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Current Account Defıcıt Analysıs Usıng The Structural Break Method In Turkey In The Perıod Of 1984- 2021 [1]

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1984 – 2021 Döneminde Türkiye'de Yapısal Kırılma Yöntemiyle Cari Açık Analizi

HÜSEYİN KARAHAN

Dr. Manisa Celâl Bayar Üniversitesi, Sosyal Bilimler Enstitüsü, İktisat (Dr)

karahanhuseyn45@gmail.com

Orcid ID: 0000-0002-0361-7175

CEMAL ERDEM HEPAKTAN

Prof. Dr., Manisa Celâl Bayar Üniversitesi, İktisadi Ve İdari Bilimler Fakültesi, İktisat Bölümü, İktisadi Gelişme Ve Uluslararası İktisat Anabilim Dalı

erdem.hepaktan@cbu.edu.tr

Orcid ID: 0000-0002-3522-1941

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Abstract

In the study, it was examined whether there was a structural break in exports and imports along with the current deficit. The main purpose of this study is to analyze whether there is a structural break in Turkey's current account deficit, exports and imports. The originality of this study is to determine whether exports and imports have an effect on the structural break that may occur in the current deficit. Annual data on the Central Bank of Turkey(CBRT) website for the period 1984 – 2021 are used. In addition, there is stationary in the first difference values of the variables in the structural break unit root test(URT). According to the results of the CUSUM Squares Test, it was revealed that there was a structural break in the current deficit, exports and imports in the 2017 – 2019 period. While Cointegration Test and Causality Test were performed in the study, it was determined that there was a unidirectional causality relationship between the variables. According to the results of Gregory Hansen Cointegration Test, in case of structural break, there is a long – term relationship between the variables.

Key Words: Current Deficit, Time Series Model, International Trade, Turkish Economy

Özet

Çalışmada, Cari Açık ile birlikte ihracat ve ithalatta yapısal kırılma olup olmadığı incelenmiştir. Bu çalışmanın temel amacı, Türkiye'de cari açık, ihracat ve ithalatta yapısal bir kırılma olup olmadığını analiz etmektir. Bu çalışmanın özgünlüğü, cari açıkta oluşabilecek yapısal kırılmada ihracat ve ithalatın etkisinin olup olmadığının tespit edilmesidir. Türkiye Cumhuriyet Merkez Bankası (TCMB) internet sitesinde yer alan 1984 – 2021 dönemindeki yıllık veriler kullanılmıştır. Çalışmadaki değişkenler cari açık, ihracat ve ithalattan oluşmaktadır. Ayrıca, yapısal kırılma birim kök testinde değişkenlerin birinci fark değerlerinde durağanlık vardır. CUSUM Kareler Testi sonuçlarına göre, 1997 – 2013 döneminde ve 2017 – 2019 döneminde cari açık, ihracat ve ithalatta yapısal kırılma olduğu ortaya çıkmıştır. Çalışmada, Eşbütünleşme Testi ve Nedensellik Testi yapılırken, değişkenler arasında tek yönlü nedensellik bağı olduğu tespit edilmiştir. Gregory Hansen Eşbütünleşme Testi sonuçlarına

göre, yapısal kırılma durumunda, değişkenlerin arasında uzun dönemli bir ilişki söz konusudur.

Anahtar Sözcükler: *Cari Açik, Zaman Serisi Modeli, Uluslararasi Ticaret, Türkiye Ekonomisi*

Introduction

With emergence of liberilazation in the world since 1980's the liberalization movement in Turkey caused the foreign trade volume to grow. Therefore, the current account deficit (CAD) or surplus, which has a great impact on foreign trade(FT), affects the country's economy (Özbek vd. 2019). The CAD is a very important concept in the information of macroeconomic balance in many countries. The CAD is a situation arising from a country's spending more than its income, investing more than its savings, FT difference or a decrease in its net foreign assets (Mütevelli & Konak, 2019: p.124).

The current account includes external trade balance, service balance and income balance. While external trade balance expresses the difference between a country's total product exports and total products imports in a year, the service balance expresses the difference between the services revenues and expenditures of the economy in a year. The primary income balance consists of the income and expense difference arising from the allocation of the factors of production to foreigners and basically includes wage, interest and dividend payments. The secondary income balance is the income and expense difference consisting of unrequited income transfers (Tonus & Benli, 2019: p.438).

The balance of payments is dividend into four in itself. The current deficit phenomenon occurs when a country's income is less than its expenditure in a year. One of the factors that create the CAD is the FTD. For example, higher import means higher CAD (Alçın & Gümüşoğlu, 2019: p.22).

