



Exchange Rate Private Sector Debt Nexus: Lessons from Turkish Experience¹

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Abstract: External debt stock of the private sector is increased from 2002 to 2018 in Turkey. In this period, Turkish Lira depreciated against foreign currencies. This study is investigated the relationship between real exchange rate and private sector external debt during the period 2002-2018 in Turkey. Auxiliary variables included in the model are LIBOR, domestic interest rates and real GDP. Application methods of the study are Delayed Distributed Autoregressive Model (ARDL) and Error Correction Model (ECM). Results of the study shows that, respectively domestic interest rate, LIBOR and exchange rate effective variables on the private sector external borrowing in the long term. Beside, exchange rate's effects on the private sector external debt is higher in the short term than long term. Other hand, there is no relationship between private sector external borrowing and domestic production in the short and long term.

Keywords: Private Sector External Borrowing, Real Exchange Rate, Borrowing, ARDL, ECM

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1. Introduction

Turkey has adopted the free financial market structure since 1989. In this process, external borrowing has also facilitated for both the public and private sectors. From 2002 onwards, the external borrowing of the private sector increased faster than the public sector. Due to the increase in the external borrowing of the private sector, the inadequacy of the financial system and the fact that the real sector is composed of small and medium-sized enterprises, it causes controversy in most economic circles. In particular, when the volatility of the exchange rate is high, it is argued that the possibility of the private sector to enter the financial narrows increases and this situation leads the economy to a fragile structure. On the other hand, the number of studies on this subject in the literature is low. Actually, debt crises in developing countries is a fundamental problem (Human Development Report, 2011). These countries have high external debt, instabil exchange rate and foreign trade deficit. These reasons were caused the economic and financial crises in the developing countries.

The purpose of the study is to examine the relationship between external debt of the private sector and exchange rate and thus to analyze the impact on the exchange rate of foreign borrowing. In addition, relations between private sector external borrowing and gross domestic product, domestic and foreign interest rates are also presented. In this context, the study aims to contribute to the literature on private

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sector external borrowing. Delayed Distributed Autoregressive Model (ARDL) and Error Correction Model (ECM) were used in the application phase. The structure of the model was analyzed by CUSUM and CUSUMQ Tests.

The study consists of six parts. The first part of the study contains the introduction. In the second part, information about the private sector external debt for the 2002-2018 period in Turkey is given. The third part of the study contains the literature review, the fourth part of the study contains the definition of variables, and the fifth part of the study includes the methods of application and findings. The study is completed with the conclusion section.

2. Private Sector External Debt in Turkey

Inflation targeting regime is being implemented since 2002 in Turkey. In the 2002-2008 period, inflation rates decreased and the economic growth rates remained positive (Süreççi Yamaçlı, 2017: 109). In this period, the external borrowing of the private sector was also high. Although the banking system has a stronger structure than the real sector in Turkey, private sector borrowing has been criticized in financial circles as a negative development for Turkey's economy. Table 1 shows that the external debt of the private sector in Turkey.

Table 1. External Debt of the Private Sector in Turkey (2002-2018)

Term	Short Term Stock (a) (Million USD)	Long Term Stock (b) (Million USD)	Private Sector Total External Debt Stock (a + b) (Million USD)	Total External Debt Stock (Public + Private) (Million USD)	Private Sector Total External Debt Burden*	Private Sector Total External Debt Stock / GDP
2002	13,854	29,212	43,066	129,600	0.33	0.18
2003	18,812	30,139	48,951	144,160	0.33	0.15
2004	27,076	36,993	64,069	161,147	0.39	0.16
2005	34,018	50,902	84,920	170,757	0.49	0.17
2006	38,540	82,302	120,842	208,107	0.58	0.22
2007	38,697	122,012	160,709	250,035	0.64	0.23
2008	47,390	141,142	188,532	280,932	0.67	0.24
2009	43,615	128,588	172,203	268,879	0.64	0.26
2010	71,389	119,746	191,135	291,809	0.65	0.25
2011	73,304	126,950	200,254	303,867	0.66	0.24
2012	88,079	140,477	228,556	339,667	0.67	0.26
2013	111,858	157,049	268,907	390,085	0.69	0.28
2014	113,390	168,703	282,093	402,286	0.70	0.30
2015	87,698	195,413	283,111	397,690	0.71	0.33
2016	90,826	207,941	298,767	421,434	0.71	0.33
2017	95,834	221,373	317,207	455,545	0.70	0.37
2018	87,877	210,516	298,393	444,878	0.68	0.38

