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The role of government gross saving in financing imports of goods and services: A study in 18 OECD countries

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ABSTRACT

This study determines the impact of imports of goods and services on government gross savings and the consumer price index (CPI) through government expenditure. This study was conducted in 18 OECD countries during 2011-2022. A purposive sampling is used in determining sampling techniques, data analysis techniques and path analysis. The OECD is used as a research object because it is a high-income country with a strong economy where government gross saving and CPI play an important role in the import of goods and services activities. Statistical results show CPI has a very high variability (184.97 %) followed by import variability (47.209 %) while government gross saving (22.37 %) and government expenditure (20.74 %) have the lowest variability and are relatively equal. The behaviour pattern of these variables supports the findings of this research. Imports of goods and services affect government expenditure, imports of goods and services affect government gross saving and imports of goods and services affect the CPI. When making fiscal policy, it is necessary to consider government expenditure because this variable serves as a mediator in the relationship between imports and government gross savings.

Contribution/Originality: Our originality is using government gross savings and government expenses which have never been used together in a study. Furthermore, our object is OECD countries; it means our study is specifically on a wider economic area, not only one or two countries. It makes our study different from past studies.

1. INTRODUCTION

According to data from the World Trade Organization between 2021 and 2023, imports of goods and services have decreased. This is due to worldwide inflation, high energy prices, and weak demand in the manufacturing industry (World Trade Organization, 2024).

The COVID-19 pandemic highlighted the vulnerabilities in global value chains due to interruptions in the trade of intermediate goods and services. The termination of production for certain intermediate goods led to a halt in the production of other goods, revealing the delicate nature of these chains. However, in the years after the pandemic, markets rebounded swiftly, with services recovering even more rapidly. Figure 1 shows comparability between goods import and services import from 2021 to 2023. (Eurostat, 2024).

The Organization for Economic Cooperation and Development (OECD) launched in 1961 to enhance global trade and economic growth. It includes 38 member countries from Europe, Asia-Pacific, South America, and North America.

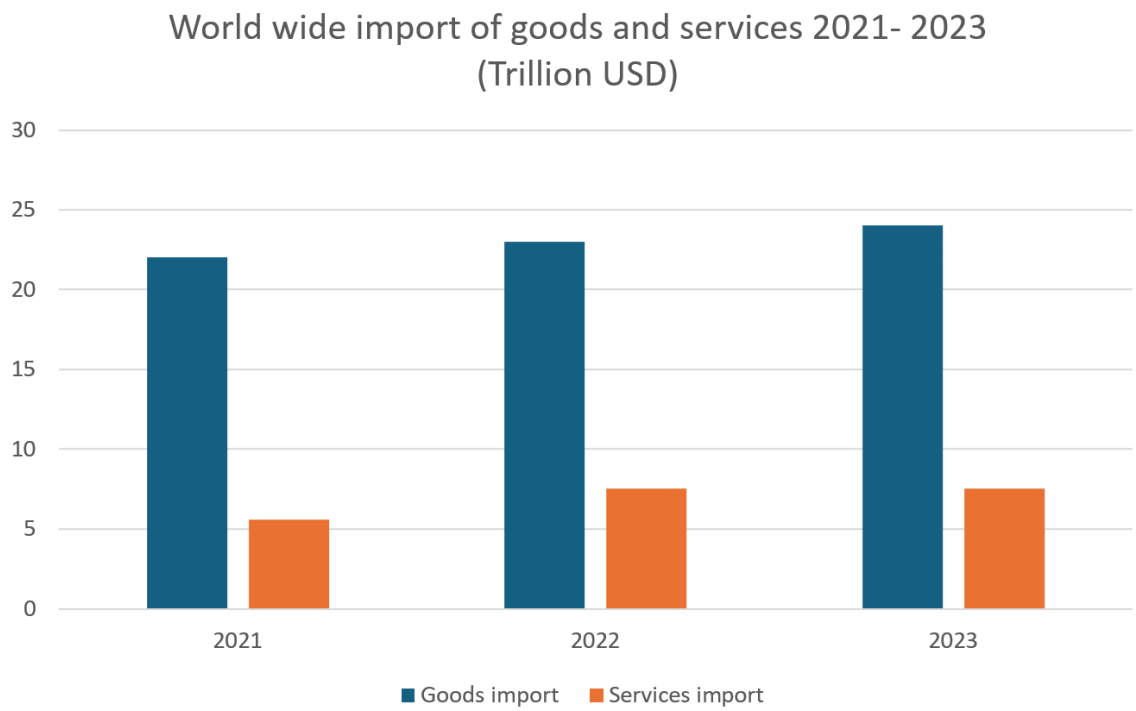

Figure 1. Worldwide import of goods and services from 2021 to 2023.

Import activity in OECD countries involves a wide range of economic interactions centered primarily on export-import content and trade in goods. This is sometimes expressed as the "foreign value-added share of gross exports" which is a percentage calculated by dividing foreign value-added in gross exports by total gross exports. Imported goods affect a country's economic resources and are an important component in international trade statistics which provide insight into trade flows and economic interdependence. Research from Baidoo (2023) related to import goods and services with gross domestic saving studies in Ghana 1970-2019 that the import of goods and services has a significant negative impact on gross domestic saving in the long run with an increase in imports by 1% causing a decrease in domestic savings by 0.3727%. However, his research only focused on Ghana not generalizing to other developing countries.

A comprehensive study investigating the role of import prices in domestic inflation dynamics in South Korea, focusing on the relationship between import prices, producer prices, and consumer prices from 2002 to 2020 has been conducted by Ahn and Lee (2023). However, this study only focuses on South Korea, thus limiting generalizability for economic studies. Another study by Konstantakopoulou (2017) found that increased government spending in Eurozone countries correlates with increased imports. This research shows that assuming other factors remain constant (ceteris paribus), an increase in government spending can lead to a decrease in the trade balance. The elasticity of imports with respect to government spending varies depending on the model used but is generally positive and significant.

Referring to the existing research, we will find out more about imported goods and services with government savings and CPI, government expenditure, a study on 18 OECD countries during 2011 - 2022. The novelty of this research is in combining the variables of government gross saving and government expenditure as mediating variables to find out more about the relationship between import and CPI and focusing on several countries as research objects. The reason we chose government gross saving and government expenditure variables is because both variables play an important role in economic growth and stability. Government saving provides essential funds for domestic investment which drives labor productivity and higher future living standards. When governments maintain positive saving rates, they can better finance crucial development projects without excessive reliance on borrowing. In addition, public spending enables governments to produce and purchase goods and

services necessary for achieving social and economic objectives. Government expenditure increased significantly in the 20th century as states took on expanded roles in education, healthcare, and social protection. Government spending serves as a vital economic policy tool through automatic stabilization during economic downturns, discretionary fiscal policy to influence economic activity and direct stimulation of demand for goods and services.

