Twin Deficits: Apparition or Reality for Albania

Nevila Mehmetaj

Keywords: Fiscal deficit; Current account deficit; Economic growth; Granger causality; VECM

Abstract: This study examines the validity of the Keynesian Twin Deficits hypotheses (TDH) for Albania, using time series data of the span period from 2008 to 2021. The twin deficit hypothesis implies a long-run positive correlation running from the budget deficit to the current account deficit. For this, the Stationarity test, the Johansen co-integration test, the Granger causality, and VEC model techniques are used to examine the long-run and short-run relationship between budget balance, current account deficit, and real growth rate. The empirical findings suggest that the Keynesian twin deficits hypothesis is not valid in the context of the Albanian economy, the budget deficit has a negative relationship to the current account deficit. The policy implication of the results is that prudent management of the fiscal budget of the government may not prove to be a suitable policy instrument for the evaluation of the current account balance improvement.

1. INTRODUCTION

Many countries are experiencing negative balances in the budget account in the last decades. Large fiscal deficits can have negative impacts on the current account balance and the real economic growth rate. The analysis of the mechanism of the relationship between budget deficit, current account deficit, and economic growth rate movements became a source of economic debates in the literature. Moreover, the study of their relationships is of great empirical importance for policy purposes.

From a theoretical viewpoint, the link between budget deficit and current account deficit is usually referred to as the Twin Deficits Hypothesis (TDH), and it means that the budget deficit will be associated with a current account deficit. It first emerged in the 1980s, when a significant deterioration in the U.S. account balance was accompanied by a sharp rise in the federal budget deficit (Miller & Russek, 1989). Public expenditures which are considered to play a central role in periods of recessions seemed to have an impact on the country’s growth rates. The need for expansionary or contractionary fiscal policies to restore long-run economic equilibrium is postulated by the Keynesian, New Keynesian, and Post-Keynesian schools of thought. Fiscal expansion is often used for stimulating economic growth, however, this is followed by revenue shortages, sequenced by the deterioration of the future budget balances within these countries. Government, under debt circumstances, in most cases tends to rely on foreign sources of funds rather than using domestic financial funding (Dornbusch, 1984; Fischer & Easterly, 1990). This has the tendency to adversely affect the overall current account balance of the economy.

The phenomenon of the simultaneous deterioration in budget and current accounts is known as the twin deficits hypothesis (TDH) and supposes that budget deficit is likely to stimulate an increase in the current account balance (CAB) as well (Abell, 1990). There are two main approaches that analyze the relationship or the link between budget deficit and current account deficit. The first is the Keynesian income-expenditure absorption approach and the Mundell- Fleming
(FM) model, which supports the twin deficits hypothesis. From the Keynesian income-expenditure approach, an increase in the budget deficit will cause the existence of increased disposable income, which will induce higher domestic demand and import expansion resulting in the worsening of the current account balance. According to the Mundell-Fleming model framework, an increase in the budget deficit would put increasing pressure on the domestic interest rate above the world rate, triggering capital inflows and causing the local currency exchange rate appreciation. Thus, deteriorating the net export and current account position, the export become less competitive in foreign markets while the imports become cheaper (Hatemi & Shukur, 2002).

The second model is the Ricardian Equivalence Hypothesis (REH), which rejects the twin deficits hypothesis. In contrast to the Mundell-Fleming model, the REH postulates that expansionary fiscal policies will not have an impact on the current account balance. The higher disposable incomes resulting from the increased government budget deficit will not lead to an increase in aggregate demand, because rational households in the current period have expectations that higher taxes will be imposed in near future. In view of this, households do not consider themselves wealthier; they will save the additional transitory incomes to pay their increased tax liabilities in the future. Consequently, the private savings will increase equivalently to the reduction in public savings, and the demand for both domestic goods and imports will not increase to the extent that the current account will deteriorate (Abbas, Hagbe, Fatas, & Velloso, 2010; Corsetti & Müller, 2006).

