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*Özcan Karahan**
*Olcay Çolak***

AN EXAMINATION OF THE CAUSALITY RELATIONSHIP BETWEEN CURRENT AND FINANCIAL ACCOUNTS IN TURKEY

ABSTRACT: *In today's economies, where commerce and the economy are strongly interrelated, the relationship between current account and financial account has become crucial. However, economists have not reached a consensus regarding the direction of the causality relationship between capital and current accounts. Our study aims to contribute to the literature by determining the direction of the causality relationship between current and financial accounts in Turkey, applying the Johansen Cointegration Test and the Vector Error Correction (VEC) model to quarterly data for 2002–2018. The empirical results show that the causality relationship in Turkey runs from the financial account to the current account. This means that capital inflows to Turkey have the potential to deteriorate the current account balance. Therefore, it is of crucial importance that Turkey implement policies to manage the financial account in order to provide a current account balance.*

KEY WORDS: *current account, financial account, Turkish economy.*

JEL CLASSIFICATION: F32, F40, C22.

* Corresponding author, Faculty of Economics and Administrative Sciences, Department of Economics, Bandirma Onyedi Eylul University, Turkey, e-mail: okarahan@bandirma.edu.tr.
** Co-author, Faculty of Economics and Administrative Sciences, Department of Economics, Usak University, Turkey, e-mail: olcay.colak@usak.edu.tr.

1. INTRODUCTION

With today's rapid globalisation, international trade and especially financial relations have expanded exponentially. Therefore, keeping a record of the commercial and financial relations between nations has become increasingly important, so much so that the balance of payments sheet in which a country's commercial and financial relations with other countries are recorded has become a significant tool for measuring macroeconomic performance. In general, the balance of payments sheet consists of the current, financial, and reserve sub-accounts and net errors and omissions. The current and financial accounts are the two most important sub-accounts on the balance of payments sheet. An excess in the financial account or a decrease in reserves can be used to finance a current account deficit. However, excess in the financial account is generally used to meet the current account deficit. Accordingly, even though it is possible to finance the current account deficit from reserves, this is a temporary and secondary method. Thus, the interaction between capital and current account is the basic dynamic in the balance of payments sheet. Therefore, a country's economic situation can be analysed via developments in the relationship between current and financial accounts – so much so that an economy's stability and performance are closely related to the interaction between financial and current transactions.

In the literature the reason for a deteriorating current account balance is indicated by an increase in the components of total demand such as consumption, investment, and government expenditure. However, there is no consensus among economists regarding the source of the increase in total demand that causes a current account imbalance. Nevertheless, determining the source of the increase in total demand is a crucial issue in identifying the direction of the causality relationship between capital and current account. One group of economists claims that foreign capital is required to finance a growing current account deficit based on expanding domestic demand, which results in changes in the financial account (Higgins and Klitgaard 1998; Lau and Fu 2011; Oeking and Zwick 2015; Urbanovsky 2017). Thus, any increase in domestic demand, whether from the private or the public sector, causes a deficit in the current account, whereupon foreign capital is needed to finance this deficit in the current account. This means that the causality relationship runs from the current account to the financial account. Another group of economists argues that financial capital inflows to a

country lead to the expansion of domestic demand and growth of the current account deficit (Calvo et al. 1996; Yan 2005; "Mastroyiannis 2012; Garg and Prabheesh 2015; Yalta and Sağlam 2016). The surge in capital inflows tends to be channelled into enlarging basic components of total demand in the host countries. This means that the basic source of total demand increase triggering the current account deficit is capital inflow to the host country. Thus, the direction of causality in the balance of payments operates from the financial account to the current account.

As can be seen from the discussion above, the direction of the causality relationship between the current and financial accounts is determined by whether or not the source of the increase in total demand is capital inflow. Within the framework of this discussion, our study aims to analyse the direction of the causal relationship between the current and the financial accounts in Turkey's economy. In other words, we try to determine whether the causal relationship is from current account to financial account or from financial account to current account. By determining the direction of the causal relationship between current and financial accounts we also identify whether or not the source of the increase in total demand is capital inflow to Turkey. With the introduction in 2002 of the Inflation Targeted Stability Program under a free exchange rate system, Turkey's economy became completely open to the impact of foreign capital inflows. Thus, determining the direction of causality between current and financial accounts contributes not only to the literature but also to the design of the inflation-targeting policies to be implemented in Turkey.

