STOCK PRICE AND EXCHANGE RATE: THE CASE OF BIST 100

Hakan Altin, Assistant Prof.
Department of Business, University of Aksaray, Turkey

Abstract

Variations in the exchange rates concern all parts of the economy.One of those concerned topics is stock (share) prices and stock market indexes. In the study, the long term relationship between exchange rates and İstanbul Stock Exchange is analyzed. According to application results, there is a significant relationship between exchange rates and BIST 100. This result is consistent with Turkey's foreign currency composition. However, the direction of the effect of foreign currencies on BIST 100 gives mixed results. In other words, the effect of each foreign currency on the stock index may be different. As a result, the existence of both short term and long term significant relationships between foreign currency markets and securities exchanges can be stated.

Keywords: Stock Price, Exchange Rate, Istanbul Stock Exchange (ISE), BIST 100, Johansen Cointegraion Test

Introduction

The existence of promising high profit capital markets, the controls over foreign capitals becoming more flexible globally and the choice of flexible rate regime on foreign currency markets have all brought the determination of the relationship between stock (share) prices and foreign currency rates into attention. These kinds of steps towards the increase of global free trade are increasing direct international foreign investors and international portfolio investments. An investment to a foreign country is also an investment to that country's national currency. Therefore, when securities investments become international, it affects both local and foreign investors.

Classical economy theory explains the relationship between exchange rates and stock prices with flow oriented and portfolio balance models. The pioneering study in literature belongs to Dornbusch and Fisher (1980). According to the authors, the variations in exchange rates affect stock prices. Authors state that, while the discount rate is being determined

during the calculation of current values of corporations, exchange rates, which may affect the cash flow of the corporation in the future, should be included in this discount rate. The study trying to explain the relationship between stock prices and exchange rates using portfolio balance belongs to Branson et. al. (1977). According to authors, the variations in foreign currency rates affect capital flow. In such situation, debt structure of corporations, profitability, corporate value, stock prices and possible cash flow will be affected.

According to a corporation based study by Phylaktis and Ravazzolo (2000), foreign exchange rate fluctuations affect the discount rate or in other words cost of capital of the corporation. According to authors, executives of multinational corporations are at the risk of the exchange rates with the contracts they sign. Therefore, profit or loss in the exchange rates affects the investments companies stand to make. In their study, Dornbusch (1975) set forth two important theses. Firstly, the decrease in stock prices will diminish local economy's prosperity thus reducing the demand for money. Accordingly, interest rates will decrease. Secondly, the flow of capital abroad will be less than expected, thus pressurizing the market for the depreciation of exchange rates.

In today's economies where export based growth policy is pursued, the change in exchange rates will cause the export incomes to change. Under the assumption of Ceteris Paribus, while the income is expected to rise, the decrease of the exchange rates in case of the opposite is expected to increase the country's national currency thus reducing export income.

On the other hand, there are lot of macro-economic variables informing the length and intensity of the fluctuations to the market, stakeholders or the investors. Exchange rates and interest rates are just the two of those variables. In literature, it is stated that the exchange rates and market interest rates affect each other. This effect is seen in stock markets reciprocally. For example, Mexico, for years, has fixed their national currency Peso to United States Dollars. It promised the American market a higher profit. This situation started a serious Dollar flow to Mexican financial markets. Investors, who procured credits from U.S. markets with low interest rates, exchanged them into Pesos in

Mexican markets, gained high and risk-free interest profits. When the expiry date arrived, the investors exchanged those high risk-free profits gained from Pesos into U.S. Dollars using the same fixed exchange rate having more Dollars in the end.

This theoretical result cannot continue to occur due to the fact that peso will be subjected to devaluation. This result is supported by Krueger (1983) research. According to the author, high interest rates will cause

capital inflows to the country. However, this situation will result in the country's national currency depreciating.

