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An Empirical Investigation on Current Account Balance, Inflation, and Real Exchange Rate

Cari Denge, Enflasyon ve Reel Döviz Kuru Üzerine Ampirik Bir Araştırma

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Abstract

It has been claimed that Turkey, as it is known, has set a low-interest rate and low exchange rate target, and has moved to a new economic model with the intention of both low inflation and current account surplus at the end of 2022. This study aims to find whether lowering the exchange rate and inflation will help reduce the current account deficit. In this study, using the Vector Auto-Regressive model and impulse-response analysis, the relationship between current account balance, inflation, and the real exchange rate is examined using monthly data for the period between 2003 and 2021. Empirical results suggest that there is no relation between the real exchange rate and current account balance in Turkey, except for small responses when looking at the impulse-response analysis. These results seem to be contradicting those who think that a current account surplus will be achieved by lowering the exchange rate in Turkey. The results of this study indicate that both variables, current account balance, and inflation, affect each other in the short term but the effects are fading away in the long run. Further, the study also finds that the exchange rate is an important factor that affects inflation rates due to its pass-through effect.

Jel Codes: *F32, E31, F31, C32*
Keywords: *Current Account Balance, Inflation, Exchange Rate, VAR Analysis, Impulse-Response Analysis*

Öz

Bilindiği üzere Türkiye'nin düşük faiz ve düşük kur hedefi belirleyerek 2022 sonunda hem düşük enflasyon hem de cari fazla verme niyetiyle yeni bir ekonomik modele geçtiği iddia edildi. Bu çalışma, döviz kurunu ve enflasyonu düşürmenin cari açığı düşürmeye yardımcı olup olmayacağını bulmayı amaçlamaktadır. Bu çalışmada Vektör Oto-Regresif (VAR) modeli ve etki-tepki analizi kullanılarak cari işlemler dengesi, enflasyon ve reel döviz kuru arasındaki ilişki 2003-2021 dönemi aylık verileri kullanılarak incelenmiştir. Etki-tepki analizine bakıldığında küçük tepkiler dışında Türkiye'de reel döviz kuru ile cari işlemler dengesi arasında bir ilişki bulunmamıştır. Bu sonuçlar, Türkiye'de döviz kurunun düşürülmesiyle cari fazla verileceğini düşünenlerle çelişiyor gibi görünmektedir. Bu çalışmanın sonuçları, her iki değişken olan cari işlemler dengesi ve enflasyonun kısa vadede birbirini etkilediğini ancak uzun vadede etkilerinin azaldığını göstermektedir. Ayrıca çalışmada döviz kurunun geçişkenlik etkisi nedeniyle enflasyon oranlarını etkileyen önemli bir faktör olduğu da tespit edilmiştir.

Jel Kodları: *F32, E31, F31, C32*
Anahtar Kelimeler: *Cari İşlemler Dengesi, Enflasyon, Döviz Kuru, VAR Analizi, Etki-Tepki Analizi*

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1. Introduction

The Turkish lira is among the currencies of a developing country that has lost value with the onset of the pandemic. However, recently, the depreciation of the Turkish lira has reached extreme levels and diverged from its peers. One of the latest developments that caused this situation is the Turkish central bank's interest rate cuts, contrary to market expectations. What we mean by market expectation is that many countries have, particularly emerging economies, gradually entered the process of increasing interest rates due to inflation pressure that is being felt all over the world during and towards the end of the Covid-19 pandemic. Among the reasons for this is the supply-side shocks (Baldwin & Di Mauro, 2020), increasing the prices of raw materials, food, and lately energy prices. With the start of the pandemic, the closures in the economies and the significant increase in unemployment caused the governments to transfer money to the market to revive the falling demand, and hence the money supply of mainly developed countries increased to record levels. Similarly, Turkey also lowered interest rates when the pandemic began, but in the very short term, this low-interest rate environment triggered the rise in inflation coupled with pandemic problems around the World.