The following section reviews the studies in the literature on this subject. The third section gives information on the data and methodology. Next, the empirical results are presented. The last chapter concludes and makes some some policy recommendations for Turkey's economy.

2. LITERATURE REVIEW

Numerous studies in the literature examine the causality relationship between current account and financial account. Nevertheless, there is still no agreement on the transmission mechanism between these accounts. Two different transmission mechanisms are posited as the framework in which the current and financial accounts affect each other. In the first transmission mechanism, an

increase in the current account deficit stimulates capital inflows and thus triggers developments in the financial account. Accordingly, an increase in total demand arising from factors other than capital inflows to the home country leads to a current account deficit, which later is financed by capital inflows. In the second transmission mechanism, movements in the financial account cause developments in the current account. According to this mechanism, foreign capital inflows deteriorate the current account by stimulating total demand. Thus, there is significant disagreement about the direction of the causality relationship between current and financial accounts. This disagreement actually arises from whether or not the source of the increase in total demand is capital inflow. If capital inflow first stimulates total demand and thus deteriorates the current account balance, the direction of the causality relationship is from a financial account to the current account. However, if the current account deficit arising from the expansion of total demand increases first and thus causes capital inflows to the home country later, this implies that the direction of the causality relationship is from the current account to financial account (IMF 2009: 222–223).

Those claiming that the direction of the causality relationship is from the current account to the financial account argue that other reasons are causing the expansion of total demand, not foreign capital inflows. For example, both consumption and investments may increase due to a decline in interest rates because the central bank implements expansionary monetary policy and therefore expands the current account deficit. Thus, foreign capital is needed to finance deficits in the current account arising from expansionary monetary policy and the direction of the causal relationship runs from current account to financial account. The same process may also occur if the increase in total domestic demand is due to the public sector. A budget deficit resulting from the state implementing expansionary fiscal policies may lead to a current account deficit by increasing domestic demand. In that case, expressed as twin deficits, foreign capital will be needed to finance the deficit in the current account. Thus, an increase in domestic demand arising from the private or public sector results in a causality relationship from the current to the financial account (Higgins and Klitgaard 1998: 3).

On the other hand, foreign exchange rate policies implemented by the central bank may result in a causal relationship from capital account to financial account. For example, a devaluation policy under the fixed exchange rate regime may reduce domestic demand by restricting imports and promoting exports. Therefore, the economy needs less external capital resources due to a decreased current account deficit. Thus, maintaining a balance in the current account by implementing a devaluation policy also provides financial account stability in the next stage.

In the literature there are empirical studies which indicate that the direction of the causality relationship is from current account to financial account. Lau and Fu (2011) empirically investigate the interrelationships between financial account and current account for the Asian countries Indonesia, Korea, the Philippines, and Thailand. Johansen Cointegration and Granger Causality Tests are used to examine quarterly data series of variables for 1987–2006. The empirical results show that the current account Granger-causes the financial account. Thus, it is suggested that in Asian countries management of the current account can be used as the control policy variable. Gürsoy and Yılancı (2013) analyse the causal relationship between current account and financial account in Central, Eastern, and South-Eastern European countries using Emirmahmutoğlu and Kose's panel causality test with the panel selection method for quarterly data covering the period 2002–2010. The findings show the current account mostly Granger-causes the financial account.

More recent research has also clearly indicated a causal relationship from capital account to financial account. Oeking and Zwick (2015) analyse the relationship between current account balance and capital movements for 23 selected OECD countries, examining quarterly data between 1990 and 2013 using the Granger causality test. The empirical results show that in the OECD countries current account developments generally determine movement in the financial account. The results of more detailed analysis also indicate that the causality relationship is obscured in circumstances of extreme fluctuation in the economy. Urbanovsky (2017) examines the interaction between current account and financial account in the Czech Republic. Quarterly data for 1995–2015 is used in a causality analysis conducted within the framework of the Johansen Cointegration and Error Correction model. The empirical results show that the direction of the causality

relationship is from current account to financial account. It is also found that there is a potential risk of economic crisis in the current account during large capital inflows.

