



# Relationship between Exchange Rate and Trade Balance Pre and after COVID-19 – Albania Case Study

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**Abstract:** *This study attempts to identify the relationship between the real exchange rate and trade balance in Albania with its major trading partner Italy. Due to the severe lockdown and restrictions policies in response to Covid-19 measures, there were important effects on the evolution of trade. Quarterly data from 2008 to 2022 are used in several econometric methods such as unit root tests, cointegration techniques, Granger test, and vector error correction model (VECM). The main findings of this study are that domestic income and exchange rate show a long-run positive relationship to the trade balances. Devaluation of the domestic currency will improve the trade balance in the long run, consistent with the Marshall-Lerner condition.*

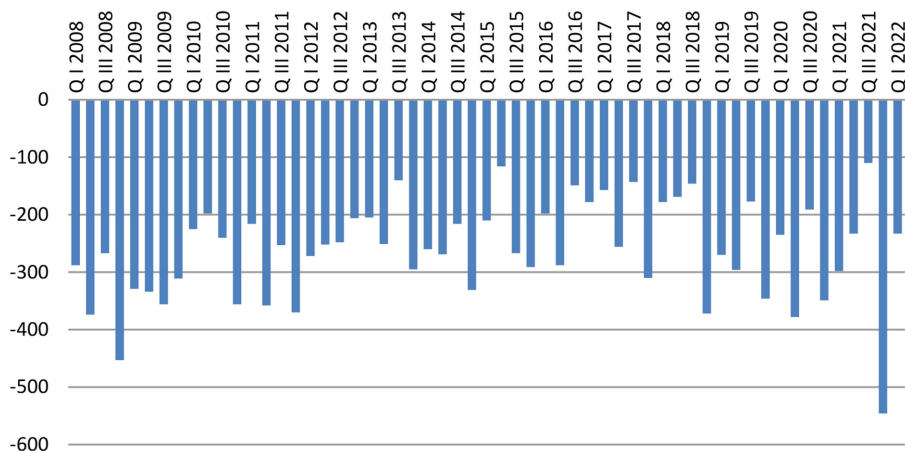
## 1. INTRODUCTION

Albania has been a member of the WTO since September 2000 and pursued a transparent, and liberal trade policy. The country's trade policies were based in absence of taxes on exports or quantitative restrictions on export levels. The country implemented several free trade agreements and benefited from preferential tariffs with some European countries, CEFTA countries, EFTA countries and Turkey. The "Open Balkan" initiative is the newest interstate agreement of broader regional cooperation launched by Balkan countries aspiring to be later in the European Union. The memorandum agreements were signed initially between Albania, North Macedonia, and Serbia, and were designated to facilitate the free movement of goods, free access to the labor market, free movement of people, etc. The commitment initiative of creating functional common markets seems to offer more in-depth integration of intraregional economic and societal connections.

Despite facilities on trade agreements, the measures taken by the Albanian government toward COVID-19 had serious consequences for the national economy. Many productive activities have been disrupted as a result of border closures and severe restrictions on business activities. This has consequences in a steep rise in unemployment rates of all age groups with a consequent reduction in demand for goods and services. Against this backdrop, country gross domestic product (GDP) had a sharp decline during the 2020-s, registering its sharpest contraction since the changes in the political system in the 1990s, and the fall of the pyramidal schemes in 1997. In this context, the volume of national trade reached its lowest levels. In May 2020 the level of exports decreased by 22.7 % while the level of imports decreased by 24.2 % compared to the same period of the previous year (Instat, International Trade Statistics in Years, 2022). In January 2021 the value of exports was 24 billion ALL (increase of 3.1 % compared to January 2020), while the value of imports was 45 billion ALL (increase of 8.4 % compared to January 2020). In January 2022, the value of exports was ALL 35 billion (increase of 47.5 % compared with the same period of the previous year), while the value of imports was ALL 55 billion (increase of 21.1 % compared with the same period of previous year) (Instat, International Trade Statistics in Years, 2022).

