

Factor Affecting Gross Domestic Product (GDP) Growth in United States (USA)

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ABSTRAK

Studi ini melihat faktor-faktor yang mempengaruhi pertumbuhan produk domestik bruto (PDB) di Amerika Serikat dari tahun 1973 hingga 2022. Dengan menggunakan model regresi berganda, pengaruh FDI, pertumbuhan penduduk pedesaan, dan impor Barang dan jasa diperiksa terhadap PDB. pertumbuhan. Studi tersebut menemukan bahwa impor barang dan jasa yang nilainya berdampak positif terhadap variabel dependen merupakan faktor signifikan dalam menentukan pertumbuhan ekonomi Amerika Serikat. Hubungan positif antara Impor barang dan jasa dengan PDB, pertumbuhan dianggap sebagai langkah untuk mengendalikan peningkatan FDI. Ditemukan juga bahwa FDI, Pertumbuhan penduduk, dan penduduk pedesaan bukan merupakan variabel yang signifikan dalam menentukan pertumbuhan ekonomi. Oleh karena itu, studi ini merekomendasikan agar pemerintah dan ekonom Amerika Serikat memprioritaskan kebijakan dan strategi yang mendorong pertumbuhan ekonomi berkelanjutan, penciptaan lapangan kerja, dan inovasi. Hal ini mungkin melibatkan langkah-langkah seperti investasi dalam pendidikan dan penelitian, mendorong kewirausahaan dan usaha kecil, meningkatkan infrastruktur, dan menjaga lingkungan peraturan yang stabil dan dapat diprediksi. Selain itu, Amerika Serikat dapat mendorong investasi asing langsung (FDI) sebagai cara untuk menarik modal dan keahlian ke negara tersebut, namun hal ini bergantung pada keadaan spesifik serta potensi risiko dan manfaat dari setiap investasi.

ABSTRACT

This study looks at factors influencing the growth of the gross domestic product (GDP) in the United States from 1973 to 2022. Using a multiple regression model, the effects of FDI, rural population growth, and imports of Goods and services were examined about GDP growth. The study found that imports of goods and services, with their value having a positive impact on the dependent variable, are a significant factor in determining the economic growth of the United States. The positive relation of the Imports of goods and services and GDP, growth was attributed to be a measure to control the rising of FDI. It was also discovered that the FDI, Population growth, and rural population are not significant variables in determining economic growth. The study therefore recommends that the United States government and economists prioritize policies and strategies that promote sustainable economic growth, job creation, and innovation. This may involve measures such as investing in education and research, promoting entrepreneurship and small businesses, improving infrastructure, and maintaining a stable and predictable regulatory environment. Additionally, the United States can encourage foreign direct investment (FDI) as a way to attract capital and expertise to the country, but this would depend on the specific circumstances and potential risks and benefits of each investment.

Introduction

One of the most important measures of a nation's economic health is its gross domestic product or GDP. It calculates the total worth of products and services generated inside a nation's boundaries over a given time frame. As one of the biggest economies in the world, the GDP growth rate of the United States varies. The purpose of this article is to examine the several elements that affect GDP growth in the US (Adedoyin et al., 2020).

In general, researching how imports of products and services affect the growth of the US economy offers insightful information about the trade balance and economic impact, helping decision-makers create plans for sustainable economic growth (De Oliveira et al., 2021).

The United States of America leads all other nations in terms of imports of products and services, making it a highly desirable destination for foreign investors (Mosteanu, 2019). Thus, there are two more reasons why factors influencing the growth of the US GDP are a fascinating area of study. First off, compared to most other nations, the United States has allowed foreign investment for a longer period. As a result, it offers lengthier time series data for analyzing the growth effects of FDI than most other nations do. Furthermore, the U.S. has been running huge and growing current account deficits that have been financed by equally large investment inflows. Whether the growing U.S. trade deficit is sustainable hinges, in part, on whether investment inflows enhance U.S. productivity. This is the reason why it the important to institute a study about the factors affecting Gross Domestic Product (GDP) Growth (Kim & Loayza, 2019).



Figure 1 GDP Growth in USA (1973 – 2022)

Figure 1 demonstrates that the USA's GDP growth has a variety of variations from 1973 and 2022. I can, however, give you a general overview of trends in GDP growth.