Contrary to the empirical indications above, some economists argue that the transmission mechanism operates from the financial account to the current account. In other words, developments in domestic demand, which lead to a change in the current account balance, mainly arise from changes in financial accounts resulting from foreign capital inflows. This process has been increasingly present in developing countries since they started to receive large capital inflows from developed countries – so much so that developing countries, where there are scarce funds and high profits, offer high returns to capital owners in developed countries. Capital owners in developed countries, where there are abundant funds and less profit, also naturally prefer investing in developing countries (Alp 2000: 115).

Movement of financial capital to developing countries, especially in the form of portfolio and other investments, has created significant economic effects. Undoubtedly, these inflows that cause a surplus in the financial account have expanded total demand in developing countries and thus have resulted in current account imbalances. Consumption and investment expenditure in developing countries used to be under a significant financial constraint due to the limited supply of funds, but with foreign capital inflows these kinds of expenditure rapidly increased. Moreover, the financial capital inflows provided the state with new financing opportunities through public loans and considerably increased its public expenditure. The expansion in public expenditure due to increased capital inflow raised total demand and consequently the current account deficit. Capital inflows to developing economies also deteriorated the current account via exchange rates: capital inflows led to a decline in nominal exchange rates by revaluating domestic currencies in developing countries. As a result, imports became more attractive while exports became more difficult and the current account deficit grew (Calvo et al. 1996: 128–131). Thus, with increased international capital movement and its effect on both domestic demand and exchange rates, especially in developing countries, the direction of the causality relationship has been from financial account to current account.

Many empirical studies in the literature determine the causality relationship direction as being from the financial account to the current account. Yan (2005) analyses the interaction between current and financial accounts in Argentina, Mexico, Indonesia, South Korea, and Thailand. Quarterly data for 1989–2004 is examined using the Granger causality test. The empirical findings determine that in these countries the financial account is responsible for the current account. Mastroyiannis (2012) examines the relationship between current account and financial account in the Portuguese economy. Granger causality test results show that capital inflows between 1980 and 2009 affected the current account balance, indicating that foreign capital flows 'pushed' Portugal's economy into current account imbalances. In terms of policy implications, to sustain the current account deficit, policies focusing on the effective management of capital inflows are preferable. Akbaş et al. (2014) analyse the relationship between capital inflows and current account deficit in the case of emerging markets for the years 1990–2011. A panel causality test covering the data of 20 emerging countries shows that there is a one-way relationship from short-term capital inflows to current account deficit. Therefore, to reduce the risk caused by high current account deficits, policies aiming for financial balance should be prioritised. Garg and Prabheesh (2015) empirically investigate the causal relationship between current and financial accounts in the Indian economy. They utilise quarterly data from 1990 to 2011 and apply the Modified Wald Granger causality test proposed by Toda and Yamamoto. The findings suggest that there is a causal relationship from capital flows to current account. They emphasize that the soundness of the financial sector should be improved, since capital flows have the potential to deteriorate the current account balance. Yalta and Saglam (2016) examine the causal relationship between current account and different types of capital inflow, applying a dynamic panel causality approach for 19 emerging market economies between 1980 and 2009. The empirical results indicate that foreign capital inflows Granger-cause current account deficits. Thus, they raise questions regarding the sustainability of current account deficits based on foreign capital inflows to emerging market economies.

