PURCHASING POWER PARITY AND THE TURKISH EXCHANGE RATE

SATINALMA PARİTESİ VE TÜRK DÖVİZ KURU

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ABSTRACT

This study surveys the literature on the purchasing power parity doctrine and brings empirical findings in relation to the argument. According to empirical findings there has been a common view that the purchasing power parity argument is only valid for the long run. The tests and estimations made by this paper indicate that the PPP theory does not hold for the exchange rate between Turkish lira and US dollar neither for short run nor for long run.

Keywords: *Purchasing power parity, Turkish exchange rate*

ÖZET

Bu çalışma satın alma paritesi doktrini ile ilgili literatürü ele almakta ve argümanla ilgili bulguları sunmaktadır. Ampirik bulgulara göre, satın alma paritesinin sadece uzun dönemde geçerli olduğu konusunda genel bir görüş vardır. Bu çalışmanın yürüttüğü test ve tahminler, satın alma paritesi teorisinin Türk Lirası ve ABD Doları arasındaki döviz kuru için ne kısa dönemde ne de uzun dönemde geçerli olduğunu göstermektedir.

Anahtar Sözcükler: *Satınalma paritesi, Türk döviz kuru*

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INTRODUCTION

The behavior of exchange rates have become very volatile since the breakdown of the Bretton Wood System. One of the oldest theories related with the rate of exchange is the purchasing power parity doctrine. The purchasing power parity theory has been taking the stage from time to time in the discussions of our new economic system which the globalization has been shaping.

In this work we have surveyed the discussions taken place around the theory of the purchasing power parity. The literature states that in the short run there has not been a clear relationship between the rates of exchange and the price levels as indicated by the purchasing power doctrine. However, most of the analyses accept a strong co-movement between the rates of exchange and the price indexes in the long run. We have also uncovered similar results for the Turkish exchange rate in the long run.

The paper continues by presenting the purchasing power parity argument in the literature. In the next section the methods for testing the purchasing power parity are discussed. Later on it deals with the empirical findings and deviations from the purchasing power parity. The last section before the conclusion contains an empirical work on the Turkish exchange rates.

THE THEORY OF PURCHASING POWER PARITY

The purchasing power parity doctrine has been coming and going as a doctrine in the art of exchange rate models. First time it was invoked in the period of the Napoleonic Wars (Balassa, 1964:584). The theory has its source in the Mercantilist writings of the seventeenth century such as Hume and Wheatley, but it came into prominence in 1916 through the writings of the Swedish economist, Gustav Cassel (1866-1945). It was clearly modeled during the World War I and it came out after the breakdown of Bretton Wood System. The doctrine has been used in order to establish equilibrium exchange rates.

The theory of purchasing power parity states that the exchange rate between one currency and another is in equilibrium when their domestic purchasing powers at that rate of exchange are equivalent. In other words, one may say that the value of home currency in terms of foreign currency falls as a result of an increase in the home price level (Bailie and McMahon, 1991:17). The basic mechanism implied by the theory is that, given complete freedom of trade between two countries, if a certain unit money of country A, say 1.50, buys more goods in the country A than 1 unit money of country B in country B, it would pay to convert country B's money into A's money

and buy from A rather than in the B. The switch in demand would raise prices in country A and lower them in country B and at the same time lower B's exchange rate until equilibrium and parity were re-established. The theory was originally interpreted in terms of changes rather than absolute levels of prices and exchange rates. The principle of the absolute PPP states that real exchange rates should be constant and equal to one or, expressed in relative terms, that changes in the real exchange rate should be arbitraged away (Imls et al, 2002:2). It was argued that the falls in the PPP in the Post-War period were a result of inflation due to unbalanced budgets increasing the quantity of money. In practice, the theory has little validity because exchange rates are determined by the balance of payments disequilibria, capital transactions, speculations and government policy. Many goods and services do not enter into international trade and so their relative prices are not taken into account in the determination of the exchange rate. Moreover, it is impossible to measure satisfactorily what purchasing power a currency in one country has relative to that in another because of the difficulty of determining the appropriate mix of commodities, and also of measuring their average price level. This means that international comparisons of standard of living, etc, based on current exchange rates have to be interpreted with great care (Bannock et al, 1987:337-8).

The theory of the purchasing power parity(PPP) requires that the ratio of domestic to foreign prices determine the fundamental or equilibrium exchange rate. The PPP is stated as: $E = K\,P/P^*$.

E denotes the equilibrium exchange rate(that is, the domestic price of one unit of foreign currency), P denotes an index of domestic prices, P^* denotes an index of foreign prices, and K refers to a scalar.

As mentioned earlier it has two versions:

According to the first one, purchasing power parities calculated as a ratio of consumer good prices for any pair of countries would tend to approximate the equilibrium rates of exchange(Balassa, 1964:589). The absolute PPP requires that the exchange rate equalise the price of a market basket of goods in the two countries (Levich, 1985:2002).

According to the other version, in comparison to a period when equilibrium rates prevailed, changes in relative prices would indicate the necessary adjustments in exchange rates (Balassa, 1964:589).