Several factors, such as net exports, government spending, corporate investment, and consumer spending, affect GDP growth. Global trends, economic events, and policy can all have an impact on GDP growth. The USA has experienced both phases of economic expansion and decline during this time (Morrison, 2019). A growing economy is shown by positive GDP growth, which is a hallmark of economic expansion. Conversely, economic contractions, also known as recessions, are marked by negative GDP growth, indicating a shrinking economy (Uddin & Rahman, 2023). It is worth mentioning that the USA has experienced several significant events that have influenced its GDP growth. For example, the oil crisis in the 1970s, the dot-com bubble in the late 1990s, the global financial crisis in 2008, and the COVID-19 pandemic in 2020 have all had substantial impacts on the country's GDP growth (Felicien & Elias, 2020).

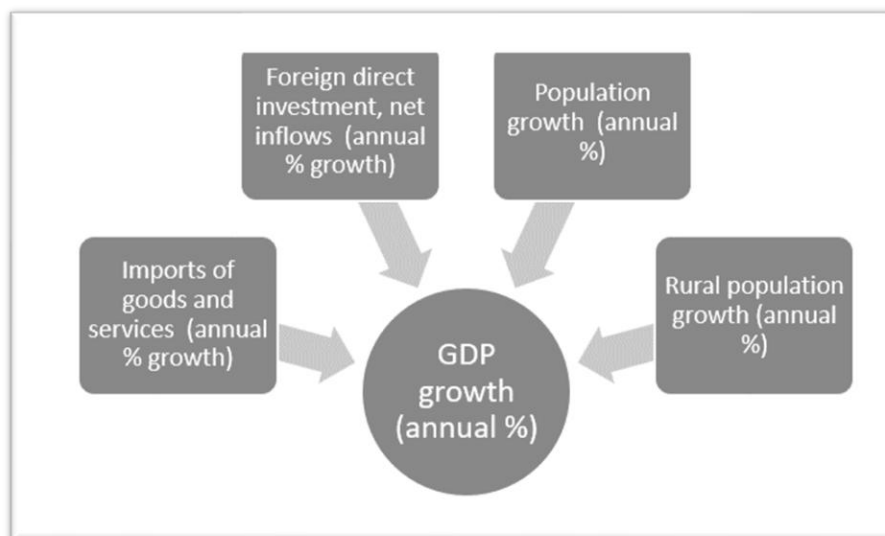


Figure 2 A conceptual framework for the relationship between GDP growth and the factors

This paper explores the relationship between GDP growth and characteristics such as imports of goods and services, growth in Foreign Direct Investment (FDI), growth in rural population, and population growth in the United States. We would like to study which variable has a significant effect on GDP growth in the United States using four factors (Chen et al., 2022).

Statement of Problem

Research studies on GDP growth date back many years. It has been crucial for decision-makers to comprehend that GDP growth may have a big impact on the economy. Numerous studies have been conducted by researchers to investigate this issue (Mankiw et al., n.d.-b).

The selection of the variables influencing GDP growth remains unclear. Numerous lists of plausible variables can be employed as explanatory variables. Fixing on specific variables that are powerful enough to account for GDP growth is challenging, though. This could be caused by several factors such as data accessibility, country-specific traits, temporal differences, and other potential causes. (Headey & Hodge, 2009a).

Research objectives

The objectives of this research are as follows:

1. To analyze the effect of Foreign Direct Investment on the Economic growth of the USA.
2. To analyze the effect of Population growth on the GDP growth of the USA.
3. To analyze the effect of rural Population on the GDP growth of the USA.
4. To analyze the effect of imports of goods and services on the GDP growth of the USA.

The linkage between this study and past research can be found in this section and is taken into consideration and used as guidance to determine a connection between GDP growth and its factors. There were four factors affecting GDP growth have been identified, namely imports of goods and services, growth in Foreign Direct Investment (FDI), growth in rural population, and population growth. (Felicien & Elias, 2020). The significant shifts in the US economy in recent years can be attributed to several factors, including the rise in foreign direct investment (FDI), the population growth in rural areas, the importation of goods and services, and population expansion. This literature review aims to examine the impact of these factors on the US economy (Alfaro & Chauvin, 2020).