Moreover, having stated the global situation above, it should also be noted that the recent escalation in economic tension at the end of 2021 in Turkey is said to be contributed to several concepts. Some argue that it is the government's intention to deliberately lower the value of the Turkish Lira in exchange to increase the export level of the country in return to reduce the current account deficit that the country has been experiencing for years. The arguments here are two folds. First, given the present view of the government, by devaluing the country's currency makes domestically produced goods cheaper relative to foreign goods. And hence, reducing the current account deficit or even creating a current account surplus. This is an old theory that was discussed much earlier, for instance, see Shapiro (1975) and more recently Bhalla (2012). It is claimed by the public that, the current Turkish government is aiming to reduce demand for foreign currency and then stabilize the exchange rate once the current account surplus policy has been achieved. The exchange rate must be stabilized because it is the main source of inflation due to its pass-through effect in an economy that depends on the import of goods to fuel economic growth like Turkey. Secondly, some further argue that, in reference to the remark of the officials from the government[2], the current government also targeting a new model that resembles China's policy that introduced a miracle economic growth based on export over the last couple of years. However, given the view of reducing the current account deficit, there is a problem of economic contraction. The main argument behind this view comes from Edwards (2005). In his empirical work, the author suggests that considerably reducing the current account deficit will result in large drops in GDP.

The arguments above were made when Turkish currency was losing extreme value, for instance, till 20th December 2021, Turkish Lira already had lost 100% in value against US Dollar and many of other foreign currencies just within three months. However, on 20th December 2021 Turkish Finance Ministry and Central Bank of Turkey took a decision that was perceived

[2] These claims are stated in reference to the remarks released by the public institutions and Central Bank of Republic of Turkey. These can be found in news coverage of the country.

to be a heterodox economic approach to stabilize the exchange rate and inflation instead of following an orthodox view of raising policy rates to combat rising inflation. This idea of steadying inflation may be in line with Gibson Paradox (Keynes, 1930) which is an economic statement claiming that there is a positive correlation between inflation and interest rate in the long run. Because the ruling party's view is that to reduce inflation, interest rates should be lowered. This is why the authorities introduced a new way out of what is called a "New Economic Model" which guarantees returns on lira-denominated deposits if switched from foreign currency to Turkish Lira, would not be lower than bank interest rates and if the return of foreign currencies against Lira is more than interest rates offered by banks then the treasury will compensate the losses that the Lira holders bear. These efforts were seen to end the demand for foreign exchange. In fact, since 20th December 2021, the exchange rate in Turkey seems to be stabilized and fluctuated only by a narrow margin, but then extend its losses against US Dollar when the war between Russia and Ukraine erupted. Since then, the US Dollar and Turkish lira exchange rate has been increasing gradually. This policy may have some negative repercussions, for example, if the Turkish lira loses value in the future and the perceived loss is greater than the interest rates offered by banks, then the Turkish Treasury would find money to compensate holders of Lira deposits. This situation may further deteriorate the treasury's budget, and which means a further tax burden for taxpayers.

Will Turkey achieve these objectives to stabilize the price level promised and foster economic growth in the short, and long term? These events inspired a controversial debate between academics and policymakers. Probably we need to wait for some time to see how the designed model will result. However, in the meantime, we use statistical tools to analyse past data which could lead us to a better consideration of the relation between the current account deficit, inflation rate, and exchange rate in Turkey by using VAR and impulse-response function. This paper will contribute to the literature in two ways. First, this paper is one of the first that try to analyse the joint relation between current account deficit, inflation, and exchange rates in Turkey. Secondly, this work tries to guide empirically whether the undertaken new policies will be successful using past data.

Before going further to do an analysis, it is best to discuss the theories and research that have been worked to find the relation between current account deficit, inflation, and exchange rates. We will also investigate exchange rates in relation to current account deficits and inflation. Because, as mentioned above, the exchange rate level is directly related to the price level due to its pass-through effect in Turkey. Then, the methodological structure and empirical results will be discussed. The last section completes the paper with some policy consequences.

2. Current Account Balance and Inflation

There is no direct relation found among current account balance and inflation in literature, however, Howard (1989) in his study, when talking about export-import and saving and investment (X-M=S-I) balances, points out that the U.S. savings were not enough to support domestic investment in 1980s. Hence, investments were sustained by foreign capital. While this situation does not mean there is causation between these variables, income, exchange

rate, and interest rate are among the other many variables that determine this balance. Ferrero et al. (2008) suggest that based on idle resources in an economy and inflationary expectations, lower marginal costs in tradable goods in countries with current account surpluses, and thus tradable goods inflation is also low. Furthermore, the authors claim that aggregate inflation will decrease as the trade balance expands. In contrast to these findings, Lin (2010) believes that inflation-targeting policies do not affect current accounts for both developed and developing countries. On a theoretical basis, Mansoorian & Mohsin (2006) constructed a model to see the relationship between inflation rate, employment, investment, consumption, and current account balance. The authors' finding suggests that a rise in the inflation rate in a country will lower the consumption of goods and households substitutes leisure for consumption. This will in effect reduces labour input and capital investment. The decrease in capital investments will also reduce the need for imports and accordingly inflation rate, in the short term, may be positively affected.