Situations of high budget deficits and recurrence of high and long-term current account deficits spurred out from the latest global financial crisis of 2008 in the USA, and many European countries’ debt crises of 2010. In the last two decades, Albania has also been experiencing deteriorated records of high budget deficits of up to 7.9% of GDP and current account deficits of up to 15.63% of GDP (Worldbank, 2021; MF, 2021). While the economic growth rate of the country has been moderately high in the last decades, despite the decrease in recent years due to natural disasters such as the earthquake in 2018 and Covid pandemic in 2019 (INSTAT, 2022).

![Figure 1. Budget Balance, Current Account Balance, and Economic Growth Rate of Albania 2008-2021.](image)
The empirical investigation of testing the validity of the twin deficit hypothesis for Albania is of special importance from the point of view of the country’s macroeconomic stability, especially in the long run. For this purpose, quarterly data on real economic growth rate, the government budget balance and the current account balance in ratio of GDP of the period 2008-2021 are applied in several econometric models and methods including the VEC model. The VEC model consists of VAR model (short-term dynamics) and cointegration (long-term co-movement) that tests for long-run relationship between the variables employed, reflecting the features of a long-run convergence between the budget deficits, the current account deficit, and economic growth rate.

2. LITERATURE REVIEW

2.1 Theoretical Framework

According to the national macroeconomic accounting approach, in the balance of payments, the current account balance equals national savings minus private investments. An increase in budget deficit results in a reduction in public savings as a result of a decrease in national savings and consequently deterioration in the current account balance. The response of the current account balance to an increase in government budget deficit will depend on the behavior of the private sector and the behavior of the households, which can offset or expand the impact of the fiscal expansion on the current account balance. The framework of national account identity defines a clear relationship between budget deficit and current account balance:

\[ Y = C + I + G + (X - M) \]  

Where \( Y \) - gross domestic product (GDP), \( C \) - private consumption expenditure, \( I \) - private investment spending, \( G \) - total government purchases of goods and services, \( X \) - total exports of goods and services, and \((X - M)\) - current account balance (CA).

Referring to the national income identity, the national saving can be written:

\[ Y - C - G = I - (X - M) \]  

or

\[ S = I - CA \]

where \( CA = (X - M) \) and \( S = Y - C - G \) stands for national saving. Furthermore, the national saving can be decomposed into government savings (Sg) and private savings (Sp):

\[ S = Sg + Sp \]

\[ Sg = T - G \]

\[ Sp = Y - T - C \]

Rearranging the equations,

\[ CA = Sp + Sg - I \]
Identity (7) suggests that the current account balance \((CA)\) is the sum of private savings and government savings minus private investment spending. It assesses the relationship between current account balance \(CA\) and government budget balance \((Sg = T−G)\) and explores the sustainability of the Keynesian Twin Deficit Hypothesis.

2.2. Empirical Evidence

After the emergence of Keynesian economics, the concept of government deficit financing has been found to be significant. But other mainstream theories, like the neo-classical theory, argued that fiscal deficit will have an adverse impact on the economy. To analyze this relation empirically a lot of studies are presented in the field using different econometrics approaches, and results based on different time-span time series data.

