 5% (p < 0.05).
4. Monetary Freedom has no effect on GDP per capita, with a coefficient (C) value of -2.463780. The Monetary Freedom variable has a probability value of 0.3921, meaning that it does not significantly affect GDP per capita because the probability value for the t-statistic of it is greater than 5% (> 0.05).
5. Investment Freedom has no effect on GDP per capita, with a coefficient (C) value of 50.52080. The Investment Freedom variable has a probability value of 0.4606, meaning that it does not significantly affect GDP per capita because the probability value for the t-statistic of the Iitreater is greater than 5% (> 0.05).
6. Economic Complexity has no effect on GDP per capita, with a coefficient (C) value of 3417.042. The Economic Complexity variable has a probability value of 0.0696, meaning that the Economic Complexity variable does not significantly affect GDP per capita because the probability value for the t-statistic of the Economic Complexity variable is greater than 5% (0.05).
7. The Population Growth Rate has no effect on GDP per capita, with a coefficient (C) value of -5684.427. The Population Growth Rate variable has a probability value of 0.0573, meaning that the Population Growth Rate variable does not significantly affect GDP per capita because the probability value for the t-statistic of the Population Growth Rate variable is greater than 5% (> 0.05).

Table 13. Fixed Effect Model Results for High-Middle Income Countries

Dependent Variable: ABSRES
Method: Panel Least Squares
Date: 02/13/25 Time: 22:50
Sample: 2011 2020
Periods included: 10
Cross-sections included: 25
Total panel (balanced) observations: 250

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	12899.54	11025.11	1.170014	0.2433
X1	1.118148	2.408010	0.464345	0.6429
X2	19.63009	12.74780	1.539881	0.1250
X3	5.911832	7.468590	0.791559	0.4295
X4	-8.255379	8.833290	-0.934576	0.3510
X5	-207.7442	230.2547	-0.902237	0.3679
X6	-825.6928	651.7731	-1.266841	0.2066

Effects Specification

Cross-section fixed (dummy variables)			
R-squared	0.368171	Mean dependent var	479.7872
Adjusted R-squared	0.281619	S.D. dependent var	415.8073
S.E. of regression	352.4273	Akaike info criterion	14.68318
Sum squared resid	27200891	Schwarz criterion	15.11984
Log likelihood	-1804.397	Hannan-Quinn criter.	14.85892
F-statistic	4.253760	Durbin-Watson stat	1.839575
Prob(F-statistic)	0.000000		

Source: Data Processing Results from EViews 13, 2025

The estimation equation for the above model is as follows:

Ln(GDP)it = 12899.54 + 1.118148 (Business Freedom)it + 19.63009 (Trade Freedom)it + *5.911832 (Monetary Freedom)it -8.255379 (Investment Freedom)it -207.7442 (Economic Complexity)it - 825.6928 (POP)it + εit*

Based on the results of the panel data regression model estimation, the interpretation of the equation is as follows.

1. The coefficient or C value is 12899.54, which indicates the GDP per capita when other variables are constant or not influenced.
2. Business Freedom has no effect on GDP per capita, with a coefficient (C) of 1.118148. The Business Freedom variable has a probability value of 0.6429, meaning that the Business Freedom variable does not significantly affect GDP per capita because the probability value for the t-statistic of the Business Freedom variable is greater than 5% (> 0.05).
3. Trade Freedom has no effect on GDP per capita, with a coefficient (C) value of 19.63009. The Trade Freedom variable has a probability value of 0.1250, meaning that it does not significantly affect GDP per capita because the probability value for the t-statistic of the Trade Freedom variable is greater than 5% (> 0.05).
4. Monetary Freedom has no effect on GDP per capita, with a coefficient (C) value of 5.911832. The Monetary Freedom variable has a probability value of 0.4295, meaning that the Monetary Freedom variable does not significantly affect GDP per capita because the probability value for the t-statistic of it is greater than 5% (> 0.05).
5. Investment Freedom has no effect on GDP per capita, with a coefficient (C) value of -8.255379. The Investment Freedom variable has a probability value of 0.3510, meaning that the Investment Freedom variable does not significantly affect GDP per capita because the probability value for the t-statistic of the Iitreater is greater than 5% (> 0.05).
6. Economic Complexity has no effect on GDP per capita, with a coefficient (C) value of -207.7442. The Economic Complexity variable has a probability value of 0.3679, meaning that the Economic

Complexity variable does not significantly affect GDP per capita because the probability value for the t-statistic of the Economic Complexity variable is greater than 5% (> 0.05).

7. The Population Growth Rate has no effect on GDP per capita, with a coefficient (C) value of -825.6928. The Population Growth Rate varable has a probability value of 0.2066, meaning that the Population Growth Rate variable does not significantly affect GDP per capita because the probability value for the t-statistic of the Population Growth Rate variable is greater than 5% (> 0.05).

