An Investigation on the Shuttle Trade Dynamics of a Small-Open-Economy

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Abstract

In this article we have tried to assess the possible relationships between shuttle trade and the expletory variables, export (f.o.b.), import (c.i.f.) and CPI based real effective US dollar exchange rate. We employed monthly data of Turkey covering the years from 1996:01 to 2006:12 and forecasted the parameters by Ordinary Least Square (OLS) estimation method. In order to find out whether there is a linear relationship among these series; we have checked each series whether are integrated at the same order or not. According to the ADF unit root test results, we have found that all the variables are integrated of order one, I(1), but shuttle trade. Besides we detected a case of multicollinearity among some of the expletory variables. Therefore we used first order autoregression model of shuttle trade. We have derived that, previous month's shuttle trade have positive impacts on the current level shuttle trade. We also used the same specification to indicate that the shuttle trade value increases in the months of fall and decreases in months of summer.

Keywords: International Macroeconomics, Shuttle Trade, Ordinary Least Square

JEL classification: F41, E26 and C22

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1. Introduction

OECD (2001) defines shuttle trade as the activity in which individual entrepreneurs buy goods abroad and import them for resale in street markets or small shops. Often the goods are imported without full declaration in order to avoid customs duty. Besides international definitions, there is a classification debate on shuttle trade among countries, whether or not it will be classified as non-observable, legal or underground economy. Those also make it complicated to measure and determine the shuttle trade volume and define its contribution to the macroeconomy (IMF, 1998:6, Paramonov and Strokov, 2007). Simply, because of its significant role among Eastern Europe and Central Asia; countries try to measure it usually by applying surveys in the customs. Approximately, the origins of shuttle traders are mostly from Russia, China, Ukraine and Bulgaria. These tourists go to their countries with their luggage. The visitors coming from Eastern Europe Countries usually do not encounter by any custom unions restrictions while carrying their goods to their own countries.

The economic meaning of shuttle trade was initially weak until 1990s. Within the appearance of integration and transition economies in Asia, shuttle trade has started to become commonplace among emerging markets. One of the causes of this type of trade flow was the structural transformation in the Eastern Europe. After the collapse of the Soviet Union, its economy has started to be turned to a market economy. In this period, the privatization policy had been administered unsuccessfully, which gave rise to structural unemployment. Some part of this unemployed population started to take jobs as shuttle traders and has started to travel to other countries as Turkey.

The shuttle trade has been in the agenda of Turkish and Russian economies for more than ten years (Eder, Yakovlev and Carkoglu, 2003). The shuttle trade issue concerns thousands of people from both sides of the countries and follows a sensitive policy to crisis and foreign trade policies. Economic indicators determine the volume of shuttle trade with Turkey and Russia. Besides its economic influences, political events are also critical to determine the trade volume between two countries (see Sezeri, 2000 for brief history of Turkish-Russian political history beyond 2000). The shuttle trade has been decreasing since 1998, continued to decrease after the political events in Russia in 2004.

The rest of the article is organized as follows. Section II gives a brief economic outlook for shuttle trade economics. Section III introduces the model specification and presents the results. The last section is the evaluation of the results and the conclusion.

2. Brief Outlook for the Shuttle Trade Economics

In law, shuttle trade has been assessed as export with waiver. This makes trade easier because generally shuttle trade between Russia and Turkey concentrates on textile, leather products, shoe, building supplies, food and plastic products. According to Foreign Economic Relations Board (DEIK), regional total trade volume of shuttle trade is nearly 20 billion dollars and half of this number remains in Turkey. Central Bank of the Republic of Turkey forecasts this number as 9 billion dollars and Turkish Statistical Institute (TURKSTAT) forecasts this number as 4.3 billion dollars. According to LASIAD (2000) from 1996 to 2000, Turkey has lost potentially 21 billion dollars from shuttle trade.

Although shuttle trade has no contribution to the economy related with custom revenues for the governmental budget, another contribution of shuttle trade to economy is related with tourism economy. The visitors coming for this purpose concede thundering currency to the domestic economy. Besides, it has a substantial role in the informal economy which is the biggest negative motive for shuttle trade. Yukseker (2003) redefines informal economy concept within Fernard Braudel's understanding of market economy. Hort (1973) suggests that informal economy grows out of by migration from urban to rural. Urban industry can not observe the unemployed segment, consequently binary labor market come into being. Workless part of the economy searches for alternatives to exist in the world as a human being. Privatizations in 1990s in Russia were a collapse relating with unemployment. Most of the privatized emporiums, hotels and other services sectors passed into the hands of minor groups in 1990s (Serling,1994: 99-100). Consequently, shuttle trade accounts of Russia have started to be controlled by minor groups (Yukseker, 2003:69).