A topic to be considered is high levels of capital activity. According to this approach, either the trade happened or the trade that is going to happen is not determined by the daily supply and demand of foreign currencies, because the contracts are arranged in advance. Additionally, if there is a decrease in stock prices, foreign investor will part with the stocks they owned in the relevant currency. Concurrently, if foreign investor is leaving the market altogether, they will exchange the local currency they obtained by selling the shares into an internationally valid currency. Financial transactions are expected to decrease in markets with high uncertainty and foreign exchange rates will depreciate significantly. This situation will increase the dependency of financial markets on each other.

This interaction will be more profound during periods of financial crises. Therefore determining the relationship between the stock market and foreign currency market will have a positive effect on the recovery of the economy.

Another point to be considered is the markets being stable. By stable, it is not meant that the markets stay without changing. The point is that what happened in markets in the past might happen in the future. However, markets don't usually repeat the past. In other words, positive situation regarding the general expectations of the economy will make markets more stable. Therefore, when stakeholders predict the future, they will minimize the risk of foreign exchange rate.

Literature Review

In literature, there are lots of studies explaining the relationship between stock prices and foreign exchange rates. In a general evaluation, it is established that results obtained differ. In this section, results from studies of the topic are presented as summaries.

In their study, Aggarwal (1981) found out that revaluation of U.S. Dollar and securities incomes have a positive relationship between them. According to author, variations in exchange rates affect payment balances of multinational corporations. Roll (1992) suggests that there is positive relationship between stock prices and foreign exchange markets. This suggestion is supported by the study of Phylaktis and Ravazzolo (2000). According to authors, there is a positive relationship between stock prices and foreign exchange market in both long and short term. Richards et. al. (2009) found out that stock prices and exchange rates move in the same direction. According to the authors, for Australia, who is pursuing an export based economy policy, changes in the exchange rates are important. Ramasamy and Yeung (2005) identified a highly sensitive mutual

relationship between stock prices and exchange rate markets. According to authors, exchange rate activities are important macro-economic variables affecting business life. Chow et. al. (1997) used monthly data periods in the first part of their study. Authors failed to determine a relationship between abnormal stock profits and real exchange rates. For the six month long data periods, they discovered positive relationships between variables. Ajayi and Mougoué (1996) analyzed the relationship between stock prices and exchange rates for eight developed markets. Authors found out that there is a significant relationship between variables in short and long term. Ong and Izan (1999) analyzed the existence of the relationship between stock prices and exchange rates in Australia and G7 countries. According to the authors, there is a significant relationship between stock prices and exchange rates. Nieh and Lee (2001) researched the relationship between stock prices and exchange rates for G7 countries. Authors identified the relationship between the two in the short term but failed to identify a relationship in long term. However, Soenen and Hennigar (1988) identified a significant negative relationship between two markets. Solnik (1987) found out that the changes in exchange rates are not factors affecting stock prices. Ratnik (1993) has obtained a similar result. According to the author, stock indexes and U.S. Dollar price activity have no significant relationship. Stavárek (2005) reached mixed results in their research about the relationship between stock prices and exchange rates. Because of both the researched period and the researched countries, the relationship between variables yields different results. According to the author, it is impossible to determine the long term and short term relationship between stock prices and exchange rates originating from the specifications of the countries. Harald and Hélène (2002) have reached three important results in their study. First is; when there is not enough elasticity of supply of foreign currency, exchange rate fluctuations will be high. Second is; foreign stock prices (in that local currency) and exchange rate profits have a negative relationship between them. Third is; exchange rate profits and total capital flow have a positive relationship between them. Dimitrova (2005) stated that the decrease in the exchange rate pressurizes the stock prices to drop; however, an increase in the exchange rate may cause an increase in the stock market. Moreover, during the periods where there are sudden drops in stock prices, in other words, where bubble effect is seen, they found that the exchange rate will depreciate. Ajayi and Mougoue (1996) states that, a rising stock market is the indicator of an expanding economy. In an expanding economy there is an expectation of inflation. According to the authors, a decrease in the exchange rates will cause stock prices to decrease because it will increase inflationist expectations.In another research, Granger et. al. (2000) identified

that the decrease in exchange rates during the 1997 Asia crisis caused the stock prices to fall.