Almost in all research papers dealing with current accounts and inflation, there is one common point: exchange rate is the main mechanism that drives inflation virtually in most emerging economies (Reyes, 2007; Nordstrom et. al., 2009; Ebeke & Fouejieu, 2018). There is another common point in causing the current account deficit in emerging countries is oil prices, i.e., dependence on energy. The empirical literature analyses suggest that when energy prices increase, the burden of energy costs rise in most emerging economies (Bitsiz et al., 2008; Kılınç et al., 2016; Bayraktar et al., 2016; Kamugisha & Assoua, 2020).

Kılınç et al. (2016) state in their working paper that the emerging market countries with higher current account deficits are the most vulnerable countries that will face higher currency depreciation due to volatilities that occurred in the post-2008 financial crisis. The reason for this is thought to be that as uncertainties loom over the markets, the financing of the current account deficit will become hard and as a result, the currency must be devalued to attract capital inflow. The authors also mention the point we made above about the exchange rate pass-through effect. As the exchange rate increases the prices of goods will feel upward pressure which in turn causes inflation due to the increasing cost of imported goods.

However empirical works also suggest that while currency devaluation may be good for export in the short run, this benefit of devaluation disappears and causes inflation in the long run in some developing countries like Ethiopia (Woldie & Siddig, 2019) and for Uganda (Kamugisha & Assoua, 2020). In their work, Behera & Yadav (2019) argue that the current account deficit in India rose in 2017 and 2018 when oil prices surged, and as a result of this deficit Indian Rupee faced a sharp decline against foreign currencies.

On the side of the relationship between current account balance and exchange rate, Dornbusch & Fischer (1980) argue that the previous theory of exchange rate determination did not include current account and purchasing power parity. Hence, they built a theory that integrates relative prices (i.e., inflation), market expectations, asset markets, and current account to see the reaction of the exchange rate. Their notion suggests that while asset markets have an important part in influencing the exchange rate at some certain stage, the current account through its impact on net asset position determines the course of the exchange rate over time.

In addition, the work of Dornbusch & Fischer (1980) and Hooper & Morton (1982) utilized a model based on two approaches, the monetary and portfolio balance model to see the movement of the US dollar. The authors suggest that a change in the US current account balance affects the real exchange rate. Their ideas rest on the decision of asset holders. Because they view asset holders as constantly modifying their expectations regarding the equilibrium relative price element of the nominal exchange rate. However, Hooper & Morton (1982) further argue that not only do changes in current account balance affect the exchange rate, but also other factors such as monetary reasons, for instance, expected US inflation, play an important role.

3. Exchange Rate Pass-Through

While exchange rate pass-through is known to be an extreme currency movement that causes price fluctuations, the degree of exchange rate shocks depends on the reasons that trigger them (Ha et al., 2020). The reasons may be central bank monetary policies, political reasons and risks, movements in trades, and future price expectations. The authors point out that the shocks affecting exchange rates not only disturb economic activities and productivity but also price formation and inflation outlooks. Some economists suggest that the countries that experience large and extreme currency movements are emerging economies (Calvo & Reinhart, 2002). One of the ways that emerging countries are taking steps to prevent any currency devaluation shocks is to adopt free-floating exchange rates so that the exchange rate will adjust in market conditions according to Mundell-Fleming theory (Bianchi & Coulibaly, 2022). However, Calvo & Reinhart (2002) suggest that the countries that say applying a free-floating rate actually do not allow their currency to be freely priced in the market. This case is called by the authors as “Fear of Floating”. Because Calvo & Reinhart (2002) believe that in the case of any financial turmoil, the central banks of emerging economies behave unwillingly to consent their currency float freely. In this case, the action of the Turkish central bank and regulatory authorities resembles this fear. For instance, introducing guarantees that returns on lira-denominated deposits by the central bank and finance ministry mentioned above, and new regulatory amendments by the banking regulatory authority on foreign currencies in bank accounts are all arrangements taken to prevent further depreciation of the Turkish lira in the market and controlling the exchange rates.