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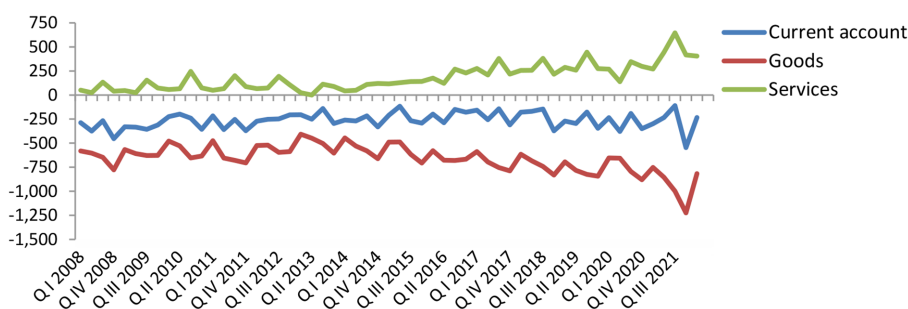
Development of the country's foreign trade has been characterized by increasing trade flows, a fact that indicates an opening and intensification of trade exchanges with the world economies and markets. However, the country had a negative trade account balance associated with higher levels of imports compared to the level of exports. Albania's current account deficit has had continuous fluctuations during the last two decades (see figure 1).



**Figure 1.** Current Account on a Quarterly Basis, 2008-2022 (in million Euros)

**Source:** Bank of Albania, Statistics, Time Series, External Sector, Balance of Payments, accessed 22<sup>nd</sup> June 2022. (BOA, Statistics, Time Series, Balance of Payments, 2022)

The import of goods composes a critical part of the current account deficit, while the positive values of the service sectors as tourism, financial sector, mining sector, etc., contribute to the decrease of the net trade deficit position.



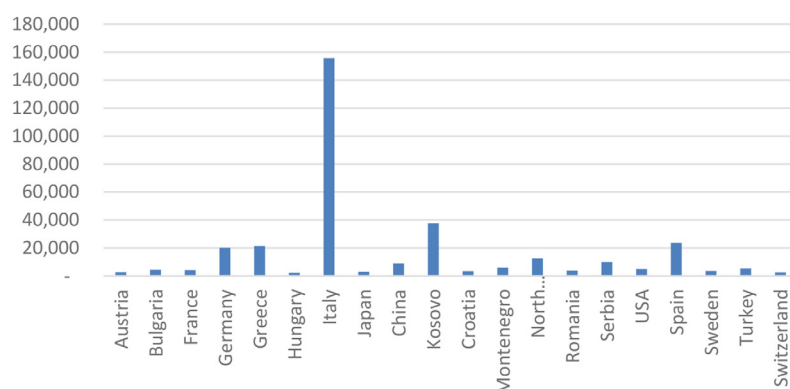
**Figure 2.** Balance of Payments of Goods and Services, on a quarterly basis, 2008-2022 (in million Euros)

**Source:** Bank of Albania, Statistics, Time Series, External Sector, Balance of Payments, accessed 22<sup>nd</sup> June 2022.

The country's most important trading partners are the European Union (67.8%, of which Italy has the largest share), CEFTA countries (8.6%), Turkey (5.9%), China (6.2%), the United States of America (1.5%), EFTA countries (1.2%), and other world countries. Due to the geographical vicinity, Italy stands as the most important trading partner of Albania, with which the outflux of exports reached 1.3 billion Euro and influx of imports reached 1.6 billion Euros in 2021 (see figures 3 and 4).

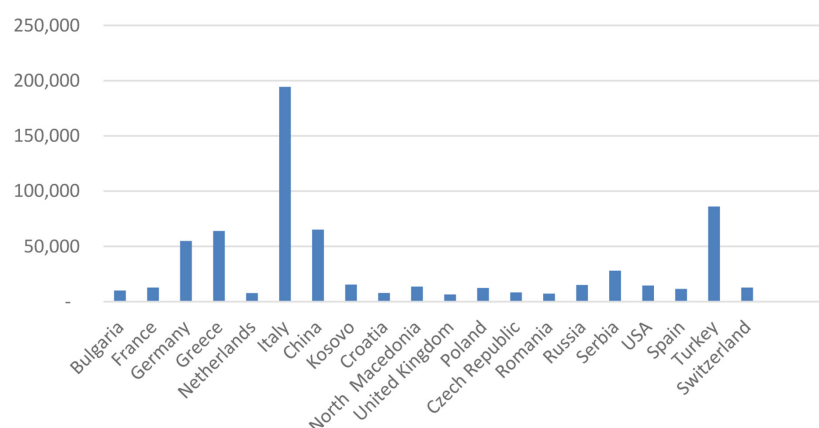
The trade with Italy has been in continuous fluctuations, especially during the pandemic period. The trade balance most of the time has been negative, except in 2016 and 2022 when the level

of exports surpassed the level of imports. This is due mostly to the increase in exports of many Italian firms that operate in Albania.