In studies focusing on Turkey there is also no consensus on the direction of the causality relationship between capital and current accounts. Some studies indicate that the causality runs from current account to financial account. Karagöz and Karagöz (2006) investigate whether causality runs from current

account to financial account for the period 1980–2002 in Turkey. In a recent study, Kesgingöz and Karataş (2016) show that there is a causal relationship from current account deficit to foreign capital movements for the periods 1992–2001 and 2002–2005. However, most of the research on Turkey indicates a causality from capital to current account, similar to the experience of other developing countries. Erden and Çağatay (2011) examine the causal relationship between current account and financial account using monthly data for the years 1992–2009. The findings show that the relationship between variables is unidirectional and that the causality direction is from financial account to current account. Turan and Karakas (2016) investigate the causal relationship between current balance and financial account in Turkey using quarterly data for the period 1998–2014 and using Toda-Yamamoto and Hatemi-J causality tests. The empirical findings show that there is a unidirectional causality relationship from the financial account to the current balance. Tüzemen and Tüzemen (2018) analyse the causal nexus between financial account and current account balance using Toda-Yamamoto causality and Hatemi-J asymmetric causality tests on data covering the period 2002–2017. The empirical findings show that capital flows to Turkey cause positive and negative shocks to the current account balance. Finally, Gümüşoğlu and Alçın (2019) analyse the interaction between current and financial accounts in Turkey by employing the vector autoregression (VAR) model and ımpulse responses to examine quarterly data for the period 1998–2015. The empirical findings indicate a positive causality relationship from capital flows to current account deficit.

In the literature the financial crises in developing countries are discussed and explained within the framework of the causality relationship between current and financial accounts. Capital inflows caused the current account deficit to rise to a very high level, which after a while created significant risks for foreign investors. When foreign capital inflows to developing countries were suddenly abandoned a major liquidity crisis resulted and the real sector faced major problems (Alp 2000: 233–247). Thus, the arguments raised in studies of the financial crises caused by financial liberalisation in developing countries have been developed within the framework of a causality relationship that moves from financial account to current account. Calvo et al. (1992) find that the financial capital that entered Latin American countries during the 1990s caused significant deficits in the current account by appreciating domestic currencies. Thus, a deteriorating

current account balance led to devaluation expectations and consequently, with the deterioration of the financial balances, to the banking crises. Similarly, Fernandez-Arias & Montiel (1996) determine that even if capital inflows to developing countries create economic expansion and prosperity, consequently the risks caused by the rise in the current account deficit cause the foreign capital to escape, resulting in economic crisis and shrinkage. Yentürk (1999) draws attention to the large number of capital inflows to Turkey during the 1990s and points out that these led to current account deficits due to public deficits and caused great economic instability. Yeldan (2008) also emphasizes that the main cause of the 1994 and 2001 crises in Turkey was the high amount of foreign capital inflows experienced after 1989. Accordingly, exchange rate fluctuations caused by capital inflows during the crisis periods caused unsustainable deficits in the current account.

As can be seen from the literature, many studies have been conducted on the causality between current and financial accounts. The link has even been analysed within the framework of determining the dynamics of the economic crisis. Pure cross-country evidence on the causal relationship between capital account and financial account is summarized in Table 1.

Table 1: Pure Cross-Country Evidence on the Causal Relationship between Capital Account (CA) and Financial Account (FC)

Study	Sample	Method	Key Finding
Yan (2005)	Quarterly data for Argentina, Mexico, Indonesia, & Thailand for the period 1989–2004	Granger causality test	FA→CA
Lau and Fu (2011)	Quarterly data for 4 Asian countries over the period 1987–2006	Johansen Coint. and Granger Causality Test	CA→FA
Mastroyiannis (2012)	Quarterly data for Portugal covering the period 1980–2009.	Granger causality test	FA→CA

Gürsoy and Yılancı (2013)	Quarterly data for Central Eastern European countries for the period 2002–2010	Panel causality test of Emirmahmutoğlu and Köse	CA→FA
Akbaş et. al (2014)	Quarterly data for 40 emerging countries for the period 1990–2011	Granger panel causality test	FA→CA
Oeking and Zwick (2015)	Quarterly data for 23 OECD countries during the period 1990–2013	Granger panel causality test	CA→FA
Garg and Prabheesh (2015)	Quarterly data for India covering the period 1990–2011.	Modified Wald Granger Causality Test	FA→CA
Yalta and Sağlam (2016)	Quarterly data for 19 emerging countries for the period 1980–2009	Dynamic panel causality test	FA→CA
Turan and Karakaş (2016)	Quarterly data for Turkey over the period 1998–2014	Toda-Yamamato and Hatemi-J causality test	FA→CA
Urbanovsky (2017)	Quarterly data for Czech Repub. for the period 1995–2015.	Johansen Cointeg. and ECM	CA→FA
Tüzemen and Tüzemen (2018)	Quarterly data for Turkey over the period 2002–2017	Toda-Yamamato and Hatemi-J causality test	FA→CA
Gümüşoğlu and Alçın (2019)	Quarterly data for Turkey over the period 1998–2015	VAR Model	FA→CA