Price correlation with exchange rate movements in Turkey is found to be higher (Leigh & Rossi, 2002; Berument & Pasaogullari, 2003; Kara & Öğünç, 2008). Changes in exchange rates affect and influence domestic goods prices within four months and the shock continues for about a year. Similarly, Berument & Pasaogullari (2003) found the time effect of the exchange rate on inflation to be about three quarters. The pass-through effect of the exchange rate to price changes is more noticeable in producers’ prices than in the consumer’s prices (Leigh & Rossi, 2002). However, after the banking crisis in Turkey in 2001, when the central bank of Turkey started the objective of inflation targeting policy and together with macro-economic reforms, the effect of pass-through of exchange rate movements to consumer price index was weakened (Kara & Öğünç, 2008). The authors claim the reason for this is exchange rate behaviour and the credibility of central banks’ inflation-targeting policy. It should also be

noted that the authors' analysis covers the post-crisis period to 2005 when macroeconomic reforms took place, and the exchange rate was relatively stabilized. It is highly likely that the weakening of the pass-through effect resulted from an appreciation of the Turkish Lira at that time while the capital inflow to Turkey was at record levels.

Contrary to the literature above, Bouakez & Rebei (2008) found that the effect of exchange pass-through shocks declined on inflation in Canada in the 1990s. The authors compare their arguments to previously suggested literature which observed the weakening effect of pass-through in industrialized countries.

4. Data and Methodology

To analyse the connection between current account deficit, inflation, and exchange rate, all data were collected from the Central Bank of Turkey and OECD. This study uses monthly data for the period of 2003:1 to 2022:11. The monthly series for real exchange rates were taken from the Central Bank's effective exchange rate which is constructed as a weighted average affiliated with the trade partners' currency., The inflation rate is found by using the monthly consumer price index. The current account balance series represent the trade balance and includes total receipts from other countries. Figure 1 shows the movement of three variables over time between 2003 and 2021.

Figure 1: Graphical Representation of the Variables

Source: Central Bank of Turkey and OECD

Descriptive statistics are exhibited below in Table 1. For instance, while the lowest current account deficit is 9 billion 407 million US Dollars that occurred in a month, the maximum

surplus is said to be approximately 4 billion US Dollars. However, the average current account balance appears to be negative during the data series. Further, the highest inflation figure is 13% and the lowest is exhibited to be-1.4% in a month. And the average value for monthly inflation seems to be around 0.8%. The minimum exchange rate of the US Dollar and Turkish lira is 54.39 and the maximum value is 137.85. except for the exchange rate, the other two variables are positively skewed in terms of distribution behaviours.

Table 1: Descriptive Statistics

Statistics	Current Account	Inflation	Exchange Rate
Mean	-2468.022	0.008821	108.5409
Median	-2641.000	0.007375	113.6150
Maximum	4103.000	0.135755	137.8500
Minimum	-9407.000	-0.014429	54.39000
Std. Dev.	2296.308	0.012162	18.73282
Skewness	0.145276	5.420246	-0.759686
Kurtosis	3.516378	54.88512	2.742419
Jarque-Bera	3.335131	26691.03	22.56097
Probability	0.188706	0.000000	0.000013
Sum	-562709.0	2.011105	24747.33
Sum Sq. Dev.	1.20E+09	0.033574	79658.48
Observations	228	228	228

When using macroeconomic variables, using the VAR (Vector Auto-Regressive) model is a comprehensible multivariate time series approach for data interpretation in the case of this study. Asteriou & Hall (2011) claim that VAR model has some decent properties to use. For instance, in this method, there is no need for a researcher to know whether the variables are endogenous or exogenous. And VAR also allows each equation in the system to be estimated in a way of the usual OLS method. However, to have more intuitive predictive power, it is said that all variables in the system should be stationary at their levels for the VAR model. Nevertheless, the variable, real exchange rate, seems to be non-stationary at the level when running unit root tests (see below, unit root test results). This variable is taken into VAR system by taking the first difference form.

Mathematically, a VAR model can be written with *k* variables and *p* lags as follows.

$$y_t = b_0 + by_{t-1} + b_2 y + \cdots + b_p y_{t-p} + e_t \quad (1)$$

In equation (1), y_t, b_0 together with e_t are presented as *k x 1* column vector, and the coefficients of k x k matrices are $b_0, b_1, b_2, \ldots, b_p$. Error term ($e_t$) must have a zero mean, zero covariance with its lagged values and constant variance, and normal distribution. In the VAR model, the errors themselves are unrelated to the lagged values which do not impose any constraints on the model. Because by increasing the lag length of the variables, the autocorrelation problem can be solved (Özgen & Güloglu, 2004).

