

# **The Behavior of Turkish Lira forward and Spot Foreign Exchange Rates**

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## **Abstract**

The purpose of this study is twofold; firstly, the behavior of Turkish lira (TRL) forward rates against US Dollar (USD) and Euro will be evaluated; whether the interest rate parity holds and the market participants quote the forward foreign exchange rates according to the interest rate differentials. It is also analyzed whether the forward foreign exchange rate coincides with the spot exchange rate at the relevant maturity. Secondly, the unbiased forward rate hypothesis (UFH) is tested by the use of regression method. The finding is that for TRL against USD and Euro, the forward rate is a biased predictor of the future spot rate. Going the same way with the previous researchers, the source of the bias is examined. The explanations set by early researchers for the finding of bias in the forward markets for different currencies have been generally based on two different sets of explanations. The first category of explanation maintains the assumption of rational expectations and interprets the systematic component of the forward market's prediction errors as a risk premium. The second category attributes the systematic component of the forward rate's prediction errors to expectation errors on the part of market participants that are themselves systematic.

**JEL classification numbers:** G14, G15

**Keywords:** Forward exchange rate, Spot exchange rate, rational expectations, Forward discount bias

## **1 Introduction**

Foreign currency forward contracts are used as a foreign currency hedge when an investor has an obligation to either make or take a foreign currency payment at some point in the future. This instrument helps investors manage the risk in the currency market by locking in the future exchange rate and date on which they will make a foreign exchange

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transaction. Thus, by using foreign exchange forward contracts, investors can protect costs on products and services purchased abroad, protect profit margins on products and services sold abroad and lock-in exchange rates.

The forward exchange rate is a contractual exchange rate established at the time of a foreign currency forward contract that will take place at the maturity time and usually regarded as the unbiased predictor of the future spot exchange rate. Under a rational expectations approach, the unbiased forward exchange rate hypothesis has been developed proposing that the forward foreign exchange rate is an unbiased predictor of the spot exchange rate. Most of the tests of the hypothesis resulted with the rejection and they generally agree on that the spot exchange rate moves on average in the opposite direction from what was predicted (Froot and Thaler, 1990) and this has been identified as the forward premium puzzle (Fama, 1984).

The findings of the bias in the forward markets for different currencies have been generally based on two different sets of explanations. The first category of explanation maintains the assumption of rational expectations and interprets the systematic component of the forward market's prediction errors as a risk premium. The second category attributes the systematic component of the forward rate's prediction errors to expectation errors on the part of market participants that are themselves systematic.

It is a fact that many of the tests of the unbiased forward exchange rate hypothesis focused on major developed country currencies. However in the last decade, some of the researchers turned their direction towards developing country currencies especially when making comparisons about the biasedness of the developing and developed country currencies. Bansal and Dahlquist (2000) tested the uncovered interest rate parity for 28 developed and developing country currencies and found that failure of the parity was confined to the developed country currency group. Similarly, Lee (2006) found UIP to hold comparatively better for emerging market currencies. The study of Frankel and Poonawala which was firstly originated in 2006 and focused on a comparison between currencies of developed countries and emergent ones and was revisited in 2010 by using the data of 1996-2004 period ended up with the interesting finding that the forward rates are not unbiased predictor of emerging market currencies and advanced country currencies as well, and the biasedness is more severe for advanced countries. (Frankel and Poonawala 2010, p.11) Another research realized by Lorey and Lucey published on August 2012, replicated firstly the results of Frankel and Poonawala, but when the period of analysis extended the result was contradictory (Lorey and Lucey, 2012). Turkish Lira was included in the analysis as one of the developing country currencies in all of the above mentioned studies except Lee (2006).