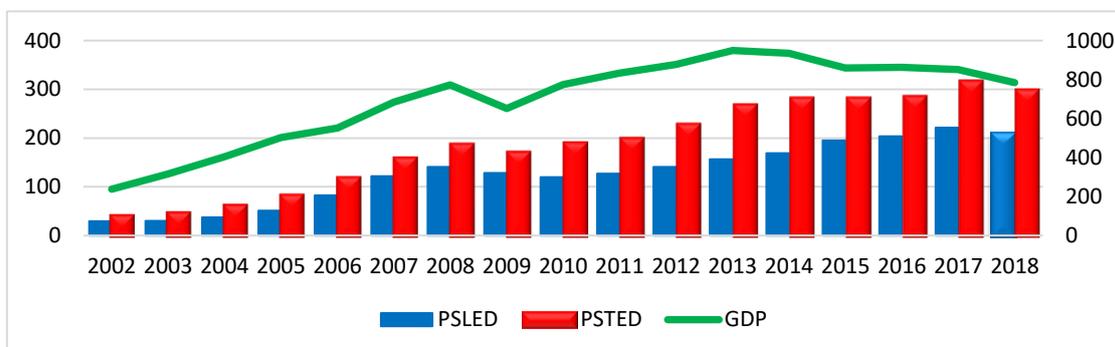
Note: Similar to the public debt burden, private sector external debt burden is calculated private sector external debt stock/total external debt stock. Private sector total external debt stock/GDP is an indicator as sustainability of debt burden of the private sector which is used by the World Bank, the IMF and the European Union for the public sector's sustainability of debt indicator.

Source: Central Bank of the Republic of Turkey, Statistical Data (EVDS), <https://evds2.tcmb.gov.tr/index.php?/>

According to Table 1, total external debt stock of the private sector was 43,066 million dollars in 2002. The share of private sector external debt stock in total external debt stock was rised from 49% to 67% in 2005-2008 period. Except for 2009 and 2018 years, it continued to increase for all other period. Private sector long-term external debt stock increased more than the short-term in the period of 2002-2018. On the other hand, private sector external debt burden was rised in this period, except in 2009, 2017 and 2018

years. Sustainability of the private sector external debt burden is 18% in the first years of the period and later it increased to 38% in 2018. Chart 1 shows that the ratio of private sector external debt/GDP and the trend variables in Turkey in 2002-2018 period.

Chart 1. Private Sector External Debt Stock and GDP in 2002-2018

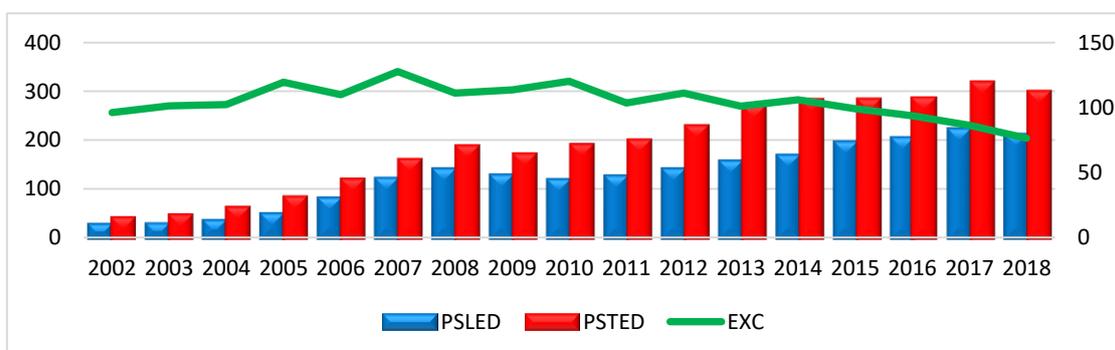


PSLED: Private Sector Long-Term External Debt Stock (Billion USD), PSTED: Private Sector Total External Debt Stock (Billion USD), GDP: Gross Domestic Product (Billion USD)

Source: Central Bank of the Republic of Turkey, Statistical Data (EVDS), <https://evds2.tcmb.gov.tr/index.php?/>

Chart 1 shows that there may a similar trend between private sector external debt and economic growth, but not clear. When GDP decreases, external debt stock increase 2014-2017 period in Turkey. In the 2002-2018 period, Turkey's private sector external debt stock and real exchange rate are presented in Chart 2.