The Consumer Price Index (CPI) measures changes in the cost of living by assessing the price of a standard set of goods. It plays a crucial role in shaping government macroeconomic policies and analyzing financial markets, including money and bond markets as well as central bank interest rates. In the UK, CPI serves as the foundation for the government's inflation target which the Bank of England's Monetary Policy Committee must meet. The CPI is developed in two steps, namely, first, calculating index numbers for various commodities purchased by households, and second, creating the CPI by averaging the weighted values of different commodity categories.

The CPI experiences fluctuations due to various factors, including monetary policy, industrial structure, investment demand, and capital flow. These fluctuations can lead to a redistribution of wealth and income among the population. As a result, CPI serves as a crucial indicator for assessing the effectiveness and efficiency of government fiscal and monetary policies (Xiao, Wang, Tian, & Zhen, 2018).

Inflation represents an economic condition where there is a widespread increase in the prices of goods and services over time, resulting in diminished purchasing power of money. As inflation escalates, each currency unit purchases fewer goods and services than before, making it a vital indicator of economic well-being. The years 2021 and 2022 witnessed a significant surge in inflation worldwide driven by rising macroeconomic uncertainties following the Russian invasion of Ukraine (Londono, Ma, & Wilson, 2023). Concurrently, global trade growth slowed and the proportion of trade relative to gross domestic product (GDP) decreased in major economies, such as China and India (Goldberg & Reed, 2023).

Binder, Ozturk, and Sheng (2025) investigate the impact of inflation uncertainty on economic activities in 33 countries, particularly in the aftermath of the COVID-19 outbreak. They use inflation forecast disagreement as a proxy for inflation uncertainty and employ panel local projections to analyze its effects on industrial production and firm-level outcomes. Moreover, they found higher inflation uncertainty correlates with reduced industrial production and lower real sales and employment at the firm level. In contrast, while their study discusses how globalization moderates the effects of inflation uncertainty, it does not delve deeply into how other macroeconomic factors or policies might interact with these variables, potentially overlooking important dynamics. Research by Evans and Wachtel (1993) supports the theoretical and empirical consensus that inflation uncertainty generally has adverse effects on the real economy. This uncertainty often prompts businesses and consumers to defer spending and investment decisions until the situation stabilizes (Binder, 2017; Dotsey & Sarte, 2000). Londono et al. (2023) concluded that inflation uncertainty diminishes industrial production, consumption, and investment in the U.S.

Inflation in small open economies was studied by Ybrayev, Shamar, and Mamatova (2024) focusing on analyzing the main drivers of inflation in Kazakhstan by distinguishing between demand and supply factors that contribute to headline inflation. However, he assumes that the import content is stable over time despite potential structural changes but in reality, imports are not stable over time. Similarly, he uses quarterly data which may miss short-term price dynamics. Research focusing on the interplay between inflation, economic growth, and government expenditure in Pakistan from 1980 to 2010 revealed that inflation is inversely related to economic growth whereas government spending has a positive correlation with economic growth. The analysis considered total government expenditure, including both current and development spending. Nonetheless, the study overlooked external influences on growth and inflation and did not examine how an inflation threshold might affect economic growth (Attari & Javed, 2013).

Sustainable economic growth is defined as a development approach that strives to satisfy the needs of the present without jeopardizing the ability of future generations to fulfill their own requirements. This idea merges economic progress with environmental responsibility and social justice, ensuring that economic activities are

carried out in a way that is both ecologically sustainable and socially accountable. The relationship between sustainable economic growth and the size of government is nonlinear. It suggests that while a balanced level of government intervention can enhance growth, an excessively large government may obstruct it.

The efficiency of government expenditure is vital. Therefore, it is important to strike a balance between delivering essential public services and encouraging private sector engagement for sustainable economic growth. The relationship between the size of government and economic growth is a topic of ongoing debate. It is clear that the government must be involved in various domains, such as safeguarding property rights and fostering an environment conducive to private enterprise. Reducing transaction costs can stimulate both investment and production. Furthermore, the government has a significant role in providing infrastructure, public health, and education as the private sector often falls short in adequately serving the entire community. Thus, government initiatives can drive economic growth by addressing sectors where market mechanisms fail often proving to be more efficient than private sector solutions. In this context, several empirical studies have highlighted a positive relationship between government size and economic growth (Bose, Haque, & Osborn, 2007; Ram, 1986; Romero-Avila & Strauch, 2008).

According to Caselli (2018), it correlates with import activity, saving and CPI but his research studied the relationship between import activity and related factors proxied by raw materials and capital goods which were then proxied by machinery, equipment, and productivity of a manufacturing industry and did not consider the global economy. In the case of the British Exit (Brexit), it has an impact on the import of goods and services. Observations were made before and after Brexit, the habit of importing goods decreased by one-third post-Brexit and the habit of importing services showed minimal change. The drawback of this study is that the sample period also includes the effects of the COVID-19 pandemic which has the potential to confound the results and does not consider potential structural damage outside of Brexit (Fleissig & Swofford, 2023).

Carroll, Overland, and Weil (2000) conducted a study and found evidence that economic development has a positive influence on savings. However, this does not mean that all positive "cross-country" correlations are related to these two variables (development and saving paths). There are differences in saving rates due to preferences or policies that will affect development. At the same time, differences in development (due to policy, for example, or due to imported new technology) will affect savings. However, the shortcoming of his research is that it assumes a closed economy with no international capital flows and does not fully rule out other potential explanations for the savings growth correlation. There are studies that explain the negative relationship between imports and government savings. Baidoo (2023) explained that government spending on imports has a significant negative relationship with gross domestic savings (GDS). When a country spends more on importing goods and services, it tends to reduce the overall national savings rate. Numerous studies have examined the connection between economic growth and savings. Solow (1956) highlighted the role that savings play in economic expansion. He said, "more savings led to more investment and more productivity."