Santos (2023) and (Amara & Qiao, 2023) are among the writers who have emphasized the significance of foreign direct investment in promoting economic growth. Because it makes information sharing and the creation of new products and technology easier, it promotes economic growth (Musa et al., 2024). Depending on their access to and utilization of cutting-edge technology, advanced economies may

profit from FDI to differing degrees, according to Anakpo et al. (2023). By adopting and implementing new technology, industrialized countries may simplify their exports and imports (Lall, 2019).

Imports of goods and services play a crucial role in the United States economy. The United States, being the biggest consumer market globally, is significantly dependent on imports to fulfill the needs of its populace. By offering consumers a large selection of goods and services at affordable rates, imports of goods and services support economic growth. Furthermore, imports boost domestic businesses by fostering specialization and innovation (Susanto et al., 2024).

Foreign Direct Investment (FDI) is another significant factor that influences the United States economy. FDI refers to the investment made by foreign companies in the United States, either through establishing new businesses or acquiring existing ones. FDI brings in capital, technology, and expertise, which can enhance productivity, create jobs, and stimulate economic growth. It also promotes international trade and strengthens economic ties between the United States and other countries (Lall & Narula, 2004).

The growth in rural population has implications for the United States economy as well. Rural areas contribute to the overall economic development of the country through various sectors such as agriculture, manufacturing, and tourism (Musa et al., 2022). The increase in rural population can lead to increased demand for goods and services, job creation, and the development of local industries. Moreover, rural areas often possess natural resources and agricultural land, which can contribute to the country's export capabilities and food security (Pawlak & Kołodziejczak, 2020).

Population growth, both in rural and urban areas, has a significant impact on the United States economy. A growing population means a larger consumer base, which drives demand for goods and services (Dadon 2019). This increased demand can stimulate economic growth, encourage investment, and create employment opportunities. However, population growth also poses challenges such as strain on infrastructure, healthcare, and resources. Therefore, effective management of population growth is crucial for sustainable economic development as indicated by Headey & Hodge, (2009b) (1988), McNicoll (1984), Srinivasan (1988), and Birdsall (1988). These reviews also explicitly emphasized that population growth had adverse effects only in some countries, mainly those at lower levels of development, and in countries with ineffective or inappropriate policy or institutional environments. Kelley (2001) terms the latter the "variables versus constraints" hypothesis. For example, in countries where public spending and trade barriers discriminate against the labor-absorbing agricultural sector, population growth exacerbates the problem.

However, population growth only affects economic growth by interacting with institutional and policy factors.

Method

Data and Variable Descriptions

Annual time series data from 1973 to 2022 are analyzed using the Ordinary Least Squares Method (OLS). The dependent variable GDP Growth is the annual percentage growth rate of real GDP Ilesanmi and Tewari (2017). The independent variable is the variable INF expressed as an annual percentage. Our variable FDI measures Foreign Direct Investment as a percentage of GDP growth. The variable Imports gr represents the growth of imports of goods and services as a percentage of GDP growth. The variable Rpop is our measure of rural population growth measured as a percentage of GDP growth. The variable pop is our measure of population growth expressed as a percentage of GDP growth (Chen et al., 2022b).

Annual time series data for the 1973 to 2022 periods, the Ordinary Least Square Method (OLS) is used for the analysis. The dependent variable GDP Growth is the real GDP measured by the annual percentage growth rate. While the independent variables are the variable INF measured as an annual percentage. The variable FDI is our measure for Foreign Direct Investment measured as a percentage of GDP Growth. The variable Imports gr is our measure for imports of goods and services growth represents measured as a percentage of GDP Growth, the variable Rpop is our measure for growth in rural population measured as a percentage of GDP Growth, the variable pop is our measure for population growth measured as a percentage of GDP Growth Arora and Shi (2016).

The Ordinary Least Square Method (OLS) and Multiple Regression analysis were utilized to estimate the GDP growth model in the United States. The unit root test, also known as the Augmented Dickey Fuller (ADF) test, is used to determine whether the variables are stationarity. Several tests, including the White Heteroscedasticity and Breusch-Godfrey tests, were used to evaluate the model to determine whether or not it met the assumptions of the Classical Linear Regression Model (CLRM). We may evaluate whether the model's assumptions of autocorrelation, heteroscedasticity, and multicollinearity are true using the aforementioned methodologies (Fonchamnyo et al., 2021).