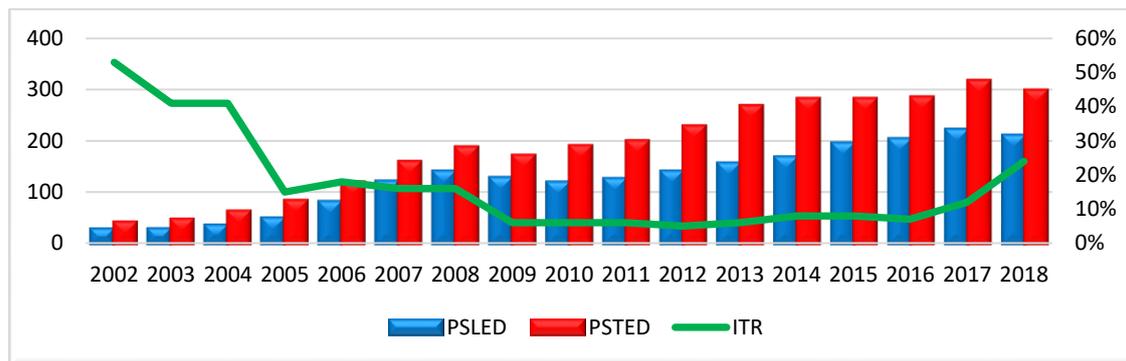
Chart 2. Private Sector External Debt Stock and Real Exchange Rate in 2002-2018



PSLED: Private Sector Long-Term External Debt Stock (Billion USD), PSTED: Private Sector Total External Debt Stock (Billion USD), EXC: Real Effective Exchange Rate Index

Source: Central Bank of the Republic of Turkey, Statistical Data (EVDS), <https://evds2.tcmb.gov.tr/index.php?/>

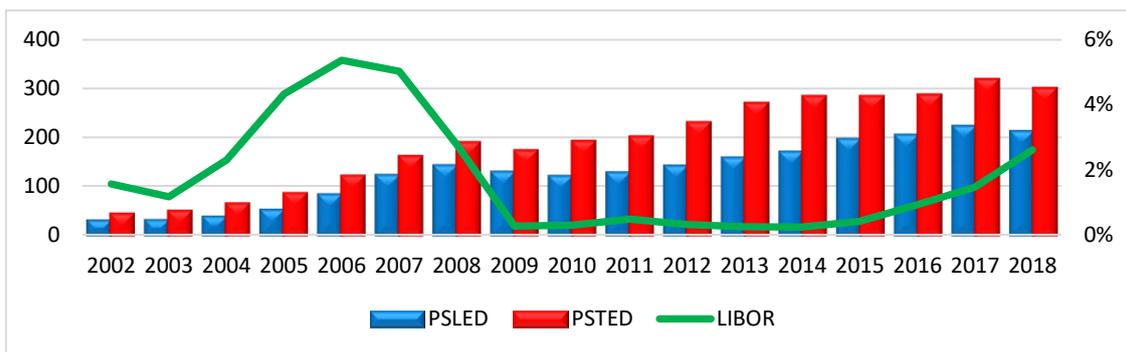
In Chart 2, EXC is identified real effective exchange rate which is based CPI and calculated CBRT (<https://www.tcmb.gov.tr/wps/wcm/connect/65b5812f-f1cd-4cb9-8ca6a978c77f74f4/REERMtadata.pdf?MOD=AJPERES&CACHEID=ROOTWORKSPACE-65b5812f-f1cd-4cb9-8ca6-a978c77f74f4-mBdDyZm>). If the EXC is increasing, the Turkish Lira is gaining value, if the EXC is running low, the Turkish Lira is losing value. With reference to this, exchange rate volatility is high in this period in Turkey and Turkish Lira has been losing value in these periods. Besides, there is a negative trend between real effective exchange rate index and private sector external borrowing. When we compare the two variables in terms of overall trends; there is a negative trend between real effective exchange rate index and private sector external borrowing. In Turkey, domestic interest rates and private sector external debt burden tendency is presented in Chart 3.

Chart 3. Private Sector External Debt Stock and Domestic Interest Rate in 2002-2018

PSLED: Private Sector Long-Term External Debt Stock (Billion USD), PSTED: Private Sector Total External Debt Stock (Billion USD), ITR: Domestic Interest Rate

Source: Central Bank of the Republic of Turkey, Statistical Data (EVDS), <https://evds2.tcmb.gov.tr/index.php?/>

Turkey in 2002, the interest rate was at the level of 53.5%, showed a decline in 2015 and fell below 10%. However, it rose again in 2016-2018 period. As of 2018, the interest rate is 24%. Turkey's private sector external debt and foreign interest rates (LIBOR) have been presented at Chart 4.

Chart 4. Private Sector External Debt Stock and Overseas Interest Rate in 2002-2018

PSLED: Private Sector Long-Term External Debt Stock (Billion USD), PSTED: Private Sector Total External Debt Stock (Billion USD), LIBOR: International Interest Rate.