**Fiscal deficit & Growth:** Fiscal deficit is often discussed to be an important factor to influence the country’s output growth. Martin and Fardmanesh (1990) in a study of 76 developed & developing countries, analyzed the impact of a few fiscal variables on economic growth for the span period from 1972 to 1981. Using cross-sectional linear regression, the authors showed that total expenditure has a positive relationship to the economic growth rates, while tax revenue and deficit have negative relations. By categorizing the countries into low, middle, and high-income groups they discovered negative relation between deficit and economic growth rate resulting only for the middle-income countries but not for low and high-income groups of countries. The outcome seemed to be inconsistent as low-income countries show the necessity of more government expenditures in order of employing the existing unutilized resources (Martin & Fardmanesh, 1990). Keynesian theories, emphasizing growth and development, were taken into consideration by researchers who have been testing the expanding public-sector and economic-increase hypothesis. The results showed that the public investment was not of much significance to the growth rate, and the budget balance although negative was insignificant indicating no relationship to the economic growth rate (Nelson & Singh, 1994). Furthermore, government seigniorage financing of deficit was found to be growth deteriorating, as well as limit values of fiscal deficit of more than 1.5% of GDP, while limit values of fiscal deficit less or equal than 1.5% of GDP were found to be growth-enhancing. Categorization of public expenditure into productive expenditure and residual expenditure served as another analysis presenting a significant positive relation of the first category to the growth rate, while a negative relation of the second category (Adam & Bevan, 2005). Many econometric empirical results verified the historical pattern of the Keynesian approach after the great recession in the USA (2007-2009) and further suggested that there was a strong positive effect of the higher deficit on the country’s economic growth, even when possible increases in the interest rate were taken into consideration (Taylor, Proano, Carvalho, & Barbosa, 2011).

**Fiscal deficit & Current account balance:** Studying the twin deficits hypothesis was of great interest since the 1980s because of the increasing phenomenon in many countries in the world. The twin deficit analyses were initiated from the synchronized deterioration of the United States’ budget and current account balances in the 1980s. The theory was initially thought to be applicable in the context of only developed economies (Hutchison & Pigot, 1984; Hutchison, Michael & Throop, 1985; Fountas & Tsoukis, 2004). However, empirical research studies in the relevant macroeconomic discourse suggested that the twin deficit hypotheses were prevalent as well within the less developed economies (Fidrmuc, 2003; Baharumshah, Lau & Ahmed, 2006). Persistent budget deficits seem to be a popular characteristic of developing economies around the globe (Klitgaard, 1989). Khalid and Teo (1999) argued that a high correlation between the two
deficits is more likely to appear in less developing countries than in developed ones. This is due to the differences in the composition of the economy and the different macroeconomic dynamics governing the two deficits (Khalid & Teo, 1999).

The theoretical debates over the twin deficits correlation have generated several studies with different investigating techniques. A lot of researchers have empirically examined the causality link between fiscal deficit and current account deficit in various countries. However, the findings of the studies varied within a country and across countries, most likely due to the variation in methodologies, sample sizes, data used, and different periods covered in the econometric analysis. Early empirical studies on the twin deficits hypothesis mostly focused on the United States where was the initial issue awareness. Most of these studies confirmed that in the United States budget deficits contribute to current account deficits (Barro, 1989; Diboo_lu, 1997; Hatemi & Shukur, 2002)

Along the same line, a lot of studies have investigated the connection between the two deficits in developed countries such as Canada, the Group of Seven (G7), the Organization for Economic Cooperation and Development (OECD), and European countries, using various estimation methods (see Ahmed & Ansari, 1994; Aslan, Buyrukoglu, Oz, & Nazlioglu, 2014; Bluedorn & Leigh, 2011; Forte & Magazzino, 2013). The results of these studies validate the twin deficits hypothesis.

The twin deficits hypothesis has also been examined in a group of developing economies or regions, focusing on cross-country studies. Examples include Central Eastern European countries (Aristovnik, 2008), Baltic countries (Sulikova, Sinicakova & Horvath, 2014), African countries (Ahmad, Aworinde, & Martin, 2015), Asian countries (Anoruo & Ramchander, 1998), Southeast Asian countries (Kinza & Kashif, 2016), SEACEN countries (Lau & Baharumshah, 2006), and ASEAN countries (Baharumshah, Lau, & Khalid, 2006). The empirical investigations from these studies indicate that current account deficits are influenced by budget deficits, but also nonsupport evidence is reported on specific case countries.