According to the European Central Bank Working Paper Series No.172/ August 2014, when government spending increases, especially through imports, it can affect national savings. High government spending in a small open economy has a direct negative effect on the government spending multiplier, as part of the increase in government spending ends up as a stimulus for foreign exporters. The European Central Bank Working Paper Series 2014 also concludes that imports have a positive effect on government spending. Government spending has been shown to directly increase imports by about 0.4% for goods and 0.5% for services when government spending increases by 1% (Clancy, Jacquinot, & Lozej, 2014).

A comprehensive study of ASEAN countries from 2006 to 2019 found that imports have a significant and positive effect on inflation with a large coefficient of determination (57.3%) while if the interest rate is included as a dependent variable, import activities have a positive relationship with inflation (Herawati, Sumaryoto & Sidik, 2022). There are also studies linking imports to products and innovation to show how access to imported

intermediate products can support product innovation through two main pathways: a love of variation in production technology and knowledge spillover from imported goods. This model shows how international trade through trade liberalization can provide firms with access to new intermediate goods that were previously unavailable. This can increase innovation efforts. However, this research is limited to India which limits generalizability and does not account for quality differences in imported inputs (Seker, Ulu, & Rodriguez-Delgado, 2024). Other scholars contended that the evolution of consumption patterns led to a positive association between GDP growth and savings, hence promoting sustainable economic development in emerging nations to investigate the causal link between economic growth and savings (Carroll et al., 2000).

The technical analysis in this study uses the path analysis method to determine the magnitude of the influence of one variable on other variables, either directly or indirectly in accordance with the objectives of this study. Different from research by Seker et al. (2024) and Ybrayev et al. (2024) who used the Vector Auto Regressive (VAR) method. 18 OECD countries are used as reference observations for the period 2011-2022; data for 2023 and 2024 are not yet available. The research data is obtained from the World Bank and OECD Stats databases; therefore, the data used is quality assured.

OECD countries have experienced a significant moderation in consumer price inflation largely due to globalization and better trade integration with low-cost economies. This has led to domestic inflation, which is lower by reducing trade prices and increasing the share of imports. The impact of global economic conditions on domestic inflation has become more pronounced with global factors contributing to lower inflation rates across OECD countries.

This paper's remaining parts are arranged as follows: The introduction is summarized in section I. Section II overviews the theoretical background and hypothesis development. Section III describes the methodology, sample and data. Section IV presents the findings. Section V describes research discussion, and section VI presents conclusions. Section VII presents implications, section VIII describes limitations, and section IX shows the references.

1.1. Research Purpose

We examine the relationship between imported goods and services with government saving CPI, and government expenditure. By combining the variables of government gross saving and government expenditure as mediating variables to find out more about the relationship between the research variables. Thus, we will gain knowledge that can become new literacy for OECD countries or countries around the world in making fiscal and monetary policies.

2. LITERATURE REVIEW

2.1. Research Model

The model structure used in the study consists of import of goods and services, government expenditure, government gross saving, and consumer price index variables. The relationship between these variables shows

(1) Direct effect of import of goods and services on government gross saving.
(2) Direct effect of import of goods and services on CPI.
(3) Indirect effect of import of goods and services on government gross saving through government expenditure.
(4) Indirect effect of import of goods and services on the consumer price index through government expenditure.

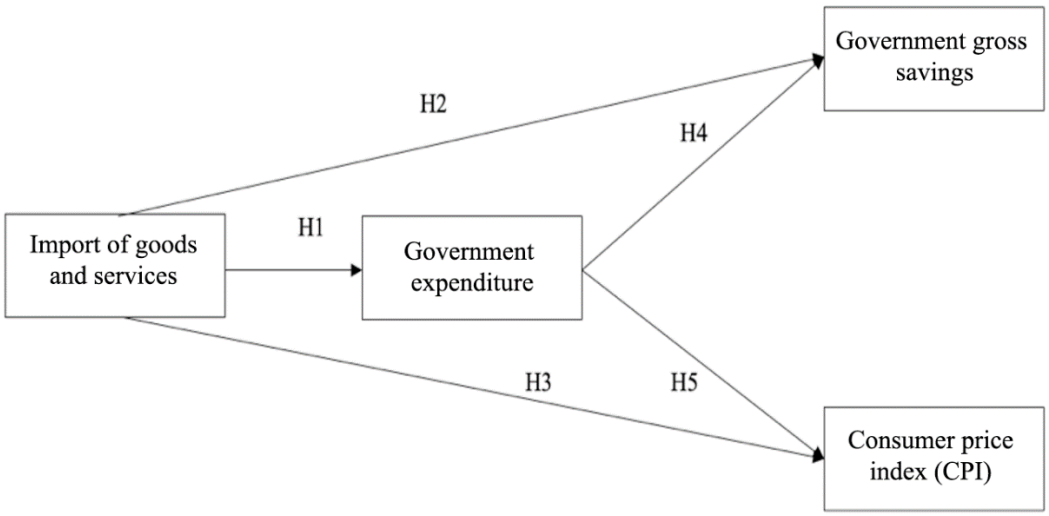

Figure 2. Hypothesis framework.

Figure 2 shows that the variability of government gross saving is determined by the direct effect of imports of goods and services and the indirect effect through government expenditure while the variability of the consumer price index is determined directly by the import of goods and services and the indirect effect through government expenditure.

2.2. Literature Review and Hypothesis Development Macroeconomic Theory

According to Principles of Economics by Case, Fair, and Oster (2012), macroeconomics encompasses the study of the economy as a complete system. This field concentrates on the factors that determine total national income, examines aggregates, such as total consumption and investment, and assesses the general price level rather than focusing on specific prices. The primary concerns of macroeconomics include output growth, unemployment, inflation, and deflation. Policymakers strive to achieve high levels of output growth, low unemployment rates, and controlled inflation.

2.2.1. Imported Goods and Services and the Government Expenditure

Developing nations have long been believed to rely on imported capital goods from established nations to provide them with access to cutting-edge technology and knowledge resources essential for industrial upgrading and productivity development. Costly processes, including acquiring capital goods, establishing connections with foreign suppliers and gathering data from foreign markets, prohibited local businesses from accessing foreign innovative technology (Fauceglia, 2015). However, the study focused on seven developing countries which might limit the generalizability of the findings. Expanding the research to include more countries, especially those with varied levels of financial development could provide a more comprehensive understanding of the relationship between credit market institutions and capital imports. Additionally, the analysis assumed that all firms were equally affected by changes in credit market institutions which might not be true due to differences in firm size, industry, or ownership structure.