The purpose of this study is twofold; firstly, the behavior of Turkish lira (TRL) forward rates against US Dollar (USD) and Euro will be evaluated; whether the interest rate parity holds and the market participants quote the forward foreign exchange rates according to the interest rate differentials. It is also analyzed whether the forward foreign exchange rate coincides with the spot exchange rate at the relevant maturity. The aim is to provide something more than empirical comparisons, to give indication about the possibility of the success of the hedge of foreign exchange rate risk by the use of forward transactions. Secondly, the unbiased forward rate hypothesis (UFH) is tested by the use of regression method. The UFH argues that the forward rate "fully reflects" available information about the exchange rate expectations (Chiang 1986). There have been many empirical studies employing different currencies both in support of and opposing the unbiased forward rate hypothesis (UFH). The finding is that for TRL against USD and Euro, the forward rate is

a biased predictor of the future spot rate. Going the same way with the previous researchers, the source of the bias is examined.

The data set consist of spot and forward foreign exchange rates of TRL against USD and Euro with the maturities of 1, 3, 6, 9 and 12 months. Also, USD and TRL Interbank rates and EURIBOR for the relevant maturities are used. The set belongs to the period strating from July 2002 and runs into July 2012 and all of the data are gathered from Datastream of Thompson Reuters.

## 2 Literature Review

The Fisher hypothesis states that nominal interest rate differentials between purely similar assets that are denominated in different currencies can be explained by the expected change in the spot exchange rate between those currencies over the holding period (Fisher 1930). This is the expected consequence of the efficient markets as if this does not hold, then it means that there exists an opportunity for arbitrage. One can borrow in one country invest in another and at the maturity she can earn profit if the future spot foreign exchange rate between the currencies of two countries permits. The Fischer hypothesis can be formulized as the following:

$$\frac{(1+i_t)}{(1+i^*_t)} = \frac{E_t(S_{t+1})}{S_t} \quad (1)$$

$S_t$  is the spot exchange rate at time  $t$ , defined as the domestic currency price of foreign currency;  $i_t$  and  $i^*_t$  are one-period nominal interest rates at time  $t$  on domestic and foreign currency denominated assets, respectively; and let  $E_t(S_{t+1})$  denote the expected value of the spot exchange rate, conditional on all the information available at time  $t$ . These denotations will be used in the whole of this study with the additional ones explained when required.

Under a similar framework, the interest rate parity theorem proposes that short-term capital movements will ensure that the returns on two identical assets except for the currency of denomination will be equal when expressed in terms of the same currency after covering the exchange risk in the forward exchange market. The interest rate parity theorem can be formulated as the following:

$$\frac{(1+i_t)}{(1+i^*_t)} = \frac{F_{t+1}}{S_t} \quad (2)$$

As an addition to already defined denotations,  $F_t$  is the forward exchange rate set at time  $t$  for time  $t+1$  for the domestic currency against the other. The Fisher hypothesis and the interest parity theorem are not equivalent unless the forward exchange rate at time  $t$  is equal to the expected value at time  $t$  of the spot exchange rate that will prevail at time  $t + 1$ . This means that, under rational expectations and risk neutrality, the gain from borrowing a low interest rate currency and investing in a higher interest rate one will, in equilibrium, be matched by a equally large expected cost in form of depreciation of the high interest rate currency. However, the empirical literature, Bilson (1981), Fama (1984), Froot and Frankel (1989) and Burnside, Eichenbaum, and Rebelo (2007, 2009) among many others, systematically suggest the opposite. Both propositions are equivalent only if

the following equation holds:

$$F_t = E_t(S_{t+1}) \quad (3)$$

Although the Equation 3 is widely accepted and generally used in the market place, this does not mean that Equation 3 holds almost always. There exist too many studies on the test of the applicability of the Equation 3 and also several models explaining the difference of the quotations of the market participants and the proposed theorem.