On the other hand, several studies have investigated this relationship for individual European economies such as Greece, Germany, Portugal, Ireland, Italy, Greece, and Spain (Kalou & Paleologou, 2012; Trachanas & Katrakilidis, 2013). Almost all these studies confirmed the existence of the twin deficits phenomenon in the respective countries. But there are also other contradictory results for the same countries that present the rejection of the twin deficit hypothesis respectively (Algieri, 2013).

In this regard, studies are performed also in developing economies, which are no exemptions from similar analysis. Several authors have presented often contradictory results in the different countries’ case studies. In Turkey, China, Pakistan, and Nigeria almost all studies showed results of the validation of twin deficit (Idil, 2010; Banday & Aneja, 2019; Mifukhtar, Zakaria, & Ahmed, 2007; Dayo, 2012). In other economies such as Egypt and Peru, model results failed to support the twin deficits hypothesis (Omneia & Chahir, 2015; Sobrino, 2013). A summary of the empirical literature review on twin deficits is presented in Table 1.

Although there is a considerable number of empirical studies on the twin deficits hypothesis, little has been done to examine the issue in Albania. Results of the Granger causality test, with nominal data of the period 1991-2014 in Albania, show that there is unidirectional causality from budget deficit to current account deficit (Kalaj & Mema, 2015).
### Table 1. Summary of Empirical Literature Review on Twin Deficits

<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Country (ies)</th>
<th>Period</th>
<th>Method</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bluedorn &amp; Leigh, 2011</td>
<td>17 OECD European countries</td>
<td>1978-2009</td>
<td>OLS Regression by Delta method, Impulse Responses</td>
<td>1% of fiscal consolidation raises the current account balance to 0.6%/GDP ratio, supporting the twin deficits hypothesis</td>
</tr>
<tr>
<td>Forte &amp; Magazzino, 2013</td>
<td>33 European countries</td>
<td>1970-2010</td>
<td>Generalized Least Squares-Fixed Effects</td>
<td>1% increase in the budget deficit, deteriorates the current account/GDP ratio of 0.37%</td>
</tr>
<tr>
<td>Anoruo &amp; Ramchander, 1998</td>
<td>Developing Economics of Asia</td>
<td>Countries’ time span 1957-1993</td>
<td>Granger causality, VAR</td>
<td>Trade deficit causes a fiscal deficit</td>
</tr>
<tr>
<td>Kinza &amp; Kashif, 2016</td>
<td>South Asian Countries</td>
<td>1981-2014</td>
<td>Granger causality, VAR ARDL</td>
<td>No evidence of the twin deficit hypothesis in all countries in the long run</td>
</tr>
<tr>
<td>Sulikova, Sinicakova, &amp; Horvath, 2014</td>
<td>Baltic countries</td>
<td>1992-2011</td>
<td>Vector Error correction (VEC)</td>
<td>Significant long-run positive relation in most countries</td>
</tr>
<tr>
<td>Ahmad, Aworinde &amp; Martin2015</td>
<td>African countries</td>
<td>1980-2009</td>
<td>Vector Error correction (VEC)</td>
<td>Support of twin deficit in six out of the nine countries examined</td>
</tr>
<tr>
<td>Magazzino, 2017</td>
<td>APEC countries</td>
<td>1980-2013</td>
<td>Panel VAR</td>
<td>There is a two-way causality between the two deficits</td>
</tr>
</tbody>
</table>

**Source:** Author’s descriptions

### 3. METHODOLOGY

A set of econometric methods such as Stationarity test, Johansen test, Granger causality, vector error correction model (VECM), and impulse response functions (IRF) are used to investigate the relationship between the deficits. Time series data are pretested for unit root and cointegration which determine the use of the VEC model as the most appropriate econometric method to use. The VEC model provides a measure of the short-run correlations and long-run equilibrium relationships between the variables. The VEC model is tested for sustainability using diagnostic tests. R software is used for econometric analyses.