Developing countries have insufficient production structures due to their low capital accumulation and lack of technological infrastructure that will enable the emergence of intermediate goods used in production (Karahan, 2020: p.63).

It is known that the CAD is affected by many variables such as exports, imports and borrowing. In addition, the current account, which closely affects the commercial competitiveness of a country with the foreign world, stands out as a very important element in open economies (Duman & Sağdıç, 2021: p.214). When the CAD exceeds five percent of a country's total income, it raises concerns about the country's economic situation. During the 1990 – 2001 period, while Turkey experienced some major economic crises, the 1990 – 2001 current account had a mix of surpluses and deficits that fell below this threshold. After 2001, the limit 5% was exceeded many times in Turkey, with CAD increasing reliance on short – term debt and decreasing national savings (Abbasoğlu, vd. 2018, p.2-3). When the ratio of a country's CAD to its

national income reaches 5% or more, it poses a major risk for the sustainability of the CAD. Moreover, according to Freund, this situation is likely to result in slow income growth and significant real exchange rate depreciation over a period of three or four years. Edwards, on the other hand, points to the difficulty of sustaining a CAD about 6% of GDP (Şahin, 2011: 49).

In this study, it has been determined which variables are between the factors affecting the CAD. Accordingly, first of all, a literature review will be made in the study. After the literature review, the study on the determinants affecting the CAD from 1984 to 2021 in econometric analysis will be analyzed through the Eviews 11 econometric program. The variables of the study consist of CAD, Export and Import. In the hypothesis of the study, Karul & Berk & Koncak (2017) prepared the variables of Current Deficit, Export and Import by using monthly data for the period 1998 – 2016, originality of this study is that it uses annual data for the period 1984 – 2021 and in its econometric analysis, Unit Root Tests(URT), URT with Structural Breaks, Structural Breaks Test, Cointegration Test and Granger Causality Test are applied.

1. THEORETICAL EXPLANATIONS

In theoretical explanations, balance of payments and its sub – headings current account, capital account official reserves account and net errors and omissions will be mentioned.

1.1.Balance Of Payments

It is a planned phenomenon where all economic activities in a year in which financial activities are carried out between individuals and institutions residing in any country for one year and individuals and institutions residing abroad for one year (Alptekin, 2016). In the balance of payments (BP), a country's income from foreign countries is desired to be equal to its expenditures to foreign countries, In the absence of this balance, deficits and surpluses occur in the balance of payments (Yıldırım, et al. 2016). BP accounts are divided into four.

1.1.1.Current Account

This sub-account is called the account in which the records of the goods sold abroad and the goods imported by the country in a certain period are kept. When goods are sold abroad, a positive entry is made in the BP, and when goods are purchased from abroad, a negative entry is made in the balance sheet (Özdurak, 2015).

The competition of a country in the external realm significantly determines the balance of current transactions. Furthermore, it leads to the investment decision of people who do not reside in that country because it gives clues to the situation of the economy (Sanni et al, 2019, p.84).

While the openness of a country is expressed as the promotion of FT, it is thought that an increase in the openness coefficient will increase exports and lead to a decrease in the CAD (Sumiyati, 2022, p.10).

1.1.2. Fınancıal Account

The capital account covers the investments made by the residents of the country with foreign world. While the residents of the country receive the capital that does not belong to them from the foreign world, it is called capital import, while the sending of their capital resources to the foreign world is capital export (Keskin, 2019, p.280 – 281).

1.1.3. Offıcıal Reserves Account

This account shows the changes in the official reserves of any country. It indicates the financial result of economic transactions in the foreign world. A country's official reserves consist of foreign currency, gold and resources obtained obtained from foreign economic institutions (Seyidoğlu, 2015).

After the economic crises, the official reserves in the central banks of the countries where the economic conjuncture was fluctuating gained importance, with financial fragility, a country must maintain more Dollar reserves if its central banks, private and public sector borrow more in Dollars or import more Dollar denominated goods and services, Accordingly, central banks sell their foreign exchange reserves in order to maintain the falling value of the national currencies (Aizenman & Cheung & Qian, 2020: p.3-4).

1.1.4. Net Errors And Omıssıons

The net error and omission account (NEOA) is directly linked between current account and capital account. From this connection, it turns out that the NEOA is equivalent to the difference between the current account and capital account. In addition, the sum of current account and capital account must be zero in order to achieve equality in the BP (Keşap & Sandalcılar, 2021, p.151).