Table 14. Fixed Effect Model Results for Low-Middle Income Countries

Dependent Variable: ABSRES
Method: Panel Least Squares
Date: 02/13/25 Time: 22:49
Sample: 2011 2020
Periods included: 10
Cross-sections included: 25
Total panel (balanced) observations: 250

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-3572.638	6306.525	-0.566499	0.5716
X1	-1.033785	5.040016	-0.205115	0.8377
X2	-7.882550	6.578263	-1.198272	0.2321
X3	18.30691	4.520069	4.050138	0.0001
X4	-1.285648	3.918396	-0.328106	0.7431
X5	-329.0712	160.4258	-2.051237	0.0414
X6	177.6719	359.5904	0.494095	0.6217

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.487797	Mean dependent var	263.6015
Adjusted R-squared	0.417632	S.D. dependent var	341.1307
S.E. of regression	260.3273	Akaike info criterion	14.07737
Sum squared resid	14841696	Schwarz criterion	14.51403
Log likelihood	-1728.671	Hannan-Quinn criter.	14.25311
F-statistic	6.952150	Durbin-Watson stat	1.189467
Prob(F-statistic)	0.000000		

Source: Data Processing Results from EViews 13, 2025

The estimation equation for the above model is as follows:

Ln(GDP)it = -3572.638 - 1.033785 (Business Freedom)it - 7.882550 (Trade Freedom)it + 18.30691 (Monetary Freedom)it - 1.285648 (Investment Freedom)it - 329.0712 (Economic Complexity)it + 177.6719 (POP)it + εit

Based on the results of the panel data regression model estimation, the interpretation of the equation is as follows.

1. The coefficient or C value is -3572.638, which indicates the GDP per capita when other variables are constant or not influenced.
2. Business Freedom has no effect on GDP per capita, with a coefficient (C) value of -1.033785. The Business Freedom variable has a probability value of 0.8377, meaning that the Business Freedom variable does not significantly affect GDP per capita because the probability value for the t-statistic of it is greater than 5% (> 0.05).
3. Trade Freedom has no effect on GDP per capita, with a coefficient (C) value of 19.63009. The Trade Freedom variable has a probability value of 0.1250, meaning that it does not significantly affect GDP per capita because the probability value for the t-statistic of the Trade Freedom variable is greater than 5% (> 0.05).
4. Monetary Freedom has no effect on GDP per capita, with a coefficient (C) value of 5.911832. The Monetary Freedom variable has a probability value of 0.4295, meaning that it does not significantly affect GDP per capita because the probability value for the t-statistic is greater than 5% (> 0.05).

5. Investment Freedom has no effect on GDP per capita, with a coefficient (C) value of -8.255379. The Investment Freedom variable has a probability value of 0.3510, meaning that it does not significantly affect GDP per capita because the probability value for the t-statistic of the Iitreater is greater than 5% ($p > 0.05$).
6. Economic Complexity has no effect on GDP per capita, with a coefficient (C) value of -207.7442. The Economic Complexity variable has a probability value of 0.3679, meaning that the Economic Complexity variable does not significantly affect GDP per capita because the probability value for the t-statistic of the Economic Complexity variable is greater than 5% (> 0.05).
7. The Population Growth Rate has no effect on GDP per capita, with a coefficient (C) value of -825.6928. The Population Growth Rate varable has a probability value of 0.2066, meaning that the Population Growth Rate variable does not significantly affect GDP per capita because the probability value for the t-statistic of the Population Growth Rate variable is greater than 5% (> 0.05).

Table 15. Fixed Effect Model Results for Low-Middle Income Countries

Dependent Variable: ABSRES
Method: Panel Least Squares
Date: 02/13/25 Time: 22:49
Sample: 2011 2020
Periods included: 10
Cross-sections included: 25
Total panel (balanced) observations: 250

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-3572.638	6306.525	-0.566499	0.5716
X1	-1.033785	5.040016	-0.205115	0.8377
X2	-7.882550	6.578263	-1.198272	0.2321
X3	18.30691	4.520069	4.050138	0.0001
X4	-1.285648	3.918396	-0.328106	0.7431
X5	-329.0712	160.4258	-2.051237	0.0414
X6	177.6719	359.5904	0.494095	0.6217

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.487797	Mean dependent var	263.6015
Adjusted R-squared	0.417632	S.D. dependent var	341.1307
S.E. of regression	260.3273	Akaike info criterion	14.07737
Sum squared resid	14841696	Schwarz criterion	14.51403
Log likelihood	-1728.671	Hannan-Quinn criter.	14.25311
F-statistic	6.952150	Durbin-Watson stat	1.189467
Prob(F-statistic)	0.000000		

Source: Data Processing Results from EViews 13, 2025

The estimation equation for the above model is as follows:

Ln(GDP)it = -3572.638 - 1.033785 (Business Freedom)it - 7.882550 (Trade Freedom)it + 18.30691 (Monetary Freedom)it - 1.285648 (Investment Freedom)it - 329.0712 (Economic Complexity)it + 177.6719 (POP)it + εit

Based on the results of the panel data regression model estimation, the interpretation of the equation is as follows.

