The Relationship between Trade Openness and Inflation in Turkey*

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Abstract

Both in Turkey and in the world in 1980 was a year of major structural transformations. Globalization has been accelerated in this time and countries have implemented some liberal policies for opening borders to foreign capital. Economies began to be led by export-oriented industrialization and liberalization policies after 1980 and these policies continue since then. Turkey is one of these countries that began liberalization after 1980. While decreasing trade barriers exerts a downward pressure on prices trade liberalization represents a structural break. This study aims to examine the relationship between trade openness and inflation over the period 1980-2011 for Turkey by using OLS method. The proportion of foreign trade volume (exports plus imports) to GDP and real exchange rates are used as measures of trade openness besides inflation rate. As a result of the study, it has been determined that there was a negative correlation between trade openness and inflation rate for the dedicated years in Turkey. The effects of crisis and election years in Turkey have been also tested and found statistically insignificant.

Keywords: Trade openness, Inflation, Turkey

JEL classification: F10, F14

Introduction

For more than 50 years, there have been studies estimated the relationship between trade openness and inflation. While intending to increase the openness of countries by trying to reduce quotas and tariffs with GATT, UNCTAD and WTO that established to provide the liberalization of trade, on the other hand

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countries has been trying keep foreign trade under control by applying quotas and restrictions either to protect their domestic industries or to generate income.

With the ending of protectionism in 1970's, this has started with the Great Depression, with the disintegration of the USSR and the collapse of the Berlin Wall in 1980's, effort to apply export-oriented industrialization model as a national policy has been accelerated. The major structural change in Turkey's economy has also experienced in 1980's; abandoned the import substitution development policy and export-oriented and open development policy was adopted. Since 1980, Turkey's foreign trade volume increased rapidly; especially the positive effect of expansionary monetary policy implemented for the financing of the budget deficit on general level of prices caused inflation rates to remain high during this period.

Openness of an economy is determined by a large number of factors, most importantly by trade to income ratios, trade restrictions like tariffs, non-tariff barriers, foreign exchange regimes, non-trade policies and the structure of national economies. The share of trade transactions in a country's value added is a result of all these factors (UNESCAP, 2009).

Inflation has been one of the most important concerns for policy makers, as it creates uncertainty in the economy that may adversely affect economic growth. Therefore, maintaining noninflationary stable economic growth has been the gist of macroeconomic policies in developing countries (Samimi et al, 2011). The inflation in developing countries could be influenced by many variables. Fluctuations in the exchange rate, balance of payments (BoPs), and foreign investment inflows tend to have influence on the price and quantity dynamics in the economy in various ways (Ashra, 2002).

A significant expansion in global trade and a simultaneous decline in inflation volatility have seen in recent decades (Bowdler & Malik, 2005). The determinants of gaining and losing from the international trade have been drawn attention for centuries (Okay, Baytar, Erdoğan, 2012). International trade usually creates economic growth. On the other hand, it also creates inflation. In this study, it is estimated that the relationship between trade openness and inflation in Turkey in the period of 1980 – 2011 by using OLS method. As a result of the literature review, it was determined that this study supports the most studies explaining the negative correlation between trade openness and inflation.

Liberalization Policies in Turkey

Liberal policies were applied in Turkey between the years 1923-1929 and 1950-1960 however, these policies which didn't base on a liberalization policy have remained as temporarily held policies with the effect of international conjuncture. Many applications such as convertibility of the Turkish lira, the IMF stabilization programs, export promotion policies, and privatization of SOEs have been revealed to ensure rapid development by liberalizing the economy and also opening it (Gökalp, 2000).

1980 was a year of major structural transformations both in Turkey and in the world. Globalization has been accelerated during this time and countries have implemented some liberal policies for opening borders to foreign capital. In line with the trade liberalization in Turkey, economy was opened to foreign competition after 1980 and abandoned the strategy of import-substituting industrialization which applied pre-1980, adopted and encouraged export-oriented industrialization strategy.

The liberalization of foreign trade is important in two respects. The first one is opening the economy to foreign competition in a given process. Liberalization of imports allows the entrance of foreign products to domestic markets and the transportation of international competition pressure to these markets, the promotion of exports and domestic products to compete with its rivals in foreign markets (Ateş&Bostan, 2007).

In 1980s, developments in exports, directly affect the economy; exporting sectors create labor demand and also change the composition of production. Shaping the commodity composition of exports in the context of the changes in the world economy is the basic condition of the adaptation of Turkish economy to the global economy. The period since 1980 has been a period of significant structural and administrative changes such as the implementation of open development strategies to foreign competition, locating foreign trade at

the top pf the national agenda and thus increasingly becoming a society that tries to adopt the importance of exports.