### 3 Main Results

#### 3.1 Test of Interest Rate Parity

In order to test whether the interest rate parity holds for Turkish Lira against USD and Euro, two sets of time series data have been used; the first one is self-calculated forward exchange rates as proposed by the interest rate parity theorem (Equation 2) given the interest rates and spot exchange rates prevailing at the time of quotation. The second one is the forward exchange rates for TRL against USD and Euro rates as quoted by the market participants as gathered from Datastream. As the applicable interest rates for each currency pairs of TRL against USD and TRL versus Euro, the interbank interest rates and EURIBOR for the relevant maturity are used respectively for the period July 2002-July 2012. The null hypothesis are  $\mu_1 = \mu_2$  and  $\sigma_1 = \sigma_2$  and Table 1 shows the results of the hypothesis tests for five different maturities at 99% confidence level.

Table 1: Calculated versus Real-time Forward Foreign Exchange Rates of TRL against USD and Euro with maturities 1, 3, 6, 9 and 12 Months

	USD				EURO			
	Equal means		Equal variances		Equal means		Equal variances	
	t value	prob	f value	prob	t value	prob	F value	prob
1 month	1,0214	0,3082	1,0776	0,6983	0,5955	0,5522	0,8664	0,4570
3 months	2,7392	0,0067	1,2680	0,2189	1,7340	0,0843	0,6950	0,0599
6 months	4,6467	0,0000	1,7195	0,0052	3,5693	0,0004	0,5901	0,0065
9 months	6,1044	0,0000	2,6275	0,0000	5,5117	0,0000	1,5647	0,0208
12 months	6,8098	0,0000	0,2761	0,0000	7,1755	0,0000	0,8591	0,4314

Table 1 shows that the two sample which are the forward foreign exchange rates of TRL against USD quoted by the market participants as gathered from Datastream and the calculated forward rates as theory proposed have equal means and variances. This means that market participants use interbank interest rates for TRL and USD when determining their forward quotations for all the maturity brackets. This finding can also be considered as an indication of the rationality in determining the forward foreign exchange rate of TRL against USD. However, the situation is very different for the forward exchange rate of TRL against Euro. Referring to Table 1 it seems that for only 1 month maturity forward exchange rates, the means of the real-time and calculated rates have equal means and variances. There may exist two different explanations for the situation for longer

maturities than 1 month; firstly the calculation of the theoretically suggested forward exchange rates are done by using EURIBOR for the relevant maturities, may be the market participants employ a different reference interest rate set when determining their quotations. Second, the crisis environment in Euro financial markets which began in the late 2008 caused this divergence. However, realizing the same hypothesis tests on the data excluding the crisis time reveals no difference.

### 3.2 Forward Rates and the Spot Rates at the Maturity of the Forward

The forward foreign exchange transactions are basically performed in order to hedge foreign exchange rate risk of an existing exposure, but it can also be used for speculative purposes in order to gain from the future foreign exchange rate fluctuations. Whatever the reasoning to perform the transaction, the spot foreign exchange rate at the maturity of the forward is very deterministic. For hedging transactions, a future spot exchange rate which is divergent from the forward exchange rate means loss of possible gains in case the forward was not realized, a lesser amount to be received in exchange for the delivered currency. For speculative transactions, a divergent forward rate from the future spot rate directly results with loss. From another perspective, a divergent forward exchange rate from the future spot exchange rate reveals the fact that the former rate has limited predictive capacity. In this framework, the forward foreign exchange rates of TRL against USD and Euro and the relevant spot exchange rates at the maturity of the forward are evaluated for maturities of 1, 3, 6, 9 and 12 months. The null hypothesis are that both rates have the same means and variances ( $\mu_1 = \mu_2$  and  $\sigma_1 = \sigma_2$ ), Table 2 shows the results of the analysis at 99% confidence level.