1. The coefficient or C value is -3572.638, which indicates the GDP per capita when other variables are constant or not influenced.
2. Business Freedom has no effect on GDP per capita, with a coefficient (C) value of -1.033785. The Business Freedom variable has a probability value of 0.8377, meaning that the Business Freedom variable does not significantly affect GDP per capita because the probability value for the t-statistic of the Business Freedom variable is greater than 5% (> 0.05).
3. Trade Freedom has no effect on GDP per capita, with a coefficient (C) value of -7.882550. The Trade Freedom variable has a probability value of 0.2321, meaning that the Trade Freedom variable does not

significantly affect GDP per capita because the probability value for the t-statistic of the Trade Freedom variable is greater than 5% (> 0.05).

4. Monetary Freedom has a positive effect on GDP per capita, with a coefficient (C) value of 18.30691. This means that when Monetary Freedom increases by one unit (1%) in Low-Middle Income Countries, GDP per capita increases by 18.30691 percent (%). The Monetary Freedom variable has a probability value of 0.0001, meaning that the Monetary Freedom variable significantly affects GDP per capita because the probability value for the t-statistic of the Monetary Freedom variable is less than 5% (< 0.05).
5. Investment Freedom has no effect on GDP per capita, with a coefficient (C) value of -1.285648. The Investment Freedom variable has a probability value of 0.7431, meaning that the Investment Freedom variable does not significantly affect GDP per capita because the probability value for the t-statistic of the Investment Freedom variable is greater than 5% (> 0.05).
6. Economic Complexity has a negative effect on GDP per capita, with a coefficient (C) value of -329.0712. This means that when Economic Complexity increases by one unit (1%) in Low-Middle Income Countries, GDP per capita decreases by -329.0712 percent (%). The Economic Complexity variable has a probability value of 0.0414, meaning that the Economic Complexity variable significantly affects GDP per capita because the probability value for the t-statistic of the Economic Complexity variable is smaller than 5% (p < 0.05).

4.2.2.2. Hypothesis Testing

a) T Test (Partial)

A partial T-test was performed to evaluate the influence of each independent variable on the dependent variable, GDP per capita, individually. This test aimed to determine whether each independent variable had a significant impact on the dependent variable by comparing the probability value against a significance level of α = 0.05 (5%).

Table 16. Partial Test Results for High Income Countries

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	84291.72	48618.58	1.733735	0.0838
X1	2.753384	16.37784	0.168116	0.8666
X2	27.34341	10.53376	2.595790	0.0098
X3	-2.463780	2.875333	-0.856868	0.3921
X4	50.52080	68.39195	0.738695	0.4606
X5	3417.042	1878.027	1.819485	0.0696
X6	-5684.427	2980.561	-1.907167	0.0573

Source: Data Processing Results from EViews 13, 2025

Based on the regression results of this research model, it shows that:

1. Variable X1, Business Freedom, does not affect GDP per capita, with a coefficient (C) value of 2.753384. The Business Freedom variable has a probability value of 0.8666, meaning that the Business Freedom variable does not significantly affect GDP per capita because the probability value for the t-statistic of the Business Freedom variable is greater than 5% (> 0.05).
2. Variable X2: Trade Freedom, has a positive effect on GDP per capita, with a coefficient (C) value of 27.34341. This means that when Trade Freedom increases by one unit (1%) in high-income countries, GDP per capita will increase by 27.34341 percent (%). The Trade Freedom variable has a probability value of 0.0098, meaning that the Trade Freedom variable significantly affects GDP per capita because the probability value for the t-statistic of the Trade Freedom variable is less than 5% (p < 0.05).
3. Variable X3: Monetary Freedom does not affect GDP per capita, with a coefficient (C) value of -2.463780. The Monetary Freedom variable has a probability value of 0.3921, meaning that the Monetary Freedom variable does not significantly affect GDP per capita because the probability value for the t-statistic of it is greater than 5% (> 0.05).
4. Variable X4: Investment Freedom does not affect GDP per capita, with a coefficient (C) value of 50.52080. The Investment Freedom variable has a probability value of 0.4606, meaning that the Investment Freedom variable does not significantly affect GDP per capita because the probability value for the t-statistic of the Iitreater is greater than 5% (> 0.05).

