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The Impact of Competitive Devaluation on the Foreign Trade of Turkey

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Abstract

Exchange rate system, although it is an important factor in determining the real value of the currency of a country, economy, inflation, devaluation, interest rates vs. foreign trade, such as the affect in many ways. In the study, competitive devaluations and trade relationship is investigating in Turkey. The relationship between foreign trade and competitive devaluations, cumulative method ARDL approach to study is to investigate where there is a long-term relationship between the variables and factors related to long-term model and error correction is estimated between 1965-2014 periods for TB. The results indicate that positive and significant correlation between TB and RER and also between TB and GDP there is, and significant and negative correlation between TB and P, as well as between TB and G there is. Long-term variable coefficient equals 0.80.

Keywords: Devaluation; Foreign trade; ARDL

Introduction

In this study, we determine the impact of competitive devaluations in Turkey's foreign trade with econometric analysis. Competitive devaluation is usually a mover to close the current account deficit of a fiscal policy. While devaluation, decreases the export prices of currency and increases the price of imported goods of national currency. The purpose of devaluations on one hand by encouraging exports is to increase foreign exchange earnings and on the other by reducing domestic demand for imported goods is to save foreign exchange. To make a good result of devaluations in improving the current account balance, it depends on the Marshall-Lerner condition, $e_m + e_x \geq 1$. This situation by assuming an infinite traction of supply, means that the total domestic demand for imported goods(e_m) and foreign demand for exports(e_x) is greater than one. The bigger the total traction than one, the larger the impact of exchange rate adjustment in the external balance will be. The success of devaluations to keep domestic prices depends on no changing in the price of domestic goods in foreign countries as well as consumer habits. However, if the trade deficit depends on structural factors such as low productivity in the national economy, the lack of production and technology and lag of management, the success of the devaluation of national currency in foreign balance will be limited [1]. After the devaluation of the domestic currency, being the total value of traction less than one in the short term, lead the effect of J curve to be one. According to this approach, immediately after the devaluations, first the balance of foreign trade distorted more and the improvement occurs with a certain delay. In the context of summarized theoretical explanations above, it is believed that changes in the variable exchange rate affect the trade balance.

Theoretical Foundations

For the first time Maggie interpreted this phenomenon based on Marshall-Lerner condition Because of the weakening national currency, the real value of import and export volume does not change, but imports more expensive than before, and thus the trade balance worsens the situation. Because by weakening the national currency, the real value of import and export volume does not change, but imports get more expensive than before thus the trade balance situation get worse. Over time, both the suppliers and consumers reacted to the weakening of the national currency and import and export values based on the relative price of domestic goods began to modulate and the trade balance situation improve. In other words, weakening the national currency with intervals affect the trade balance. The Chart of reaction trade balance delay to weaken the national currency, which resembles the letter J, called J-curve effect."

National currency devaluation has two quantity and value effects. The effects of devaluation, represents the exports increasing and imports decreasing. And the impact of its value represents an increasing in import costs according to the domestic currency. In practice it is found that the effect of value which causes deterioration in the trade balance may occur before the quantity effects which improve the trade balance. As mentioned above, this situation is known as the J-curve effect. Because in this case, the trade surplus curve will be drawn as J-curve.

Literature Review

Rezaei Abyaneh Bahareh [2], studied on the asymmetric effects of exchange rate fluctuations on export prices in Iran. And reached the conclusion that export prices reaction is asymmetric to increase and decrease the value of money. So the reaction of export prices according to the negative shock of exchange rate (devaluation) is more than positive shocks (increasing the value of money).

Kazerouni Ali and Mojiri Hadi [3] studied the effect of National currency devaluation on Iran's trade balance with six selected business partner. According to the experimental results between Iran, China and the United Arab Emirates in the short term, the effect of J curve has been confirmed, while it doesn't apply in the other countries (France, Germany, South Korea and Switzerland). In addition to that, J Curve only has been confirmed between Iran and the Emirates in the longer term and rejected in order to the other studied countries.

In this study Carmen and Reinhat [4] has examined the relationship between currency devaluation, relative prices and international trade.