3. DATA SET AND METHODOLOGY

Within the framework of the discussion indicated above, our study aims to determine the direction of the causal relationship between current and financial accounts in Turkey's economy, whether from capital account to financial account or from financial account to capital account.

By utilizing quarterly data for the period 2002–2018, we investigate the linkage between financial account and current account for the Turkish economy. The financial account data consists of Foreign Direct Investment (FDI), Portfolio Investment (PI), and Other Investment (OI). The financial account and current account data used for the detailed analysis of the balance of payments is from the Electronic Data Distribution System of the Central Bank of the Republic of Turkey. Both series are adjusted for seasonal and calendar effects using the X-12 methodology and are expressed in US$.

Table 2 briefly introduces the descriptive statistics. It is striking that the standard deviations of both series display high variance due to the considerable difference between corresponding maximum and minimum values.

Table 2: Descriptive Statistics

Variable	CA	FA
Number of Observations	68	68
Mean	–8475.73	9758.63
Maximum	2174.00	27582.00
Minimum	–22681.00	148.00
Standard Deviation	5822.27	7194.86

Note: CA: Current Account, FA: Financial Account.

To investigate the interplay between the current and financial account in Turkey we conduct the cointegration test developed by Johansen (1988), Johansen and Juselius (1990), and Johansen (1995). The Johansen cointegration test suggests that there are multi-cointegrated vectors between the variables, assuming all variables to be determined endogenously. The model is constructed with the matrix notation in the following form:

$$M_t = A_1 M_{t-1} + A_2 M_{t-2} + \ldots + A_p M_{t-p} + \varepsilon_t \quad (1)$$

where M_t is the vector matrix of the independent variables and ε_t denotes the disturbance term with zero mean and constant variance. From Equation 1, the vector error correction (VEC) model can be written in the following form:

$$\Delta M_t = \sum_{i=2}^{p} \gamma_{i-1} \Delta M_{t-i+1} + \Pi M_{t-1} + \varepsilon_t \quad (2)$$

where i=1,2,…, p denotes the lag length, $\gamma_i = -(I - A_1 - A_2 - \ldots - A_i)$ and $\Pi = -(I - \Pi_1 - \Pi_2 - \ldots - \Pi_i)$ denote the short-run and long-run parameters respectively. The parameter Π can be expressed by decomposing it into two parts as $\Pi = \alpha\beta'$ where β' denotes the long-run coefficient and α denotes the adjustment coefficient of the long-run parameter. If rank $(\Pi) = p$, then the process of the vector matrix is stationary. However, if rank $(\Pi) = r < p$, then there is r stationarity and linear combinations do exist in the long run.

Before employing the Johansen cointegration test we check the stationarity status of the vector M_t that requires that the variables should be integrated at I (1). We employ the augmented Dickey-Fuller unit root (ADF) test developed by Dickey-Fuller (1981) to check for the stationarity of the variables. In the next step we estimate the Vector Autoregression (VAR) model to figure out the appropriate lag order when employing the cointegration test. By incorporating Likelihood Ratio (LR), Final Prediction Error (FPE), Akaike Information Criterion (AIC), Schwarz Information Criterion (SIC), and Hanna-Quinn (HQ), the optimal lag length is selected under which there are no serial correlation and heteroskedasticity problems besides the normal distribution of standard errors. Johansen's approach may also require making assumptions regarding the trend. Hence, the appropriate test method under AIC and SIC is selected by making assumptions regarding the trend in five cases. As suggested by Johansen (1995), cases 1 and 2 do not include deterministic trends in the level data, while case 2 includes an intercept in the cointegrating equations. Cases 3 and 4 have linear trends and intercepts in the level data, whereas case 4 has a linear trend and intercept in the cointegrating equations while case 3 has only an intercept in cointegrating equations. Finally, case 5 includes quadratic trends in the level data,

whereas cointegrating equations include linear trends. The decision is made by selecting any case that satisfies the minimum value of the AIC or SIC.