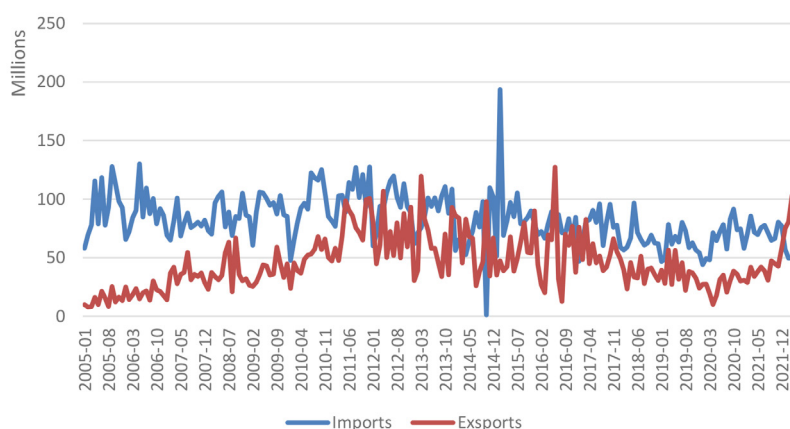
**Figure 3.** Export of Albania by Trading Partner Countries in 2021 (million ALL)

Source: Institute of Statistics, International Trade Database



**Figure 4.** Import of Albania by Trading Partner Countries in 2021

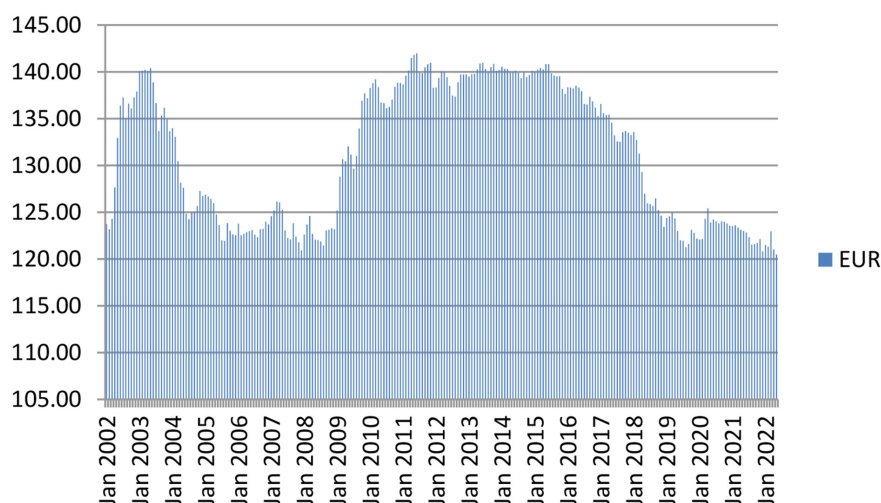
Source: Institute of Statistics, International Trade Database



**Figure 5.** Imports and Exports of Albania and Italy, 2005-2022

Source: Institute of Statistics, International Trade Database

The dominating trade currency with European partner countries is Euro (while with other world partner countries the Us dollar), which has been fluctuating against Albania's ALL currency. Over the years, this has had an important effect on the outcome of the balance of trade.



**Figure 6.** Exchange Rates, Eur/All in Albania, 2002-2022

**Source:** Bank of Albania, Statistics, Time Series, External Sector, Exchange Rates, accessed 22 June 2022.

Therefore, it is the objective of this study to analyze the effects of Covid-19 on the evolution of exchange rates and the fluctuations of Albanian trade balance in relationship to its major trade partner country Italy.

## 2. LITERATURE REVIEW

Depreciation of the currency has a great effect on the trade balance of a country, nevertheless its effect may also vary due to the different intensity of economic development. This phenomenon is described as the Marshall-Lerner condition, which denotes that domestic currency depreciation leads to increase in the trade balance in the long run. Real currency depreciation improves the trade balance through two channels. First, as import is relatively more expensive, quantity of imports decreases. Second, depreciation of the currency exposes the domestic goods cheaper compared to foreign goods, thus increasing the quantity of export making domestic product more competitive. However, the response of trade volumes (exports and imports) to currency depreciation will not occur rapidly. The theory of international trade suggests that exchange rate depreciation will initially not affect or deteriorate trade balance in the short run. This is because of the following reasons: “products in transit do not react to changes in exchange rate, because have already been priced according to the old exchange rates” (Krueger, 1983). This scenario is known as J-curve effect and gets the name of the J-shape of trade balance (Magee, 1973).

Rose (1991) described that the Marshall-Lerner condition does not exist in five major OECD countries (Germany, United Kingdom, United States, Canada, and Japan). Her study results showed no significant relationship between exchange rate and trade balance, implying that domestic currency devaluation could not enhance trade balance in the long run (Rose, 1991). Other results were presented by Shirvani and Wilbratte whose results provided significant evidence for the Marshall-Lerner condition. The authors examined the relationship between trade balance and real exchange rate in the United States and the G7 countries of Italy, Germany, France, Japan, United Kingdom, Canada and the United States (Shirvani & Wilbratte, 1997).