Benjamin (2006) could not identify a long term relationship betweenstock prices and exchange rates. However, author identified a causality from exchange rates to stock prices. In their study, Caporaleet. al. (2012) researched the causality relationship between stock profits and exchange rate changes. They reached mixed results between the variables, namely unidirectional and bidirectional for the country markets the research took place in. Bahmani – Oskoose and Sohrabian (1992) did not find any relationship between stock prices and exchange rates in long term in their research of American market. However, authors identified bidirectional causality between variables. Rahman and Uddin (2009) could not find any relationship between stock prices and exchange rates in the long term in their research of Banglades, Indıa and Pakistan. Authors also could not identify any causality relationship between variables. Another study that researched the causality relationship between two markets is Hatemi and Irandoust (2002) study. In their study of Swedish market, authors identified the existence of a unidirectional causality from stock prices to exchange rates. In another study, Groenewold and Paterson (2011) researched the relationship between stock prices and exchange rates including commodity prices.According to the authors there is a weak relationship between stock prices and exchange rates. However, there is a significant relationship between exchange rates and commodity prices. According to the authors, a possible influence between stock prices and exchange rates will take place, under the assumption that commodity prices are affecting stock prices. In their research of India, Bhattacharya and Mukherjee (2001) researched the causality relationship over macro-economic variables using BSE Sensitive Index. According to the authors, one of the macro-economic variables affecting BSE Sensitive Index is the exchange rate. Issam and Murinde (1997) identified a unidirectional causality from exchange rate to stock prices in their research. According to the authors, governments have to be careful while implementing policies regarding exchange rates. Because, exchange rate policies may affect the stock markets.

When empirical results are examined, it is seen that the relationship between stock prices and exchange rates yields mixed results.

The Purpose of the Study and its Scope

The purpose of the study is to determine the effects of the variations in foreign currency market on Turkish securities market. In the study, Borsa Istanbul (BIST 100) index is used as it is used in international comparisons. The currencies researched to have the possible effects on this index are: EURO (EUR), United States Dollar (USD), Pound Sterling (GBP), Japanese

Yen (JPY), Australian Dollar (AUD), Canadian Dollar, (CAD) and Swedish Krona (SEK). Period of the research, where daily values are used, is 2001/01/01 – 2013 /12/31.

Econometric Approach Used in the Study

There are two methods suggested in the literature for determining the long term relationship. These are The Engle–Granger Two-Step Method (1987) and Johansen's Cointegration Analysis (1988) methods. When two methods are compared, these are their differences (Atan, 2002): (1) Engle-Granger is a static model, does not include dynamic events. Johansen made their model dynamic. (2) The long term and short term relationships cannot be seen together in Engle-Granger model. Whereas Johansen model includes, both long term and short term relationships. (3) Parameters obtained from Johansen model are less unbiased than Engle-Granger model. (4) Engle-Granger model consists of only one long term. Multiple long term relationships can be found in Johansen model.

For the Johansen model used in the study, Vector Autoregressive Model (VAR) model is established. For the determination of the lag of the system, Akaike and Schwarz information criteria are used. According to these information criteria, system lag is determined as 1. The mathematical formula and hypothesis tests of the VAR method used in the study are as follows Schmidt, (2005) and Atan, (2002):

$$Y_{1t} = \beta_0 + \beta_{11} Y_{1(t-1)} + \ldots + \beta_{1M} Y_{1(t-M)} + \beta_{21} Y_{2(t-1)} + \ldots$$

$$B_{2M} Y_{2(t-M)} + \ldots + \beta_{K1} Y_{K(t-1)} + \beta_{KM} Y_{K(t-M)} + \varepsilon_t$$

In the model, K shows the number of variables,
M shows the number of lag.

H_0: There is no mutual integration.
H_A: There is mutual integration.