Source: Central Bank of the Republic of Turkey, Statistical Data (EVDS), <https://evds2.tcmb.gov.tr/index.php?/> and Global-Rates, <https://www.global-rates.com/interest-rates/libor/libor.aspx>.

According to the Chart 4, the relationship between private sector external debt indicators and LIBOR is not clear. For example, in 2002-2003 period, LIBOR decreased, while external borrowing increased; however, while LIBOR increased in 2003-2006 period, foreign borrowing increased. This may be due to higher domestic borrowing interest rate of LIBOR in Turkey.

3. Literature

In the literature, the studies examining the external borrowing of the private sector are limited. In one of them, Edo (2002) examined between the total external debt stock, foreign trade balance, internal savings, public spending, LIBOR relationship, using the Ordinary Least Squares method, for 1980-1999 period in Morocco and Nigeria. As a result of the study; positive outlook between foreign borrowing and LIBOR and public expenditures; It was determined that there is a negative relationship between external borrowing and payments balance and domestic savings.

Küçüksu (2008) examined the relationship between real sector external debt stock and foreign exchange deposits accounts of the real sector in domestic banks, export, import, inflation, exchange rate, domestic interest rate using the Ordinary Least Squares method and Multiple Regression model for 2001-2007 period in Turkey. As a result of the study; there is a negative correlation between real sector external borrowing and foreign exchange deposits accounts of the real sector in domestic banks, export, import, inflation, exchange rate, domestic interest rate. In another study, Zafar and Butt (2008) examined the relationship between external debt stock and trade liberalization, import to GDP ratio, export to GDP ratio, exchange rate using the Autoregressive Distributed Lag (ARDL) Method and Error Correction Method (ECM) for the 1972-2007 period in Pakistan. In the result of study, positive relation between external debt stock and trade liberalization, export to GDP ratio; It was determined that there is a negative relationship between external borrowing and exchange rate, import to GDP ratio.

Hallak (2009) examined private sector external borrowing for developing countries South Korea and Iceland. In the results of study, financial stability is effective in private sector external borrowing. There is a negative relationship between private sector external debt stock and investments, whereas there is a positive correlation between economic growth, openness ratio, inflation and debt service / export.

Akkaya (2010) examined private sector external borrowing for the period 1970-2009 in developing countries and Turkey, It was stated that the external debt stock increased as a result of the private sector applying to working capital and speculative external borrowing. Malik, Hayat and Hayat (2010) examined the relationship between the economic growth rate and total external debt stock using the Ordinary Least Square method for the 1972-2005 period in Pakistan. In the results of study, there is a negative relationship between total external debt stock and economic growth rate.

In the study conducted by Dücan and Bakan (2015), the relationship between the private sector short-term external debt stock and import, export, industrial production index was examined by VAR Model and Granger Causality Analysis. As a result of the study, it is observed that the private sector short-term external debt stock is the reason for imports and exports. Abdullahi, Abu Bakar and Hassan (2015) examined the relationship between total external debt stock and exchange rate, savings, budget deficit, interest rate using the Autoregressive distributed lag (ARDL) method, Error Correction Method and Granger Causality Analysis for 1980-2013 period in Nigeria. As a result of the study, there is a positive effect savings on the total external debt and a negative effect for the exchange rate, budget deficit, interest rate variables on the external debt. Korkmaz (2015) examined relation between external debt and economic growth using the VAR method for the 2003:1-2014:3 period in Turkey. In the result of study, there is a unidirectional causality between external debts and economic growth. In another study, for the 1970-2013 period in Malaysia, Lau, Lee and Arip (2015) examined the relationship between total external debt stock, GDP, real interest rate, inflation and money supply/ international reserves using the Johansen Cointegration Analysis and Granger Causality Analysis. As a result of the study, the respectively money supply/ international reserves and GDP are effective on the total external debt stock in the long term. Beside, the inflation effects on the total external debt stock in the short term.

In the study by Brzozowski and Siwińska - Gorzelak (2016), the relationship between public and private sector external debt stock for the developing 48 countries was examined using the VAR Model. In the results of study, it was determined that public external debt hampered the external borrowing of the private sector. On the other hand, private sector external debt stock positively affected public external debt. In addition, it is stated that economic growth has a significant effect on both the public and private sector external debt stock. In another study, Al-Fawwaz (2016) examined relationship between the total external debt stock and trade openness, term of trade, exchange rate, and GDP (gross domestic product per capita) using the Autoregressive Distributed Lag (ARDL) Method for the 1990-2014 period in Jordan. As a result of the analysis, there is a positive effect trade variable on the external debt in the long run and a negative effect for the GDP variable on the external debt in the short term.