According to the CBRT, which determines the BP data based on the IMF, the determinants of Turkey's NEOA are divided into three: obtaining economic transactions in different ways in foreign trade transactions, using temporary data in foreign trade statistics, and using temporary data in non – banking sectors, also deposits are obtained through a different institution (Altıner & Sandalcılar, 2021, p.30).

1.2. Current Account Defıcıt In Turkey

CAD, which is the most important account of the BP, shows all economic transactions of a country in a one – year term. Developing countries generally have a CAD. Turkey, which is among the developing countries, is one of the countries with a CAD. In the CAD, while Turkey borrows from the foreign world, investments are more than savings (Kucukefe, 2019, p.135).

It is known that the FTD affects the CAD in the Turkish Economy. Accordingly, the Turkish Economy aims to reduce the FTD. In addition, the importation of a large part of the energy and intermediate goods used in the production of commercial goods

and the inability to produce and sell products with high added value are the main reosans for the CAD in the Turkish Economy (Uslu, 2019, p.155).

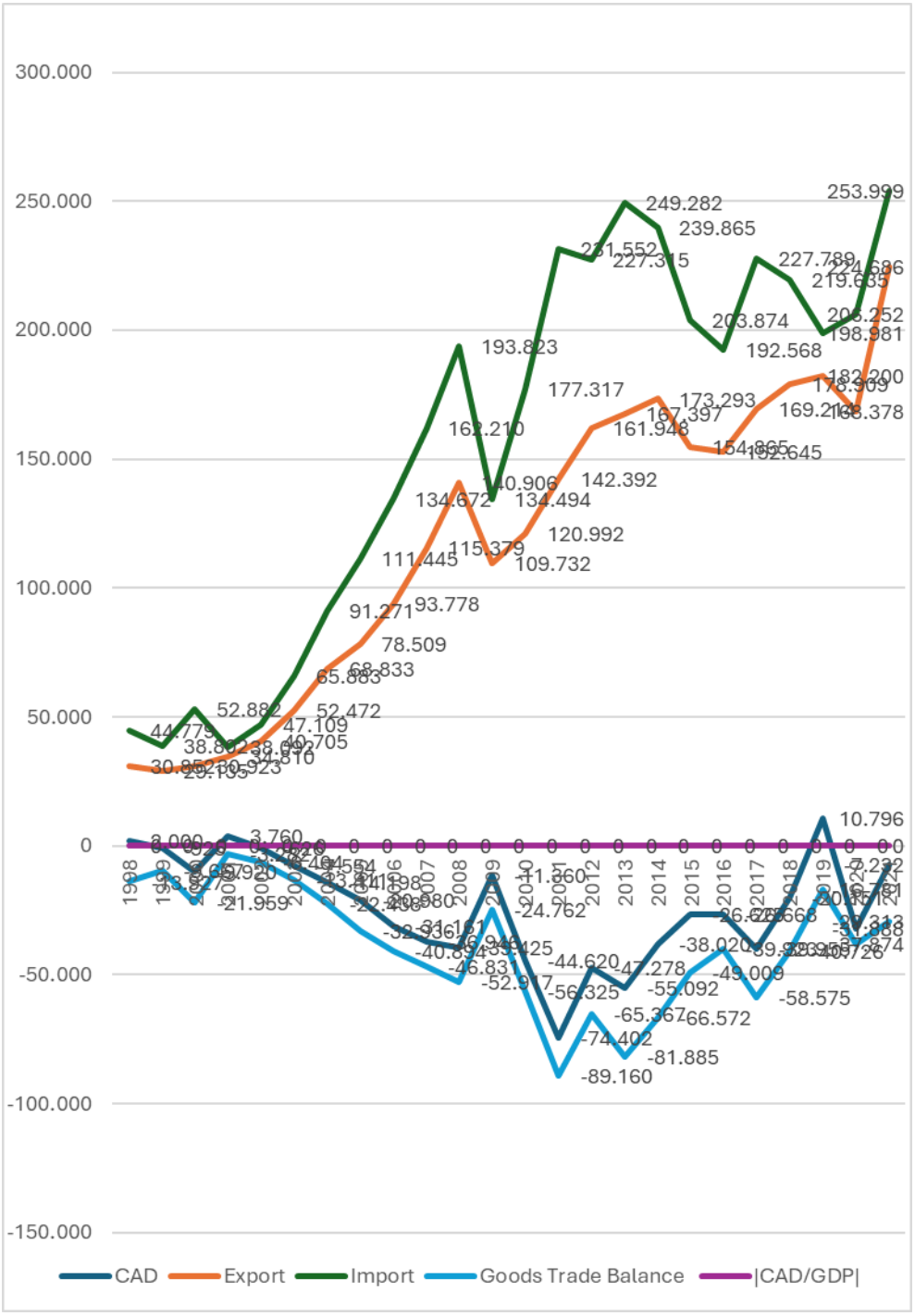
In terms of the economic indicators of the countries, the CAD arises when there is a decrease in domestic savings in cases where the FT terms suddenly appear. In addition, when domestic savings are low in Turkey, an increase in investments causes a CAD (Türk & Şahin, 2018, p.151).