The rate of exchange between two countries will be determined by the quotient between the general levels of prices in the two countries. At any time the real parity between two countries is represented by quotient between the purchasing power of money in one country and the other. This is called the purchasing power parity (Balassa, 1964:585).

The main thrust of the PPP is that nominal exchange rates are set so that the real purchasing power of currency is constant over time. As a result, the PPP suggests that in the long run, the rate of change of the nominal bilateral exchange rates will tend to equalize the differential in inflation rates between countries. As prices and exchange rates are both determined endogenously in the real world, the PPP represents an equilibrium relationship rather than a precise theory of exchange rate determination. Since the composition of market baskets and prices indexes varies substantially across countries, and because many goods are non-traded or subject to tariffs, it is unlikely that the absolute PPP will hold in the real world. For this reason the followings are assumed: (i) Transport costs are zero; (ii) There is no tariff or no artificial barrier to foreign trade; and (iii) Foreign and domestic goods are perfectly homogenous (McKinnon, 1973:119). The relative PPP requires merely that percentage change in the exchange rate equal the difference between the percentage changes in the prices of the market baskets of goods in the two countries (Levich, 1985:1002-3). However, the followings are assumed

THE METHODS OF TESTING THE PPP

There have been different methods and models created as technologies developed in the literature. We can introduce three basic techniques for testing PPP at first hand:

The first ones are simple models for testing absolute and relative versions of PPP.

For the absolute version of the PPP can be formulated as follows:

$$s_t = a + bp_t + cp^*_t + u_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots(1)$$

Lower letters represents the log of the variables. It should be found that the coefficient restrictions, b=1 and c=-1 are satisfied.

The relative version of the PPP can be formulated as follows:

$$\Delta s_t = a + b\Delta p_t + c\Delta p^*_t + u_t \ldots\ldots\ldots\ldots\ldots..(2)$$

and homogeneity restriction applies here also.

The second technique for checking the PPP is simply calculating the exchange rate, which satisfies the PPP.

$$S_{ppp t+n} = S_t \cdot (P_{t+n}/P^*_{t+n})/(P/P^*)_t \ldots\ldots\ldots..(3)$$

And then compare to S_{t+n}

The third one considers the tradable and non-tradable goods problem. Price indexes are calculated as a composition of tradable and non-tradable

goods' prices. So the exchange rate is thought as a function of the domestic ratios of tradable-non tradable goods' prices and that of the foreign ratio of tradable and non tradable (Levich, 1985:2006). Bilson(1984:716) makes similar models. Edison (1987:380) introduces two models for testing the PPP. One is simple model as the first ones above, and the other one is a macroeconometric model, which states that the rate of exchange is a function of price, money and income level differences between domestic and foreign countries. As a different approach Frenkel (1981:161) concentrates on expectation with a single variable model in modeling exchange rate and ignores PPP arguments. Frankel and Mease (1987:118) builds up a similar model as Edison and adds expectations and asset prices into the model. Livera-Batiz (1991:477-83) surveys general modeling for PPP testing procedures.

New econometric techniques concentrate on stationary analysis and look for long term diagnostic issues with error correction forms (Taylor, 2002:140). Engel (2002:1) uses a simple model with price indexes as a composite of tradable and non tradable goods. Although the theory of the PPP is internally strong, empirical findings are not so consistent with the arguments.

EMPIRICAL FINDINGS AND DEVIATIONS FROM THE PPP

The relationship between exchange rates and prices that is summarized by the PPP doctrine is one of the oldest and the most controversial relationships in the theory of exchange rates (Frenkel, 1981:146). Over long time periods and during periods dominated by monetary disturbances, such as hyperinflation, the PPP offers a fairly good description of exchange rate behaviors. However, over short time periods, three to twelve months, it has been claimed that it has not been uncommon to observe substantial exchange rate change, say 10-20 percent which are unrelated to commodity price changes (Levich, 1985:2003). Continuous changing deviations from PPP are said to be commonplace. Related literature states that convergence to the PPP happens very slowly. It is reported that estimates of half-lifes usually lay in the ballpark of three to five years (Imls et al, 2002:2). If the empirical evidence and international economists are right, such long estimates have three important consequences: (i) Firstly, the PPP is at the best of little practical relevance over horizons of concern to policy makers or practitioners. (ii) Secondly, economic models based on the PPP assumptions are unlikely to provide an adequate description of the real world at any relatively short horizon. (iii) Thirdly, the slow convergence of international prices towards parity makes it quantitatively difficult to ascribe the failure of PPP to temporary arbitrage impediments or sticky prices. It has been claimed that all existing estimates, whether based on panel data or

pure time series suffer from a cross sectional aggregation bias. This bias is found to be substantial. It was said that measurement errors could be large in sectoral data (Imls et al, 2002:2). Until a more robust theory replaces it, the PPP among tradable goods is said to tend to hold in the long run in absence of overt impediments to trade among countries with convertible currencies. It was argued that because commodity arbitrage is so imperfect in the short run, it can not be relied on to contain nominal exchange rate movements within the predictable and narrow limits suggested by the law of one price (Levich, 1984:1006).