Analysis of the Model

The Results of the Descriptive Statistics

Definitive statistics are showing the general characteristic specifications of the data. Every definitive statistic of every foreign currency used in the study are given in Table 1 and Table 2.

Table 1- Descriptive Statistics: Raw Data's

	EUR	USD	GBP	JPY	AUD	CAD	CHF	SEK
Mean	1.870537	1.491006	2.478305	1.476013	1.199910	1.282837	1.302917	0.200829
Median	1.853000	1.482000	2.482000	1.340000	1.093000	1.215000	1.182000	0.198000
Maximum	2.744000	2.070000	3.132000	2.466000	1.954000	1.890000	2.453000	0.304000
Minimum	0.623000	0.665000	0.983000	0.563000	0.357000	0.441000	0.406000	0.069000
Std. Dev.	0.381211	0.215757	0.326563	0.406576	0.365119	0.306329	0.378594	0.043178
Observations	3254	3254	3254	3254	3254	3254	3254	3254

According Table 1, it is identified that Turkish Lira depreciated against all foreign currencies except Swedish Krona in the researched period (12 years). Foreign currencies that gained the most value against Turkish lira are, respectively, GBP, EUR, USD, and JPY. On the other hand, when standard deviation values, which are an indicator of value fluctuations, are examined, it is determined that foreign currency value fluctuations are high. Additionally since 2014/01/20, EUR and USD exchange rates have exceeded the maximum value in the researched period. It is known that prices are willing to move in the increase direction, however not that willing to move in the decrease direction. This situation applies to all asset prices in the market.

Table 2-Descriptive Statistics: Returns

	EUR	USD	GBP	JPY	AUD	CAD	CHF	SEK
Mean	0.000501	0.000389	0.000408	0.000472	0.000544	0.000496	0.000573	0.000514
Median	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Maximum	0.199045	0.200873	0.235592	0.172945	0.176471	0.159910	0.125616	0.260870
Minimum	-0.062214	-0.059885	-0.091653	-0.099429	-0.082262	-0.060000	-0.088681	-0.080000
Std. Dev.	0.010195	0.010195	0.011249	0.012876	0.011061	0.010162	0.011494	0.011762
Observations	3254	3254	3254	3254	3254	3254	3254	3254

Table 2 shows the return of every foreign currency in the researched period when they are considered as assets (an investment tool in portfolio). As seen in Table 2, foreign currencies which are subjects of the study have average returns close to both the zero and to each other. In fact, this result is consistent with the Dow Theory. Dow Theory states that every event affecting supply and demand will be reflected on the market average.

Table 3- Gross External Debt of Turkey - Currency Composition: (Million USD)

	2001	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
SHORT TERM	16.403	16.424	23.013	32.203	38.916	42.855	43.148	52.522	48.993	77.312	81.913	100.961
LONG TERM	97.188	113.173	121.079	128.807	131.584	165.506	207.248	228.576	220.098	214.608	222.515	238.057
TOTAL	**113.591**	**129.597**	**144.092**	**161.010**	**170.500**	**208.361**	**250.396**	**281.098**	**269.091**	**291.920**	**304.428**	**339.018**
USD	56.448	59.910	65.051	77.554	91.824	113.422	137.292	152.277	140.968	148.627	164.410	184.788
ECU/EUR	34.206	39.484	47.800	54.207	53.847	66.667	86.833	97.538	96.482	100.377	108.264	117.046
JPY	5.176	5.310	4.509	3.426	2.804	2.744	2.927	3.933	3.793	4.906	7.456	8.230
SDR	14.106	22.018	24.012	21.447	14.653	10.764	7.150	8.573	9.447	7.123	4.380	2.361
TL	170	148	144	1.789	5.033	12.374	13.752	16.493	16.286	28.302	17.274	23.578
OTHER	3.484	2.727	2.577	2.586	2.340	2.391	2.443	2.285	2.116	2.586	2.644	3.014

Source: Undersecretariat of Theasury

Table 3 shows Currency Composition and Gross External Debt of Turkey. When it is examined on a year basis, gross external debt of Turkey is showing a general increase with decrease in the year 2009. The importance of following foreign currency activity is increased due to the gross external debt of Turkey, currency composition showing high shares of USD, EUR and JPY.