Turkey has earned significant income from the shuttle trade activity in the region since the last ten years of time being. However, as seen in Table 1, there is an important decrease in income after 1996. In 1996, Russian government has decreased the exempting applied to shuttle trade from 2000 dollars to 1000. Also Russia increased the custom duties and quantity restrictions related with the trade. Consequently, shuttle trade among Turkey and Russia has been affected negatively. Laleli Business Association offers free trade zone to Laleli-Istanbul in order to increase the shuttle trade potential between Turkey and Russia. They claim that, after this, the unregistered economic activities will be diminished.

Table 1. Turkey's Trade with Russia (Million Dollar)				
Years	Export (X)	Import (M)	X/M(%)	Equilibrium	BT
1996	1.482	1.846	80	-364	8.842
1997	2.049	2.048	100	1	5.849
1998	1.348	2.155	63	-807	3.689
1999	587	2.372	25	-1,785	2.255
2000	644	3.886	17	-3,242	2.944
2001	924	3.436	27	-2,512	3.040
2002	1.163	3.855	30	-2,692	4.068
2003	1.363	5.420	25	-4,057	3.953
2004	1.860	9.033	21	-7,173	3.880
2005	2.377	12.905	18	-10,528	3.473
2006	3.236	17.529	18	-14,293	6.408
Source: TURKSTAT, CBRT, BT: Shuttle trade income of Turkey				

Turkey's most important partner is Russia related with the shuttle trade. General structure and trend in both of the economies affect the shuttle trade volume. We have lack of data denoting the origins of shuttle traders. However, according to Yukseker (2007) the volume of shuttle trade exports from Turkey to the former Soviet Union in the mid-1990s was estimated to 9 billion US dollars, but this number dropped to 2.2 billion US dollars after 1998 economic crisis in Russia. Although some attitudes to increase shuttle trade volume between two countries, in 2001 this number was 3 billion dollars. After 2001, we have no available data to analyze the shuttle trade volume between Russia and Turkey. Shuttle trade imports into Russia were around 86 billion Dollars in 1996 according to Organization for Economic Co-operation and Development.

When we analyze the trade picture between Turkey and Russia, we observe that Russia's export to Turkey increased by the time being. Although the general trade between Russia and Turkey has been increased after 1996, shuttle trade between countries has started to diminish. After 1998, China, United Arab Emirates, Dubai and Poland have started to obtain comparative advantage. Paramonov and Strokov (2007) provides detailed information for the shuttle trade debate among China and Central Asian countries and comparison of volume of Russian and Chinese trade with Central Asian countries. Consequently, the demanders coming to Turkey from Russia have started to turn their way to these countries (see Eder, Yakovlev and Carkoglu, 2003 for the profile of Turkish shopkeepers and Russian traders.). Also more of the informal cross-border trade has been transformed into registered exports since the crisis of 1998. Therefore, it's meaningful to expect a negative correlation between exports and informal shuttle trade.

## 3. Model Specification and the Results

In this section, we have tried to investigate whether there is a possible relationship between shuttle trade of Turkey and export, import values and real effective exchange rate index which are thought to be most related variables with the shuttle trade. There is restricted detailed time series sub-data concerning the shuttle trade dynamics, because the data has been collected by the surveys. Since the detailed information about the shuttle traders, their profiles and origins are unavailable. We have no opportunity to consider the number of tourists in our investigation. We may talk about high level asymmetric information.