Dayar and Sandalcı (2017) observed that exports and private sector fixed capital investments increased during the years 2002-2015 in the years when private sector borrowing increased. In addition, it is

stated that growth grew from the private sector. In another study, for the 2002-2015 period in Turkey, Ducan (2017) examined the relationship between private sector long-term foreign debt, import, exports and industrial production index using the VAR and Johansen Cointegration Analysis. There is a statistically significant positive relationship between the long-term external debt of the private sector, export and industrial production index. In the study by Sarısoy, Beşer and Öztürk (2017), the relationship between private sector external borrowing and foreign direct investment, real GDP, budget balance, official foreign exchange reserve was examined using the Panel Data approach for the 2000-period in 70 countries. In the results of study, there is a negative relationship between private sector external debt stock and foreign direct investment. Beside, there is a positive relationship between private sector external debt stock and economic growth, budget balance, official foreign exchange reserve.

Çevik, Kırıcı and Yüksel (2018) evaluated the private sector external debt in Turkey in 1989-2017 years. Turkey's foreign debt burden compared to domestic debt burden is at a higher level and after 2007, determined that he had shifted over to increase the share of private sector external debt burden. In the study by Aypek and Erener (2018), the relationship between net foreign debt and exchange rate was examined using the Granger Causality Analysis for the 2005:1-2017:6 period in Turkey. In the results of analysis, the foreign exchange rate is effective on the net foreign debt stock in the long run.

In another study, for the 1980-2016 period in Turkey, Karayılmazlar and Özgün (2019) examined the relationship between external debts and savings using Autoregressive Distributed Lag (ARDL) Bound testing approach. As a result of the study, it is seen that there is a negative relationship between savings and external debt.

In this study we have investigated the effect of real exchange rate on the private sector external borrowing a period when inflation targeting regime is carried out in Turkey. The possible effects of domestic product, exchange rate, domestic and foreign interest rate on private sector borrowing are also discussed.

4. Defining Variables and Economic Prospects

The dependent variable of the study is private sector external debt stock. In recent years, the private sector has turned to foreign borrowing, despite the exchange rate increase. Does the appreciation of the Turkish Lira lead the private sector to external borrowing? The aim of this study is to explain the relationship between foreign borrowing and exchange rate. In addition, the effects of domestic and foreign interest rates and real GDP on private sector external borrowing were also evaluated. Information about the dependent and independent variables was presented in Table 2.

Table 2. Identification of Variables

Variables	Descriptions	Sources
RPLDS	Private Sector Long-Term Real External Debt Stock	Central Bank of the Republic of Turkey, Electronic Data Distribution System (EVDS).
RGDP	Real Gross Domestic Product	Central Bank of the Republic of Turkey, Electronic Data Distribution System (EVDS).
REXC	Real Effective Exchange Rate	Central Bank of the Republic of Turkey, Electronic Data Distribution System (EVDS).
ITR	Domestic Interest Rate	Central Bank of the Republic of Turkey, Electronic Data Distribution System (EVDS).
LIBOR	International (Foreign) Interest Rate (London Interbank Offered Rate)	Global-Rates, https://www.global-rates.com/interest-rates/libor/libor.aspx

According to the economic expectations, the direction of the relationship between private sector external debt, exchange rate and domestic interest rate are positive, external debt and LIBOR are negative. In the literature, relationship between private sector external debt and domestic product is not clear. Its sign can be positive or negative.

5. Methods and Results

Study is examined the relationship between real exchange rate and private sector external debt the period of 2000-2018 in Turkey using Autoregressive Distributed Lag Model and Error Correction Model. All variables are seasonally adjusted by Moving Average Method. Augmented Dickey-Fuller (ADF) test was used to determine stationary levels of variables.

The Dickey-Fuller (Augmented Dickey Fuller-ADF) Test, which was developed by Dickey-Fuller in 1981, involves regressing the lagged differences of the variable with its own delayed value (Gujarati, 2016: 88).

Hypothesis of Unit Root Test is as follows:

H0: $\rho \geq 1$ (Series is not stationary, unit has root)

H1: $\rho < 1$ (Series is stationary)

For the implementation of the Dickey-Fuller test, there should be no problem of autocorrelation and changing variance in error terms (Enders, 2010: 215). The number of delay was determined according to the Akaike and Schwarz Information Criteria.