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According to the obtained results, relative prices play an important role in determining trade flows, but sometimes there is no systematic relationship between trade balance and relative prices.

Mahesh Kumar and Chaulagai [5] has tested j-curve hypothesis for Nepal and concluded that devaluation is ineffective in correcting the lack of business in Nepal.

Tirsit Genye [6] has studied the impact of devaluation on Ethiopia's economic growth. And according to these studies it is conducted that devaluation has a negative effect on gross domestic product (GDP) of Ethiopia.

Data and Empirical Findings

Reveals the laws of economics as digital and a variety of economic issues to be examined numerically, the econometric methods are needed to assist in obtaining the correct economic decision. In the study, to establish a close relationship between theory and practice is applied econometric analysis. The results achieved by the results of the econometric analysis of the results achieved in other studies in the literature to assess whether it is in the same direction. In the study, to examine the impact of competitive devaluations in Turkey's foreign trade, it covers the years 1965-2014 data for the period between [7]. Data were taken from the World Bank and the model is as follows:

$$\ln TB_t=\beta_0 + \beta_1 \ln GDP_t + \beta_2 RER_t + \beta_3 \ln G + \beta_4 P + u_t$$

Variables used are as follows:

LNTB: was defined as the logarithm of the ratio between exports of goods (X) to imports of goods (M).

RER: the official exchange rate (official market) US dollar at the beginning of the domestic currency (ER), the US wholesale price index (WPIUS) and i in the country's consumer price index (CPI).

LN GDP_t: was defined as logarithm of the national output,

P: was defined as the inflation.

LNG: was defined as logarithm of the government expenses.

In order to evaluate the reliability of variables Dickey Fuller test is used (Table 1).

Dynamic model

Our model for dynamic pattern is as follows:

$$LTB = \alpha + \sum_{j=1}^{q} \mu_j LGDP_{t-j} + \sum_{j=0}^{p_1} \beta_{1i} LG_{t-j} + \sum_{j=0}^{p_2} \beta_{2j} RER_{t-j} + \sum_{j=0}^{p_3} \beta_{3j} P_{t-j} + T + V_t$$

Dynamic model is based on the results (Table 2), while RER and GDP positive and significant, G is negative and significant. So the reduction of the nominal value of the Turkish currency increased exports and reduced imports to Turkey, this also increase the trade balance is Turkey. Turkey's GDP increased that is an increase in both export and import, since the increase in exports greater than imports increase the country's trade balance [8]. Fiscal policy that is more in the form of increased government spending, investment and private consumption increased, leading to an increase in aggregate demand and this increased demand for imports and the trade balance will worsen (Table 2).

Convergence test

Dynamic model, to understand the long-term convergence is considered T-statistical model.

According to Schwarz Byzn criteria for being considered the optimum number of delays, the dependent variable (TB) is a pause, so we have:

$$t = \frac{\sum_{j=1}^{q} \lambda_j - 1}{\sum_{j=1}^{q} S_{\hat{\lambda} j}} = \frac{.53013\text{-}1}{.18391} = \text{-}2.56$$

Where t is calculated absolute values from the absolute value provided by benerje (Associated with the process, the 90% confidence level, are for 2.042) is large. H0 hypothesis is rejected, and the results show that the 90% confidence levels between the variables of the model are thought to be stable long-term relationship [9].

Estimates of long-term relationships

Table 3, shows ARDL provide a long-term model with coefficient calculated. According to the obtained results, RER variable factors, has a positive and significant effect on the balance of payments. Assuming all other variables remain constant, if RER one percent increase, TB, 0.10601 percent increase. Just the same, the GDP variable, on TB, there is a significant and positive effect, if a percent of GDP is increase, 0.40142 percent increase in TB. G variable factors, has a negative and significant impact on the balance of payments. So if G one percent increase, TB, 0.51402 per cent decrease because when government spending increases and this will lead to an increase in aggregate demand and this increased demand for imports and the trade balance will worsen. Inflation (P) in the long term significant negative impact on trade balance (TB) Because when a country's domestic prices rise this increase imports and decrease exports, the trade balance is reduced as a result [10].