Economic rational for the failure of the PPP to hold in the short run is that the economy is never observed in equilibrium. Over short periods occur large shocks or structural changes that may disturb exchange rates from their long run equilibrium position (Edison, 1987:376).

In the short run exchange rate may deviate from the levels of implied by the PPP due to real and monetary factors. In the long run these factors should not influence the exchange rate. The PPP provide a fair, through rough approximation of the long run exchange rate. Relative supplies of cash balances also influence the long run exchange rate (Denison, 1987:380).

Forces exist in the economy that drive the exchange rate towards the PPP equilibrium, However, the exchange rate never quite return to the PPP equilibrium because of the wedge created by relative supplies of cash balances (Edison, 1987:382). The homogeneity between money supplies and the exchange rate could break down even if the PPP holds if demand for money has shifted over time. Monetary innovations and the development of banking system may have altered the long run velocity of money. A simple version of the PPP relationship does not adequately represent exchange rate. Within the enlarged monetary model the conditions of symmetry and of proportionality can be rejected. However, the condition of exclusiveness is rejected, so that permanent deviations from the PPP can not be ruled out (Edison, 1987:382).

During the 1970s short run changes in exchange rates bore little relationship to short run differentials in national inflation rates and frequently, divergences from purchasing power parities have been cumulative. There is an important intrinsic difference between the assets market theory of exchange rate determination. This theory implies that the exchange rate like prices of other assets, is much more sensitive to expectations concerning future events than national price levels and as a results in periods which are dominated by news which alter expectations, exchange rates are likely to be much more volatile than national price levels and departures from the PPP are likely to be rule rather than exception (Frankel, 1981:145).

The PPP is of the hypothesis that the elasticity of the exchange rate with respect to the price rate is about unity. Policies, which affect the trend of domestic prices are likely to affect the exchange rate in the same manner. 1970s have brought instability so that the PPP could not be estimated stably. What account for the vast differences in the performance of the PPP among the various currencies are:1- Transport costs, for example the theory is better to hold in Europe, where transport costs are small; 2- Changes in commercial policies and non tariff barriers to the trade; they have been more stable within Europe than between Europe and the USA for example; 3- The unique effects of the various phases of the US price controls and their gradual removals during the first half of the 1970s; 4-The effects of institutional agreements like the snake and later on like the European Monetary System (Frenkel, 1981:148). Nevertheless, if the relative prices do change, the simple PPP versions which use aggregate price levels are likely to hold (Frenkel, 1981:154).

It was argued that when inter sectoral relative price structures remain stable and when there are significant changes in tariffs and non tariff barriers to trade and in degree of capital market integration, the purchasing power parity doctrine should hold even for the short run. The modern approach to the analysis of exchange rates implies that there is a fundamental difference between the characteristics of exchange rates and those of national price levels. This difference yields a presumption that, at least in the short run, exchange rate fluctuations would not be matched by corresponding fluctuations of aggregate price levels (Frenkel, 1981:161).

In contrast to these characteristics of exchange rates, aggregate price indices are not expected to reveal such a degree of volatility since they reflect the price of goods and services which are less durable and therefore are likely to be less sensitive to the news which alters expectations about the future. This deviation between commodity price and asset prices is fundamental for interpreting the deviations from the PPP. As is well known, changes in commodity prices are serially correlated while changes in exchange rates are not (Frenkel, 1981:162).

Exchange rates reflect expectations about future circumstances while prices reflect more present and past circumstances as they embedded in existing contrasts. This differences implies that large fluctuations of exchange rates are likely to be associated with large deviations reflect intrinsic difference between commodity and asset prices (Branson, 1981:168).

If exchange rate is constant over the relevant period, the PPP could be considered to be violated either if(i) the underling equilibrium value of the exchange were to change or (ii) if the variance of exchange rates, S was very different from the variance of P/P* ratio, but around the same mean. The

former involves movement in equilibrium exchange rate, e; the latter could come from the exchange rate, S fluctuations of a much greater magnitude that those in P/P* ratio. Frenkel implicitly argues that the 1970s' data are an example of type(ii) violation of the PPP (Branson , 1981:167).

Given the competitive linkages between international prices, the effect of devaluation must be simply a proportional increase in the ratio of home to foreign price levels. Hence causation runs from exchange rate to price levels (Culbertson, 1975:288). The PPP can be violated in the long as much as in the short run. The martingale model of the PPP deviations shows a loss link between exchange rate and inflations (Adler and Lehman, 1983:1471-3).

It has been claimed that the PPP worked very well under the Anglo-American gold standard before 1914. The real exchange rate was found to be stationary between 1875 and 1986. It was reported that real exchange rates exhibit mean reversion with a half life of deviations of four to five years (Taylor, 2002:139).

It has been reported that real exchange rates deviations and volatility were relatively small prior to 1914 under the classical gold standard regime; the interwar period was a major turning point; deviations become much larger as many exchange rate began to float or stay fixed for only a few years. There was some reduction in deviation after 1945, but in 1970s the floating era, deviations and volatility rose (Taylor, 2002:143).