**Stationarity Test** is used to test the stationarity of the time series variables. This in order to avoid a spurious regression model when inserting nonstationary variables in the model in their level forms. There are various stationarity tests used in different economic literature. In this study it is used Augmented Dickey-Fuller Unit Root Test (ADF) which takes the following form:

$$
\Delta Y_t = \infty + \beta t + \rho Y_{t-1} + \sum_{j=0}^{p} \delta \Delta Y_{t-j} + \epsilon_t 
$$

(8)

It is noticed that the first difference of the variable of concern is regressed on a constant term, linear trend, and the first lag and other lags of the dependent variable, confirm no autocorrelation in the error term.

**Cointegration test:** It is known that if the variables are nonstationary, then a cointegration test should be performed before being used in order to avoid a spurious regression. Cointegration
test checks if there is a stable long-run equilibrium relationship between them over time. If the variables are cointegrated, then they could be used in the regression model in the level forms. There are various tests used for the cointegration of time series variables; this study uses the Johansen Cointegration test. This test has an advantage over other previously mentioned tests as it takes into consideration the possibility of multiple cointegrating vectors.

**Causality test:** The regression model indicates only the statistical relationships between the dependent variable of concern and other independent variables, but it does not indicate the direction of the relationship and its causal relationship. There might be independence between the variables, a unidirectional causality relationship, or a bidirectional relationship running from one variable to the other one. The Granger causality test is used to investigate the direction of the causal relationship among the variables in our empirical model. The intuition behind Granger causality tests can be expressed using the following equations:

\[
Y_t = c + \sum_{j=0}^{p} \alpha_j Y_{t-j} + \rho Y_{t-1} + \sum_{j=0}^{p} \beta_j X_{t-j} + \varepsilon_t \tag{9}
\]

If a specific variable \(Y\) can be forecasted by its own lagged values as well as the current and lagged values of another variable \(X\), \(X\) it is Granger-cause \(Y\). If both \(\beta\)s and \(\alpha\)s were significant, it means that a feedback causal relationship exists between \(Y\) and \(X\); if both \(\beta\)s and \(\theta\)s were insignificant, it means that \(Y\) and \(X\) are independent of each other. If only \(\beta\)s in equation (1) was significant and \(\theta\)s are insignificant in equation (2), it means that \(X\) granger causes \(Y\), and vice versa.

**Vector error regressive model (VEC):** Vector error correction model (VECM) is used when time series variables are non-stationary and have at least one positive cointegration. VEC consists of a vector autoregressive model (VAR) and error correction equation, and it is used when there is the presence of long-term equilibrium relationships.

In principle, in the context of vector time series modeling, there are three basic pairs of models. Given a vector of endogenous variables \(X_t = (X_1, X_2, \ldots, X_t)\): First, a VAR with stationary level variables \(X_t\) is used when all variables are stationary in level \((X_t)\):

\[
X_t = c + \beta_1 X_{t-1} + \beta_2 X_{t-2} + \ldots + \epsilon_t \tag{10}
\]

Second, a VAR with stationary growth variables \(\Delta X_t\) is used when all variables are non-stationary in level \((X_t)\):

\[
\Delta X_t = c + \beta_1 \Delta X_{t-1} + \beta_2 \Delta X_{t-2} + \ldots + \epsilon_t \tag{11}
\]

Third, a VEC model is used when all variables are non-stationary in level \((X_t)\) and there are some cointegrations in level \((\Pi X_t)\) (Johansen & Juselius, 1990). The VEC model consists of a VAR with stationary growth variables \(\Delta X_t\) and error correcting equations with non-stationary level variables \((X_t)\):

\[
\Delta X_t = c + \beta_1 \Delta X_{t-1} + \beta_2 \Delta X_{t-2} + \ldots + \Pi X_{t-1} + \epsilon_t \tag{12}
\]

where \(\Pi X_{t-1}\) represents long-term relationships among non-stationary level variables and is the first lag of linear combinations of non-stationary level variables or error correction terms.
Since our data results content consists of non-stationarity and cointegration, the VEC model will be analyzed in the long term for the vectors of fiscal budget deficit and current account deficit time series. In the VAR model the lag length (p) is selected by using the information criteria as AIC, HQ, SC, and FPE. In these criteria, the lowest value is chosen since these criteria penalize models that use more parameters. The VECM model consists of VAR model (short-term dynamics) and cointegration (long-term co-movement). The cointegration indicates one or more long-run equilibriums or stationary relationships among non-stationary variables. The following 5 steps are taken:

1. decomposition of quarterly time-series data,
2. testing for non-stationarity,
3. testing for cointegration (r),
4. estimate VECM model (if r > 0),
5. test the VEC stability test.

4. RESULTS

Quarterly data series of the budget balance, current account balance, and economic growth rate (in ratio of GDP) spanning from the first quarter of 2008 to the last quarter of 2021 are used. Given the quarterly data and seasonality theoretical considerations, it is investigated the effect of real variables in the ratio of GDP, and nominal variables in levels are not included in the analysis. Data are retrieved from the Institute of Statistics, Ministry of Finance, and World Bank database (2022). The tests and models are performed using the R econometric software.

The econometric analyses start by testing the stationarity of the time-series variables. For this, the Augmented Dickey-Fuller Test (ADF) unit root analysis is performed to test the null hypothesis of non-stationarity. The results in Table 1 show that both budget balance and current account balance time series data are non-stationary at the levels (5% significance level).

| Table 2. Augmented Dickey-Fuller (ADF) |
|---|---|---|
| Lag | ADF t-Statistic | Prob. |
| Budget Balance | 3 | -1.5403 | 0.6653 |
| Current Account Balance | 3 | -2.2164 | 0.3038 |
| Economic Growth Rate | 3 | -3.557 | 0.0719 |

Source: Author’s calculations

After verifying that the sample data are non-stationary, it is proceeded with the Johansen test for cointegration to determine whether there are long-run relationships between the variables. For this procedure, the optimum lag length in the VAR model is chosen from Akaike’s information criterion, because in cases of small samples (60 observations and below), it is superior to the other criteria as minimizes the chance of underestimation while maximizing the chance of recovering the true lag length (Liew, 2004). This selection procedure has led us to choose a lag of 3. There are two variants of the Johansen tests, the trace statistics approach, and the maximum eigenvalue approach. In this analysis, it is used the trace statistic approach as the most common approach. The results show that at 5% critical values, the test statistic exceeds the critical value of the null hypothesis $H_0: r = 0$, and it is rejected. Therefore, $r > 1$ means that there is at least one cointegrating relationship between the variables in the long run. These findings provide justification for applying the VEC approach rather than the VAR model.
Table 3. The Johansen Test of Cointegration

<table>
<thead>
<tr>
<th>Test statistic</th>
<th>Critical values</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10%</td>
</tr>
<tr>
<td>r &lt;= 2</td>
<td>2.44</td>
</tr>
<tr>
<td>r &lt;= 1</td>
<td>16.37</td>
</tr>
<tr>
<td>r = 0</td>
<td>35.31</td>
</tr>
</tbody>
</table>

Source: Author's calculations

The short and long-run significant coefficients estimated from the VEC model are presented in Table 4. The basic cointegration equation is \( \text{CAB} = \beta_1 \text{BB} + \beta_2 \text{EGR} \), where \( \beta_1 \) and \( \beta_2 \) are the regression coefficients that estimate the long-run relationship between the budget balance (BB) and economic growth rate (EGR) to the current account balance (CAB). The cointegration equation shows a negative long-run relationship of the budget balance to the current account balance. This finding is not consistent with the notion of the twin deficits hypothesis which asserts a positive relationship between the two variables. While it shows a positive long-run relationship of the economic growth rate to the account balance. This finding is important because it supports the assumptions that an increase in the country’s economic growth rate is likely to affect two categories of firms: first, the category of firms that increase the production of domestic goods and contribute to the reduction of imports; second, the category of firms that increase the production of domestic goods mainly for exports. The long-run estimated coefficient implies that, on average, a 1% increase (decrease) in the budget balance attributes to a 0.47% decrease (increase) in the current account balance, \textit{ceteris paribus}. While a 1% increase in the economic growth rate is estimated to increase the current account balance by 1.766% in Albania.