It also shows that, Turkish Economy has a sensitive composition regarding exchange rates. Because the external debt of Turkey in reality, has increased, and Turkey has to buy the foreign currency it needed in a higher price because of the increased exchange rates. As a result, a change in values of the foreign currencies concerns all economy. One of those concerns is the effects on securities markets.

The Results of the Regression

The solution of the model, which is defined as a semi-logarithmic function, has four stages. In the first stage, unit roots of stock market indexes used in study are analyzed. Serials are first difference stationary. In the second stage, Cointegration Test is applied to determine the long term relationship between variables. According to this approach, every variable used in the model are endogenously variables, in other words, dependent variables. Independent variables are the lagged values of variables. Model is defined with the same lagged length. Model shows what the variables are telling rather than what the theory tells. In the third stage, the Cointegrating Equation of the model is reached. In the final stage, how the system will behave when subjected to a shock is researched using Variance Decomposition approach.

Table 4- Johansen Cointegraion Test

Sample (adjusted): 3 3254
Included observations: 3252 after adjustments
Trend assumption: Linear deterministic trend
Series: LOG(BIST100) EUR USD GBP JPY AUD CAD CHF SEK
Lags interval (in first differences): 1 to 1
Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.034691	408.3676	197.3709	0.0000
At most 1 *	0.027108	293.5503	159.5297	0.0000
At most 2 *	0.022957	204.1771	125.6154	0.0000
At most 3 *	0.016686	128.6498	95.75366	0.0001
At most 4 *	0.011894	73.92938	69.81889	0.0226
At most 5	0.006133	35.01985	47.85613	0.4470
At most 6	0.002632	15.01315	29.79707	0.7792
At most 7	0.001852	6.442995	15.49471	0.6431
At most 8	0.000128	0.415210	3.841466	0.5193

Trace test indicates 5 cointegratingeqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Table 4 shows the results of Johansen Cointegration Test. It shows the long term relationship between Trace Statistics and Eigenvalue series. According to these results, there is a 5 per cent significant relationship between BIST 100 stock market index and EUR, USD, GBP and JPY. This finding is consistent with the distribution relationship of the foreign currencies in Table 3. However, no significant long term relationships between other currencies and BIST 100 are found.

Table 5- Cointegrating Equation(s)

1 Cointegrating Equation(s): Log likelihood 91023.34
Normalized cointegrating coefficients (standard error in parentheses)

LOG(XU100)	EUR	USD	GBP	JPY	AUD	CAD	CHF	SEK
1.000000	-3.558140	-0.685214	0.911469	0.192389	-5.386997	-1.893069	6.678752	14.05913
	(0.38995)	(0.40813)	(0.27694)	(0.35085)	(0.77743)	(0.67113)	(0.76443)	(6.55575)

$$Log\,(XU100) = 3{,}558140EUR + 0{,}685214USD - 0{,}911469GBP - 0{,}192389JPY + \ldots$$
$$\ldots + 5.386997AUD + 1.893069CAD - 6.678752CHF - 14{,}05913SEK + \varepsilon_t$$

Table 5 shows the Cointegrating Equation defined as a semi-logarithmic function. According to this result, a 1 unit change in EUR and USD increases the BIST 100 index by % 3.55 and %0.68. 1 unit change in GBP and JPY decreases the BIST 100 index by %0.91 and %0.19

Table 6- Variance Decomposition of LOG (XU100)