It was claimed that the PPP holds in the long run and so money appears to be neutral at that horizon; but the fact that short run PPP deviations may be large and seem very closely associated with monetary shock, suggesting a role for nominal rigidities (Taylor, 2002:139) Because the real exchange rate is a combination of price levels and exchange rates, another way to restate the conclusion is that inflation volatility and nominal exchange rate volatility –each one a monetary phenomenon in itself- are jointly neutral in the sense that they are correlated with the real effect of deviations from the PPP. It is stated that deviations from PPP are always and everywhere a monetary phenomenon (Taylor, 2002:149).

Domestic prices and the nominal exchange rate are stable as long as the stock of the money is under control and the capital movement is stable. In the short run shocks to the nominal exchange rate affect domestic prices, but have virtually no impact on real output (Jonsson, 2001:43).

The literature on open economy macroeconomics concludes that different classes of theoretical models have very different implications for the persistence of deviations from the PPP (Killia and Zha, 1999:23-24). The PPP does not hold because of real barrier effect and stickiness of consumer prices (Huang, 1987:69).

Although considerable evidence suggests that the real exchange rate is mean reverting in the long run, especially for small open economies with floating exchange rates, homogeneity, symmetry restrictions are often rejected and deviations from PPP tend to dampen out only at a relative slow rate (Bilson, 1984:262). Recent work by Engel (2002:1) for high income countries has found evidence in favor of the hypothesis that real exchange rates convergence to their PPP level in the long run.

Relative PPP involves the assumption that real exchange rates remain unchanged over time. Factors altering the real exchange rate, whether temporarily or permanently, will then generate deviations from the relative PPP. Various factors generate changes in real exchange rates. Differential changes in taste, technology, factor prices and market structure between countries will generally affect their relative cost of production, thereby influencing their relative price competitiveness and therefore real exchange rates. These long term changes in real exchange rates appear as deviations from the relative PPP. But even if the long run real exchange rate is fixed, disturbances, particularly unanticipated ones in the economy might lead to short-term fluctuations in real exchange rates. For example rigidities take time to affect exchange rates (Rivera-Batiz, 1991:485).

Deviations are referred to the followings in general: (i) Tradeability as important goods almost always involve some non-zero trading costs, ones thus are not perfectly substitutable with domestic ones. (ii) The persistence of (non-tradeable) local costs embedded in the final good prices. (iii) Nominal rigidities.(iv) Market power in the production chain manifested for instance by the ability to price in local currency and the resulting possibility for producers(or retailers) to price differently between countries, without generating free entry of competitors (Imls et all, 2002:17).

The hypothesis that a devaluation does not have any effects on the relative price of domestic goods is associated with the long standing doctrine of the purchasing power parity (Rivera-Batiz, 1991:331).

It has been assumed that international productivity differences are greater in the production of traded goods than in that of non-traded goods, currency of the country with the higher productivity levels will appear to be overvalued in terms of PPP. The greater are the productivity differentials in the production of traded goods between two countries, the larger will be differences in wages and in the prices of services and correspondingly, the greater will be the gap between the PPP and the equilibrium exchange rate. According to the absolute interpretation of the PPP doctrine, PPPs calculated for any pair of countries would tend toward equality with exchange rates. Trade restrictions, monetary polices and productivity differences will lead to create a gap between the PPP and the exchange rate between two countries (Balassa, 1964:586).

Imls et al (2002:17) shows that corrected estimates are perfectly in line with the real exchange rate persistence derived in a model with plausible nominal rigidities. Parameter heterogeneity could be the answer to the famous PPP puzzle. Accordingly there is no PPP puzzle. The vast majority of the economic mechanisms that could theoretically impede price adjustments operate at the good or sector level.

As has been seen there has not been a clear cut empirical finding supporting the theory of the PPP. Now let us look at the Turkish annual exchange rate for the period of 1972 and 2001, which is a suitably long time span to look at the issue.