Table 2: Forward Rates and the Spot Rates at the maturity of the Forward

	USD				EURO			
	Equal means		Equal variances		Equal means		Equal variances	
	t value	prob	f value	prob	t value	prob	F value	prob
1 month	1,0214	0,3082	1,0776	0,6983	0,5955	0,5522	0,8664	0,4570
3 months	2,7392	0,0067	1,2680	0,2189	1,7340	0,0843	0,6950	0,0599
6 months	4,6467	0,0000	1,7195	0,0052	3,5693	0,0004	0,5901	0,0065
9 months	6,1044	0,0000	2,6275	0,0000	5,5117	0,0000	1,5647	0,0208
12 months	6,8098	0,0000	0,2761	0,0000	7,1755	0,0000	0,8591	0,4314

Referring to Table 2, for TRL against USD for the maturity of 1 month, it seems that the forward foreign exchange rate coincides with the spot rate at 1 month later as both have equal means and variances. For 3 months while two samples seem to have equal variances, the equal means hypothesis is not accepted. For the other maturity brackets both means and variances differ considerably. The basic motive to enter into a forward rate transaction is generally hedging against the foreign exchange rate risk attached to an existing contract by linking at the quoted forward rate. However, the results given in Table 2 show that the except 1 month quotations, the forward exchange rates of TRL against USD differ with the spot exchange rates at the maturity. This means unless the forward is realized with hedging purposes where there exist an underlying foreign exchange exposure, the financial results of the forward would have been loss.

For foreign exchange of TRL against Euro, t test results for the hypothesis of equal variances are not rejected for any of the maturity bracket and that for the hypothesis of equal means seem acceptable for 1 month and 3 months maturity. Again, this means that 1 month and 3 months forward TRL rate against Euro produces the expected financial results.

### 3.3 Rationality Test of Forward Exchange Rates

The efficiency of the forward exchange rates has generally been tested by regressing the observed change in the spot exchange rate on the forward discount. In this Study, in order to test the efficiency of Turkish Lira forward rate against US Dollar and Euro, a regression model the formulation of which is given below is employed:

$$\Delta S_{t+k} = \alpha + \beta fd_{kt} + \eta_{t+k} \quad (4)$$

$S_{t+k}$  = the change in the log of the spot rate from time t to k (maturity of the forward),

$fd_{kt}$  = the log of the k period forward rate minus the log of the spot rate at time t

$\eta_{t+k}$  = the random error

This Equation is the most popular test of the forward market unbiasedness as it has been employed by many researchers. References consist but are not limited with Tryon (1979), Levich (1979), Longworth (1981), Hsiech (1984), Fama (1984), Huang (1984), Hodrick and Srivastava (1984), Froot and Frankel (1989), Hodrick (1987), Froot and Thaler (1990), Engel (1995), Lewis (1995), (Froot and Frankel, 1989), Bansal and Dahlquist (2000), Bekaert and Hodrick (2001), Flood and Rose (2002) Nikolaou and Sarno (2005). The null hypothesis is  $\beta=1$  and so it is assumed that the change in the log of the spot rate at t+k is equal to the log of the k period forward rate minus the log of the spot rate and this is tested by the use of ordinary least squares (OLS) for each time horizon of 1, 3, 6, 9 and 12 months. The results for TRL against US Dollar and Euro are given in Table 3 at 99% confidence level.

Table 3: Tests of Forward Discount Unbiasedness (OLS Regressions)

	USD				
	F value	prob	beta	t value	prob
<b>1 month</b>	1,070	0,304	-4,073	-1,03	0,304
<b>3 month</b>	1,690	0,195	-3,001	-1,30	0,196
<b>6 month</b>	3,930	0,050 *	-2,911	-1,98	0,050 *
<b>9 month</b>	7,690	0,006 *	-3,211	-2,77	0,007 *
<b>12 month</b>	9,350	0,003 *	-3,047	-3,06	0,003 *

\*represents significance at 99% confidence level.