The Model

The VAR model that is going to be estimated will be expressed in the following equations. The dependent variable is a function of both its own lagged values and other variables in these equations.

$$CA_t = \alpha + \sum_{i=1}^{k} \beta_i \, CA_{t-i} + \sum_{j=1}^{k} \theta_j \, INF_{t-j} + \sum_{m=1}^{k} \delta_m \, RER_{t-m} + u_{1t}$$

$$INF_t = \gamma + \sum_{i=1}^{k} \beta_i \, CA_{t-i} + \sum_{j=1}^{k} \theta_j \, INF_{t-j} + \sum_{m=1}^{k} \delta_m \, RER_{t-m} + u_{2t}$$

$$RER_t = \varphi + \sum_{i=1}^{k} \beta_i \, CA_{t-i} + \sum_{j=1}^{k} \theta_j \, INF_{t-j} + \sum_{m=1}^{k} \delta_m \, RER_{t-m} + u_{3t}$$

Since in VAR models, each variable can be a dependent variable, three models are expressed as above. CA, INF, and RER represent respectively, the current account balance, inflation rate, and real exchange rate.

Before going further to do a VAR analysis, it is best to check the behaviour of each variable. Many researchers think that most of the economic variables contain unit roots (Kwiatkowski, 1992). They consider whether macroeconomic variables contain a trend the variables are affected by shocks and these shocks are defined as unit root (Mahadeva & Robinson, 2004). When variables have unit roots, false relationships can arise between variables, such as constant increase, constant decrease, or movement in the same direction (Yılmaz et al., 2022). For example, for time series, Sarı et al. (2007) indicates that the characters of time series can be controlled by utilizing strong unit root estimators suitable for econometric methods. ime series can be controlled by utilizing strong unit root estimators suitable for econometric methods. If the calculated values are higher than the critical values, the null hypothesis (H0) is not rejected and the series is not stationary. Failure to reject the null hypothesis leads to unit root testing on the difference of the series, so further differencing is performed until stationarity is reached and the null hypothesis is rejected. If the time series (variables) are not stationary at their level, they can be integrated with I(1) when their first difference is stationary (Kavacık, 2022).

When applying ADF (Augmented Dickey Fuller, 1979) and PP (Philip Perron, 1988) to the variables, while current account balance and inflation rate series seems to be stationary, real exchange rate appears to be non-stationary at level. Real exchange rate becomes stationary when it has been transformed to first difference (See Table 2).

Table 2: Unit Root Test Results

		Constant		Constant and Trend	
Variable	**Test**	**Level**	**First Difference**	**Level**	**First Difference**
CA	**ADF**	-3.8664***	-3.7539***	-3.8765**	-3.7373**
	PP	-6.0651***	-6.0552***	-24.303***	-24.240***
INF	**ADF**	-4.6610***	-10.962***	-5.3471***	-8.6059***
	PP	-7.3350***	-7.9297***	-51.7023***	-58.860***
RER	**ADF**	-0.6138	-2.4274	-11.7927***	-12.003***
	PP	-0.6831	-2.3928	-11.3543***	-11.527***

Lag Length Criteria

One of the essential conditions for estimating the VAR model is to determine the lag length of the model. To do this, the following information criteria will be used in this study; (AIC) Akaike information criterion, (SC) Schwarz information criterion, (HQ) Hannan-Quinn information criterion, (FPE) Final prediction error, and (LR) Sequential modified LR test statistic.

Table 3: Optimal Lag Length Selection

Lag	**LogL**	**LR**	**FPE**	**AIC**	**SC**	**HQ**
0	-2078.585	NA	14575.72	18.10074	18.14559	18.11883
1	-1911.474	328.4108	3685.783	16.72586	16.9052*	16.79822
2	-1892.112	37.54572	3368.351	16.63575	16.94966	16.76238
3	-1870.579	41.1931*	3020.88*	16.5267*	16.97522	16.7076*
4	-1864.256	11.93086	3092.649	16.55005	17.13303	16.78521
5	-1858.331	11.02592	3177.451	16.57679	17.29430	16.86622
6	-1852.077	11.47510	3255.718	16.60067	17.45271	16.94437
7	-1843.015	16.39036	3256.007	16.60013	17.58671	16.99809
8	-1839.665	5.971600	3422.802	16.64926	17.77037	17.10149

According to results from Table 3 AIC, HQ, FPE, and LR criterion optimal lag length for the VAR system should be 3 lags. For this reason, the estimated VAR model will be VAR(3) and the result are shown below.