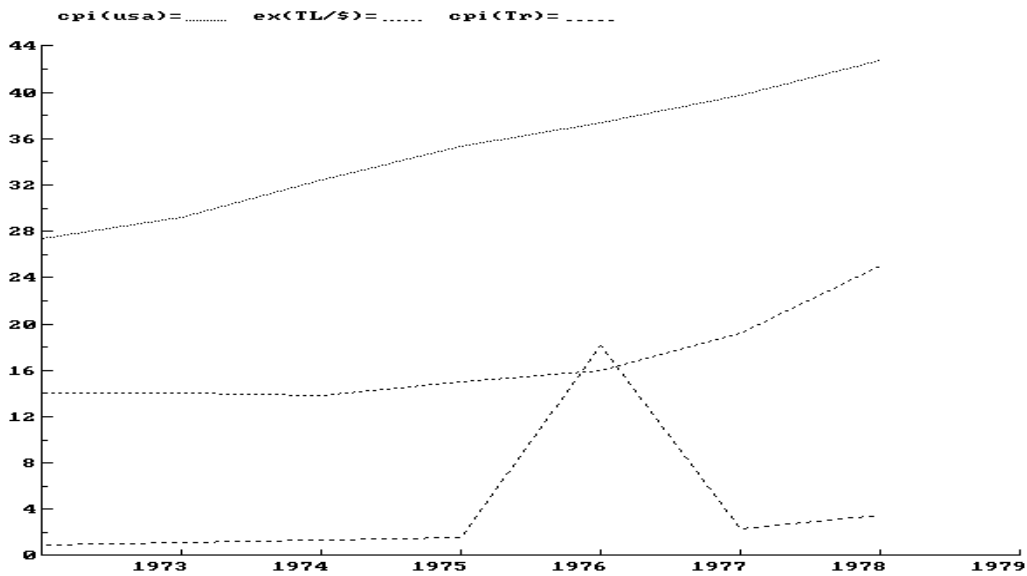## THE TURKISH EXCHANGE RATE AND PURCHASING POWER PARITY

In this section we have attempted to analyze the relationship between the Turkish exchange rate and price indexes of Turkey and the USA. First we have presented the data, then, we have run regressions with error correction forms. Let us look at the data we have received from the IMF resources.

DATA

We have used annual data obtained from IMF Annual Statistical Book between 1972 and 2001. We have plotted the exchange rates(ex as TL/US Dollar), Turkish consumer price indexes(cpitr) and US consumer price index(cpius) in various graphics. The base year for price indexes is 1995. We have a visual problem in presenting data as graphics because series are not consistent in terms of size. For this reason, in order to visualize the data in graphics forms we have divided data in visually suitable years. Graph 1 shows that the exchange rate had started to drift away from other series in the first years of 1990s. While Graph 2 shows that there had been a co-movement between series, Graph 3 indicates that there had been a clear break up between the rate of exchange and price indexes in last years of 1970s. When we look at the years after this break up the 1980s show a continuous break up between the rate of exchange and price indexes. This can be observed through Graph 4, 5, 6 and 7.
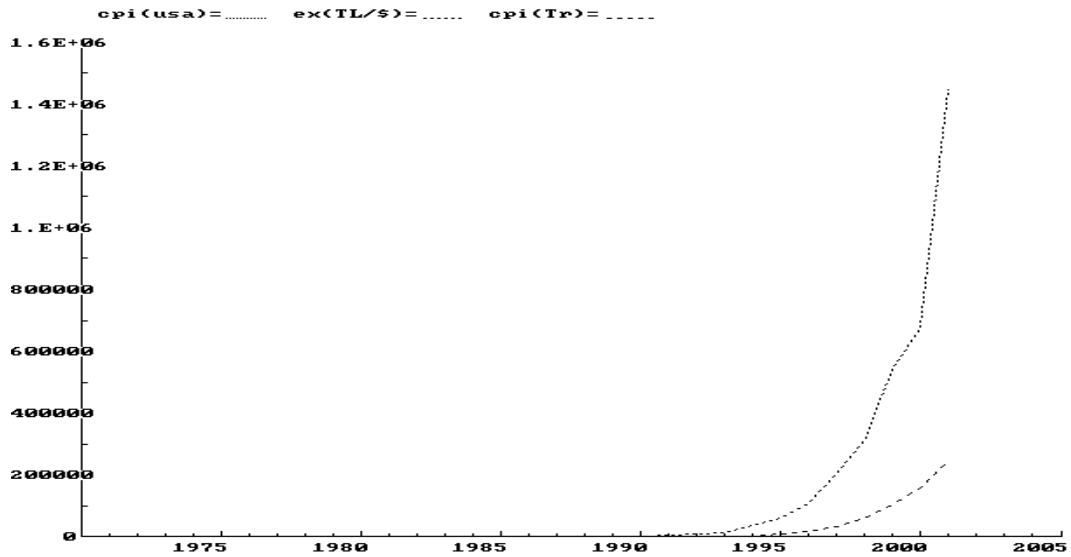
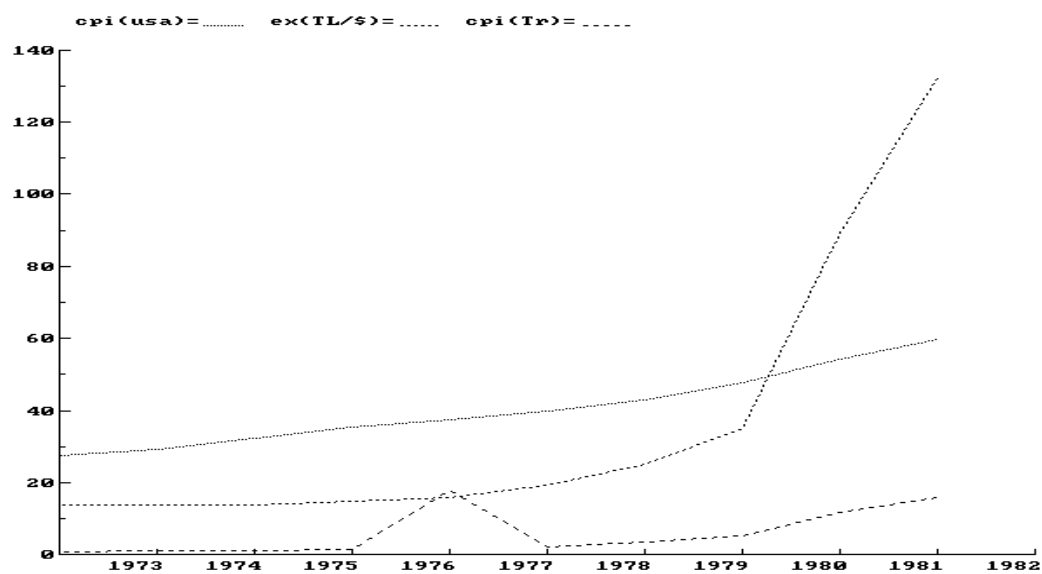Graph 1. The Rate Of Exchange And Price Indices: 1972-2001[1]