5. Variable X5: Economic Complexity does not affect GDP per capita, with a coefficient (C) value of 3417.042. The Economic Complexity variable has a probability value of 0.0696, meaning that the Economic Complexity variable does not significantly affect GDP per capita because the probability value for the t-statistic of the Economic Complexity variable is greater than 5% (> 0.05).
6. Variable X6: Population Growth Rate does not affect GDP per capita, with a coefficient (C) value of -5684.427. The Population Growth Rate variable has a probability value of 0.0573, meaning that the Population Growth Rate variable does not significantly affect GDP per capita because the probability value for the t-statistic of the Population Growth Rate variable is greater than 5% (> 0.05).

Table 17. Partial Test Results for High-Middle Income Countries

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	12899.54	11025.11	1.170014	0.2433
X1	1.118148	2.408010	0.464345	0.6429
X2	19.63009	12.74780	1.539881	0.1250
X3	5.911832	7.468590	0.791559	0.4295
X4	-8.255379	8.833290	-0.934576	0.3510
X5	-207.7442	230.2547	-0.902237	0.3679
X6	-825.6928	651.7731	-1.266841	0.2066

Source: Data Processing Results from EViews 13, 2025

Based on the regression results of this research model, it shows that:
1. Variable X1: Business Freedom does not affect GDP per capita, with a coefficient (C) value of 1.118148. The Business Freedom variable has a probability value of 0.6429, meaning that the Business Freedom variable does not significantly affect GDP per capita because the probability value for the t-statistic of the Business Freedom variable is greater than 5% (> 0.05).
2. Variable X2: Trade Freedom does not affect GDP per capita, with a coefficient (C) value of 19.63009. The Trade Freedom variable has a probability value of 0.1250, meaning that it does not significantly affect GDP per capita because the probability value for the t-statistic of the Trade Freedom variable is greater than 5% (> 0.05).
3. Variable X3: Monetary Freedom does not affect GDP per capita, with a coefficient (C) value of 5.911832. The Monetary Freedom variable has a probability value of 0.4295, meaning that it does not significantly affect GDP per capita because the probability value for the t-statistic of the Monetary Freedom variable is greater than 5% (> 0.05).
4. Variable X4: Investment Freedom does not affect GDP per capita, with a coefficient (C) value of -8.255379. The Investment Freedom variable has a probability value of 0.3510, meaning that the Investment Freedom variable does not significantly affect GDP per capita because the probability value for the t-statistic of the Investment Freedom variable is greater than 5% (> 0.05).
5. Variable X5: Economic Complexity does not affect GDP per capita, with a coefficient (C) value of -207.7442. The Economic Complexity variable has a probability value of 0.3679, meaning that the Economic Complexity variable does not significantly affect GDP per capita because the probability value for the t-statistic of the Economic Complexity variable is greater than 5% (> 0.05).
6. Variable X6: Population Growth Rate does not affect GDP per capita, with a coefficient (C) value of -825.6928. The Population Growth Rate variable has a probability value of 0.2066, meaning that the Population Growth Rate variable does not significantly affect GDP per capita because the probability value for the t-statistic of the Population Growth Rate variable is greater than 5% (> 0.05).

Table 18. Partial Test Results for Low-Middle Income Countries

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-3572.638	6306.525	-0.566499	0.5716
X1	-1.033785	5.040016	-0.205115	0.8377
X2	-7.882550	6.578263	-1.198272	0.2321
X3	18.30691	4.520069	4.050138	0.0001
X4	-1.285648	3.918396	-0.328106	0.7431
X5	-329.0712	160.4258	-2.051237	0.0414

X6	177.6719	359.5904	0.494095	0.6217

Source: Data Processing Results from EViews 13, 2025

Based on the regression results of this research model, it shows that:

1. Variable X1: Business Freedom does not affect GDP per capita, with a coefficient (C) value of -1.033785. The Business Freedom variable has a probability value of 0.8377, meaning that the Business Freedom variable does not significantly affect GDP per capita because the probability value for the t-statistic of the Business Freedom variable is greater than 5% (> 0.05).
2. Variable X2: Trade Freedom does not affect GDP per capita, with a coefficient (C) value of -7.882550. The Trade Freedom variable has a probability value of 0.2321, meaning that the Trade Freedom variable does not significantly affect GDP per capita because the probability value for the t-statistic of the Trade Freedom variable is greater than 5% (> 0.05).
3. Variable X3: Monetary Freedom has a positive effect on GDP per capita, with a coefficient (C) of 18.30691. This means that when Monetary Freedom increases by one unit (1%) in Low-Middle Income Countries, GDP per capita will increase by 18.30691 percent (%). The Monetary Freedom variable has a probability value of 0.0001, meaning that the Monetary Freedom variable significantly affects GDP per capita because the probability value for the t-statistic of the Monetary Freedom variable is less than 5% (< 0.05).
4. Variable X4: Investment Freedom does not affect GDP per capita, with a coefficient (C) value of -1.285648. The Investment Freedom variable has a probability value of 0.7431, meaning that the Investment Freedom variable does not significantly affect GDP per capita because the probability value for the t-statistic of the Investment Freedom variable is greater than 5% (> 0.05).
5. Variable X5: Economic Complexity has a negative effect on GDP per capita, with a coefficient (C) value of -329.0712. This means that when Economic Complexity increases by one unit (1%) in Low-Middle Income Countries, GDP per capita will decrease by -329.0712 percent (%). The Economic Complexity variable has a probability value of 0.0414, meaning that the Economic Complexity variable significantly affects GDP per capita because the probability value for the t-statistic of the Economic Complexity variable is smaller than 5% (p < 0.05).
6. Variable X6: Population Growth Rate does not affect GDP per capita, with a coefficient (C) value of 177.6719. The Population Growth Rate variable has a probability value of 0.6217, meaning that the Population Growth Rate variable does not significantly affect GDP per capita because the probability value for the t-statistic of the Population Growth Rate variable is greater than 5% (> 0.05).

Table 19. Partial Test Results for Low Income Countries

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-483.9244	263.5430	-1.836225	0.0699
X1	0.110485	0.038856	2.843448	0.0056
X2	-0.234183	0.137576	-1.702199	0.0924
X3	-0.115984	0.095323	-1.216750	0.2271
X4	-0.169048	0.238917	-0.707561	0.4812
X5	3.363041	4.649127	0.723371	0.4715
X6	27.83813	14.63693	1.901910	0.0606

Source: Data Processing Results from EViews 13, 2025

Based on the regression results of this research model, it shows that:

1. Variable X1, Business Freedom, has a positive effect on GDP per capita, with a coefficient (C) value of 0.110485. This means that when Business Freedom increases by one unit (1%) in low-income countries, GDP per capita will increase by 0.110485 percent (%). The Business Freedom variable has a probability value of 0.0056, meaning that the Business Freedom variable significantly affects GDP per capita because the probability value for the t-statistic of the Business Freedom variable is smaller than 5% (< 0.05).
2. Variable X2: Trade Freedom does not affect GDP per capita, with a coefficient (C) value of -0.234183. The Trade Freedom variable has a probability value of 0.0924, meaning that it does not significantly

affect GDP per capita because the probability value for the t-statistic of the Trade Freedom variable is greater than 5% (> 0.05).

3. Variable X3: Monetary Freedom does not affect GDP per capita, with a coefficient (C) value of -0.115984. The Monetary Freedom variable has a probability value of 0.2271, meaning that the Monetary Freedom variable does not significantly affect GDP per capita because the probability value for the t-statistic of the Monetary Freedom variable is greater than 5% (> 0.05).
4. Variable X4: Investment Freedom does not have an effect on GDP per capita, with a coefficient (C) value of -0.169048. The Investment Freedom variable has a probability value of 0.4812, meaning that the Investment Freedom variable does not significantly affect GDP per capita because the probability value for the t-statistic of the Investment Freedom variable is greater than 5% (> 0.05).

b. F Test (Simultaneous)

The F-test is used to evaluate whether the independent variables, namely, Business Freedom, Trade Freedom, Monetary Freedom, Investment Freedom, Economic Complexity, and Population Growth Rate, collectively have a significant effect on the dependent variable, GDP per capita. This test was conducted by comparing the F-statistic value against a significance level of α = 0.05 (5%) to determine whether the observed relationship was significant within the research model.

Table 20. Simultaneous Test Results for High Income Countries

F-statistic	14.12894
Prob(F-statistic)	0.000000

Source: Data Processing Results from EViews 13, 2025

Based on the results of the F-test regression, the probability of the F-statistic obtained was 0.000000, which was smaller than the significance level α = 0.05 (5%). This indicates that the null hypothesis (H0) was rejected and the alternative hypothesis (H1) was accepted. Therefore, it can be concluded that the variables of Business Freedom, Trade Freedom, Monetary Freedom, Investment Freedom, Economic Complexity, and Population Growth Rate have a significant impact on GDP per capita.