At the ADF test, a constant-free and non-trendless state (1) number is shown with the equation (2) with fixed term and no trend (2) and with constant equation and the trend (2), respectively (Tari, 2014: 389):

$$\Delta y_t = \delta y_{t-1} + \varepsilon_t \quad (1)$$

$$\Delta y_t = \mu + \delta y_{t-1} + \varepsilon_t \quad (2)$$

$$\Delta y_t = \mu + \beta t + \delta y_{t-1} + \varepsilon_t \quad (3)$$

$$\Delta y_t = \mu + \beta t + \delta y_{t-1} + \sum_{i=1}^k a_i \Delta y_{t-i} + \varepsilon_t \quad (4)$$

As a result of the fact that the variables have different stability levels, ARDL (Auto-Regressive Distribution Lag) is determined as the application method. ARDL was developed by Pesaran, Shin and Smith in 2001 (Pesaran, Shin and Smith, 2001). ARDL is a model used to test causality relationships of short and long term series and can be used in small samples. It is possible to determine the integration relation of the variables that have different integration levels as a result of the unit root tests applied to the time series of variables to be included in ARDL Analysis. The results of unit root tests can be studied with ARDL analysis if they are stable at level and first difference. The application of ARDL analysis consists of three stages: In the first phase, the existence of a long-term (cointegration) relationship between variables is investigated. Under the assumption of cointegration relationship, long-term and short-term elasticities are determined in the second stage.

Table 3 presents the stability levels of variables, depending on the extended rootey-test result of the Dickey-Fuller (ADF) unit.

Table 3. Extended Dickey-Fuller (ADF) Test Statistics

Variables	Level / First Difference	Fixed	Trend and Fixed	Result
RPLDSSA	Level	0.3815	0.9260	I(1)
	First Difference	0.0075	0.0144	
REXCSEA	Level	0.4170	0.4434	I(1)
	First Difference	0.0000	0.0000	
RGDPSEA	Level	0.4335	0.1611	I(1)
	First Difference	0.0000	0.0000	
ITR	Level	0.0182	0.8303	I(0)
LIBOR	Level	0.0350	0.0486	I(0)

According to the results of the ADF test, the stability levels of the variables are different. The LIBOR and ITR variables are I(0); RPLDSSA, REXCSEA and RGDPSEA variables are the first difference. Therefore, ARDL analysis was used to determine the relationships between variables. ARDL Analysis can be applied at the I(0) or I(1) station level except that the variables are at different levels of stability, but I(2). The subject of the study was investigated based on the following function 5 and model 6:

$$RPLDSSA = f(RGDPSEA, REXCSEA, ITR, LIBOR) \tag{5}$$

$$\begin{aligned} \Delta RPLDSSA = & \gamma_1(RPLDSSA)_{t-1} + \gamma_2(RGDPSEA)_{t-1} + \gamma_3(REXCSEA)_{t-1} + \gamma_4(ITR)_{t-1} + \gamma_5(LIBOR)_{t-1} \\ & + \sum_{i=0}^m \gamma_6 \Delta(RPLDSSA)_{t-1} + \sum_{i=0}^m \gamma_7 \Delta(RGDPSEA)_{t-1} + \sum_{i=0}^m \gamma_8 \Delta(REXCSEA)_{t-1} + \sum_{i=0}^m \gamma_9 \Delta(ITR)_{t-1} \\ & + \sum_{i=0}^m \gamma_{10} \Delta(LIBOR)_{t-1} + u_t \end{aligned} \tag{6}$$

Firstly the lag length of the model is determined at the ARDL analysis. For determined of the lag length was used Akaike Information Criteria (AIC). According to AIC, the lag length is four periods. AIC results are presented in Table 4.