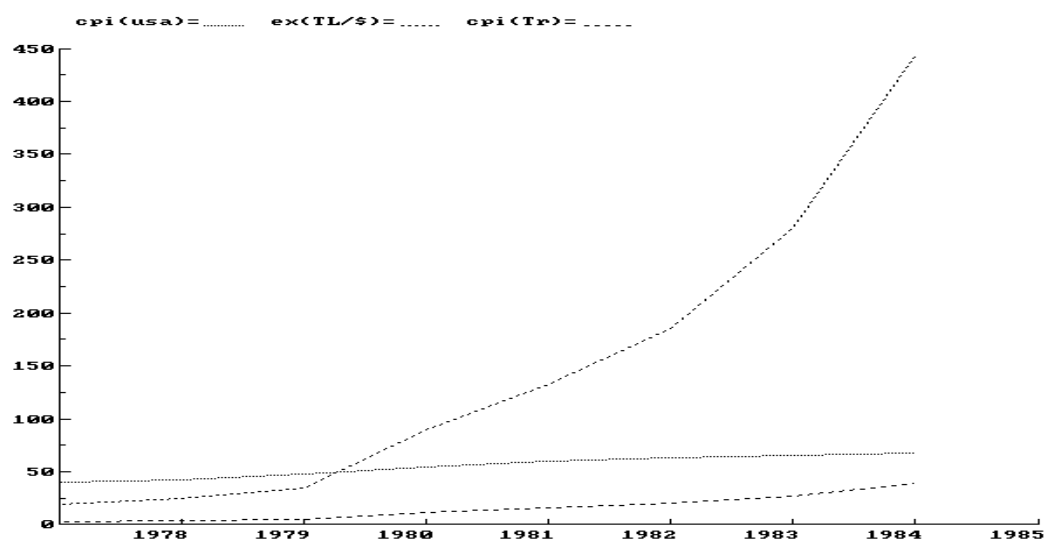Graph 2. The Rate of Exchange and Price Indices: 1972-1978