Period	S.E.	Log (XU100)	EUR	USD	GBP	JPY	AUD	CAD	CHF	SEK
1	0.021	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.030	99.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
3	0.037	99.88	0.02	0.00	0.01	0.00	0.00	0.00	0.01	0.05
4	0.043	99.77	0.04	0.00	0.02	0.00	0.00	0.00	0.03	0.10
5	0.048	99.63	0.06	0.00	0.04	0.00	0.01	0.01	0.05	0.15
6	0.052	99.47	0.09	0.01	0.06	0.00	0.02	0.02	0.09	0.22
7	0.056	99.28	0.13	0.01	0.08	0.00	0.02	0.03	0.12	0.29
8	0.060	99.09	0.16	0.01	0.10	0.00	0.03	0.04	0.16	0.36
9	0.064	98.88	0.20	0.02	0.13	0.00	0.04	0.05	0.21	0.43
10	0.067	98.66	0.25	0.02	0.16	0.00	0.05	0.07	0.26	0.50

Table 6 shows the Variance Decomposition results. Variance Decomposition method shows what shape the system will take and which variable will be effected how much, when system is subjected to a shock. According to this, a variation change in BIST 100, on first days, will be self-caused, however, variation changes in the following days will be caused by the changes in the exchange rate. This applies to all variables which are subject of the application.

Conclusion

International financial theory makes two important announcements regarding exchange rate fluctuations. First; when investors invest in securities in a foreign country, their profit is affected by the change of value of the security and the change of value of the currency the security is in. If a country's national currency is expected to gain value, investors may volunteer to invest in that country's securities in order to benefit from currency activities. On the other hand, if the country's national currency is expected to lose value, foreign investors may choose to buy securities from other countries, Madura, (2012). This theoretical explanation applies for Turkish securities markets. Nowadays, while the Turkish Lira is losing value rapidly, both domestic and foreign investors are abandoning securities investments and moving in the direction of getting out of the market. This situation is causing serious losses in Turkish stock market. Second, the loss of value of national currency makes the export products more competitive. Therefore the export income is expected to increase. This approach is also applies for Turkish Economy.Because in the researched period, export income of Turkey has increased significantly. However, as Turkey's import expenditures are more than its export income, it brings a risk of current deficit for the Turkish Economy. This situation is a structural problem for the Turkish Economy. It is not a problem that can be solved in a day.

Changes in exchange rates also concerns corporations. Especially it affects the payment balance of corporations which trades internationally. Therefore, whether the company is exporting or importing, increases or decreases in the exchange rates will affect both the cash flow and market value of the corporation. This is obvious.

When looked at, the results of the study show a significant long term relationship between BIST 100 and exchange rate changes. The effect can be seen even more clearly especially when evaluated from the angle of foreign currencies which have a high ratio in foreign currency composition. On the other hand, every foreign currency may have a different effect on the stock market index. Again, it can be said that there are currencies with no significant effects to stock market index. In conclusion the foreign exchange markets are a subject to be followed closely.

Acknowledgement

This survey was presentedWorld Business and Social Science Research Conference DATES: 14 – 16 April 2014Paris, France.

References:

Aggarwal, R. (1981). "Exchange Rates and Stock Prices: A Study of the US Capital Markets under Floating Exchange Rates", *Akron Business and Economic Review*, 7-12.

Ajayi, R. A., Mougoue, M. (1996)."On the Dynamic Relation between Stock Prices and Exchange Rates",*The Journal of Financial Research*, 19, 193-207.

Atan, M. (2002)."Econometrics Lecture Notes.*Department of Econometrics*",*Gazi University*, Ankara – Turkey.

Bahmani – Oskooee.,Sohrabian, M. A. (1992)."Stock Prices and the Effective Exchange Rate of the Dollar",*Applied Economics*, 24, 459-464.

Benjamin M. T. (2006). "The Dynamic Relationship betweem Stock Prices and Exchange Rates: Evidence for Brasil",*Working Paper Series*, 124,1-38.

Bhattacharya, B., Jaydeep, M. (2001)."Causal Relationship Between Stock Market and Exchange Rate, Foreign Exchange Reserves and Value of Trade Balance: A Case Study for India",*Akron Bisiness and Economic Review*, 12, 7-12.