The ARDL model was used to investigate the possibility of cointegration since the variables are stationary at different degrees, but meanwhile, a long-term cointegration relationship between the variables is not found and for this reason, the difference of the first order of non-stationary real exchange rate variable is taken and the VAR model is applied.

VAR models are not estimated for the interpretation of parameters. Impulse-response analyses are performed to see the effect of shocks of any variable on other variables. Before proceeding further to interpret the impulse-response function outcome, there is a need to check whether the established model satisfies several assumptions and the stability of regression. First, autocorrelation and residual heteroscedasticity tests have been used to see if there is any presence of autocorrelation and changing variance between error terms. Second, a stability condition test is examined to understand the validity of the system. Breusch-Godfrey Serial Correlation LM test results suggest that there is no autocorrelation among the error terms of the model and null hypothesis of no autocorrelation is accepted. VAR Residual Heteroscedasticity Test finds that there is no heteroscedasticity between

residuals. The graphical representation of the unit roots table in the previous table indicate that all unit roots of the VAR (3) model located inside the circle and appears to take values less than 1. Hence, the unit roots provide the stability condition. Autocorrelation LM test results and modulus inverse root graphs are given below.

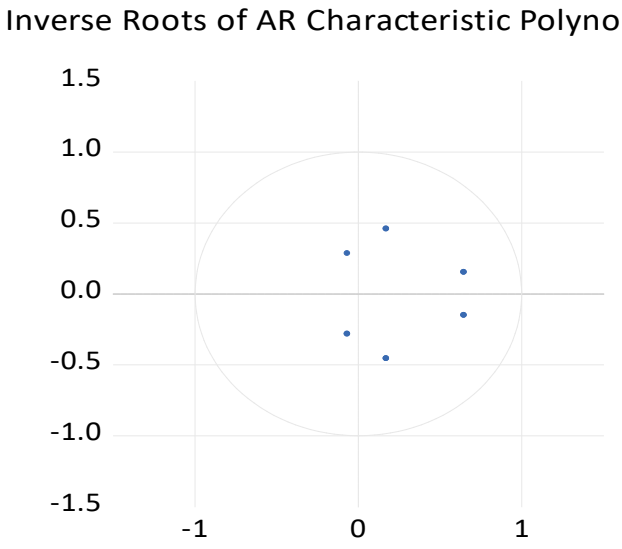
Table 4: VAR Autocorrelation LM Test Results

Null hypothesis: No serial correlation at lag h						
Lag	LRE* stat	df	Prob.	Rao F-stat	df	Prob.
1	12.45964	9	0.1886	1.391802	(9, 508.8)	0.1886
2	10.45785	9	0.3147	1.165904	(9, 508.8)	0.3147
3	10.38564	9	0.3202	1.157772	(9, 508.8)	0.3202
4	8.141109	9	0.5200	0.905564	(9, 508.8)	0.5200

Table 5: VAR Residual Heteroscedasticity Test Results

Chi-sq	**df**	**Prob.**
214.0649	108	0.0000

Figure 2: AR Root Graph



Impulse-Response Function

As mentioned above, the best part of the VAR model is that it lays the groundwork for impulse-response analysis. Impulse-response analysis shows the effect of a shock to any variable on other variables. This will give us, for example, the effect of a shock to the real exchange rate both on the current account balance and on inflation.

First, it is necessary to look at the impact of the one standard deviation of a shock on the real exchange rate on the inflation rate and the current account balance. A positive shock to the real exchange rate causes a decrease in inflation in the first period, but in the next three periods, the inflation progresses in the opposite direction and the effect of the shock disappears in the following periods. The interpretation of this result is as follows: an increase in the real exchange rate means an appreciation of the Turkish lira. In other words, the appreciation of the Turkish lira reduces inflation in the first period. however, with the

disappearance of the effect of the shock in the following periods, inflation continues to rise again. This result is in line with the work of Berument & Pasaogullari (2003); Kara & Öğünç, (2008); Woldie & Siddig (2019) and Kamugisha & Assoua (2020) who also found that an increase in exchange rate causes inflationary pressure. Granger causality test also confirm causality from real exchange rate to inflation and the result is statistically significant (See Table 5). Moreover, when a shock is given to the inflation rate, this shock has a negative effect on the real exchange rate in the first period but then causes an upward reaction in about 4-5 months, and after the sixth period, the effect of this shock disappears. In other words, this result shows that a sudden increase in inflation causes a direct depreciation of the Turkish lira and this effect disappears over time.