[1] cip(USA), ex(TL/$) and cpi(Tr) refer to USA consumer price indices, TL/US Dollar Exchange rate and Turkish price indices respectively.
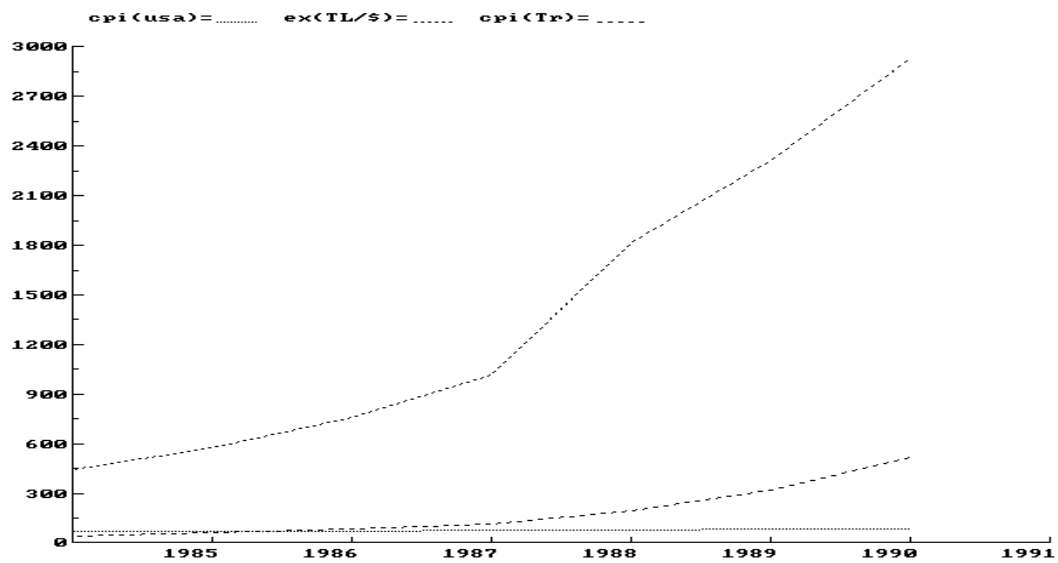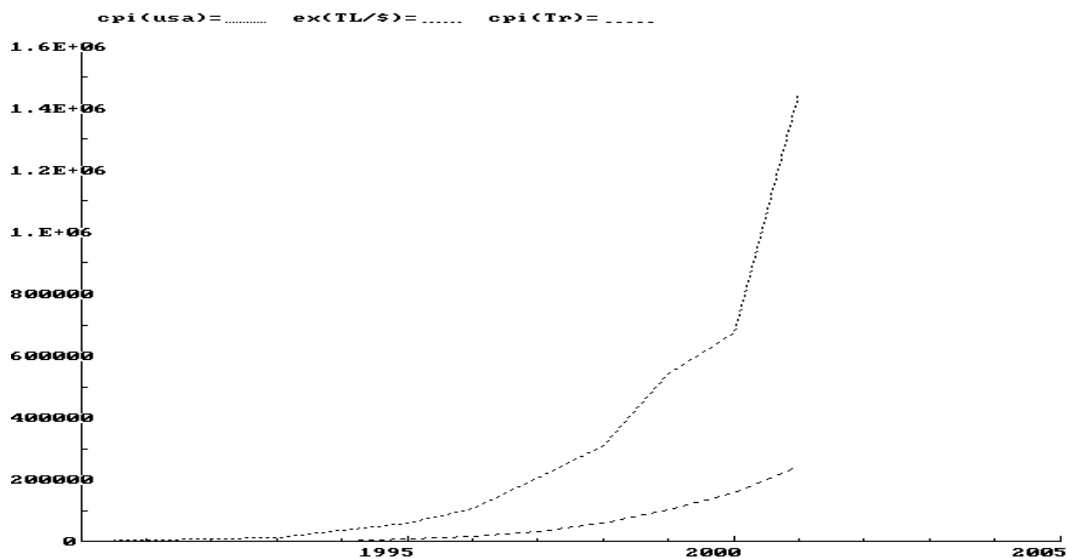
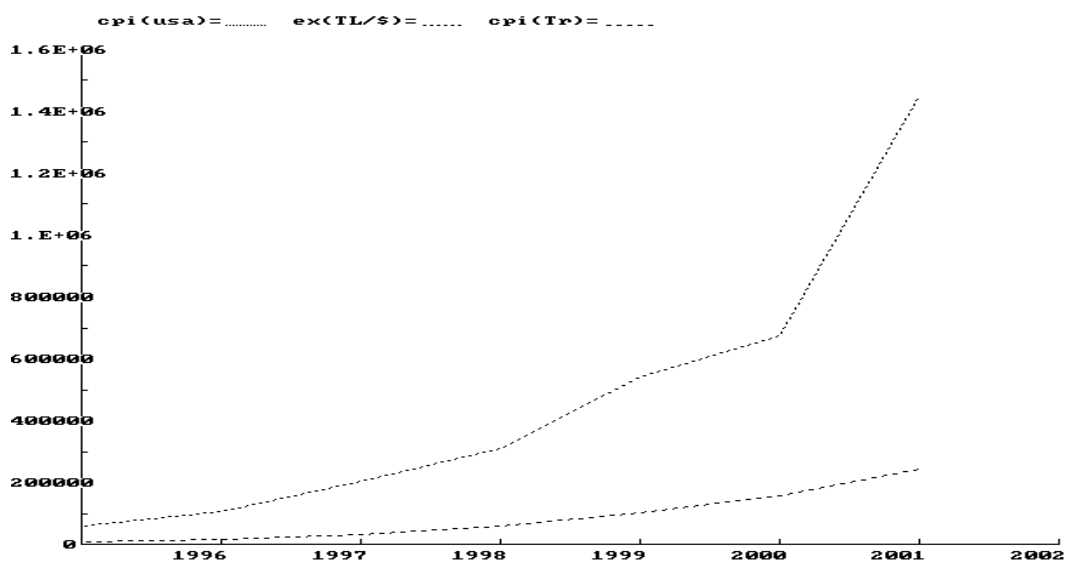**Graph 3. The Rate Of Exchange And Price Indices: 1972-1980**

Graph 4. The Rate of Exchange and Price Indices: 1972-1984

Graph 5. The Rate of Exchange and Price Indices: 1972-1990

Graph 6. The Rate of Exchange and Price Indices: 1990-2001

Graph 7. The Rate of Exchange and Price Indices: 1995-2001

We have run unit root tests in order to check whether the series are stationary or not as in Green(1993:563). Table 1 shows standard unit root test results. The first column of the table shows that while Turkish price index and the nominal exchange rate contain unit roots, US price index does not contain a unit root. Series have the similar results at the first difference in the third column. However, series all have unit roots both at the log level and the first difference of log form.

Table 1. Unit Root Test Results

Series	Level	Δ_1	Log level	Δ_1Log
CPT	1.000	1.000	1.000	1.000
CPU	-5.429	-8.698	1.336	-2.369
EX	-0.165	-0.161	-0.671	-0.346

1% Critical Value -3.7497

5% Critical Value -2.9969

10% Critical Value   -2.6381

"*" indicates that the value is significant.