With the globalization of foreign trade in Turkey after 1980, the demand for energy increased with the increasing domestic demand, as the energy requirement increased in Turkey, an increase was achieved in energy imports, the increase in energy imports in Turkey has increased Turkey's dependence on energy imports (Ağır & Özbek & Türkmen, 2020, p.58).

In the period of 1990 – 2010, when various countries with current account surplus provided various facilities in loans to countries with deficit, there was an abundance of credit in countries with deficit, countries with deficit had the opportunity to close the CAD by obtaining loans with low interest rates with the abundance of loans, countries with current account surplus financed countries with CAD with hot money (Garg & Prabheesh, 2021, p.3). After 2002, it was revealed that Turkey achieved high economic growth in the 2002 – 2012 period due to attractive Dollars ans Euros in the foreign world and through the loans financed by the government – backed Credit Guarantee Fund (CGF), Increasing household demand caused the CAD to increase further. According to the last meeting with the IMF, the vast majority of loans were used to finance investments in sectors with low added value (Malovic & Özer, 2020, p.2).

In the 2000 – 2016 period, the CAD increased 3.5 times as the Turkish economy grew and as a result of the increase in energy consumption. Due to the increasing energy demand, energy imports were needed. The CAD increased due to the increase in energy imports (Kızıldere, 2020, p.2125).

Figure 1: Current Account Deficit, Foreign Trade and CAD/GDP in Turkey Between 1998 – 2021



Since 1980's, an increase in foreign trade volume has occurred in Turkey with the transition to open economy policies. The EU approved Turkey's entry into the Customs Union in 1996. Although it is known that the Customs Union has a positive effect on Turkey's foreign trade in the short run, Turkey has been exposed to various economic losses in the long run (Şahin, 2022, p.83).

In the introduction of the study, it is stated that a CAD/GDP ratio of 5% and above is risky for the sustainability of the CAD in Turkey. Accordingly, the data in Table 1 shows that Turkey has a great risk for the sustainability of the CAD in 2000 and 2011.

Except for 2019, it is observed that the FTD also increased during the period of CAD. In addition, the increase in FT volume increases the CAD (Altunöz, 2021, p.131-132).

Since developing countries generally have high CAD, countries need external resources to maintain their current account balance. Accordingly, an increase in Turkey's CDS premium negatively affects the country's macroeconomic variables. As a result, the increase in CDS premium increases the interest rates in Turkey's financial borrowing for the foreign world (Akın & Işıklı, 2020, p.92).

2. LITERATURE REVIEW

Karul, Berk & Koncak (2017) the relationship between CAD and export and import variables, which are preferred as monthly data covering the period 1998 – 2016, with Structural Break URT, Gregory Hansen Single Break Cointegration Test, Westerlund and Edgerton Single Break Cointegration Tests has been tested. As a result of the tests or analyzes made, it has been revealed that the current deficit is not retainable in Turkey.

Beşel (2017) the relationship between CAD and oil prices covering the period 1976 – 2016 is tested with Zivot Andrews URT, Gregory Hansen Cointegration Test, Toda Yamamoto Causality Tests using annual data. In Turkey, current deficit and oil prices are cointegrated in the long run. According to the Causality Test, there is a unidirectional causality relationship from oil prices to the current deficit.

Uçak (2017) the relationship between CAD and growth using annual data covering the period 1980 – 2015, ADF, PP and KPSS URT, Structural Break Zivot Andrews URT, Normality Test, Autocorrelation LM Test, White Variance Test, Granger Causality Test tested with Impact – Response Analysis and Variance Decomposition Analysis. In the study, According to the Causality Test, there is a unidirectional causality relationship from GDP to current account balance.

Türkmen (2018) examined the relationship between CAD, growth, public sector borrowing obligation, external debt stock, exchange rate, oil price with MARS Model Estimators, Pearson Correlation Matrix, ANOVA using annual data covering the period 1977 – 2015. In the study, it was revealed that variables effecter the CAD in Turkey are growth, public sector borrowing obligation oil price and exchange rate.