The monthly data for the shuttle trade, export, import and real effective exchange rate index are gathered from the Central Bank of Republic of Turkey Electronic Data Delivery System, balance of payments detailed presentation available at www.tcmb.gov.tr for the period January, 1996 to December, 2006. We used shuttle trade as dependent variable (TP.OD.D010:I-A12.Shuttle Trade, monthly, million U.S. dollars) denoted by BT. The independent variables used in the model are Export (TP.OD.D009:I-A111.Export, f.o.b., U.S. million dollars, denoted by X), Import (TP.OD.D013: I-A121.Imports, c.i.f., million dollars, denoted by M), and CPI based Real Effective Exchange Rate Index (TP.DK.REER3, 1995=100, denoted by RER). RER calculated using the IMF weights for 19 countries including Germany, USA, Italy, France, United Kingdom, Japan, Netherlands, Belgium, Switzerland, Austria, Spain, Canada, Korea, Sweden, Taiwan, Iran, Brazil, China and Greece. An increase in the index denotes an appreciation.

Historically Turkish export is lower than import. Most of the firms export the final goods constructed by the interval goods imported before. Therefore, export value is directly related with the import value. In order to observe it, we used Johansen cointegration test. Trace test indicates two cointegrating equations at the 5% level. The impulse of the export to the import is also positive indicating a significant direct relationship. Therefore, the appreciation of the Turkish Lira may increase the export volume. Besides the correlation coefficient between *X* and *M* is 0.94. The structure of the foreign trade figures increases the collinearity problem of the specification. *RER* directly affects the foreign trade balance of the economy, highly correlated by *X* and *M*, respectively 0.89 and 0.80. Trace test indicated one cointegrating equation at the 0.05 level between *X* and *RER*. Because of observing cointegration relationship among the expletory variables, there is a high possible multicollinearity among the expletory variables (export-import and RER). Also, we observe that *BT* is integrated of order zero (e.i. BT is stationary) and the others are integrated of order one. Therefore, a possible cointegration relationship to search for *BT* on *M, X* and *RER* are not possible.

Most of the economic variables are not pure linear, therefore taking the logarithm of the data gives a great advantage to obtain normality assumption for the variables. The data employed in the specifications are normally distributed. The graphs of the variables are presented in Figure 1.

Figure 1. Logarithmic Graphs of the Variables
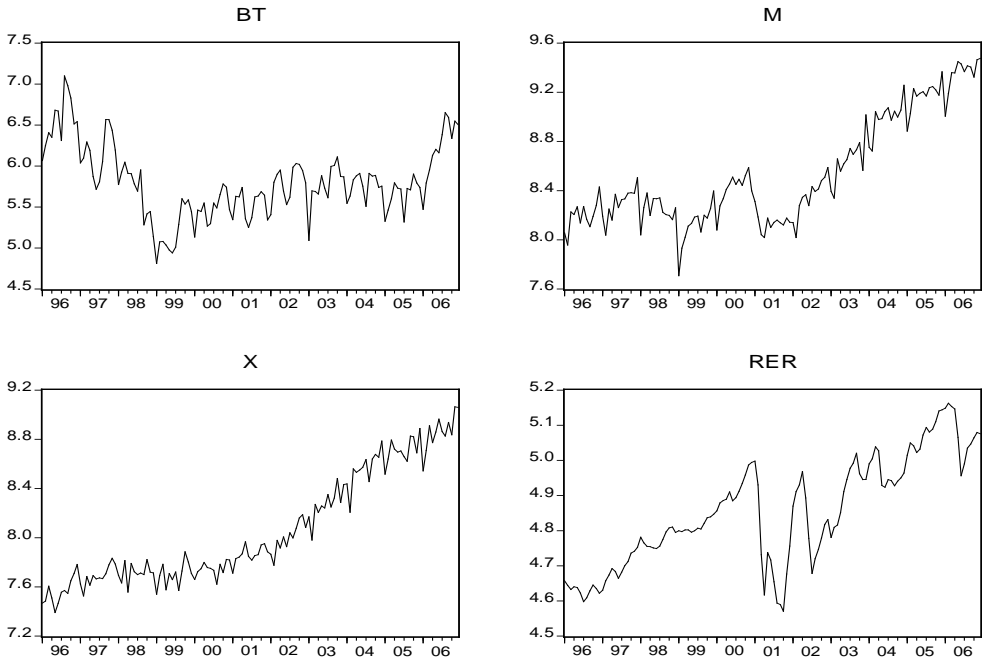
In order to search for a linear relationship among these variables, we have to check whether all variables are integrated at the same order or not. Table 2, presents the ADF unit root test statistics results. Based on the data, we observe that *BT* is stationary and the other variables are integrated at the order one.