To discover the long-run interplay between the variables we conduct the Johansen cointegration test in which cointegrated vectors of the matrix Π are also identified. Two types of test are used to estimate the cointegrated vector numbers, namely trace statistics and maximum Eigenvalue statistics, which are estimated in the following form (Johansen and Juselius 1990: 177_178):

$$\lambda_{trace(r)} = -n \sum_{i=r+1}^{n} ln\left(1-\hat{\lambda}_i\right) \tag{3}$$

$$\lambda_{max(r,r+1)} = -n \sum_{i=r+1}^{n} ln\left(1-\hat{\lambda}_{r+1}\right) \tag{4}$$

Both statistics are used to test the null hypothesis of no cointegrating equations over the alternative, which is that there exists at least one cointegrating equation. If the calculated test statistics exceed the critical values, then the null hypotheses are rejected. Thus, a long-run relationship between the variables exists, i.e., the variables are cointegrated.

After deciding the cointegration relationship between the variables, the short-run dynamics are investigated by estimating the VEC model using Equation 2 in the following form:

$$\Delta M_t = \sum_{i=2}^{p} \gamma_{i-1} \Delta M_{t-i+1} + \alpha(\beta' M_{t-1}) + \varepsilon_t \tag{5}$$

where $\beta' M_{t-1}$ is the vector error correction term that includes (*m-1*) vectors by which the deviations tangle in the vector matrix. In the context of the VEC model we also check for the exogeneity/endogeneity of the variables by performing the block Wald weak exogeneity test. The test is employed on the α parameter and the hypothesis testing is performed by restraining the relevant coefficients of the α parameter. If the null hypothesis cannot be accepted, then the variables are regarded as endogenously determined.

4. EMPIRICAL RESULTS

Our empirical analysis commences by checking the stationarity status of the variables used to investigate the nexus between financial account and current account by employing the ADF-type unit root test developed by Dickey and Fuller (1981). Table 3 reports the results, which confirm that both series become stationary by taking the first-differenced form, i.e., I (1). Hence, the null hypothesis of the presence of a unit root is rejected for both series after taking the first differences at the 1% significance level. This result leads us to identify the long-run patterns of both series by employing the cointegration test proposed by Johansen (1988) in which the series are necessarily integrated at the same order, i.e., at I (1).

Table 3: ADF Unit Root Test

Variable	ADF test	ADF test (Trend)	Decision
FA_t	–2.098 [0.245]	–2.495 [0.329]	Non-stationary
CA_t	–2.019 [0.248]	–1.090 [0.921]	Non-stationary
ΔFA_t	–11.813[0.000]*	–11.718 [0.000]*	I(1)
ΔCA_t	–3.538 [0.010]**	–3.952 [0.015]**	I(1)

Notes: * and ** denote 1% and 5% significance levels respectively. Δ denotes the first difference. AIC is used for selecting the optimal lag length. Probability values are shown in brackets.

Based on the vector autoregression (VAR) technique, Johansen's (1988) methodology requires that all the variables are endogenously determined. In this context we initiate the VAR model to decide the optimal lag length by employing Johansen's (1988) test and Table 4 reports the results for the optimal lag order. Since we incorporate the quarterly data, the maximum lag length is selected to be 4. Three criteria out of five show that the optimal lag order should be four when employing Johansen's (1988) cointegration test.