There was a close relationship between imports and government expenditure because import activities were financed by the government which was available in the state budget. Most governments allocated about 75 per cent of their expenditure to consumer products and the remaining 25 per cent was used for productivity. A high-quality government would encourage more talent and capital to enter the local market, boost productivity, allow businesses to reach the Global Value Chain (GVC), and promote economic prosperity for all parties involved. However, poor management may result in adverse externalities like moral hazard. Transaction costs may rise due to poor management and other unfavorable externalities, eroding investor trust and impeding long-term economic growth

(Acemoglu, 2002). Nevertheless, the conclusions heavily relied on estimating the elasticity of substitution between skilled and unskilled workers which could vary significantly across different studies and contexts. This variability might affect the robustness of some conclusion drawn in the paper.

The study by Hosen (2023) discusses aggregate import demand in Bangladesh, focusing on the impact of the Global Financial Crisis (GFC) on import demand. The results show that income and relative prices are important determinants of import demand in Bangladesh, both in the long and short run. Income elasticity declines over time while price elasticity remains inelastic. Unconventional factors, such as foreign exchange reserves and trade liberalization have a limited positive influence on import demand. The study also finds that income components, such as private and government consumption, investment, and exports have a positive effect on import demand. However, it discusses the impact of the global financial crisis; it does not detail the impact of geopolitical situations, such as the Russian- Ukrainian war, which can affect import demand and the economy as a whole.

Iliopoulos and De Witte (2024) research highlights that the decision-making mechanisms and trade-offs in budget allocation between policy areas remain understudied. Their study has focused more on total expenditure size rather than specific components that are sacrificed or prioritized in response to socio-economic, demographic and political fluctuations. One drawback of their study is the potential inaccuracies in the functional level data reported by the municipalities which may affect the interpretation of the findings. In addition, the clustering approach used may not fully capture the complexity of budget decisions across all municipalities due to significant local variations. Additionally, the analysis's findings might be impacted by endogeneity bias and reverse causation between political ideology and fiscal policy.

Government spending has significant immediate impacts on imports, particularly in small open economies where a high import content of government expenditure leads to substantial effects on the trade balance. In small open economies, many goods purchased by the government are imported since these economies may not produce all necessary items domestically. This creates a direct relationship between government spending and import levels. Therefore, in this research, we found limited consideration of the role of expectations and confidence effects also limited empirical evidence on fiscal spillovers for very small open economies within monetary unions.

Hypothesis 1: Import of goods and services has a significant positive effect on government expenditure.

2.2.2. Import of Goods and Services and Government Gross Savings

Import activity is linked to government gross savings. In macroeconomics, government gross savings can be one of the sources of financing import activities. The economies of nations with greater savings rates have developed more quickly than those with lower savings rates. A nation's production may increase significantly as a result of capital accumulation. This may be achieved by giving a nation, like Kosovo, more sources of income. According to the UN Conference on Trade and Development (2004), encouraging domestic savings programs is the primary way to boost domestic capital, which can then be used to invest in the most productive practices. Numerous works of literature have been written on changes in the US aggregate savings rate. The importation of goods and services was found to be negatively associated with gross domestic savings in the long-term. This negative relationship is logical since imports typically represent an outflow of money from a country (Baidoo, 2023).

The research from Ferreira and Matos (2020) discusses the precautionary risk in an open economy, especially related to the volatility of domestic consumption and imports. This research shows that the volatility of foreign consumption is higher than domestic consumption in the United States. This leads to precautionary savings in foreign currency due to the difference in volatility between domestic consumption growth and imports. The developed model shows that open economy factors are better at explaining currency risk compared to the traditional model that separates consumption into durable and non-durable. Conversely, this model assumes perfect economic openness, which may not fully reflect the reality in many countries and its complexity can make it difficult to interpret or apply in policy practice.

On the other hand, there was research done by Wilson (2023) about the savings behavior of state governments in the United States over the business cycle and how federal fiscal policy affected state fiscal policy. State governments tended to keep reserve funds during economic expansion and utilize them during recession. This suggested precautionary savings behavior in anticipation of fiscal risks. The shortcomings of this research focused more on quantitative analysis and might have lacked qualitative analysis of the political or social factors that may influence state government savings policies.

Higher imports relative to exports can lead to trade deficits. Trade deficits can impact currency valuation and overall economic performance. A country's importing activity influences its GDP, exchange rates, and inflation levels. Therefore, while imports and government savings are interconnected through various economic mechanisms, the research does not support a direct positive correlation between these two variables. Instead, the circumstances are more complex relationship where increased imports tend to have a negative relationship with gross savings.

Hypothesis 2: Imports of goods and services have a positive significant effect on government gross savings.

2.2.3. Import of Goods and Services and Consumer Price Index (CPI)

CPI as an indicator of price changes has a common thread with import activities. Macroeconomic theory explains that if goods and services from abroad enter the domestic market, it will result in the unstable price of domestic goods if the percentage is not balanced (the amount of foreign goods and services is greater than the amount of domestic goods and services).

Price indices often only show average changes since prices for commodities and services fluctuate at different rates. In the reference period, one price index is often given a value of unity, or 100 points whereas other ages are given a different index value. This seeks to illustrate the average proportionality, percentage or price change from the reference period of these prices. Price indices may also quantify price variations between cities, regions, or nations at a given time.

The economic committee had been recommending for a long time that the Bureau of Labor Statistics in the United States (BLS) should declare a cost-of-living index as the measurement objective in changes in the cost to purchase many permanent goods. In addition, research should be conducted, and operational changes are also needed to replace the CPI to make it closer to the above objectives. The Boskin Committee appointed by the Finance Committee of the US Senate confirmed this recommendation in their 1996 report (Boskin & Robert, 1996). A more ambitious goal was based on a conceptual index for the measurement of price changes to maintain households' standardized cost of living at a certain level.

Alsamara, Mrabet, and Hatemi-J (2020) used a non-linear lag distribution autoregressive model to explore the asymmetric response of consumer prices to import costs. They found that changes in import prices had a significant impact on the CPI in the long and short run. Negative changes in import costs were passed on more strongly than positive changes in Oman, Bahrain, and Saudi Arabia while positive changes were stronger in Qatar and Kuwait. In contrast, the findings might not be generalizable to other regions or countries with different economic structures and policies.