The relationship between trade balance and exchange rate evolution was presented by many authors in different countries (Ling, Har, & Mei, 2008). Many studies using bilateral trade data

contributed to the literature examining the effect of the COVID-19 pandemic on countries' aggregate trade flows. China's lockdown policies resulted in a decrease in the trade responses to the partner countries with the reduction of capital goods (Liu, Emanuel, & Huimin, 2021). Similarly, using bilateral trade data from about 30 countries, they found that lockdowns had a diminishing effect on bilateral trade flows. Espitia et al. recognized considerable heterogeneity of lockdown effects across trade sectors (Espitia, Aaditya, Rocha, Ruta, & Winkler, 2021).

### 3. METHODOLOGY

The modeling of the trade balance of this study follows the similar model presented by Gomez and Alvarez-Ude (2006). Equilibrium of goods market in an open economy can be presented as:

$$Y = C(Y - T) + I(Y, r) + G - IM(Y, \varepsilon) + X(Y^*, \varepsilon)$$

where  $Y$  denotes total domestic income,  $C$  denotes consumer spending, and  $T$  denotes income tax,  $I$  denotes private investment,  $r$  the interest rate,  $G$  denotes government spending,  $\varepsilon$  denotes real exchange rate,  $IM$  denotes import,  $X$  denotes export, and  $Y^*$  denotes foreign income.

Consumers spending ( $C$ ) is a positive function of the disposal income ( $Y-T$ ); higher disposal income lead to higher consumer spending. Private investment ( $I$ ) is a positive function of total income and negative function of interest rate. The real exchange rate is a positive function of the nominal exchange rate ( $E$ ) and the foreign price level ( $P^*$ ), while the negative function of the domestic price level is:

$$\varepsilon = (EP^*) / P \quad (1)$$

Import ( $IM$ ) is influenced positively by domestic output or income ( $Y$ ). Additionally, import has a negative relationship with the real exchange rate ( $\varepsilon$ ); higher ( $\varepsilon$ ) leads to a lower quantity of imports because of the higher price of foreign goods. Export ( $X$ ) exposes a positive relationship between the foreign income ( $Y^*$ ) and the real exchange rate ( $\varepsilon$ ).

As the objective of the study is to examine (net export,  $NX$ ) and exchange rate, other variables are assumed 'ceteris paribus'. The net export is:

$$NX \equiv X - IM \quad (2)$$

or after some mathematical substitutions:

$$NX \equiv X(Y^*, \varepsilon) - IM(Y, \varepsilon) \quad (3)$$

$$NX = X(Y^*, \frac{EP^*}{P}) - IM(Y, \frac{EP^*}{P}) \quad (4)$$

assuming, that  $EP^*/P$  is stationary:

$$NX = NX(Y, Y^*, \varepsilon) \quad (5)$$

Therefore, the trade balance as a function of the domestic and foreign income and the real exchange rate is presented as:

$$\ln TB_t = \beta_0 + \beta_1 \ln Y_t + \beta_2 \ln Y_t + \beta_3 \ln RER_t + \mu_t \quad (6)$$

where the  $B$ -s are the estimators in the model,  $\ln$  is the natural logarithm,  $ut$  is the white-noise process,  $TB_t$  is the trade balance as the difference of exports to imports in the logarithm form, and real exchange rate,  $RER_t$ , expresses by Albanian (All) against Euro and  $Y^*t$  expresses as gross domestic product of Italy. The quarterly data of Albania used in the model are obtained from the Institute of Statistics, and Bank of Albania; and quarterly data of Italy are obtained from Eurostat (Eurostat, National Accounts, GDP aggregates, 2022). Time series variables data as exchange rates Euro/All, net exports between countries, gross domestic incomes, gross foreign incomes, and consumer price index (CPI) for both countries are used for the period from 2008 to the first quarter of 2022 (Eurostat, Real effective exchange rate (42 trading partners, based on HICP/CPI), 2022). Augmented Dickey-Fuller (ADF) test is used to test the data for stationarity. The Granger causality test is used to test the data for cointegration. The vector error correction model (VECM) is used to analyze the short-run (dynamic) and the long-run (static) relationships between trade balance, real exchange rate, and domestic and foreign income.

#### 4. RESULTS

The results of the Augmented Dickey-Fuller test show that  $\Delta \ln TB$ ,  $\Delta \ln RER$ ,  $\Delta \ln Y$  and  $\Delta \ln Y^*$  are integrated in order at level I (1); while  $\ln TB$  is stationary in level form, I (0).