Table 4: Lag Order Selection

Lag	Log likelihood	LR	FPE	AIC	SIC	HQ
1	−872.796	NA	0.027	27.399	27.534*	27.453*
2	−872.410	0.722	0.035	27.512	27.782	27.619
3	−869.284	5.667	0.031	27.540	27.944	27.699
4	−856.367	22.604*	0.023*	27.261*	27.801	27.474

Notes: * denotes the selected appropriate criterion that ensures no autocorrelation or heteroskedasticity problems. LR: Likelihood Ratio; FPE: Final Prediction Error; AIC: Akaike Information Criterion; SIC: Schwarz Information Criterion; HQ: Hanna-Quinn.

After detecting the optimal lag order for the cointegration test we tailor the appropriate trend assumption to carry out the analysis rigorously. By using the AIC and SIC, the selection of the correct form is based on five cases in which there exist various assumptions regarding the deterministic trend and intercept. Table 5 displays the corresponding results. The results reveal that case 2, in which the cointegrating equations have only a restricted constant and no deterministic trend, is selected for bearing the minimum value of each criterion according to rank number.

Table 5: Selection of Cointegration Model

AIC by Rank and Case					
Rank	Case 1	Case 2	Case 3	Case 4	Case 5
0	27.004	27.004	27.056	27.056	27.098
1	26.963	26.925*	26.952	26.983	27.007
2	27.080	27.028	27.028	27.086	27.086
SIC by Rank and Case					
Rank	Case 1	Case 2	Case 3	Case 4	Case 5
0	27.643	27.640	27.668	27.668	27.779
1	27.548*	27.548*	27.701	27.766	27.823
2	27.896	27.912	27.912	28.038	28.038

Notes: * denotes the selection of appropriate model.

Having decided on the correct form, we proceed to the Johansen (1988) cointegration test to determine the long-run interaction between the variables. The upper segment of Table 6 is devoted to the trace statistics and the lower segment to the maximum eigenvalue statistics. The null hypothesis of no

cointegration between the variables is tested over its alternative and the results of both statistics reveal that there is one cointegrating equation at the 5% significance level. This means that there is at least one long-run relationship between these variables.

Table 6: Johansen Cointegration Test

Trace Statistics			
# of Co-integrations	λ_{trace}	% 5 Critical Value	p-value[a]
None*	17.775	15.494	0.022
At most 1	3.259	3.841	0.071
Maximum Eigen Value Statistics			
# of Co-integrations	$\lambda_{maximum}$	% 5 Critical Value	p-value[a]
None*	14.516	14.264	0.045
At most 1	3.259	3.841	0.071

Notes: * denotes rejection of the null hypothesis at the 5% level. [a] denotes MacKinnon-Haug-Michelis (1999) p-values.

After confirming the cointegration, the long-run relationship is assessed by estimating normalised cointegrating vectors. The estimated vector is normalised by multiplying the relevant endogenous variable by its reverse value. Table 7 shows the long-run parameter estimates of the normalised coefficients and unrestricted coefficients of each variable. Since both variables are endogenously determined, we report the normalised cointegrating coefficients by considering each variable as the dependent variable individually. Model 1 denotes that normalisation is conducted on the current account, whereas Model 2 denotes normalisation on the financial account. In Model 1 the coefficient of the financial account is –1.307, indicating that a 1% rise in capital flows results in a 1.5 % fall in the current account deficit. Model 2 shows the normalisation on financial accounts, in which the coefficient of the current account is –0.764 and statistically significant at the 5% level. Hence, a 1% rise in current account deficit leads to a rise in capital inflows of less than 1%.

Table 7: Long-Run Coefficient Estimates

	CA_t	FA_t
Model 1	1.000	–1.307*(0.020)
Model 2	–0.764*(0.137)	1.000

Notes: * denotes a 1% significance level. Standard errors are shown in parenthesis.

In the next step we investigate the short-run dynamics between the variables using the VEC model. However, before investigating the short-run dynamics we need to investigate whether the variables included in the empirical analysis are exogenously or endogenously determined. To do this we perform a block exogeneity test, and the results are reported in Table 8. They show that the null hypotheses regarding the exogeneity of each variable is not accepted since the corresponding test statistics are statistically significant at the 5% and 10% levels. Thus, there is an interplay between these variables in the long run and both variables are endogenously determined.