Table 2. Augmented Dickey-Fuller test Statistics						
Variable	ADF (Level)	ADF (1st Diff.)	1% Level	5% Level	10% Level	Result
BT*	-2.9982	-4.5955	-3.4808	-2.8836	-2.5786	Stationary
M	-0.0699	-2.5999	-3.4808	-2.8836	-2.5786	Unit Root
X	1.8731	-2.9289	-3.4808	-2.8836	-2.5786	Unit Root
RER	-1.8672	-8.0550	-3.4808	-2.8836	-2.5786	Unit Root
(*) stationary at % 5 significance level.						

Equation (1) is the initial specification of the model and call as specification A.

$$\ln BT_t = \ln \beta_0 + \beta_1 BT_{t-1} + \beta_2 \ln M_t + \beta_3 \ln X_t + \beta_4 \ln RER_t + u_t$$
(1)

All the variables are considered in logarithmic scale. Because taking logarithms of the data gives an advantage of increasing the probability of normality assumption. In Figure 2a, normal probability plots of the series at the first difference are presented. From the plots, we clearly observe the normality of the data. However, when we take *BT* as dependent variable, it is not meaningful to search for a linear relationship among other indicators (Engle and Granger, 1987). Because the variables import, export and real effective exchange rate are not stationary. To search for a relationship among the variables, they should be integrated in the same order. Therefore we consider equation (2) and use it as specification B.

The autocorrelation and partial autocorrelation plots and the analysis indicate that a first order autoregressive time series model (equation 2) for *BT* is appropriate. The values of AIC and SBC are also support the same model. That is a model for *BT* is proposed as;

$$(BT_t - \mu) = \alpha_1 (BT_{t-1} - \mu) + \sum_{i=2}^{12} \sum_{j=1}^{11} \alpha_i D_j + u_t$$

$$(2)$$

Eleven monthly seasonal dummy variables are included in equation (2) in order to catch the monthly seasonal effects in the mean equation. We excluded the month December in order to avoid for the dummy trap.
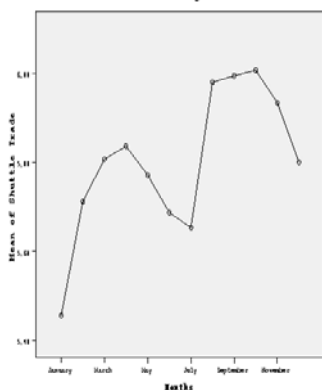
Table (3) presents the parameter estimates of the specification B. The shuttle trade value is persistent and affected by the pervious month. The second pillar of the study is to detect the seasonality in the shuttle trade data. The results of the specification B support our hypothesis that there is a high seasonality in the data. Next by the monthly, yearly and seasonally graphs given in Figure 3, we observed the same structure of seasonality. The trade increases in the fall and decreases in summer. In order to assess the sensitivity of seasonality results to the use of monthly data, we redid our analysis using quarterly data. Similarly, the shuttle trade volume of Turkey increases more in the fall than in the summer.