Table 4. AIC Model Selection Results

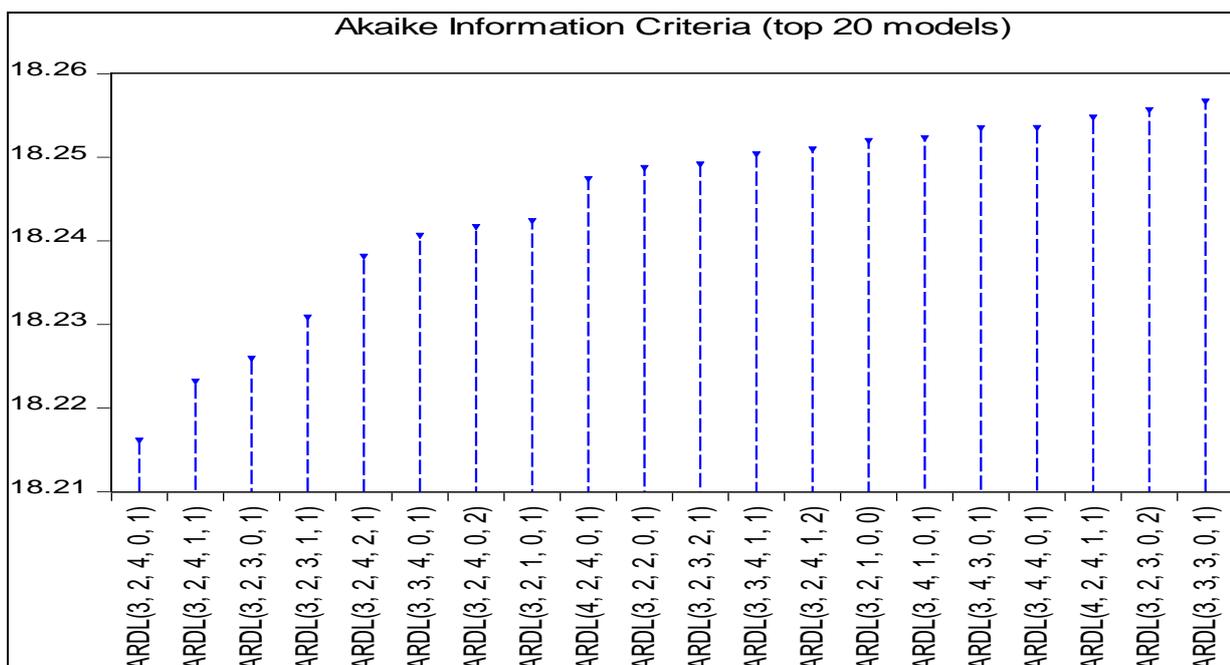


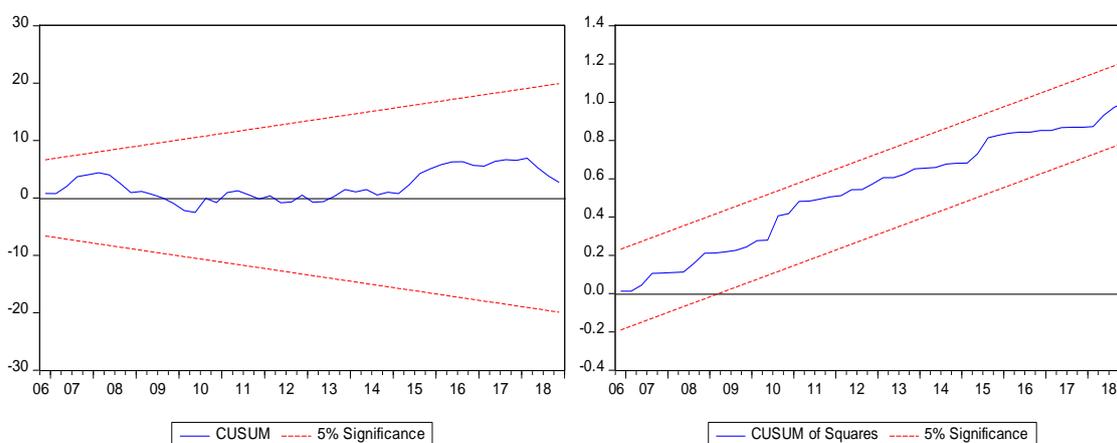
Table 5 shows that the variance and autocorrelation problems do not occur in the model with four period lag lengths, however the error term has a normal distribution.

Table 5. Results of the Tests of the Reliability of the Model

Breusch - Godfrey Autocorrelation LM Test, F-Statistics: 1.318 Possibility: 0.258;
 Breusch – Pagan - Godfrey Changing Variance Test, F-Statistics: 0.808 Possibility: 0.621;
 Jarqua - Bera Normality Test, JB: 3.320 Possibility: 0.190.

According to the results of the diagnostic tests performed for the model; it was determined that there is no error in autocorrelation problem and model building and it has a normal distribution. The results of CUSUM and CUSUMQ tests are presented in Table 6.

Table 6. Results of CUSUM and CUSUMQ Tests



CUSUM and CUSUMQ tests show that the model has a stable structure with a confidence interval of 5%. These results show that the model has a reliable structure. Table 7 shows the results of the ARDL Bound Test.

Table 7. ARDL Border Test Results

F-Coefficient of Statistics	Critical Values						Term k
	%1		%5		%10		
	Lower Boundar	Upper Boundary	Lower Boundary	Upper Boundary	Lower Boundary	Upper Boundary	
4.687	3.29	4.37	2.56	3.49	2.2	3.09	4

k refers to the number of arguments. H0 hypothesis for long term (cointegration), there is no long-term relationship between variables. H0 hypothesis was rejected because the calculated F statistic value was greater than the upper limit of 1%, 5% and 10% significance level. This result indicates the existence of a long-term relationship between variables. Table 8 presents the long-term relationship between the variables determined by ARDL Analysis.