Model specification

The econometric model was estimated as:

$GDPT = \beta_0 + \beta_1 \text{Imports gr} + \beta_2 FDI_t + \beta_3 Rpop + \beta_4 \text{pop} + \mu_t$, where t represents time series data and $\beta_0, \beta_1, \beta_2, \beta_3, \beta_4$ are the coefficient of the independent variables to be estimated and μ_t is the random error term or disturbance error term that represent the missing variable or factors that are not mentioned in the model. (Akgiray1989, n.d.)

Hypothesis

According to (Sugiyono et al., 2019) the research hypothesis is a provisional solution to the formulation of a research topic that must be validated by the acquired data. Our main hypotheses are presented below,

H1: There is a relationship between imports of goods and services, growth, and Gross Domestic Production in the USA.

H2: There is a relationship between Foreign Direct Investment and Gross Domestic Production in the USA.

H3: There is a relationship between Rural Population and Gross Domestic Production in the USA.

H4: There is a relationship between Population and Gross Domestic Production in the USA.

Regression Analysis Method

The purpose of this study is to use a model to explain the relationship between the independent and dependent variables. To further model sample regression, the Ordinary Least Squares (OLS) approach was used.

White Heteroscedasticity Test

It is a generic test for heteroscedasticity. An inefficient regression model will arise from its presence (the variance of the error term is not constant). The model's homoscedasticity is the test's null hypothesis. The null hypothesis is rejected if the p-value is smaller than the significance level Vanessa Berenguer-Rico (2020) (Warton, 2022).

Breusch – Godfrey Test

The Durbin-Watson test finds first-order autocorrelation difficulties; the test finds autocorrelation problems at a higher order. The assertion that there is no serial correlation of any order up to p is the null hypothesis for this test (number of lags). If the p-value falls below the significance threshold, the null hypothesis is rejected.

Results and Discussion

The model's performance was evaluated by analyzing the R-squared and Adjusted R-squared results. Table 1 shows the outcome of both R squared. According to (A Kassem et al., 2020), the R-squared value is the endogenous construct's coefficient of determination.

Table 1 R squared results

R-squared	0.788446
Adjusted R-squared	0.769214

Source: Researcher's Analyses Using Eviews.

Table 1 shows that both results show the high value of R squared so it provides us more information and checks for the significant relationship between GDP growth and other variables.

Ordinary Least Square Method

The estimated regression model:

$$\text{GDP growth} = 2.056192 * \text{RPOP} + 0.271465 * \text{IMPORTS_GR} + 0.019079 * \text{FDI} + 0.903352 * \text{POPULATION}$$

Table 2 OLS results

Variable	Coefficient	Prob	Prob(F-statistic)
Constant	2.056192	0.0085	0.0000
RPOP	0.654002	0.0834	0.0000
IMPORTS_GR	0.271465	0.0000	0.0000
FDI	0.019079	0.9329	0.0000
POPULATION	-0.903352	0.1926	

Source: Researcher's Analyses Using Eviews.

GDP Growth Main body:

The OLS (Ordinary Least Squares) results presented in Table 2 provide valuable insights into the relationship between various variables and GDP growth. This analysis aims to understand the impact of different factors on the growth of an economy. Let's delve into the coefficients and probabilities associated with each variable. Starting with the constant term, we observe a coefficient of 2.056192. This implies that when all other variables are held constant, the dependent variable (GDP growth) is expected to increase by 2.056192 units. The probability associated with this coefficient is 0.0085, indicating that the constant term is statistically significant. Moreover, the extremely low probability (0.000000) for the Prob(F-statistic) suggests that the overall model is highly significant. Moving on to the variable RPOP, we find a coefficient of 0.654002. This suggests that a one-unit increase in RPOP (representing a specific variable) leads to a 0.654002 unit increase in GDP growth, holding all other variables constant. However, the associated probability of 0.0834 indicates that this relationship is not statistically significant at conventional levels. Next, we examine the variable IMPORTS GR. The coefficient of 0.271465 suggests that a one-unit increase in IMPORTS GR is associated with a 0.271465 unit increase in GDP growth, assuming all other variables remain constant. The probability of 0.0000 indicates that this relationship is statistically significant. Moving on to the variables FDI and POPULATION, we find coefficients of 0.019079 and 0.903352, respectively. However, the associated probabilities of 0.9329 and 0.1926 suggest that these variables are not statistically significant in explaining economic growth. In conclusion, the OLS results provide valuable insights into the impact of different variables on economic growth. The constant term and the variable IMPORTS GR show statistically significant relationships with economic growth, while the variables RPOP, FDI, and POPULATION do not exhibit significant associations. These findings highlight the importance of considering various factors when analyzing economic growth and informing policymakers about the key drivers of economic development.