	EURO				
	F value	prob	beta	t value	prob
<b>1 month</b>	0,300	0,587	-0,996	-0,55	0,587
<b>3 month</b>	0,080	0,774	-0,300	-0,29	0,774
<b>6 month</b>	0,110	0,744	-0,206	-0,33	0,744
<b>9 month</b>	2,190	0,142	-0,687	-1,48	0,142
<b>12 month</b>	3,310	0,072	-0,707	-1,82	0,072

The findings above shows that  $\beta = 1$  does not hold,  $\beta$  is less than 1 and even lower than zero for USD/TRL and Euro/TRL as well. Although the regression results are proved to be statistically significant for USD for 6, 9 and 12 months maturities, the calculated  $\beta$  is below zero and statistically significant at 95% confidence level. The situation is similar for Euro but the  $\beta$  of the regressions are less negative than that for USD. These findings are in line with the results of the previous research stating that the forward exchange rate is a biased predictor of the future spot exchange rate and even it moves in the opposite, the most recent researchs are; Bachetta and van Wincoop (2005), Backus, Foresi and Telmer (2002), Breuer (2000), Lustig and Verdelhan (2005) and Verdelhan (2006).

Although there exist a consensus on that the forward rate is not an unbiased predictor of the future spot rate of many currencies, the explanation for the reasoning of the existence of the bias comes from two different sources. Some of the researchers propose that the bias stems from the investor expectations only and from the risk premium and others assume that the investors did not make systematic errors and bias comes from the pure risk premia. (Froot and Frankel 1989, p.142) Froot and Frankel proposed an approach a statistical process of decomposition of the forward discount into risk premium and expectations error components. They decomposed the coefficient of  $\beta$  by employing the regression algorithm and used the following formula:

$$\beta = \frac{cov(\eta_{t+k}^k, fd_t^k) + cov(\Delta S_{t+k}^k, fd_t^k)}{var(fd_t^k)} \tag{5}$$

In the Equation 5,  $\eta_{t+k}^k$  is the expectational error of the investors and  $\Delta S_{t+k}^k$  is defined as the market expectation, the risk premium is defined as:

$$rp_t^k = fd_t^k - \Delta S_{t+k}^k \tag{6}$$

Defining  $\beta = 1 - b_{re} - b_{rp}$ , in the logic that  $\beta$  composed of rational expectations ( $b_{re}$ ) and risk premium ( $b_{rp}$ ), the formulation for  $b_{re}$  and  $b_{rp}$  are generated as:

$$b_{re} = \frac{-cov(\eta_{t+k}^k, fd_t^k)}{var(fd_t^k)} \tag{7}$$

$$b_{rp} = \frac{var(rp_t^k) + cov(\Delta S_{t+k}^k, rp_t^k)}{var(fd_t^k)} \tag{8}$$

For the forward rates of US Dollar against British Pound, Deutsche Mark, Swiss Franc and Japanese Yen, Froot and Frankel determined that the negative  $\beta$  which is proposed to

be equal to 1 under rational expectations framework consist of a greater magnitude of failure of rational expectations ( $b_{re}$ ) than the risk premium ( $b_{rp}$ ). Secondly, while  $b_{re}$  is positive for all cases meaning that it causes an increase in the forward discount because of the tendency of the overreaction of the investors to information,  $b_{rp}$  is sometimes negative. However, their data set consisted of the currencies of the major developed countries for which the risk premia is considered to be lower. In our study, the data set is for TRL against USD and Euro and the calculated  $b_{re}$  and  $b_{rp}$ 's for the covered maturities are given in Table 4.

Table 4: Components of the Failure of the Unbiasness Hypothesis

	Maturity	Failure of Rational Expectations $b_{re}$	Existence of Risk Premium $b_{rp}$	Implied Regression coefficient $1 - b_{re} - b_{rp}$
USD/TRL	1 month	0,000138	5,0000	-4,00138
USD/TRL	3 months	-0,00006	3,99291	-2,99285
USD/TRL	6 months	-0,00001	3,91017	-2,91016
USD/TRL	9 months	0,00002	4,21037	-3,21040
USD/TRL	12 months	0,00002	4,04772	-3,04774
Euro/TRL	1 month	-0,00061	2,0000	-0,99939
Euro/TRL	3 months	0,0002	1,29688	-0,29707
Euro/TRL	6 months	0,00003	1,20550	-0,20553
Euro/TRL	9 months	0,00006	1,68760	-0,68766
Euro/TRL	12 months	0,00004	1,70642	-0,70646