Özdemir & Türk (2018) examined the relationship between current balance, growth, short – term external debt stock, long - term total external debt stock,with Historical Decomposition Method, ADF URT, using quarterly data covering the period 1992 – 2017. According to the test and analysis results in the study, it was revealed that the

relevant variables in the study were not sustainable on th CAD. In particular, it has been observed that this effect disappeared 1994 – 1999 – 2001 economic crisis and after the 2008 global financial crisis. As a result it indicates financial fragility increased in the period of high uncertainty of Turkish Economy.

Duman (2018) examined the relationship between CAD, export, import, unrequited international transfers with ADF URT, Johansen Cointegration Test, Weak Externality Test, Co – İntegrated Coefficients, Error Correction Model (ECM) using quarterly data covering the period 1991 – 2017. According to the results of the study, it was concluded that the CAD in Turkey is sustainable.

Berk & Cin (2018) examined the relationship between CAD, energy consumption, population with ADF URT, Granger Causality Test, VECM using annual data covering period 1970 – 2014. According to the result of Causality Analysis, while there is a unidirectional relationship between population and trade. In order to ensure the maintainability of the CAD, investments should be made in alternative energy sources.

Demir (2019) examined the relationship between Current Balance/GDP with ADF and PP URT, Zivot Andrews URT, Lee – Strazicich Two Break URT, URT with Multiple Structural Breaks using quarterly data covering period 1998 – 2018. As a result of the unit root test analysis conducted with and without structural breas in the 1998Q1 – 2018Q2 period with the variable in the study, it is obvious that the CAD is unsustainable for the relevant period in Turkey.

Gençoğlu & Ünlü (2019) examined the relationship between CAD, Export, İmport with ADF and PP URT, URT with Structural Break, VAR Model, Johansen Cointegration Test, VECM, Toda Yamamoto Causality Test using annual data covering period 1980 – 2017. In the study, it was revealed that the maintainability of the CAD is unlikely.

Bozgeyik & Kutlu (2019) examined the relationship between Current Account, Exchange Rate, M2 Money Supply, Oil Prices, Foreign Direct Investments, Export Import Coverage Ratio, Inflation with Unconditional Correlation Test, GARCH Model, Dynamic Conditional Correlation Coefficients using monthly data covering period 1992 – 2017. In the study, while there is a direct connection between the current account, export and foreign direct investments in Turkey, there is an bidirectional relationship between the current account and other variables.

Benli & Tonus (2019) examined the relationship between CAD, GDP, Budget Balance, Real Exchange Rate, Real Interest Rate with ADF and PP Unit Root Test, ARDL Limit Testing Approach, White Test, Autocorrelation Test, JB Test, Ramsey RESET Test, CUSUM Stability Test using quarterly data covering period 2006 – 2019. While real exchange rate and real interest affect CAD in the long run in Turkey, GDP and budget balance affect the CAD in Turkey in the short run.

Özer & Malovic (2020) examined the relationship between CAD, GDP Growth Rate with Conventional and Frequency Domain Granger Causality Test using quarterly data covering period 2002 – 2017. The study results show that increased CAD leads to growth in both the short and medium term. Therefore, CAD raises some doubts about the sustainability of its future growth in Turkey as it is usually covered by short – term debt and Turkey is a credit dependent country.

Baş & Kara (2020) examined the relationship between CAD, Overnight Interest Rate, M3 Money Supply with ARDL Boundary Test, ARDL Long Term Estimation, ARDL Short Term Estimation, CUSUM Test using quarterly data covering period 2005 – 2018. Within the scope of ARDL analysis method, the cointegration relationship between the variables was determined by first applying the bounds test. According to the results of the cointegration test, it has been observed that there is meaningful relationship between the money supply and the CAD both in the short run and the long run.

Aka(2020) examined the relationship between Current Account Balance, Export Import Coverage Ratio, Openness Rate, Foreign Direct Investments, Portfolio Investments with ADF URT, JB Normality Test, Breusch – Godfrey Autocorrelation LM Test, Fixed Variance Test, Multiple Linear Connection Test, Least Squares Method. In the study, while the variables that decrease the CAD in Turkey are the ratio of exports to imports, portfolio investments and foreign direct investments, the variable that increases the CAD in Turkey is the openness rate.