**Table 1.** Unit Root Test

| Variables | Estimated coefficients | Variables        | Estimated coefficients |
|-----------|------------------------|------------------|------------------------|
| $\ln TB$  | -3.332* (0.034)        | $\Delta \ln TB$  | -2.855** (0.0451)      |
| $\ln RER$ | -0.654 (0.758)         | $\Delta \ln RER$ | -6.258** (0.003)       |
| $\ln Y$   | 0.452 (0.879)          | $\Delta \ln Y$   | -3.236** (0.001)       |
| $\ln Y^*$ | -1.474 (0.547)         | $\Delta \ln Y^*$ | -2.158** (0.005)       |

Note: \*, \*\*significance level at the 5% and 1%

**Source:** Author's calculations

The Engle-Granger long-run cointegration test the multivariate system to check if any linear combinations exist between the four variables. In result,  $ut$  -the error term in the long run is stationary in level form, I (0), table 2. This means a linear combination between  $\ln TB$ ,  $\ln RER$ ,  $\ln Y$  and  $\ln Y^*$  exists, or a long-run relationship between the variables in the model.

**Table 2.** Granger Test

| Variables | ADF statistic | Probability |
|-----------|---------------|-------------|
| $\mu$     | -2.568        | 0.002       |

**Source:** Author's calculations

The result of pairwise Granger causality presents unidirectional Granger causality effects running from the real exchange rate to the trade balance (at 10 percent level of significance), from the domestic income to the trade balance (significant at 1 percent level of significance), and from the foreign income of European countries to the trade balance (at 5 percent level of significance).

**Table 3.** Pairwise Granger Causality Based on Vector Error Correction

| $\chi^2$ -statistics | $\Delta \ln TB$ | $\Delta \ln RER$ | $\Delta \ln Y$   | $\Delta \ln Y^*$ |
|----------------------|-----------------|------------------|------------------|------------------|
| $\Delta \ln TB$      | -               | 2.31 (0.06) *    | 11.29 (0.00) *** | 4.23 (0.015) **  |

**Source:** Author's calculations

Cointegration results show that  $r > 0$ , at 1 percent significance level (see table 4), which means a long-run relationship exists between the variables in the model. The positive sign on the real exchange rate (*RER*) variable represents that a devaluation of currency causes an improvement in trade balance in the long run (see table 5).

**Table 4.** Johansen Cointegration Test

| H0         | H1      | Trace statistic |
|------------|---------|-----------------|
| $r \leq 0$ | $r > 0$ | 48.258**        |
| $r \leq 1$ | $r > 1$ | 16.254          |

Note: \*, \*\* rejection of H0

Source: Author's calculations

**Table 5.** Johansen Cointegrated Vectors Estimation

|          | $\ln TB$ | $\ln RER$ | $\ln Y$ | $\ln Y^*$ |
|----------|----------|-----------|---------|-----------|
| All/Euro | -1.000   | 0.057     | 0.089   | -0.132    |

Source: Author's calculations

The results of error correction model used for estimation in the long run relationship between the variables are estimated:

$$\Delta \ln TB_t = -0.0129 + 0.142 \Delta \ln TB_{t-1} + 0.217 \Delta \ln RER_{t-1} - 0.422 \Delta \ln Y^*_{t-1} + 1.631 \Delta \ln Y_{t-1} - 0.423 \mu_{t-1}$$

The positive sign of the trade balance of the previous period, the real exchange rate, and gross domestic income show a positive relation of these variables to the trade balance, while foreign income shows a negative relationship to the trade balance in the long run. This is contradictory to the theory that suggests the sign of the foreign income ( $Y^*$ ) to domestic trade balance should be positive. When the real income of the trading partners increases, the volume of exports to a foreign country should increase as the purchasing power is increased.

## 5 CONCLUSION

To test whether Marshall-Lerner condition and J-curve effects exist, after the impact of Covid-19 on the economy, this research studied the short run and long run effects of the real exchange rate of the trade balance of Albania with Italy, the major trade partner in international trade. A VECM dynamic model is presented for the short and long run effects between the variables. The study results do not show evidence of the short-term deterioration of trade balance suggested by the J-curve effects. However, the results support the empirical validity of the Marshall-Lerner condition, suggesting that depreciation improves the trade balance. As implication, to achieve the desired level of trade balance, the country should depend on devaluation nominal exchange rates based policies, which should be harmonized with domestic price level stabilization policies. However, this should be performed with precautions because devaluation-based policies could cause increase in the cost of imports.

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