Branson, W., Halttunen, H., Masson, P. (1977)."Exchange Rate in the Short Run: The Dollar Deutsche Mark Rate",*European Economic Review*, 10, 303–324.

Chow, E.H., Lee W.Y., Solt, M.S. (1997). "The Exchange Rate Risk Exposure ofAsset Returns",*Journal of Business*, 70, 105-123.

Desislava, D. (2005). "The Relationship between Exchange Rates and Stock Prices: Studied in a Multivariate Model",*Issues in Political Economy*, 14, 1-25.

Stavárek, D. (2005). "Stock Prices and Exchange Rates in the EU and the USA: Evidence of their Mutual Interactions", Czech Journal of Economics and Finance, 55, 141 – 161.

Dornbusch, R., Fischer, S. (1980). "Exchange Rates and the Current Account",*American Economic Review*, (70) 5, 960-971.

Dornbush, R. (1975). "A Portfolio Balance Model of Open Economy.*Journal of Monotery Economics"*, 1, 3-20.

Granger, C.W.J, Huang, B., Yang, C.W. (2000)."A Bivariate Causality between Stock Prices and Exchange Rates: Evidence form Recent Asian Flu", *The Quarterly Review of Economics and Finance*, 40, 337-354.

Groenewold, N., Paterson, J.E.H. (2011). "Stock Prices and Exchange Rates in Australıa: Are Commodity Prices the Missing Link?",*Discussion paper*, 1- 24.

Guglielmo M. C., Hunter J., Faek M. A. (2012). "On the Linkages between Stock Prices and Exchange Rates: Evidence from the Banking Crisis of 2007–2010",*BMRC-QASS Conference on Macro and Financial Economics*, 1-51.

Harald H., and Hélène, R. (2002).“Exchange Rate, Equity Prices and Capital Flows”,*NBER Working Paper*, No. 9398.
Hatemi J. A., Irandoust, M. (2002).“On the Causality Between Exchange Rates and Stock Prices: A Note”,*Bulletin of Economic Research*, (52) 2, 197-203.
Issam S.A. A.Murinde, V. (1997).“Exchange Rate and Stock Price Interactions in Emerging Financial Markets: Evidence on India, Korea, Pakistan and the Philippines”,*Applied Financial Economics*, 7, 25 – 35.
Krueger, A.O. (1983). “Exchange Rate Determination”,*Cambridge University Press*, Cambridge.
Madura, J., (2012). International Financial Management.HaticeDoğukanlı (Ed.), Ankara: Nobel AkademikYayıncılıkEğitimDanışmanlık Tic. LTD. ŞTI.
Nieh, C., Lee, C. (2001). “Dynamic Relationship between Stock Prices and Exchange Rates for G7 Countries”,*Quarterly Review of Economics and Finance*, 41, 477 – 490.
Ong, L.L., Izan, H.Y. (1999). “Stock and Currencies: are they related?”,*Applied Financial Economics*, 9, 523-532.
Phylaktis, K., Ravazzolo, F. (2000).“Stock Prices and Exchange Rate Dynamics”,*Australian Banking Association in Sydney, at the European Meeting of the Financial Management Association in Edinburgh, at the Macro, Money and Finance Conference in Oxford, at the European Financial Management Association in Athens and at the City University Business School in London Workshop.*
Rahman L., Uddin, J. (2009). “Dynamic Relationship between Stock Prices and Exchange Rates: Evidence from Three South Asian Countries”,*International Business Research*, (2) 2, 167 – 174.
Ramasamy, B., Yeung, M.C.H. (2005). “The Causality between Stock Returns and Exchange Rates: Revisited”,*Australian Economic Papers*, (44) 2, 162-169.
Ratner, M. (1993).A Cointegration Test of Impact of Foreing Exchange Rates on U.S. Stock Market Prices.*Global Finance Journal*, 4, 93-101.
Richards, N. D., Simpson, J., Evans. J. (2009).“The Interaction between Exchange Rates and Stock Prices: An Australian Context”, International Journal of Economics and Finance, (1) 1, 1-23.
Schmidt, S.J. (2005). Econometrics.New York, McGraw-Hill.
Soenen, L.A., Hennigar,E.S. (1988). “An Analysis of Exchange Rates and Stock Prices - The US Experience between 1980 and 1986”, *Akron Business and Economic Review*, 7-16.
Solnik, B. (1987). “Using Financial Prices to Test Exchange Rate Models: A Note.*Journal of Finance”*, 42, 141–149.