Karış (2020) examined the relationship between CAD/GDP, Logarithmic Domestic Savings, Deposit Interest Rate, Budget Balance, Openness Ratio, Logarithmic Average Exchange Rate, Logarithmic M2 Money Supply, Export Import Coverage Rate, Logarithmic Gross External Debt Stock, Logarithmic Average Crude Oil Price with ADF Unit Root Test, LM Test, Wald Test, Probit Analysis. In the study, it was revealed that the increases in the domestic deposit interest rate, budget balance, openness ratio, gross external debt stock and crude oil price variables decreased the maintainability of the CAD in Turkey.

Abioğlu, Koç & Bakırtaş (2020) examined the relationship between CAD, GDP with BDS Test, ADF, KPSS, DF – GLS URT, ST – TAR and ST – MTAR URT, LNV – SOLLİS – AESTAR URT. According to the results of the study, it means that if the CAD is allowed for direct foreign ivestments and long term external borrowing for production, a CAD of up to % 5 of GDP is sustainable. However, when local investments are mostly financed by short range foreign borrowing, then the maintainability of the CAD is jeopardized.

Uslu (2020) examined the relationship between CAD/GDP, Loans Given to the Company, Household Loans with Kapetanios Unit Root with Structural Breaks, Cointegration Test, ARDL Analysis, Toda Yamamoto Causality Test. According to the results of the academic study, a unidirectional causality relationship emerged from loans to household and loans to companies to the CAD. According to the output of the research, it was revealed that the reason for the CAD in Turkey was the loans given to the companies.

3. METHODOLOGY

In this study, it was decided to perform the econometric analysis with structural break URT based on Karul, Berk & Koncak (2019) study. The reason why Karul,Berk &Koncak (2019) study was taken as inspiration for this study is that similar econometric tests were applied in the studies. Accordingly, CAD, export and import data were used in this study. Data refer to the period 1984 – 2021. The data obtained from the TCMB website. The analysis of the study was done with Eviews 12 and Stata 15 program. The data obtained are annual.

3.1. Least Squares Method

With the Least Squares Method, it will be checked whether the data obtained for the CAD, export and import variables are meaningful or not.

Table 2: Least Squares Method

Variables	**Probability Value of Level Values**	**Probability Value of First Difference Values**
XEXP	0.00	0.00
XIMP	0.00	0.00
Regression Results		
Regression Results	**Level Values**	**First Difference Values**
R^2	0.95	0.91
Prob>F	0.00	0.00
Adj. R^2	0.95	0.91

According to the Least Squares Method, the independent variables Export and Import are statistically significant. According to the R^2 results, it is observed that exports and imports affect 95% of the variables affecting the current account deficit at level values and first difference level.

$$YCAD = \beta_0 + \beta_1 XEXP + B_2 XIMP$$

3.2. Unit Root Tests

In the study, first of all, URT of ADF, PP, KPSS and URT with Structural Break will be applied.

3.2.1. Adf Unit Root Test

ADF URT was used to measure the stationary of the variables used in the study.

Table 3: ADF Unit Root Test

Variables (Constant and Trend)	Probability Values	%1	%5	%10
YCAD	0.10	-4.27	-3.55	-3.21
D(YCAD)	0.00	-4.27	-3.55	-3.21
XIMP	0.92	-4.27	-3.55	-3.21
D(XIMP)	0.00	-4.27	-3.55	-3.21
XEXP	0.99	-4.27	-3.55	-3.21
D(XEXP)	0.00	-4.27	-3.55	-3.21

According to the ADF URT results, while the dependent variable and independent variables are insignificant at the level values (there is a unit root), the variables at the first difference level are significant (no unit root). In the next chapters it will be checked whether there is a structural break in the unit roots in the variables.

3.2.2. PP Unit Root Test

PP URT, shows whether variables have unit root just like ADF URT.

Table 4: PP Unit Root Test

Variables (Trend)	Probability Values	%1	%5	%10
YCAD	0.09	-4.27	-3.55	-3.21
D(YCAD)	0.00	-4.27	-3.55	-3.21
XEXP	0.70	-4.27	-3.55	-3.21
D(XEXP)	0.00	-4.27	-3.55	-3.21
XIMP	0.41	-4.27	-3.55	-3.21
D(IMP)	0.00	-4.27	-3.55	-3.21

According to the PP URT Results, while the variables have unit root at level values, they are stationary at the first difference level.

3.2.3. KPSS Unit Root Test

Unlike ADF and PP Unit Root Tests, KPSS Unit Root Test hypothesis H0 states that the series are stationary.