In order to check whether series are cointegrated or not we have run OLS and tested residuals if they contain unit roots. Table 2 shows the

results of estimations. The standard PPP model as in Equation 2 has been used for estimating and testing. The standard cointegration test is carried out by the application of unit root tests to the residuals obtained from OLS. If the residuals contain unit roots, it means that series are not cointegrated. According to the OLS, residuals obtained from estimations contain unit roots, but the estimation done with the second differenced data in the fourth column does not contain unit roots. Thus, we have only one integrating vector with the second differenced data. The rest of the estimations do not give an integrating vector as demonstrated by unit root test on residuals in the last row of Table 2.

Table 2. OL Estimations for Cointegration Tests

LS//Dependent Variable is EX					
Variable	Level	Δ_1	Δ_2	Log level	Δ_1Log
Constant	-241(-0.271)	-230.2(0.166)	-0.545(0.166)	2.893(2.832)	-124(-1.351)
CPT	6.044(133.95)	6.107(45.243)	2.107(21.243)	0.958(26.278)	1.212(8.027)
CPU	6.329(0.4670)	-87.3(-0.215)	-5.12(-0.045)	-0.152(-0.540)	-0.009(-0.010)
R^2	0.998	0.989	0.829	0.999	0.755
F	1297	1055	10.55	3012	33.92
DW	2.58	2.89	2.75	0.47	1.56
Residual*	-0.0059	0.0034	-5.5296	1.000	-0.5975

Paranthesis indicate t values.

* Unit root test results on residuals.

1% Critical Value -3.7497

5% Critical Value -2.9969

10% Critical Value   -2.6381

"*" indicates that the value is significant.

ESTIMATION

Although there is only one integrating vector obtained from the above cointegration tests, we have used all residuals as error correction term in estimating the respective models in Table 2 as described in Green (1993:563-567). Table 3 shows the estimations of error correction forms. The coefficients of error correction terms have come out as "1" in all estimations except in one for which we have used the second time differenced data. This indicates that error correction terms do not have a significant role in the explanation of the nominal exchange rate. In addition,

the sings of the error correction terms are not as expected either. Another unusual result is that coefficients of determination are "1" in all estimation except the one for which we used second differenced data. Although the sings of the US price index are as expected in the first difference, log level and log level difference forms, the sings are not as expected as in the level and the second time differenced forms. The estimation in the fourth column does not seems to indicate an econometric problem, but the coefficient of US price index is not significant with respect to 't' value and sing of that is not as expected either. As a result, we could conclude that according to these calculations, the PPP hypothesis does not seem to hold for the exchange rate between Turkish Lira and US dollar.

As another estimation we have run additional regression for the determination of exchange rate by using monetary and financial variables. Table 4 shows the results for the estimation, which includes monetary aggregates and interest rate differentials for Turkish and USA economies as additional explanatory variables. Results of the estimation show that while the coefficient of Turkish money supply(M2) is significant, USA's one and interest rate differentials are not significant in the explanation of the rate of exchange. The coefficient of the Turkish monetary aggregate has negative sign. Although this seems to be paradox, it could be a sign of substitution between TL and US dollar. Although the coefficient of the error correction term is significant with respect to 't' value, the sing is not as expected. According to this estimation we can say that the US money supply(M2) and the interest rate differential have not got any role in the determination of the exchange rate.

Table 3. The Estimation of the Error Correction Forms

LS//Dependent Variable is EX

Variable	Level	Δ_1	Δ_2	Log level	Δ_1Log
Constant	-241(1514)	230(1888)	-132(-0.4950)	2.893(102)	-0.124(-540)
ECM*	1.000(3429)	1.000(4933)	1.078(6.3118)	1.000(2350)	1.000(1937)
CPT	6.044(8385)	6.107(5179)	655.7(15.565)	0.958(1038)	1.212(3223)
CPU	6.329(2794)	-87.30(-2490)	2120(0.2772)	-0.152(-1992)	-0.009(-4530)
R^2	1	1	0.941	1	1
F	2630	7570	101.92	2630	13685
DW	1.10	1.28	2.85	2.41	2.45

* Error Correction Term (Residual obtained from OLS)

Table 4. The Estimation of the Exchange Rate Determinants

LS//Dependent Variable is DEX

Sample:1979-2001

Variable	Coefficient	Std.Error	t-Statistics
Constant	-56264.67	56882.39	-0.989140
ECT*	1.307434	0.163156	8.013382
DCPITR	621.1443	40.48747	15.34164
DCPIUS	7845.328	9041.098	0.867741
DMTR	-0.352181	0.082786	-4.254095
DMUS	142.5582	181.0603	0.787352
IF	528.7499	745.9725	0.708444
R²	0.974	Akaike info criterion	20.91847
DW	2.175827	F	103.6875

*Error correction term, residual obtained from fourth column in Table 2.

CONCLUSION

In this paper we made a brief literature survey on the theory of the purchasing power parity in order to check whether the PPP theory holds empirically after increasing globalization in the last decades. According to empirical analyses, the PPP theory holds in the long run, but it does not hold in the short run. The tests and estimations made by this paper indicate that the PPP theory does not hold for the exchange rate between Turkish lira and US dollar neither for short run nor for long run.

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