Table 21. Results of Simultaneous Test for High-Middle Income Countries

F-statistic	4.253760
Prob(F-statistic)	0.000000

Source: Data Processing Results from EViews 13, 2025

Based on the results of the F-test regression, the probability of the F-statistic obtained was 0.000000, which was smaller than the significance level α = 0.05 (5%). This indicates that the null hypothesis (H0) was rejected and the alternative hypothesis (H1) was accepted. Therefore, it can be concluded that the variables of Business Freedom, Trade Freedom, Monetary Freedom, Investment Freedom, Economic Complexity, and Population Growth Rate have a significant impact on GDP per capita.

Table 22. Results of Simultaneous Test for Low-Middle Income Countries

F-statistic	6.952150
Prob(F-statistic)	0.000000

Source: Data Processing Results from EViews 13, 2025

Based on the results of the F-test regression, the probability of the F-statistic obtained was 0.000000, which was smaller than the significance level α = 0.05 (5%). This indicates that the null hypothesis (H0) was rejected and the alternative hypothesis (H1) was accepted. Therefore, it can be concluded that the variables of Business Freedom, Trade Freedom, Monetary Freedom, Investment Freedom, Economic Complexity, and Population Growth Rate have a significant impact on GDP per capita.

Table 23. Results of Simultaneous Test for Low Income Countries

F-statistic	10.31755
Prob(F-statistic)	0.000000

Source: Data Processing Results from EViews 13, 2025

Based on the results of the F-test regression, the probability of the F-statistic obtained was 0.000000, which was smaller than the significance level $\alpha = 0.05$ (5%). This indicates that the null hypothesis (H0) was rejected and the alternative hypothesis (H1) was accepted. Therefore, it can be concluded that the variables of Business Freedom, Trade Freedom, Monetary Freedom, Investment Freedom, Economic Complexity, and Population Growth Rate have a significant impact on GDP per capita.

c. Coefficient of Determination Test (Adjusted R^2)

The purpose of the coefficient of determination test is to assess how well the independent variables influence and explain the dependent variable in the model. The higher the value of the coefficient of determination, and the closer it is to 1, the better the independent variables are in explaining the variation in the dependent variables.

Table 24. Results of the Coefficient of Determination Test (Adjusted R^2) for High Income Countries

R-squared	0.641567
Adjusted R-squared	0.596159

Source: Data Processing Results from EViews 13, 2025

The results of the coefficient of determination test presented in the table above show that the Adjusted R^2 value reaches 0.596159. This indicates that the independent variables—Business Freedom, Trade Freedom, Monetary Freedom, Investment Freedom, Economic Complexity, and Population Growth Rate—have a moderate ability to explain the variation in the dependent variable, GDP per capita. Specifically, 59.61% of the changes in GDP per capita (GDPC) can be explained by these six variables, while the remaining 40.39% is influenced by factors not included in this study's model.

Table 25. Results of the Coefficient of Determination Test (Adjusted R^2) for High-Middle Income Countries

R-squared	0.368171
Adjusted R-squared	0.281619

Source: Data Processing Results from EViews 13, 2025

The results of the coefficient of determination test presented in the table above show that the Adjusted R^2 value reaches 0.281619. This indicates that the independent variables—Business Freedom, Trade Freedom, Monetary Freedom, Investment Freedom, Economic Complexity, and Population Growth Rate—have a weak ability to explain the variation in the dependent variable, per capita. Specifically, 28.16% of the changes in GDP per capita (GDPC) can be explained by these six variables, while the remaining 71.84% is influenced by factors not included in this study's research model.

Table 26. Results of the Coefficient of Determination Test (Adjusted R^2) for Low-Middle Income Countries

R-squared	0.487797
Adjusted R-squared	0.417632

Source: Data Processing Results from EViews 13, 2025

The results of the coefficient of determination test presented in the table above show that the Adjusted R^2 value reaches 0.417632. This indicates that the independent variables—Business Freedom, Trade Freedom, Monetary Freedom, Investment Freedom, Economic Complexity, and Population Growth Rate—have a weak ability to explain the variation in the dependent variable, which is GDP per capita. Specifically, 41.76% of the changes in GDP per capita (GDPC) can be explained by these six variables, while the remaining 58.24% is influenced by factors not included in this study's research model.

Table 27. Results of the Coefficient of Determination Test (Adjusted R^2) for Low Income Countries

R-squared	0.648187
Adjusted R-squared	0.585363

Source: Data Processing Results from EViews 13, 2025

The results of the coefficient of determination test presented above show that the Adjusted R^2 value reaches 0.585363. This indicates that the independent variables—Business Freedom, Trade Freedom, Monetary Freedom, Investment Freedom, Economic Complexity, and Population Growth Rate have a moderate ability to explain the variation in the dependent variable, which is GDP per capita. Specifically, 58.53% of the changes in GDP per capita (GDPC) can be explained by these six variables, while the remaining 41.47% is influenced by factors not included in this study's model.