The research of the import of goods and services with inflation in the household sector was studied by Hottman and Monarch (2020). This study discusses how import price inflation in the United States impacts different income groups differently. It uses highly detailed international trade transaction data and consumer expenditure surveys to construct import price indices specific to each income decile. The results show that low-income households experienced higher import price inflation than high-income households over the 1998-2014 period. The first income decile experienced import price inflation of about 33% from 1998 to 2014 or 1.82% per year. For comparison, the ninth income decile only experienced import price inflation of about 21% over that period or 1.20% per year. However, this study only matters in the United States region not compared with the broader region.

Research focusing on the ASEAN region and found factors that influence inflation in ASEAN countries from 2006-2019. The results show that 1) imports have a significant effect on inflation. 2) Interest rates have a significant effect on inflation (Herawati, Sumaryoto & Sidik, 2022). Despite the paper does not go into great depth explaining the theoretical mechanisms behind why imports and interest rates affect inflation in the ways observed. A more thorough discussion of the economic theory would strengthen the findings. Addressing these limitations in future research could help provide a more comprehensive understanding of the determinants of inflation in ASEAN countries and beyond.

Hypothesis 3: Imports of goods and services have significant and positive effect on CPI.

2.2.4. Government Expenditure and Government Gross Saving

Macroeconomic theory also explains that the level of government expenditure depends on the amount of savings owned by the government. A simple example is that a factory will dare to produce clothes if it has sufficient material resources. In addition, the relationship between government expenditure and government gross savings refers to the state budget as a source of expenditure where savings owned by the government stand as an alternative financing source.

Kida (2020) research findings demonstrated a strong and favorable relationship between per capita income, government spending, savings, and family final consumption over time. However, the relationship between family final consumption and population growth was negative. However, additional factors like inflation, interest rates, and others that might influence the relationship between family final consumption, government spending, savings, and per capita income should have been considered in this research.

Abdullah and Rusdarti (2017) research conducted in Indonesia, Malaysia, and Singapore found that government expenditure has a significant impact on GDP growth. The study revealed that

- A positive relationship between GDP growth and government expenditure.
- In Singapore, a 1-point increase in government expenditure led to a 0.596% increase in GDP growth.
- In Malaysia, a 1-point increase in government expenditure resulted in a 1.180% increase in GDP growth.

In contrast, their research does not account for significant external events or shocks (e.g., the 1997 Asian Financial Crisis, the 2008 Global Financial Crisis) that could have substantially impacted the economies of these countries during the study period.

Hypothesis 4: Government expenditure has a significant and positive effect on government gross savings.

2.2.5. Government Expenditure and Consumer Price Index (CPI)

Government expenditure with CPI depends on whether the prices of domestic goods are affected by economic sentiment. Financing the procurement of goods and services will become expensive, if there are a lot of demands for domestic goods and services which will have an impact on the government expenditure incurred.

The link between government expenditure, economic growth, and inflation in nine randomly chosen OECD nations (France, Germany, Italy, the United Kingdom, Portugal, Hungary, Spain, Finland, and Poland) over the 2010–2019 period was examined by Korkmaz and Güvenoğlu (2021). The findings demonstrated a two-way causal link between inflation and economic growth. Furthermore, there was a one-way causal link between government expenditure and economic growth and between inflation and government spending. In contrast, this study only analyzed the relationship between government spending, economic growth, and inflation without considering other factors that might affect the relationship.

When the government increases spending, it can increase aggregate demand in the economy. If supply is insufficient to fulfil the increased demand, prices of goods and services may rise, resulting in an increase in the CPI. For example, in Australia, increased government spending can trigger inflation through this mechanism (Wagner, 2025).

Some studies show that government spending can have a negative effect on inflation in the long run, especially if fiscal policy is not matched by increased production. For example, a Bank of Canada study found that changes in government spending can explain variations in inflation, but with a negative coefficient, suggesting that inflation and inflation expectations respond negatively to fiscal spending shocks (Liu & Xie, 2023).

Hypothesis 5: Government expenditure has a significant and positive effect on CPI.

3. METHODS

3.1. Research Data

Table 1. Research sample

Data	Criteria
38 OECD countries	Total OECD countries
(20 OECD countries)	Does not match the balanced panel criteria
18 OECD countries*	Suitable balanced panel criteria
Number of observations	216 (18 countries x 12 years) observations

Note: *: Australia, Belgium, Chile, Colombia, Czech Republic, Denmark, France, Hungary, Italy, Latvia, Poland, Portugal, Slovenia, Spain, Switzerland, Türkiye, United Kingdom, United States.

Table 1 shows the data of import of goods and services, government deposits, and consumer price index are taken from the World Bank Data and the data of government expenditure are taken from the "Our World Data" website (https://ourworldindata.org/grapher/total-gov-expenditure-gdp-wdi?time=latest).

In 2019, 2020 and 2021, there was a COVID-19 period, so there is a lot of incomplete data. Given that a balanced panel structure demands data completeness (in one observation period, there should be no blank data), the focus of economic variables is the import of goods and services, government expenditure, government gross saving, and CPI.

3.2. Research Population

This research focuses on OECD countries. These countries are chosen because their members are categorized as developed countries with a gross national income ≥ US$13,845 billion per year, according to the World Bank.

3.3. Sampling Technique

Purposive sampling is used to draw the sample. The criteria are OECD countries with high income.

3.4. Variables

It is derived from macroeconomic theory that the variables import of goods and services, CPI, government gross saving, and government expenditures are within the scope of macroeconomic theory. Thus, these four variables can answer this research question.

- Independent Variable
  a. Import of goods and services

  Equation: $\left(\frac{Value\ of\ Import\ of\ Goods\ and\ Services}{Gross\ Domestic\ Product}\right) x\ 100$

  Unit: % of GDP.

- Dependent Variable
  a. Government Gross Saving

  Equation: $\left(\frac{Government\ Revenue - Government\ Expense}{Gross\ Domestic\ Product}\right)$ x 100

Unit: % of GDP.

b. Consumer Price Index

Equation: $\left(\frac{CPI\ in\ Current\ year - CPI\ in\ Previous\ year}{CPI\ in\ Previous\ Year}\right) x\ 100$

Unit: % annual.

- Mediating Variable
  a. Government Expenditure

Equation: $\left(\frac{Total\ Government\ Expense}{Gross\ Domestic\ Product}\right) x\ 100$

Unit: % of GDP.

3.5. Methodology

In his book, Basic Econometrics, Gujarati (2009) explains that path analysis is an extension of multiple regression that allows more complex relationships between variables. This research has mediating variables and path analysis appropriate for statistical analysis. In addition, the purpose of the study is not to perform a prediction function, but our purpose is to determine the magnitude of influence between variables. Therefore, econometric models are not appropriate for the purpose of this research.