Appendix - Balance Of Payments

ANALYTIC PRESENTATION (Million US Dollars)	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
CURRENT ACCOUNT	**3.760**	**-626**	**-7.554**	**-14.198**	**-21.449**	**-31.836**	**-37.781**	**-40.438**	**-12.168**	**-45.447**	**-75.092**	**-48.504**
Exports f.o.b.	34.729	40.719	52.394	68.535	78.365	93.613	115.361	140.800	109.647	120.902	143.396	163.221
Imports f.o.b.	-38.092	-47.109	-65.883	-91.271	-111.445	-134.671	-162.213	-193.821	-134.497	-177.315	-232.535	-228.553
Balance on Goods	-3.363	-6.390	-13.489	-22.736	-33.080	-41.058	-46.852	-53.021	-24.850	-56.413	-89.139	-65.332
Services: Credit	15.203	14.031	18.047	23.364	27.958	26.195	29.928	36.978	35.653	36.279	40.668	43.150
Services: Debit	-6.067	-6.146	-7.575	-10.334	-11.942	-12.210	-15.974	-18.161	-17.072	-19.621	-20.538	-20.548
Balance on Goods and Services	5.773	1.495	-3.017	-9.706	-17.064	-27.073	-32.898	-34.204	-6.269	-39.755	-69.009	-42.730
Income: Credit	2.753	2.486	2.246	2.651	3.644	4.418	6.423	6.889	5.164	4.477	3.952	5.034
Income: Debit	-7.753	-7.040	-7.803	-8.260	-9.483	-11.074	-13.531	-15.255	-13.472	-11.692	-11.793	-12.191
Balance on Goods, Services and Income	773	-3.059	-8.574	-15.315	-22.903	-33.729	-40.006	-42.570	-14.577	-46.970	-76.850	-49.887
Current Transfers	2.987	2.433	1.020	1.117	1.454	1.893	2.225	2.132	2.409	1.523	1.758	1.383
CAPITAL ACCOUNT							**-8**	**-61**	**-43**	**-51**	**-25**	**-44**
FINANCIAL ACCOUNT	**-14.557**	**1.172**	**7.162**	**17.702**	**42.685**	**42.689**	**49.287**	**34.730**	**10.123**	**59.061**	**66.698**	**70.172**
Current, Capital and Financial Account	-10.797	546	-392	3.504	21.236	10.853	11.498	-5.769	-2.088	13.563	-8.419	21.624
NET ERRORS AND OMMISSIONS	**-2.127**	**-758**	**4.489**	**838**	**1.964**	**-228**	**517**	**3.011**	**2.879**	**1.405**	**9.433**	**1.197**
GLOBAL BALANCE	-12.924	-212	4.097	4.342	23.200	10.625	12.015	-2.758	791	14.968	1.014	22.821
RESERVE ASSETS	**12.924**	**212**	**-4.097**	**-4.342**	**-23.200**	**-10.625**	**-12.015**	**2.758**	**-791**	**-14.968**	**-1.014**	**-22.821**
Official Reserves	2.694	-6.153	-4.047	-824	-17.847	-6.114	-8.032	1.057	-111	-12.809	1.813	-20.814
Use of Fund Credits and Loans	10.230	6.365	-50	-3.518	-5.353	-4.511	-3.983	1.701	-680	-2.159	-2.827	-2.007
Exceptional Financing												

Source: Central Bank of the Republic of Turkey, Statistics Department, Balance of Payments Division