Table 5: KPSS Unit Root Test

Variables	KPSS Test Statistic	% 1	%5	%10
YCAD	0.24	0.21	0.14	0.11
D(YCAD)	0.03	0.21	0.14	0.11
XEXP	0.59	0.21	0.14	0.11
D(XEXP)	0.04	0.21	0.14	0.11
XIMP	0.41	0.21	0.14	0.11
D(XIMP)	0.05	0.21	0.14	0.11

According to the results of Table 5, since the H0 hypothesis is not rejected in the three variables, the series are stationary.

3.2.4. Structural Break Unıt Root Test

In the Structural Break URT, if the H0 hypothesis sis not rejected, it is concluded that there is a unit root in the variables.

Table 6: Structural Break Unit Root Test

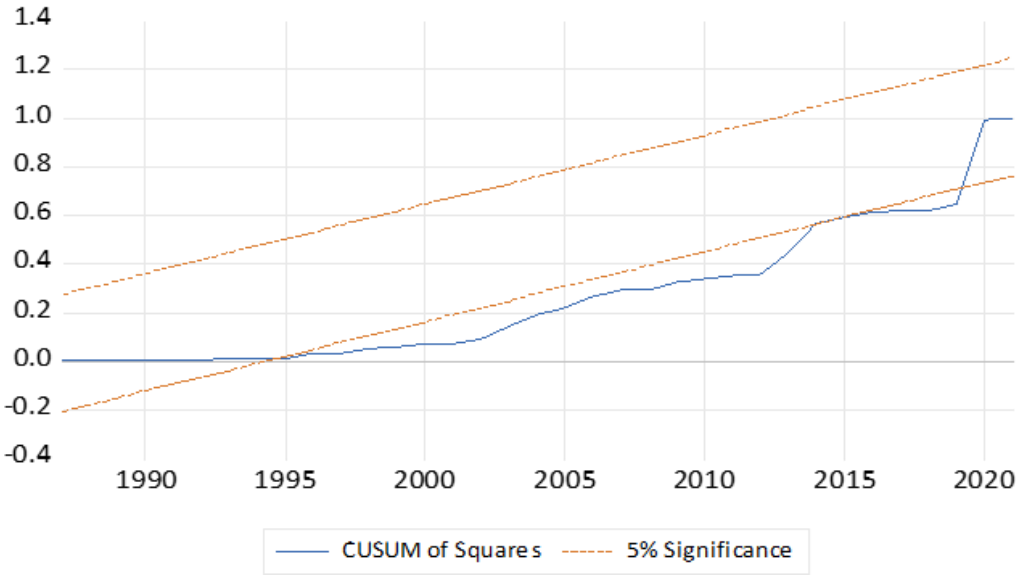
Variables	KPSS Test Statistic	%5 Critical Values
YCAD	0.07	0.01
XEXP	0.99	0.01
XIMP	0.73	0.01

According to the result of the Structural Unit Root Test, while the variables have a unit root at the level values, the variables are stationary at the first difference level.

3.3. CUSUM Sqares Test

According to the CUSUM Squares Test, lines that go beyond the 5% significance level on the graph represent the structural break in the variables.

Graph 1: CUSUM Squares Test



Accordin to test results, the structural break dates of the current deficit, export and import variables in Turkey emerged as 1997 – 2013 and 2017 – 2019.

3.4. Chow Breakpoint Test

In the Chow BreakPoint Test, it determines whether there is a structural break at the breakpoints.

Table 7: Chow Breakpoint Test

2019	YCAD/XEXP/XIMP
Prob F. F(3,32)	0.00
Prob. Chi-Square(3)	0.00
Prob. Chi-Square(3)	0.00

In the Chow Breakpoint Test, the H0 hypothesis is expressed as no structural break at the determined breakpoint. In addition, according to the test result, there is a structural break at the breaking point in 2019, since the H0 hypothesis is rejected.

3.5. Johansen Coıntegratıon Test

The Johansen Cointegration Test measures whether the variables are cointegrated in the long run.

Table 8: Johansen Cointegration Test

	Maximum EigenValue Test				Trace Test			
Maximum Rank	**Eigenvalue**	**Trace Statistic**	**0.05 Critical Value**	**Prob.**	**Eigenvalue**	**Trace Statistic**	**0.05 Critical Value**	**Prob.**
0	0.57	30.22	24.25	0.00	0.57	37.92	35.01	0.02
1	0.19	7.61	17.14	0.64	0.19	7.69	18.39	0.71
2	0.00	0.08	3.84	0.77	0.00	0.08	3.84	0.77

If the trace statistic is greater than %5 critical value, it means that the series of variables are cointegrated. Accordingly, the series are considered to be cointegrated in the long run, even if partially.