Substructures of Research Model

Government Expense = b1 Import + e1.

Government Gross Saving = b1 Import + b2 Government Expense + e2.

CPI = b1 Import + b2 Government Expense + e3.

In using path analysis to determine the type of regression (e.g., fixed effect, random effect, common effect), data testing is carried out using the Chow test, the Hausman test, and the Lagrange Multiplier test. In the first framework, the variables tested are imports of goods and services, government expenditure, and government gross savings. Similarly, in the second framework, the variables tested are imported goods and services, government expenditure, and CPI. After testing the data, framework 1 uses the fixed effect model of the regression model, and framework 2 uses the random effect model. In the final stage of testing, the government expenditure variable as a mediating variable is tested.

4. RESULTS

4.1. Descriptive Analysis

Table 2 shows the descriptive statistics in which the import variable has a MIN value of 13.021% of GDP which was the value of imports from the United States in 2020. This was due to the COVID-19 pandemic that spread throughout the world and caused a decrease in the American import balance (U.S. Bureau of Economic Analysis (BEA), 2021).

Table 2. Descriptive analysis

Stat/Variable	Import	Government expenditure	Government gross savings	CPI
Min.	13.021	16.521	11.913	-1.1439
Max.	97.330	61.346	37.247	72.308
Std. dev	21.296	8.894	5.033	5.860
Mean	45.110	42.878	22.499	3.168
Coefficient of Variation (Cv)	47.29	20.74	22.37	184.97

Regarding the value of MAX imports, this study obtained data from Belgium in 2022 (97.330% of GDP). The increase in this value was influenced by general inflationary pressures in 2022 which meant that the cost of imported goods rose, even if the physical volume of imports did not increase as much. This effect was especially pronounced for energy, food, and metals (U.S. Bureau of Economic Analysis (BEA), 2021).

In addition, for the government expenditure variable, the MIN value (16.5219%) was taken from Switzerland in 2012. In 2012, Switzerland's economy was performing relatively well with low unemployment and stable inflation. The government adopted a broadly neutral fiscal stance, meaning it neither stimulated nor contracted the economy through fiscal policy which further limited the need for increased expenditure (International Monetary Fund (IMF), 2012).

Furthermore, the MAX value of government expenditure (61.346%) was taken from France in 2020. This happened because France allocated funds for handling the COVID-19 pandemic (Eurostat, 2021).

The gross saving variable showed a MIN value (11.913%) taken from the UK GDP in 2013. The reason for this was the low savings rate. At the time of this research, the UK government was carrying out financial restructuring to reduce unnecessary expenditure (HM Treasury, 2013). The value of MAX Gross Saving (37.247%) was taken from Denmark in 2022. Denmark's unusually high gross saving in 2022 was the result of a combination of post-financial crisis consolidation in the private sector, demographic trends leading to higher household savings, a strong current account surplus, and both temporary and structural shifts in saving behavior. These factors together pushed Denmark's savings rate to historic highs distinguishing it from global trends during that period (Byrialsen & Valdecantos, 2023).

The Consumer Price Index MIN value (-1.143%) came from Switzerland in 2015. This showed that at that time, the Swiss government was able to keep inflation as low as possible. The currency in Switzerland was assumed to be the "safest place" for financial investments. People who wanted to invest their money in Switzerland needed Swiss Francs to do so. This situation "fueled" a huge demand for Swiss Francs and the result was that their value became higher (International Monetary Fund (IMF), 2015).

Turkey got 72.308% for CPI MAX in 2022 due to the Turkish government led by President Recep Tayyip Erdoğan pursuing an unorthodox economic policy by lowering interest rates despite already high inflation. This approach contradicted mainstream economic theory, which typically prescribes raising interest rates to combat inflation (Euronews, 2022).

4.2. Data Analysis

In processing the data, we require classical assumptions to be met. Research in the form of panel data must be tested for classical assumptions, such as avoiding multicollinearity and autocorrelation problems. We can conduct path analysis to get the influence between research variables.

4.3. Multi-Collinearity Test

Table 3 shows the findings that the variables have a relationship value of no more than <0.9. So, it can be concluded that there is no multicollinearity between the independent variables.

Table 3. Multi-collinearity test

Variables	Import	Government gross savings	CPI	Government expenditures
Import	1	0.4841	0.009	0.326
Government gross savings	0.484	1	0.085	0.020
CPI	0.009	0.085	1	0.072
Government expenditures	0.326	0.020	0.223	1

4.3.1. Auto Correlation Test

4.3.1.1. Framework 1

Table 4 describes the Durbin-Watson (4-D) value > DL (3.346494 > 1.799). It can be concluded that there is no positive correlation. In addition, the value of Durbin Watson (4-D) > DU (3.346494 > 1.738) indicates that there is no negative correlation.

Table 4. Auto correlation test framework 1

Durbin-Watson (D)	DU	DL	(4-D)
0.653506	1.738	1.799	3.346

4.3.1.2. Framework 2

Table 5 describes that the Durbin-Watson (4-D) value > DL (3.538788 > 1.799). There is no positive correlation. In addition, the value of Durbin Watson (4-D) > DU (3.346494 > 1.738) indicates that there is no negative correlation.

Table 5. Auto correlation test framework 2

Durbin-Watson (D)	DU	DL	(4-D)
0.461212	1.738	1.799	3.538

4.3.2. Regression Analysis

4.3.2.1. Import and Government Expenditure Variables

Table 6. First regression framework 1

Variables	Coefficient	Std. error	T. stat	P-value
C	49.418	2.317	21.326	0.0000***
Import	-0.144	0.051	-2.831	0.0051***
R squared	0.911			
Adj. R-squared	0.9039			

Note: Dependent variable: Government expenditure.
***: Significance level at 1%.

The resulting output:

Table 6 concluded that import (X) has a significant effect on government expenditure (Z) with a probability value of 0.0051 (<0.05). The variability of government expenditure is 90.39% determined by the import of goods and services and 9.61% is determined by other variables.

4.3.2.2. Variables of Imports, Government Expenditure, and Government Gross Savings

Table 7. Second regression framework 1

Variables	Coefficient	Standard error	T. stat	P-value.
C	26.149	2.669	9.795	0.0000***
Import	0.100	0.033	3.028	0.0028***
Gov. expenditure	-0.190	0.045	-4.22	0.0000***
R-squared	0.890316			
Adj. R-squared	0.879683			

Note: Dependent variable: Government gross savings.
***: Significance level at 1%.