In case of a positive shock to the real exchange rate, that is, the increase in value of the Turkish lira, it causes a small decrease in the current account balance in the first two periods, but this effect disappears after the third period and the current account balance becomes stable. According to the findings of impulse response analysis, it can be concluded that the changes in exchange rates do not have a very distinctive effect on the current account balance. From the impulse-response analysis, contrary to the relationship between these two variables, namely the effect of a positive shock in the current account balance on exchange rates, it can be seen that it has no effect on the real exchange rate, only a small upward effect on the real exchange rate in the fourth, fifth, sixth and seventh periods. These interpretations are not exactly in line with the findings of the theory of Dornbusch & Fischer (1980), and Hooper & Morton (1982) who found that the current account determines the exchange rate in the long run. However, to determine which variable force other variables, the Granger causality test can be performed to see whether the current account cause the exchange rate to vary, as the case for Dornbusch & Fischer (1980), and Hooper & Morton (1982), or exchange rate causes current account balance to vary over time. Granger causality test results suggest that (See Table 6) there is no causality between real exchange rate and current account balance. This consequence is like the conclusion of impulse response analysis where it found little effect between the two pairs for the Turkish case.

In the first two periods, inflation decreases when a positive shock is given to the current account balance. However, after the second period, the inflation rate rises for about three periods and then slowly decreases and becomes stable overtime. These findings are similar to what Mansoorian & Mohsin (2006) found in their empirical study. They also found that inflation rate will be positively affected when current account balance increases for a period of short-term. Furthermore, the Granger causality test also confirm this finding that current account balance granger cause inflation rate. As Turkey experiences current account deficit for a long time, the country cannot sustain lower deficit and as a result face higher inflation in the long term. This assumption is made by Ferrero et al. (2008) who suggest that positive current account balance contribute lower level of inflation for countries in the longer term. Similarly, when a shock is given to the inflation rate, that is, an increase in the inflation rate is observed, the current account deficit decreases for the first three periods, but then rises again and loses the effect of the shock. It should be noted that there is bidirectional causality between current account balance and inflation when using the Granger causality test results which likewise appears in impulse-response analysis.