Figure 2. Distribution Graphs of the Variables (First Difference)
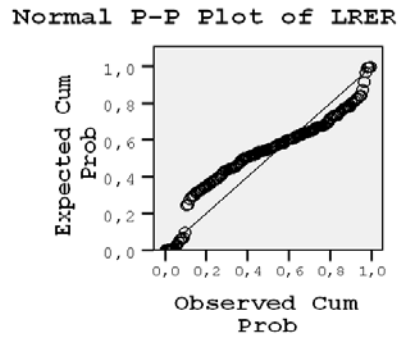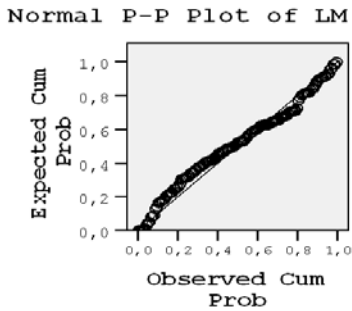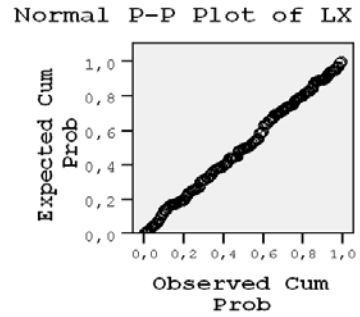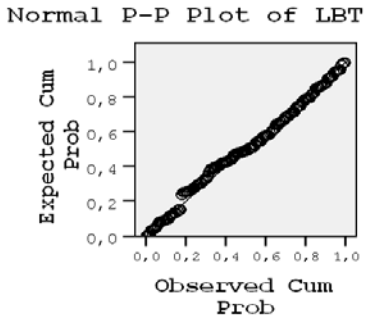
The variables are integrated in different orders; therefore, it is impossible to conduct cointegration analysis between the shuttle trade variable and the others. Therefore, it is not meaningful to search for a long-run relationship for shuttle trade and the other variables.
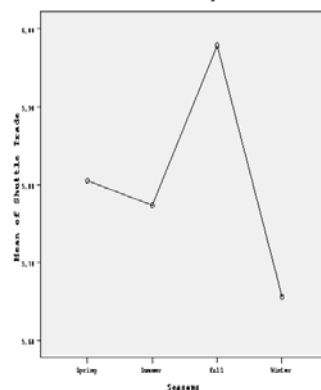
Figure 3. Shuttle Trade in Mean
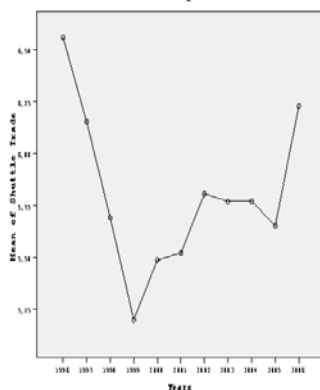
Table 3 Results of the Specification B			
Panel A: Estimates of the Parameters			
Variables	Coefficients		Coefficients
Constant	5.8022*	*May*	-0.0269
	(0.1883)		(0.0929)
BT(-1)	0.9159*	*June*	-0.1112
	(0.0377)		(0.0941)
January	-0.3404*	*July*	-0.1457
	(0.0547)		(0.0927)
February	-0.0853	*August*	0.1807*
	(0.0716)		(0.0887)
March	0.0094	*September*	0.1951*
	(0.0823)		(0.0815)
April	0.0381	*October*	0.2071*
	(0.0891)		(0.0703)
		November	0.1337*
			(0.0523)
Panel B: Robustness of the Results			
R-squared	0.8572	Mean dep.var.	5.8012
Adj.R-squared	0.8427	S.D. dep.var	0.4388
S.E. of reg.	0.1740	AIC	-0.5654
SSR	3.5731	SBC	-0.2801
Log like.	50.0350	F-statistic	59.0417
DW stat	2.3825	Prob (F-statistic)	0.0000
Note: The standard errors are reported in the parenthesis * Significant at 5% Level			

4. Discussion

Overall tendency of Turkey's foreign trade with Russia has been increased since the last ten years. But, when we assess the shuttle trade figures, we see that after 1998, the shuttle trade between two countries has been decreased significantly. The firms producing goods with low qualified labour and intermediate goods in Asian countries and obtaining comparative advantage had an important effect on diminishing trend of shuttle trade between Turkey and Russia. Russian shuttle traders have started to turn their ways to countries like China, India or Romania.

Shuttle trade is directly related with the trade regimes of the countries and shows seasonal movements. The shuttle trade value increases in fall and decreases in summer. Shuttle trade volume has been affected from the previous term's inertia. Also we may expect to obtain negative correlation between exports and informal shuttle trade because most of the shuttle trade has been transformed into registered export since the crisis of 1998.

Shuttle trade has an exempt from tax structure because it is luggage traveling with the passenger. Consequently, there is always a possibility of constituting a base for informal economy. Governments should discourage illegal trade by required controls (See Bal, 2004 for relationship between corruption and shuttle trade). There are also positive effects of shuttle trade on social and economic structure of the economies. Reselling of the goods increases the welfare of the region. This type of trade will satisfy economic resources to the home (i.e. tourism economy) and abroad countries (i.e. reselling goods) if they can fetter shuttle trade volume.

Although we have tried to explore the dynamics of shuttle trade with the available data, in the future by the developments of data mining, more qualified and detailed data will help researchers to investigate the hidden points of the shuttle trade. Specifically, because of the keen relationship between the tourism, the mining of data for the issue will increase the quality and depth of the research papers.

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