The resulting output:

Table 7 shows that import (X) and gross expenditure (Z) influence government gross savings (Y) with probability values of 0.0028 and 0.0000, respectively. The variability of government gross saving is 88% determined by import and government expenditure with the remaining 12% from other variables.

4.3.2.3. Imports and Government Expenditure

Table 8. First regression framework 2

Variables	Coefficient	Standard error	T. stat	P-value
C	49.418	2.317	21.326	0.0000***
Import	-0.144	0.051	-2.831	0.0051***
R-Squared	0.911982			
Adj.R-Squared	0.903940			

Note: Dependent variable: Government expenditure.
***: Significance level of 1%.

The resulting output:

Table 8 shows the import variable (X) has a significant effect on government expenditure (Z) with a probability value of 0.0051 (<0.05). The variability of government expenditure is 90.39% determined by the import of goods and services and 9.61% is determined by other variables.

4.3.2.4. Imports, Government Expenditure, and CPI

Table 9. Second regression of framework 2

Variables	Coefficient	Standard error	T. stat	P-value
C	5.286	3.248	4.116	0.0001***
Import	0.141	0.034	4.116	0.0001***
Gov. expenditure	-0.198	0.070	-2.79	0.0056***
R-squared	0.068			
Adj.R-squared	0.059			

Note: Dependent variable: CPI.
***: Significance level at 1%.

The resulting output:

Table 9 concluded that import (X) and gross expenditure (Z) influence the CPI variable (Y) with probability values of 0.0001 and 0.0056, respectively. The variability of CPI is 5.9% determined by import and government expenditure with the remaining 94.1% from other variables.

4.3.2.5. Mediation Test Results

Table 10. Test results of mediating variables

Variables	Statistic T	Standard error	P-value
Imports, government expenditure, and government gross savings	1.9897	0.0144	0.0466**
Imports, government expenditure, and CPI	2.3519	0.011	0.0186**

Note: **: Significance level at 5%.

The resulting output:

Table 10 explains that for framework 1, the Prob- value is 0.04661465 (<0.05) with a Sobel Test Statistic value of 1.98978479. Therefore, it can be concluded that variable X has a significant effect on variable Y1 with variable Z stands as a mediating variable. For framework 2, the Prob- value is 0.01867639 (<0.05) with a mediation test t-

statistic value of 2.35192795. The conclusion is that variable X has a significant effect on variable Y2 with variable Z stands as the mediating variable.

5. DISCUSSION

5.1. Imports, Government Expenditure, and Government Gross Savings

From the test results that have been carried out, the regression results of imports with government expenditure with a p-value of (0.0051) and the results of the import regression on gross saving through government expenditure with a p-value of 0.0028. It shows that the independent variables, dependent variables, and mediating variables influence each other.

Our results support the study from Kida (2020) that government spending, private consumption, gross savings, and per capita income showed statistically significant and positive relationships with each other. Furthermore, the study demonstrated that when the government increases expenditure, it directly affects it.

- Employment growth through public investment.
- Aggregate demand for consumption.
- Overall savings rate.

Moreover, our study also supports the result of the European Central Bank in Working Paper Series 2014 which said the relationship between imports and government expenditures has a positive relationship (Clancy et al., 2014).

Countries with higher savings rates have faster economic development than countries with lower savings rates. Based on the data in our study, Denmark has more years of savings than other countries. Capital accumulation creates greater opportunities to be productive. Accordingly, the UN Conference on Trade and Development (2004) stated that raising savings rates was a crucial component of building domestic capital and developing nations should give priority to initiatives that "encouraged" domestic savings. Thus, capital could be invested in more productive endeavors. Among the three variables, namely imports, government expenditure and government gross savings, each had a relationship with the macro economy. In macro-economics, all three variables support GDP. The equation that we already know, namely GDP = C + I + G proves the relationship between these variables.

Whenever domestic demand for goods and services cannot be met, imports become the solution. Prior research has also examined the significance of capital goods imports on productivity development (Caselli, 2018). Additionally, our research validates the findings of Caselli (2018) study, which showed that foreign capital products were more likely to introduce technical advancements than raw commodities. Seker et al. (2024) clarified that trade mostly contributed to product development and innovation by providing access to new import varieties rather than merely direct import costs, indicating that imports of capital goods had a greater influence on productivity.

Government expenditure tended to increase imports which could worsen the trade balance. In addition, other expenditure components, such as household consumption and investment also played an important role in determining import demand. The real effective exchange rate was also found to be an important factor that affected imports, with an increase in the real effective exchange rate that reduced import demand. These results had important implications for economic policy, especially in the context of trade balance management (Konstantakopoulou, 2017).

Governments oversee delivering a variety of products and services to their citizens, some of which fall within their exclusive purview (such as the legal system). Public services may differ greatly across nations, and some may be supplied by other governments and organizations (such as healthcare). Through programs like social benefits and subsidies, for instance, governments also try to redistribute money across society. In OECD nations, government expenditure is mostly used to fund public services and distribute cash to the general populace. Since government expenditure is less susceptible to fluctuations in the economy than taxes, it often does not fluctuate as

much as its earnings. The implementation of long-term policies that ensure people' rights, including universal primary education, is one of the fundamental causes.

Government expenditure in OECD countries covers a wide range of public services and income transfers, such as education, health and social security. According to Government at a Glance 2021 (OECD, 2024) published by the OECD, in 2019, government expenditure in OECD countries averaged 40.8% of GDP, with variations between 35% and 50% in most countries. This expenditure increased in 2020 due to the COVID-19 pandemic, which necessitated additional expenditure on healthcare and income support. In 2021, government expenditure averaged 46.3% of GDP, reflecting the fiscal response to the crisis. However, government gross savings are measured as a percentage of GDP and reflect the ratio between disposable income and final consumption expenditure. Government savings are important to ensure that the government has financial reserves to deal with large and unexpected expenditure, such as natural disasters or economic crises. A healthy savings rate helps maintain fiscal stability and allows the government to fund crisis response when necessary.