\[
\text{CAB} = -0.4702422 \text{BB} + 1.766247 \text{EGR} \quad (13)
\]

Table 4. Vector Error Correction Model (VECM)

<table>
<thead>
<tr>
<th>Equation Current Account</th>
<th>ECT</th>
<th>Equation Budget Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-0.6236 (0.2189) **</td>
<td></td>
</tr>
<tr>
<td>Budget Balance -1</td>
<td>-0.2108 (0.8859) *</td>
<td>0.7415 (0.4076) *</td>
</tr>
<tr>
<td>Equation Current Account</td>
<td>-0.6717 (1.9315) **</td>
<td></td>
</tr>
<tr>
<td>Economic Growth Rate -1</td>
<td>1.2032 (0.4091) **</td>
<td></td>
</tr>
<tr>
<td>Equation Current Account</td>
<td>-0.1523 (0.0762) *</td>
<td></td>
</tr>
<tr>
<td>Economic Growth Rate -2</td>
<td>-0.7193 (0.1587) ***</td>
<td>0.1694 (0.4162).</td>
</tr>
<tr>
<td>Equation Current Account</td>
<td>-0.2182 (0.0506) ***</td>
<td></td>
</tr>
<tr>
<td>Economic Growth Rate -3</td>
<td>-0.6827 (0.1258) ***</td>
<td></td>
</tr>
</tbody>
</table>

Source: Author’s calculations

Finally, the statistically significant error correction term (ECT) of the current account implies that any distortion from the equilibrium in the previous lag is corrected at a rate of - 0.6236 % in the current period. In the short run lag 1, lag 2, and lag 3 of the budget balance variable are statistically significant meaning that there are delayed negative effects between present budget balance values and the previous period’s budget balance values. This suggests that there is a short-run negative relationship within the budget balance variable. Similarly, the current account balance negatively affects the budget balance variable in the short run. This result presents for the Albania case study an inverse direction compared to the twin deficit hypothesis. Further, in the
short run, the results show a positive effect of the current account balance on the country’s economic growth rate. This is important for the economy since the benefits of export growth or import reductions are translated into economic growth in Albania. To this extent, the government’s policies might be focused on the context of the export industries, to stimulate the economic growth rates of the country.

The stability of the VEC model is tested using diagnostics tests of the VECM model as serial correlation: (Portmanteau Test), ARCH (multivariate), normality of residuals (JB-Test) is performed. To perform the test, the VECM model is transformed in the VAR model. The results of the Portmanteau test, in Table 5, show that there is no serial correlation between the variables (at 5% significance level). The ARCH (multivariate) test result with p = 1 shows that there is no arch effect, or there is no clustered volatility in the model, and the residuals are normally distributed.

<table>
<thead>
<tr>
<th>Table 5. Diagnostics Tests</th>
<th>Chi-squared</th>
<th>df</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portmanteau Test (asymptotic)</td>
<td>36.924</td>
<td>21</td>
<td>0.057294</td>
</tr>
<tr>
<td>ARCH (multivariate)</td>
<td>222</td>
<td>540</td>
<td>1</td>
</tr>
<tr>
<td>Normality of Residuals JB-Test</td>
<td>130</td>
<td>6</td>
<td>0.5734</td>
</tr>
<tr>
<td>Skewness only (multivariate)</td>
<td>21.927</td>
<td>3</td>
<td>0.35</td>
</tr>
<tr>
<td>Kurtosis only (multivariate)</td>
<td>108.17</td>
<td>3</td>
<td>0.6676</td>
</tr>
</tbody>
</table>

Source: Author’s calculations

The results of the Granger causality test show that there are no Granger causalities, or instantaneous causalities between all the three-time series variables, at a 5% significance level.