From Table 4, the magnitude of the  $b_{rp}$  is very large when compared with that of  $b_{re}$  in all of the regressions, consequently it can be said that the deviation from the null hypothesis stems from basically the risk premia. It is also easily seen that the magnitude of the risk premium makes  $\beta$  negative, widening the forward discount for all regressions, whether for US Dollar or Euro. Turkey being amongst the emerging market countries, this is understandable as the determination of  $\beta$  lies more to the risk premium than the rational market expectation failures unlike the developed country counterparts. The existence of time-varying risk premia corroborates some of the results of Cavaglia et al. (1994) for bilateral exchange rates relative to the US dollar and relative to the German mark spanning the same time period.

### 3.4 Systematic Error in Forward Rate Determination

The rational expectations theory proposes that the economic agents absorb all the available information, use the available pricing models and determine their pricing for a specific financial instrument. Under this framework, for determining the forward exchange rate for a currency against another, the interest rate parity which is explained in Section 3.1 has known to be amongst the widely used models and the required information is easily accessible. Any discrepancy with the model can be explained with the failure of rational expectations stemming from the systematic error between the calculated and the real forward exchange rate of a currency against other. In order to decompose  $\beta$  of Equation (4) into systematic error and risk premium components, another



OLS is produced similar results with Equation (4) except that  $fd_{kt}$  is defined as the log of the k period calculated forward exchange rate by using the domestic and relevant foreign interest rates for the relevant period minus the log of the spot rate at time t.

$$\Delta S_{t+k} = \alpha + \beta_{re} \quad fd_{kt} + \eta k_{t+k} \tag{9}$$

The aim is to determine  $\beta_{re}$  which is the measure of the rational expectational component and the remaining part will be the risk premium and Table 5 gives the results for TRL/US Dollar and TRL/Euro.

Table 5: Tests of Calculated Forward Discount (OLS Regressions)

	USD						
	F value	prob		beta	t value	prob	
<b>1 month</b>	9,49	0,0000	*	7,920	30,980	0,0000	*
<b>3 month</b>	27,26	0,0000	*	6,318	5,255	0,0000	*
<b>6 month</b>	11,29	0,0011	*	5,628	3,360	0,0100	*
<b>9 month</b>	6,62	0,0114	*	5,312	2,570	0,0110	*
<b>12 month</b>	3,66	0,0586		4,570	1,910	0,0590	

	EURO						
	F value	prob		beta	t value	prob	
<b>1 month</b>	7,00	0,0093	*	0,1251	2,64	0,0069	*
<b>3 month</b>	0,16	0,6863		0,0340	0,4	0,686	
<b>6 month</b>	1,12	0,2919		-0,1107	-1,06	0,292	
<b>9 month</b>	2,97	0,0877		-0,2039	-1,72	0,088	
<b>12 month</b>	5,28	0,0350	*	-0,3001	-2,3	0,024	

For TRL/US Dollar, the high positive and generally statistically significant  $\beta_{re}$ 's for nearly every maturity bracket indicates that the rational expectations theory requires higher spot rate change during the maturity of the forward transaction but the risk premium affect is on the opposite side with a higher magnitude and this brings the total  $\beta$  to a moderate negative value for TRL/USD. The situation is ambiguous for TRL/Euro. The calculated  $\beta$ ,  $\beta_{re}$  and  $\beta_{rp}$  are summarized in Table 6 for each maturity bracket for US Dollar and Euro. Referring to Table 6, higher positive magnitude of the rational expectations failure component and the moderate negative risk premium produces a negative regression coefficient for TRL/USD forward exchange rate. This is a conflicting determination with the results stipulated in Table 4 where the risk premiums seem to be the dominant component for TRL/USD forward exchange rates. Even the direction of the relationship is not confirmed as risk premium component has positive effect in Table 4, its direction is negative in Table 6. Contrarily, for TRL/Euro, the dominance of the risk premium is confirmed in Table 6 as well as its positive direction as compared to Table 4. Even the calculated magnitude of the risk premiums for each maturity bracket seem similar.