3.6. Gregory – Hansen Structural Break Coıntegratıon Test

The Gregory Hansen Cointegration Test measures whether the variables are cointegrated in the structural break in the long run.

Table 8: Gregory Hansen Cointegration Test

Test	**Test Statistic**	**Breakpoint**	**Year**	**%5 Critical Values**
ADF	-5.34	29	2012	-4.92
Zt	-5.42	29	2012	-4.92
Za	-33.06	29	2012	-46.98

According to the results of the Gregory Hansen Cointegration Test with Structural Break, if the Zt test statistic is greater than critical value of %5, in the case of structural break, "there is no cointegration between the variables", rejecting the H0 hypothesis, it turned out that the variables are cointegrated in long run under the condition of structural break.

3.6. Granger Causalıty Test

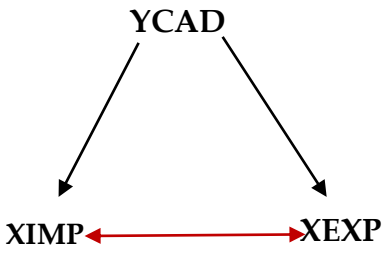
The Granger Causality test determines whether there is a relationship between the variables and is used to find the direction of this relationship between the variables.

Table 9: Granger Causality Test

Direction of Causality	Probability Value	Number of Obs	df	Result
(XIMP – YCAD)	0.84	36	2	There is a unidirectional causality relationship between current account deficits and imports.
(YCAD – XIMP)	0.01	36	2	
(XEXP – YCAD)	0.81	36	2	There is a unidirectional causality relationship between current account deficits and exports.
(YCAD – XEXP)	0.00	36	2	
(XEXP – XIMP)	0.03	36	2	There is a bidirectional causality relationship between Exports and Imports.
(XIMP – XEXP)	0.00	36	2	

It was found that there were unidirectional and bidirectional causality relationships among the variables in the study.

Shape 1: Causal Relationship Between Variables



Unidirectional causality relationships between the related variables are shown. The existence of a unidirectional causality from the Current Account Deficıt to Imports, excessive preference of luxury consumer goods and high imports may increase the current account deficit.

There is a unidirectional causality relationship from Import to Export. Accordingly, when the import of intermediate goods required for production is high, exports will be high.

There is a unidirectional causality relationship from Current Account Deficit to Exports. Decrease in income in the tourism sector, increase in imports of luxury consumer goods and increase in imports of intermediate goods, etc. factors cause the current account deficit to increase.

4. CONCLUSION

The difference of this study from the studies in the literature review is that structural break tests were applied in the study. Annual data for the period 1984 – 2021 was preferred in the study. The reason why the period in the study started in 1984 is that Turkey started the Open Industrilization process after the 24 January Decisions.

In this study, according to the ADF URT result, while the CAD, export and import have a unit root at level values, they are stationary at the first difference level. In addition, while the variables have unit root at level values in the PP URT, they are stationary at the first difference level, Unlike other URT, in the KPSS URT, there is a unit root in the variables because the KPSS test statistic is greater than % 5 critical values. In the URT with structural break, while the unit root is present in the level values, it is stationary at the first difference level. In the CUSUM Squares test, it shows that there is a structural break in the lines outside the % 5 significance level. It was revealed that there was a structural break in the CAD, exports and imports in the 1997 – 2013 period and 2017 – 2019 period in Turkey. In the Chow Breakpoint test, it was determined that there was a structural break at the breakpoints. Also in this study, Causality Test and Cointegration Test were applied. According to the results of the Cointegration Test, it was revealed that a series of variables were cointegrated in the long run. According to Causality Test result, while there is a unidirectional causality relationship from CAD to exports and imports, there is a also a unidirectional causality relationship from imports to exports. Finally, in this study, since there is a structural break in CAD, exports and imports the products with high added value in exports should be predominant and investments in energy should be made in energy where imports are high.

Factors such as high demand for luxury consumer goods, high imports of intermediate goods used for production, increasing demand for gold, foreign dependency in oil and natural gas, and foreign dependency in the agricultural sector have increased the foreign trade deficit in Turkey as well as the current account deficit. In order to reduce the current account deficit in Turkey, additional taxes on luxury consumer goods, production and export of high value – added products, removal of foreign dependency in the agricultural sector, bringing domestic precious metals into the economy, increasing grants or loans for foreign trade to SME's, and increasing foreign trade in production. Factors such as decreasing dependency will reduce the foreign trade deficit as well as the current account deficit.

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