Table 8. Long-Term Coefficients

Variable	Coefficient	Std. Error	t-statistic	Possibility
LIBOR	3513.404	1306.994	2.6881	0.0098
ITR	-1068.752	129.5617	-8.2489	0.0000
DRGDPSA	0.0002	0.0002	0.8710	0.3880
DREXCSA	1012.648	418.834	2.4177	0.0194
C	75146.66	2813.888	26.7056	0.0000

In Table 8, there is a statistically significant and positive relationship between private sector long-term real external debt stock and foreign interest rate and real exchange rate. There is a statistically significant and negative relationship between private sector external debt stock and domestic interest rate. This situation is thought to be due to the fact that the interest rates in the period have decreased but still higher than the foreign interest rates. On the other hand, there is no statistically significant relationship between private sector external debt stock and GDP. The cointegration equation of the model is presented in equation 7.

$$RPLDSSA = 75146.7 + 3513.4 \text{LIBOR} - 1068.8 \text{ITR} - 0.00 \text{DRGDPSA} + 1012.648 \text{DREXCSA} \quad (7)$$

Error Correction Model (ECM) results are presented in Table 9.

Table 9. Results of the Error Correction Model

Variable	Coefficient	Std. Error	t-statistic	Possibility
D(RPLDSSA(-1))	0.299194	0.108164	2.766100	0.0080
D(RGDPSA,2)	-382.8062	774.7671	-0.494092	0.6232
D(LIBOR)	-1534.091	809.7830	-1.894447	0.0641
D(LIBOR(-1))	-2372.982	892.4866	-2.658844	0.0106
D(ITR)	0.288309	66.35552	0.004345	0.9966
D(ITR(-1))	114.1675	75.39034	1.514352	0.1364
D(ITR(-2))	129.9409	71.51619	1.816944	0.0753
D(ITR(-3))	121.7382	68.81503	1.769064	0.0831
D(REXCSA,2)	93.80114	27.42147	3.420719	0.0013
EC (-1)*	-0.179606	0.027364	-6.563546	0.0000

Table 9 shows the statistical significance of the variables of the model at 10%, 5% and 1%, and short-term relationships between the variables. The ECM results can be summarized as follows: The fact that the coefficient of EC (-1) is (-0.17) indicates that the effect of the factor affecting the dependent variable will decrease by 0.17 percent in the next quarter period. For the private sector long-term real foreign debt stock, the coefficient determined for a period of delay is (0.29). A statistically insignificant relationship was found between the long-term real foreign debt stock of the private sector and the real gross domestic product as well as the real domestic interest rate variables. There is a negative and significant relationship between real foreign interest rate (LIBOR) variable and private sector long-term real foreign debt stock, which is statistically insignificant with the current period value and with a term delayed value. There is a statistically significant and positive relationship between private sector long-term real foreign debt stock and real exchange rate.

6. Conclusion

In the study were examined the causes of private sector external borrowing during 2002-2018 in Turkey. According to the results of the study, the foreign debt of the private sector and the exchange rate is positive, domestic interest rate is negatively corelated in the long term. In the short term, the effects of foreign exchange rates to the foreign debt is more than other variables. Findings that the exchange rate has a positive effect on the external debt stock in the short and long term is consistent with studies by Aybek and Erener (2018), Abdüllahi, Abu Bakar and Hassan (2015), and Küçüksu (2008). In addition, result of which positive relationship between the foreign interest rate and external debt in the long term, is compatible with the study of Edo (2002). Beside, result of domestic interest rates negatively affect external borrowing in the long term is compatible with studies by Abdüllahi, Abu Bakar and Hassan (2015), and Küçüksu (2008).

Finally, exchange rate is effective indicator for the private sector external borrowing both in the long and short term. As long as the value of Turkish Lira is rise, it can be said that the private sector will continue to borrow externally. Therefore, it is important that the Turkish Lira is stable and that domestic savings opportunities in favor of the private sector should be improved instead of external saving. Besides, the long-term effect of exchange rate is higher than short-term. The appreciation of the Turkish Lira affects foreign borrowing more in the short term. This short-term negative effect may increase economic instability. Therefore, the stabilization of the exchange rate is therefore very important. Therefore, results show that, there is no relationship between private sector external borrowing and domestic production. The change in domestic output does not affect private sector external borrowing.

End Notes

1. This paper was presented in the ICOAEF'19 Congress that executed on 9-11 April in Cyprus and then prepared by revising.

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