Table 6: Components of the Failure of the Unbiasness Hypothesis under Interest Rate Parity Assumption

	<b>Maturity</b>	<b>Failure of Rational Expectations <math>b_{re}</math></b>	<b>Existence of Risk Premium <math>b_{rp}</math></b>	<b>Implied Regression coefficient <math>1 - b_{re} - b_{rp}</math></b>
USD/TRL	1 month	7,920	-2,847	-4,073
USD/TRL	3 months	6,318	-2,317	-3,001
USD/TRL	6 months	5,628	-1,717	-2,911
USD/TRL	9 months	5,312	-1,101	-3,211
USD/TRL	12 months	4,570	-0,523	-3,047
	<b>Maturity</b>	<b>Failure of Rational Expectations <math>b_{re}</math></b>	<b>Existence of Risk Premium <math>b_{rp}</math></b>	<b>Implied Regression coefficient <math>1 - b_{re} - b_{rp}</math></b>
Euro/TRL	1 month	0,1251	1,871	-0,9956
Euro/TRL	3 months	0,034	1,267	-0,3005
Euro/TRL	6 months	-0,1107	1,317	-0,2063
Euro/TRL	9 months	-0,2039	1,891	-0,6874
Euro/TRL	12 months	-0,3001	2,007	-0,7066

#### 4 Conclusion

The valuation of almost all modern times financial products are based on relevant theoretical models formed under the rational expectations assumptions. In this framework, the valuation of the forward foreign currency transactions are based on the interest rate parity theorem which the forward rates are determined in such a way that there should exist no arbitrage opportunities when one can borrow in one country, convert the proceedings into another currency and invest it in the country of the purchased currency for the period concerned, then at maturity reversing the placement will generate profits.

Despite the theory, the analysis made for TRL forward rates against US Dollars and Euro revealed the fact that the real time forward rates differ from the calculated ones by using the domestic and US interbank and EURIBOR respectively for TRL forward rates against US Dollars except 1 month maturity and for all maturities for TRL/Euro forwards. When evaluating TRL forward rates against US Dollars and Euro, the correspondence of the forward rates with the relevant spot rate at the maturity of the forward transaction was also questioned as the major aim of performing a forward rate transaction is to hedge against the future spot rate fluctuations. Another outcome of the analysis showed that except 1 month maturity the TRL/us Dollar forward rate does not coincide with the spot rate at the maturity of the forward transaction at 1 month later as both have equal means and variances. But for the other maturities, the forward rate and spot rate at the maturity of the forward transaction differ considerably. Referring to the term structure of the forward premium of TRL against US Dollar and Euro, the interesting finding of this

Study is their close resemblance to each other which had been larger in the period between 2002-2005 when the effects of domestic Turkish financial crisis of year 2001-2002 were still alive. The forward premium for both of the currencies then settle-down but experienced

The predictability of future spot rate has been the core business of many of the financial actors in the marketplace, as well as many of the researchers who use different currencies and different time frames in the analysis. The results of those tests of the forward rate as an unbiased predictor of the future spot rate generally resulted with rejection as it has been the case in our Study for TRL/US Dollar and TRL/Euro. Another frequently analyzed issue has been the source of the bias; whether it stems from the failure of the rational expectation or simply from the risk premium related with the currency concerned. The results show that the bias in the forward rate of TRL/US Dollar and TRL/EURO basically stems from the risk premium and this result is parallel to the results of many other researchs performed for other currencies against major ones. Never the less, another novel approach for decomposition of the bias by using the calculated forward rates as suggested by the interest rate parity under rational expectations assumption shows a contradictory result indicating that the rational expectations require a higher future spot rates for all the maturities concerned which offset by the negative effect of the risk premium. The next step for the analysis is thought to be testing this novel approach with other currencies against US Dollar and Euro.

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