Table 3 White test result

F-statistic	0.868847	Prob. F (14,34)	0.5963
Obs*R-squared	12.91116	Prob. Chi-Square (14)	0.5335
Scaled explained SS	16.84039	Prob. Chi-Square (14)	0.2648

Source: Researcher's Analyses Using EViews.

The p-value in Table 3 is more than the 5% criterion of significance. That suggested that the null hypothesis was accepted, which resulted in the variance of the error term being homoscedastic.

Table 4 Breusch-Godfrey Serial Correlation LM Test

F-statistic	0.887542	Prob. F (2,42)	0.4192
Obs*R-squared	1.986955	Prob. Chi-Square (2)	0.3703

Source: Researcher's Analyses Using EViews.

The p-value in Table 4 is more than the 5% significance level. That achieved the null hypothesis, which states that there is no serial correlation in the regression model (Kryeziu & Durguti, 2019).

Summary of the study

According to past studies that have been conducted by Mohd Shahidan Shaari¹, Noorazeela Zainol Abidin², Abdul Rahim Ridzuan^{2*}, Muhammad Saeed Me (2021) and supported by (Bilsborrow & Okoth-Ogendo, 1992), the Rural population growth has insignificant impact on GDP growth. Thus, supported by Wei Song (2014) Rural population growth is an insignificant variable in GDP growth. Moreover, this study also supports research done by Ioana Anda Milin^{1, *}, Mariana Claudia Mungiu Pupazan²ORCID, Abdul Rehman³ (2022), and Chigozie Nelson Nkalu (2019) stating the negative relationship between inflation and economic growth.

From this study, Imports of goods and services were found to be the only significant factor and positive relationship towards GDP growth. This supports research that has been done by (Pawlos, 2004) and Anwar and Yusoff, M. B., & Nulambeh, N. A. (2016) stating that Imports of goods and services have a huge impact on economic growth in the USA. The study also supported Li, X., Greenaway, D., & Hine, R. C. (2005) as they mention that there is a positive relationship between Imports of goods and services and GDP growth.

From this study, FDI was found to be not a significant factor and negative relationship with GDP growth. This supports research that has been done by Asma Salman, (2021) stating that FDI has No impact on economic growth in the USA. The study also supported. Tripati Rao (2021) mentions that there is a negative relationship between FDI and GDP growth in the USA.

Lastly, POPULATION growth was found to be not a significant factor and negative relationship with GDP growth. This supports research that has been done by James Laurence and Harris Hyun (2021) stating that POPULATION has No impact on economic growth in USA. The study also supported by. ROBIN BARLOW (2023) mentions that there is a negative relationship between POPULATION and GDP growth in the USA.

In a nutshell, in our study, it can be concluded that Imports of goods and services are the only significant factor that contributes positively towards GDP growth. The other variables are not significant which are Rural population growth, FDI, Population growth negatively related to GDP growth, and Imports of goods and services in the USA contributing positively to GDP growth. It does not mean the other factors are not important or significant. It might be because of limited access to the availability of the data and missing data on certain variables. That leads to a lack of reliability, accuracy, and persuasiveness of the study, or maybe GDP Growth can be affected by other variables that are not included in this study.

Conclusion

This study examined the impact of the monetary policy variables on the economic growth in Nigeria from 1973 to 2022 (50 years) The multiple regression analysis was used to test whether the following monetary policy variables (Imports of goods and services, FDI, rural population and population growth) have impacts on the GDP growth. The results show that Imports of goods and services have a significant impact on the GDP growth While on the other hand, the FDI, rural population, and population growth have no significant impact on the GDP growth. The study also tested the data to ensure it does not violate the OLS assumptions.

Therefore, the study suggests that policies and techniques that support innovation, job creation, and sustained economic growth be given top priority by the US government and economists. This could entail taking steps like funding research and education, encouraging small enterprises and entrepreneurship, enhancing infrastructure, and preserving a steady and predictable regulatory framework. Additionally, the United States can encourage foreign direct investment (FDI) as a way to attract capital and expertise to the country, but this would depend on the specific circumstances and potential risks and benefits of each investment.

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