However, our research contradicts Fleissig and Swofford's (2023) research. Moreover, our theory explains that imports are not affected by the sentiment of the government's political decisions; therefore, imports are carried out to fulfil domestic needs that cannot be met by domestic producers. Additionally, their study found that there was a moderate level of habit formation in the consumption of imported goods and services in the UK. After Brexit, habits for imported goods declined, suggesting that consumers began to adjust their behavior while habits for imported services did not change. The study also showed that despite concerns about the impact of Brexit, the long-run budget elasticity suggested that the UK economy would become more open as it grew. In addition, a study in Indonesia in 2014 said the decrease in government expenditures leads to a greater reduction in import volume compared to exports in Indonesia. This demonstrates a positive relationship between government spending and imports, meaning when government spending decreases, imports decrease as well (Kuncoro & Pambudi, 2014). Consequently, their study contrasts with our findings.

In a closed economic system, investment is simply synonymous with domestic savings which gradually declined due to high inflation which erodes most of the incentives to save. As a result, the development of the capital stock in South Africa became increasingly poor. This inadequacy of savings can be clearly seen in public goods, such as railways, roads, harbors, and most recently, electricity. This limits the growth process of the domestic economy.

A nation must raise its total savings to attain sustained economic growth. Savings will thus support faster and more robust GDP growth. It also implies that less consumption results from savings in emerging nations. More capital investment may result which would eventually boost economic development.

5.2. Imports, Government Expenditure, and Consumer Price Index

From the regression test results of imports with government expenditure with p-value of 0.0051 and the results of the import regression on the consumer price index (CPI) through government expenditure with a p-value of 0.0001 and p- value of 0.0056; it shows that the independent variables, dependent variables, and mediating variables influence each other.

Our findings support existing research, such as Herawati, Sumaryoto, and Sidik (2022), imports have a significant positive effect on inflation with a coefficient of determination of 57.3% and when combined with interest rates that exposes import activities have a positive relationship with inflation. Moreover, our results also support study from Corrigan (2005) with the result between import prices and CPI shows significant effects with import prices playing a key role in the inflationary process. Studies indicate that changes in import prices have both direct and indirect effects on domestic price levels.

Furthermore, research from Hidayat, Purwanda, Hadijah, and Sodik (2024) support our result which explain government spending demonstrates a significant positive relationship with imports. When government expenditure increases, there is a corresponding increase in import levels.

The price of imported goods will be affected by the exchange rate. Import demand will be greater if domestic income is higher. As explained in the introduction, import demand will be greater if the real exchange rate is higher and the price of foreign goods is cheaper than the price of domestic goods, when both are measured in domestic currency.

Inflation in OECD countries as measured by the consumer price index (CPI) increased marginally in May 2024 rising from 5.7% in April to 5.9% in May, according to the July 2024 statistical release of the consumer price index (OECD, 2024). Changes in the costs of products and services that households usually buy are reflected in this inflation. Some countries, such as Turkey experienced very high inflation while others such as Japan and France showed variations in energy and food inflation.

Ahn and Lee (2023) research clarified how import prices affected South Korea's local price inflation between 2002 and 2020. Using a variety of inflation forecasting models, the study examined the impact of import prices on Korea's producer pricing index (PPI) and consumer price index (CPI). According to their research, import prices and domestic inflation in Korea are closely related. A 10% rise in import price inflation (IPI) might result in 3.9% and 3.4% increases in PPI and CPI inflation, respectively. Additionally, their results complement our study. As a result, their investigation validated our findings. Moreover, Attari and Javed (2013) discovered a unidirectional causal relationship between economic growth and government expenditure as well as between the inflation rate and economic growth. Therefore, their study supports our results.

However, our findings contrast with a study from Nguyen (2019) which explain government spending appears to have a negative impact on inflation in China while showing a positive impact in Indonesia and India. The relationship between government spending and inflation varies across different economic contexts and institutional frameworks.

Economic theory states that the exchange rate between national currencies in reference to exports or imports has a relationship with the balance of trade. There is a depreciation of the national currency against foreign currencies (for example, in Euro/EUR). This evaluation makes imported goods reach a higher position in the domestic market, so an increase in the consumer price index (CPI) is expected and export goods are sold cheaper in foreign markets. This condition causes export activity to increase when the exported goods have higher competitiveness, thus improving a country's trade balance. On the other hand, if the national currency is overvalued, the effect is the opposite. Thus, exchange rates become an effective regulatory mechanism for competing in international trade among different countries. This situation can be felt deeper among countries that have a relatively important position in international trade.

6. CONCLUSION

From our test results answering our research question, it is evident that government gross saving and CPI are influenced by the import of goods and services, and government expenditure is able to mediate the relationship between import and government gross saving as well as import and CPI. This result also supports previous research.

Import activities in a country are carried out to meet the needs of domestic goods and services that are still limited. Import activities are also a form of trade cooperation between two or more countries. Furthermore, import activities will be greatly influenced by first, government expenditure how much expenditure will be incurred by the government. Second, the consumer price index, which is highly susceptible to inflation. In addition, government gross saving is very influential on import activity as an alternative to financing the procurement of goods and

services. Government investment held in the form of cash or liquid assets can be a source of financing for import procurement.

As with path analysis framework 1, the total direct effect (imports on government gross savings) and indirect effect (imports on government gross savings through government expenditure) is 0.127821 obtained from the statistical equation [coefficient H2 + (coefficient H1 x coefficient H4)].

With this value, it shows that large import activities will burden government expenditure and if there is a deficit in the state budget, the government budgets from savings will result in an unstable economy. The reason is because the government does not have strict rules on imports and seems to impose those activities. By determining the strategy of diversifying import sources, we can increase economic resilience. Government savings relate to taxes, namely the potential for new tax policies to generate additional government savings without inhibiting economic growth. Government expenditure can be modelled to predict the long-run impact of expenditure adjustments on economic growth and social welfare.

In framework 2, the total direct effect (import on CPI) and indirect effect (import on CPI through government expenditure) is 0.170459 obtained from the statistical equation [(coefficient H3 + (coefficient H1 x coefficient H5)]. The positive value indicates that import activities are funded by the government, and if it is not properly controlled, that will shake the price of domestic goods and services, causing high price changes (inflation).

6.1. Implications

During this time, almost all countries prioritized direct financing in carrying out import activities. Thus, the government always prioritizes the set annual budget. Based on the results of this research, it can be recommended that the government should plan its import strategy well. The price of domestic goods is not eroded by inflation. In this case, the government can use alternative financing through government savings.

6.2. Limitation

This research focuses on 18 OECD countries. In the next research opportunity, this research can use all members (38 countries) and future study could use data year 2023 and 2024 if available. Thus, the relationship between monetary policy and fiscal policy can be analyzed in more detail. For similar research, the unemployment variable can be added as an important economic instrument to make the research more comprehensive.

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