Estimation of error correction model (ECM)

Error correction model, the relationship between the dependent variable and independent variables represent in the short term. ECM (-1) factor estimate for the model, -0.80 were obtained and show that each year 80 percent of short-term ımbalance TB close to the long-term stability [11].

Tests: The estimated model, to investigate abuses and violations of

Variables	GDP	RER	G	P	TB
	1. difference	1. difference	1. difference	1. difference	1. difference
Test statistics	-3.753	-4.392	-2.217	-7.915	-7.057
Critical values					
1% level	-4.262	-4.356	-2.636	-3.646	-3.653
5% level	-3.552	-3.595	-1.951	-2.954	-2.951
10% level	-3.209	-3.233	-1.610	-2.615	-2.617

Regression analysis results of all data according to the level of significance of 5% is statistically significant.

Table 1: Unit root test.

Variable name	Factor	T-statistics
LTB (-1)	0.53013	2.8826 (0.008)
LTB (-2)	-0.32962	-2.5686 (0.017)
LG	-0.65572	-3.9296 (0.001)
LG (-1)	0.59085	3.7892 (0.001)
LG (-2)	-0.34608	-3.3516 (0.003)
LGDP	0.32093	2.4428 (0.023)
P	-0.0012543	-1.9652 (0.062)
RER	0.84758	2.5371 (0.018)
C	0.68968	1.8696 (0.674)
T	-0.011980	-2.3989 (0.025)
R^2=0.72		

Table 2: The results dynamic pattern model.

Variable name	Factor	T-istatistik
LG	-0.51402	-2.9224 (0.008)
LGDP	0.40142	2.2727 (0.033)
P	-0.00157	-2.1382 (0.043)
RER	0.10601	2.4596 (0.022)
C	0.86264	2.0066 (0.057)
T	-0.01498	-2.5077 (0.020)

Table 3: Results of a long-term review model.

non-classical assumption is need for the implementation of some of the tests in this study and the results are brought to the Table 4.

According to the obtained results at the level of 10%, no serial autocorrelation and variance heterogeneity deficiency hypothesis is not detectable. As a result, the model is valid classical assumptions.

Stability testing of the coefficient: CUSUM and CUSUMQ tests: If the cumulative residual and cumulative residual square diagrams are between two straight lines (95% confidence interval) are, the null hypothesis that there is no structural breaks will be accepted and if figures are from outside the confidence interval, presence of structural breaks will be accepted [12].

According to Figure 1, the coefficients of both models has been stable over the period examined.

Results

In this paper, the impact of competitive devaluation on the trade

Test statistic	Lagrange coefficients	Prob.	F statistic	Prob.
Autocorrelation test	0.64244	0.725	0.20847	0.813
Heterogeneity of variance test	3.5934	0.1661	1.2831	0.298

Table 4: Test classic assumptions in the model search.