Table 8: Block Exogeneity Test

Variable	χ^2-statistic	p-value
FA_t	12.432	0.014**
CA_t	8.283	0.081***

Notes: ** and *** denote 5% and 10% significance levels respectively.

In order to capture the short-run dynamics of the variables we perform the VEC model. As both variables are endogenously determined and cointegrated in the long run, the VEC model is estimated individually by considering each variable as a dependent variable. Table 9 displays the results of the VEC (4) model.

Table 9: Vector Error Correction Model

	Dependent Variable: ΔCA_t	Dependent Variable: ΔFA_t
ECT_t	–0.461(0.180)*	–0.326(0.103)*
ΔCA_{t-1}	0.223(0.051)*	–0.118(0.334)
ΔCA_{t-2}	–0.068(0.158)	0.422(0.327)
ΔCA_{t-3}	–0.417(0.427)	0.585(0.305)
ΔCA_{t-4}	–0.468(0.463)	–0.163(0.295)
ΔFA_{t-1}	0.227(0.037)*	0.699(0.199)*
ΔFA_{t-2}	0.135(0.013)*	0.513(0.177)*
ΔFA_{t-3}	0.012(0.084)	0.313(0.206)
ΔFA_{t-4}	–0.068(0.158)	–0.024(0.273)
Diagnostic Check		
R^2	0.61	0.47
Adjusted R^2	0.55	0.39
AIC	19.03	20.49
SIC	19.34	20.80
F-Statistics	10.81	6.03
Log Likelihood	–590.67	–636.60

Notes: * denotes 1% significance level.

In the estimation of the VEC model where the current account (CA) is a dependent variable, the coefficients of the first and second lags of the first-differentiated series of the financial account (FA) are statistically significant at the 1% significance level. These results show that the financial account (FA) has a positive impact on the current account (CA). However, in the estimation of the VEC model where the current account (FA) is a dependent variable, all lags of the first differentiated series of the current account (CA) are statistically insignificant. Thus, the estimation results do not yield any significant effect of the current account (CA) on the financial account (FA) in the short run.

To sum up, the empirical findings show a causal relationship from financial account (FA) to current account (CA) in Turkey. This result is similar to other research on developing countries. However, in our study – unlike in most other research – the causality relationship is determined separately for the short term and the long term. Thus, through a dynamic analysis it demonstrates that the

causality relationship from capital account to current account is valid in both the short and the long term.

5. CONCLUSION AND POLICY RECOMMENDATIONS

In today's increasingly globalised economies the interaction between current account and financial account has increased in importance. In particular, the direction of the causality relationship between capital and current account deficit is very important in determining whether or not the current account deficit arises from enlarged aggregate demand financed by capital inflows. This is of great importance when designing policies to prevent current account imbalances that result in economic crises. However, in the literature there is no consensus among economists regarding the direction of causality between current and financial accounts. One group of economists argues that the direction of causality is from the current account to the financial account, while another group of economists asserts that the causality direction is from the financial account to the current account.

In order to contribute to the above discussion, this study uses quarterly data for 2002–2018 in Turkey to analyse the direction of the causal relationship between current and financial accounts. The results of the Johansen Cointegration test show that there is a long-term relationship between the variables. In order to obtain the short-run relationship between capital and current accounts we employ the Vector Error Correction (VEC) model. The results indicate that the financial account has an impact on the current account but the current account does not have an impact on the financial account. Thus, the results of our study confirm the existence of a unidirectional causality relationship from the financial account to the current account in Turkey.

The findings of the study show that the basis of the current account imbalances experienced in Turkey arise from changes in financial capital flows. This means that financial capital inflows to Turkey create extra liquidity that stimulates domestic aggregate demand and deteriorates the current account balance. Therefore, the management of capital movement in Turkey and consequently regulation of financial capital flows is of vital importance in terms of providing a current account balance and thus macroeconomic stability. If capital flows are successfully managed, economic growth can be achieved consistently by the

opportunities provided by additional foreign financial resources. If control of capital inflows is lost, the country will inevitably face serious economic crises due to current account imbalances. Therefore, policymakers in Turkey should prioritise financial account management with the ultimate purpose of reducing the high current account deficit.

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