Figure 3: Impulse-Response Analysis

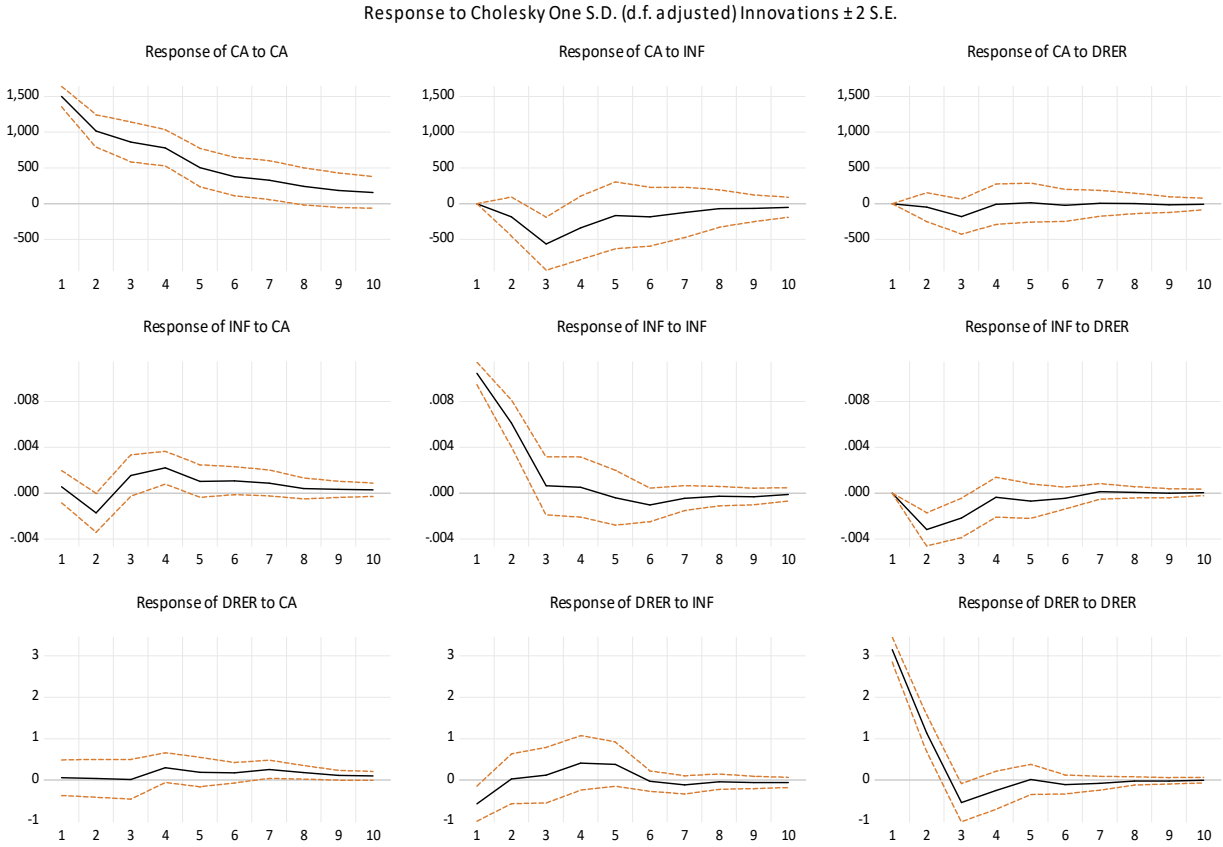


Table 6: Granger Causality Test Results

Dependent variable: CA			
Excluded	**Chi-sq**	**df**	**Prob.**
INF	14.64577	3	0.0021
DRER	4.145578	3	0.2462
All	16.78444	6	0.0101
Dependent variable: INF			
Excluded	**Chi-sq**	**df**	**Prob.**
CA	26.62834	3	0.0000
DRER	20.54849	3	0.0001
All	47.09046	6	0.0000
Dependent variable: DRER			
Excluded	**Chi-sq**	**df**	**Prob.**
CA	2.108124	3	0.5503
INF	3.554676	3	0.3137
All	7.329854	6	0.2914

5. Conclusions

This study empirically assessed the relationship between current account balance, inflation, and real exchange rate, using the VAR model and impulse-response analysis.

Empirical results propose that there is no relationship between the real exchange rate and current account balance in Turkey, with the exception of small responses when looking at the impulse-response analysis. These results seem to be contradicting those who think that a current account surplus will be achieved by lowering the exchange rate in Turkey. It is thought that such a result is probably due to Turkey's export and import structure. Because the share of technology in Turkey's exports is low and the share of technology in imports and the need for intermediates of goods for the end products is high. This is why a deprecation of Turkish currency may have little effect on the country's current account balance. In fact, it is believed that another reason for such a result is that especially developing countries, such as China, sell both technological products and competitive prices to the whole world. Probably the only advantage for Turkey is its geopolitical position to be close to Europe which is the biggest export gate for Turkey.

Then again, when looking at the association between current account balance and inflation rates, the results of this study indicate that both variables affect each other in the short term but the effects are fading away in the long run.

However, the finding of exchange rate is an important factor that affect inflation rates is valid in this study in line with the previous literature due to its pass-through effect. In the first two periods inflation decreases when a positive shock given to current account balance. After the second period, the inflation rate rises for about three periods and then slowly decreases and becomes stable overtime.

If Turkey wants to control inflation and thus ensure sustainable economic growth and financial stability, it should protect the value of the Turkish currency and implement appropriate monetary policies through the central bank. For example, tightening monetary policies. These policies may have negative repercussions on investment capacity and economic growth in the short term, but, when economic and financial stability in place, the investments will increase in the longer term, and the way for more export will open for an aimed current account surplus. In addition, if the country wants to achieve to have a current account surplus, Turkey should include more technological products in its production and gain a competitive position in foreign markets.

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Etik Beyanı: Bu çalışmanın tüm hazırlanma süreçlerinde etik kurallara uyulduğunu yazar beyan eder. Aksi bir durumun tespiti halinde Fiscaoeconomia Dergisinin hiçbir sorumluluğu olmayıp, tüm sorumluluk çalışmanın yazarına aittir.

Ethical Approval: The author declares that ethical rules are followed in all preparation processes of this study. In the case of a contrary situation, Fiscaoeconomia has no responsibility, and all responsibility belongs to the study's author.