5. Conclusions

5.1. Conclusion

1. For high-income countries, trade freedom has a significant positive effect on GDP per capita, whereas business, monetary, and investment freedoms do not show a significant impact. This confirms that openness to international trade is a key factor driving economic growth in high-income countries.
2. For High-Middle Income Countries, no aspect of economic freedom (business, trade, monetary, investment) significantly affects GDP per capita. This indicates that other factors, such as infrastructure, economic regulations, and political stability, may play a more important role in determining economic growth than in determining economic freedom.
3. For Low-Middle Income Countries, monetary freedom is the most influential factor on GDP per capita, while business, trade, and investment freedoms do not have a significant effect. Exchange rate stability and sound monetary policies are key to improving per capita income in countries in this category.
4. For low-income countries, only business freedom has a positive impact on GDP per capita, while trade, monetary, and investment freedoms do not have significant effects. This suggests that, in low-income countries, flexibility in establishing and running businesses plays a major role in enhancing economic growth.

5.2. Recommendations

1. For high-income countries, governments in advanced nations need to continue promoting free trade policies and expand export-import markets to enhance global economic competitiveness. Additionally, evaluations of business, monetary, and investment freedom policies should be conducted to generate a greater impact on economic growth in the region.
2. For high-Middle Income Countries, comprehensive economic reforms are required, including improvements in infrastructure, the creation of more conducive fiscal policies, and efforts to attract foreign investment by improving the investment climate. Economic freedom policies should be combined with other approaches that are more effective in boosting the GDP per capita.
3. For Low-Middle Income Countries, countries in this category should prioritize policies focusing on monetary stability and inflation management to create a more conducive economic environment. Furthermore, expanding access to capital and improving the quality of human resources should be prioritized to increase economic productivity.
4. For low-income countries, the main focus of economic policies should be directed towards improving the ease of doing business and removing regulations that hinder business growth. Additionally, investing in infrastructure and enhancing workforce skills are essential to strengthen the domestic economy.

References

Adil, A., Sapar, S., & Jasman, J. (2023). The effect of job appraisal and job training on employee performance at PT. Bank Sulselbar Luwu. *Journal of Multidisciplinary Academic Business Studies, 1*(1), 71-82. doi:https://doi.org/10.35912/jomabs.v1i1.1816