<table>
<thead>
<tr>
<th>Table 6. Pairwise Granger Causality Test results</th>
<th>F-Test</th>
<th>Prob.</th>
<th>Type of Causation</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAB does not Granger cause BB</td>
<td>1.6785</td>
<td>0.1514</td>
<td>no causation</td>
</tr>
<tr>
<td>BB does not Granger cause CAB</td>
<td>2.2749</td>
<td>0.0549</td>
<td>no causation</td>
</tr>
<tr>
<td>BB does not Granger cause EGR</td>
<td>1.3098</td>
<td>0.2682</td>
<td>no causation</td>
</tr>
<tr>
<td>EGR does not Granger cause BB</td>
<td>1.4671</td>
<td>0.2090</td>
<td>no causation</td>
</tr>
<tr>
<td>CAB does not Granger cause EGR</td>
<td>0.9785</td>
<td>0.4325</td>
<td>no causation</td>
</tr>
<tr>
<td>EGR does not Granger cause CAB</td>
<td>2.0676</td>
<td>0.0787</td>
<td>no causation</td>
</tr>
</tbody>
</table>

Source: Author’s calculations

The impulse response function (IR) of the VEC model (obtained from its VAR transformation) shows the response of variables after positive shocks of the other variables. The plot of IR functions shows that all the variables’ responses to aftershocks of the other variables show indecisive sort of relationships, which is a kind of reference from the Granger causality results (Appendix).

5. CONCLUSION

The relationship between government budget deficit and current account deficit has long been the center of empirical investigations, especially within the last decades when countries experienced large deficit imbalances. Research studies in this regard have been into consideration by policymakers as instruments to foster long-run growth strategies, most likely within less-developed nations. The analysis of the twin deficits seemed to be more appropriate for the developing economies with persistent deficits in their budget balances, not stable economic performance and in most cases with negative current account balances. Thus, it was the purpose of this study to empirically investigate the holding of the twin deficit hypothesis, for Albania case study.
The econometric results of the time series quarterly data in ratio to GDP, of the span period from 2008 to 2021, presented a negative long-run relationship between the budget balance to the current account balances. This evidence for Albania is not consistent with the twin deficits hypothesis of the Keynesian proposition, which supposes a positive relationship between the variables. The study results support the conclusion that efforts focused on improving the current account imbalances through fiscal policy might not be effective in the long run. Prudent government fiscal budget management may not prove to be a suitable policy instrument for the current account balance improvement. The pairwise Granger causality tests show that there are no causal associations or no instantaneous causalities between the concerned variables in the model. This is also confirmed by the variables’ responses with no clear trends to aftershocks at the impulse response functions. The short-run results of the VEC model show a positive effect of the current account balance on the country’s economic growth rate (differing from the Granger causality). This finding is important since the benefits of the current account balance growth are derived from export growth or import reductions, which are translated into economic growth in Albania. Based on the study findings it was recommended that the government’s trade policies might be focused particularly in the context of industries specialized in producing the export goods in order to stimulate the economic growth rate of the country. Furthermore, the government should be more prudent in formulating facilitating fiscal policies for the industries that produce domestic goods that are mostly imported, thus contributing to the reduction of imports.

Data unavailability is the major limitation in this paper; a longer period span of time series data could be included in the econometric analyses generating more accurate results. Moreover, there are data constraints on some other variables that could potentially be added in the model. This might be a future scope of research of this study to be extended, which could provide improved insights on the possible policy implementations.

REFERENCES


APPENDIX

Budget Balance shock to Current Account Balance

Current Account Balance shock to Budget Balance

Current Account Balance shock to Economic Growth Rate

95% Bootstrap CI, 100 runs
Figure 2. Impulse Response Functions Plots of the Budget Balance, Current Account Balance and Economic Growth Rate.

Source: Author's calculations