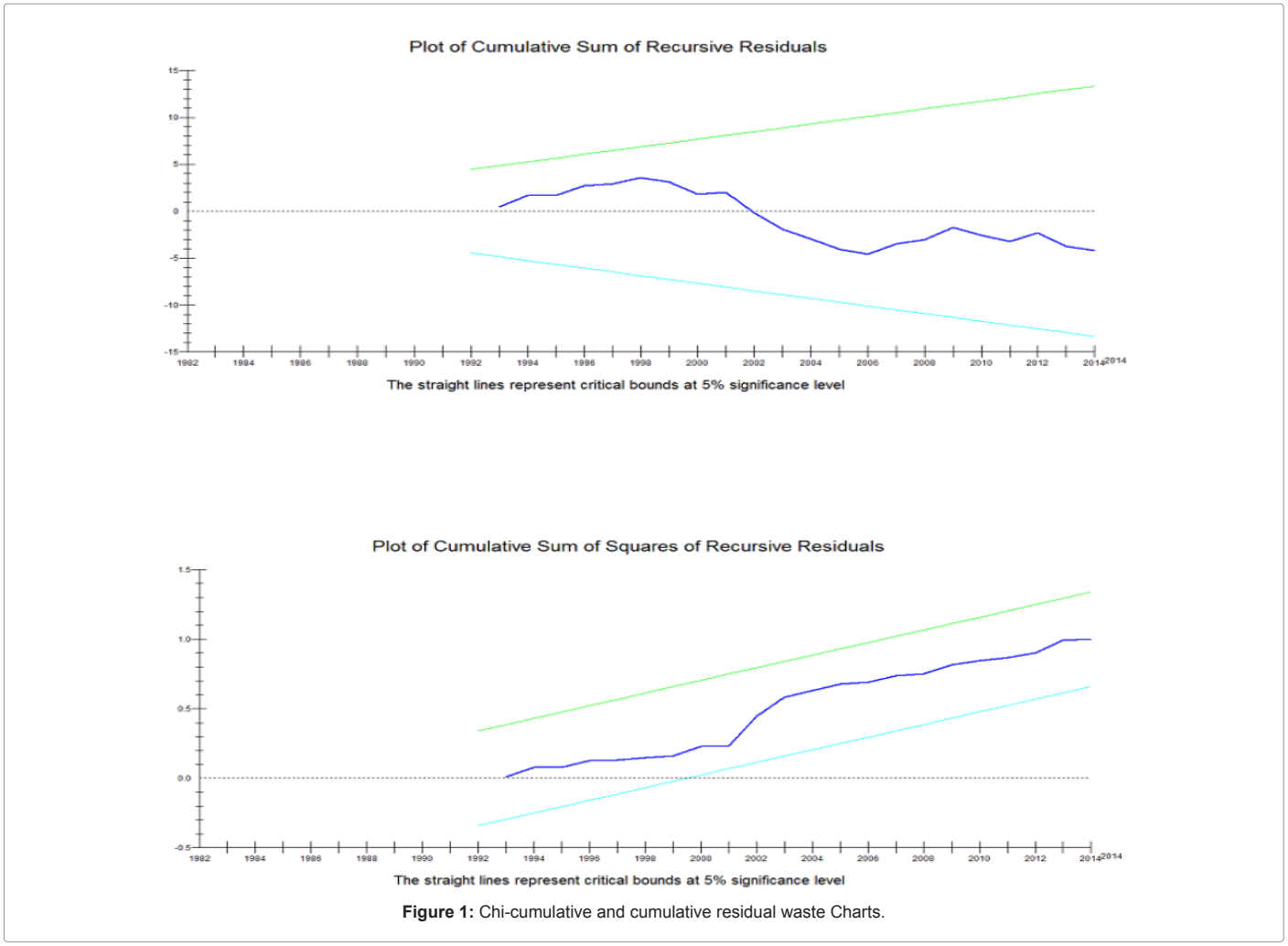

Figure 1: Chi-cumulative and cumulative residual waste Charts.

balance of Turkey, using co-integration ARDL approach for the long-term relationship between variables is used and factor related to long-term models and error correction on the trade balance for the period 1965-2014 have been estimated. The estimated model is considered five variables: 1-Logarithm of the trade balance 2-Real exchange rate 3-Inflation 4-Logarithm of GDP 5-Logarithm of government spending. The results of long-term relationships indicates that log of governments expenditure, log of GDP, inflation and real exchange rate are factors affecting the logarithm of Turkey's trade balance. As government spending leads to an increase in aggregate demand and increase aggregate demand is also increasing import demand, and increase in import demand led to a deterioration of the trade balance of country [13]. On the other hand there is inflation reduces the effect of devaluation on the trade balance, because inflation is an increase in export prices and this led to a decline in exports and increased imports, and the trade deficit will eventually be. As well as an increase in the real exchange rate is an increase in the price of foreign goods, and this will reduce imports and raise exports, and ultimately lead to an increase in the trade balance. Increase in GDP also due to an increase in exports as well as imports, but in Turkey's exports increased more than imports, that the trade balance would be better. Here is the GDP effect on the trade balance is more than the actual exchange rate.

In the short-term analysis of a causal relationship between the model variables from short-term to long-term joint was observed.

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