Ahmad, A., Ahmad, N., & Ali, S. (2013). Exchange Rate and Economic Growth in Pakistan (1975-2011). *Journal of Basic and Applied Scientific Research, 3*(8), 740-746.
Barro, R. J., & Sala-i-Martin, X. (1992). Convergence. *Journal of political economy, 100*(2), 223-251. doi:https://doi.org/10.1086/261816
Bongaarts, J. (2009). Human population growth and the demographic transition. *Philosophical Transactions of the Royal Society B: Biological Sciences, 364*(1532), 2985-2990. doi:https://doi.org/10.1098/rstb.2009.0137
Brunow, S., Nijkamp, P., & Poot, J. (2015). Chapter 19 - The Impact of International Migration on Economic Growth in the Global Economy. *Handbook of the Economics of International Migration, 1*, 1027-1075. doi:https://doi.org/10.1016/B978-0-444-53768-3.00019-9
Dwiyanti, N. M. C., Luh Putu Agustini Karta, N., Cintya, N. P., & Bendesa, I. N. G. P. (2023). Strategi Pemasaran Museum Gunung Api Batur sebagai Daya Tarik Wisata Edukasi di Kabupaten Bangli. *Jurnal Studi Perhotelan dan Pariwisata, 2*(1), 37-45. doi:https://doi.org/10.35912/jspp.v2i1.2565
Endi, A. C., Fanggidae, R. E., & Ndoen, W. M. (2023). The effect of religiosity and spirituality on financial behavior district. *Journal of Multidisciplinary Academic and Practice Studies, 1*(1), 45-53. doi:https://doi.org/10.35912/jomaps.v1i1.1455
Ferrarini, B., & Scaramozzino, P. (2016). Production complexity, adaptability and economic growth. *Structural change and economic dynamics, 37*, 52-61. doi:https://doi.org/10.1016/j.strueco.2015.12.001
Firdaus, M. (2011). *Aplikasi Ekonometrika untuk Data Panel dan Time Series*. Bogor: IPB Press.
Gu, D., Andreev, K., & Dupre, M. E. (2021). Major trends in population growth around the world. *China CDC weekly, 3*(28), 604. doi:https://doi.org/10.46234/ccdcw2021.160
Gujarati, D. N., & Porter, D. C. (2012). *Basic econometrics*: New York The McGraw-Hill, Inc.
Gwartney, J. (2008). *Economic Freedom of the World: 2008 Annual Report*. Canada: The Fraser Institute.
Hartmann, D., Guevara, M. R., Jara-Figueroa, C., Aristarán, M., & Hidalgo, C. A. (2017). Linking economic complexity, institutions, and income inequality. *World Development, 93*, 75-93. doi:https://doi.org/10.1016/j.worlddev.2016.12.020
Hidalgo, C. A., & Hausmann, R. (2009). The building blocks of economic complexity. *Proceedings of the national academy of sciences, 106*(26), 10570-10575. doi:https://doi.org/10.1073/pnas.0900943106
Hussain, M. E., & Haque, M. (2016). Impact of economic freedom on the growth rate: A panel data analysis. *Economies, 4*(2), 5. doi:https://doi.org/10.3390/economies4020005
Kurbani, A., Novalia, N., & Nuarly, M. (2023). The effect of health, spatial planning and work discipline on employee work effectiveness. *Journal of Multidisciplinary Academic and Practice Studies, 1*(2), 71-80. doi:https://doi.org/10.35912/jomaps.v1i2.1619
Lincoln, Y. S. (1998). The ethics of teaching in qualitative research. *Qualitative Inquiry, 4*(3), 315-327. doi:https://doi.org/10.1177/107780049800400301
Liny, L., & Purnama, E. D. (2024). Towards the financial well-being of Gen-Z: A study at Tri Ratna School – Jakarta with Locus of Control as a mediation variable. *Global Academy of Business Studies, 1*(2), 105-113. doi:https://doi.org/10.35912/gabs.v1i2.3390
Manurung, A., & Putro, U. (2024). Decision Analysis of ANH Gas Field Using Value Focused Thinking and AHP. *Jurnal Bisnis dan Pemasaran Digital, 3*(2), 155-173. doi:https://doi.org/10.35912/jbpd.v3i2.4516
Miller, T., Holmes, K. R., & Feulner, E. J. (2012). Highlights of the 2012 Index of Economic Freedom: Promoting Economic Opportunity and Prosperity. *Heritage Foundation and The Wall Street Journal.[2012]. URL: https://thf_media. s3. amazonaws. com/index/pdf/2012/Index2012-Highlights. pdf.*
Peterson, E. W. F. (2017). The role of population in economic growth. *Sage Open, 7*(4), 2158244017736094. doi:https://doi.org/10.1177/2158244017736094
Qi, D., Ali, A., Li, T., Chen, Y.-C., & Tan, J. (2022). RETRACTED: An empirical analysis of the impact of higher education on economic growth: The case of China. *Frontiers in Psychology, 13*, 959026. doi:https://doi.org/10.3389/fpsyg.2022.959026

Ramanayake R.A, K. (2020). Empirical Discussion of Technological Accumulation and Solow Growth Theory. *SSRN Electronic Journal*. doi:https://doi.org/10.2139/ssrn.3609294

Sari, N. K., Susilowati, D., & Arifin, Z. (2020). Analisis Pertumbuhan Ekonomi, Pendidikan dan Indeks Pembangunan Manusia Terhadap Tingkat Kemiskinan di Madura. *Jurnal Ilmu Ekonomi, 4*(3), 577-590. doi:https://doi.org/10.22219/jie.v4i3.12884

Sutama, I. K. G., Dewi, N. D. U., & Rahayu, L. R. (2024). Community Based Tourism sebagai Salah Satu Konsep Pengembangan Pariwisata. *Jurnal Studi Perhotelan dan Pariwisata, 2*(1), 47-55. doi:https://doi.org/10.35912/jspp.v2i1.2042

Thalib, M. A., Kuntuamas, M. J. A., Umar, T. P. A., & Sulastri, R. D. (2023). Potret Praktik Akuntansi oleh Pengusaha Kos-kosan berbasis Nilai Budaya Lokal. *Jurnal Bisnis dan Pemasaran Digital, 2*(2), 71-83. doi:https://doi.org/10.35912/jbpd.v2i2.2573

Todaro, M. P., & Smith, S. C. (2009). *Economic development*: Pearson education.

Wa, A. R. M., Desriyantika, E., Hasbullah, H., Et, M. R., & Indrianni, S. (2024). The influence of motivation and work environment on employee performance in the national unity and political agency of Bandar Lampung City. *Global Academy of Multidisciplinary Studies, 1*(1), 59-73. doi:https://doi.org/10.35912/gams.v1i1.3375

Wijayanti, S., & Wahyudi, M. S. (2025). Analysis of the Solow Economic Growth Model in ASEAN-5 Countries. *Jurnal Ilmu Ekonomi JIE, 9*(03), 286-294. doi:https://doi.org/10.22219/jie.v9i03.40568