After 1980, foreign trade was liberalized, export-oriented industrialization strategy adopted, important steps have been taken to restructure and develop the financial markets. In 1989, international capital movements have been completely released and privatization initiatives are accelerated in the framework of the restructuring of the public sector. Not being made in a stable political process of all these structural changes have delayed the process of change and in this period has led to the emergence of various structural problems in addition to the macroeconomic problems. The most important of these problems; chronic high inflation, lack of investment in the manufacturing sector, slow improvement in productivity levels especially created by the implementation of changes in to improve the completion environment, remaining the financial markets under pressure due to the deterioration in the public finance balance and an increase in real interest rates (Hepaktan, 2008).

The structural change in the structure of foreign trade for the period 1980 to the present that Turkey was pursuing is shown in Table-1.

Table 1: Foreign Trade in Turkey, 1980-2010

Years	Export (million\$)	Import (million\$)	Volume of Foreign Trade (million\$)	Balance of Foreign Trade (million\$)	Proportion of Imports Covered by Exports (%)	Share of Exports in GDP (%)	Share of Imports in GDP (%)
1980	2910	7909	10819	-4999	36,8	4,3	11,7
1981	4703	8933	13636	-4230	52,6	6,7	12,7
1982	5746	8843	14589	-3097	65,0	9,1	13,9
1983	5728	9235	14963	-3507	62,0	9,5	15,3
1984	7134	10757	17891	-3623	66,3	12,2	18,3
1985	7958	11343	19301	-3385	70,2	12,0	17,1
1986	7457	11105	18562	-3648	67,1	9,9	14,8
1987	10190	14158	24348	-3968	72,0	11,9	16,5
1988	11622	14335	25957	-2713	81,1	12,8	15,8
1989	11625	15792	27417	-4167	73,6	11,0	14,9
1990	12959	22302	35261	-9343	58,1	8,7	14,9
1991	13594	21047	34641	-7453	64,6	9,1	14,1
1992	14719	22870	37589	-8151	64,4	9,4	14,6
1993	15348	29429	44777	-14081	52,2	8,7	16,6
1994	18105	23270	41375	-5165	77,8	13,8	17,7
1995	21636	35708	57344	-14072	60,6	12,9	21,2
1996	23224	43625	66849	-20401	53,2	12,8	24,1
1997	26245	48583	74828	-22338	54,0	13,9	25,7
1998	26881	45921	72802	-19040	58,5	9,9	16,9
1999	26587	40671	67258	-14084	65,4	10,7	16,4
2000	27775	54503	82278	-26728	51,0	10,5	20,5
2001	31187	40508	71695	-9321	77,0	15,9	20,6
2002	35081	50832	85913	-15751	69,0	15,2	22,1
2003	47253	69340	116593	-22087	68,1	15,5	22,7
2004	63017	97341	160358	-34324	64,7	16,1	24,9
2005	73390	116537	189927	-43147	63,0	15,2	24,2
2006	85535	139576	225111	-54041	61,3	16,2	26,5
2007	107272	170063	277334	-62791	63,1	16,5	26,2
2008	132027	201964	333991	-69936	65,4	17,8	27,2
2009	102143	140928	243071	-38786	72,5	16,6	22,9
2010	113883	185544	299428	-71661	61,4	15,6	25,4

Source: TÜİK, www.tuik.gov.tr

According to Table 1, not only the volume of foreign trade but also share of exports and imports are in an upward trend since the beginning of trade liberalization in Turkey but the foreign trade deficit is a major problem for the whole period.

In this process, there was also an ongoing phenomenon of inflation since the 1970s. Due to the failures of the successively applied stability policies, structural adjustment process prolonged. The main aim of the stability programs implemented in the 1989-91, 1994-95, 1997-99, December 1999 – February 2001 and 2003-2007 periods was the struggling against inflation. In 1989, as an extension of liberalization policies, TL convertibility and financial liberalization policies have been adopted.

In the examined post-1980 period, the foreign trade policy mainly has been carried out in line with the increasing openness of the economy. It is accepted that foreign trade policy instruments to encourage exports and to liberalize imports increases trade openness but they don't have any direct effect to increase the inflation rate..

Due to effective exchange rate policy effects inflation directly, it establishes the link between trade openness and inflation. With the logic of the policies implemented in Turkey after 1980, the economy has turned out to be a market economy and at least partially influenced by globalization.

Literature Review

For more than 50 years, several studies have been estimated the relationship between trade openness and inflation. Some of them have and mostly found negative relationship and some of them positive.

Triffin and Grubel (1962) tested the hypothesis that balance of payments deficits and inflationary pressures would be vitally affected both by the degree of openness and the degree of economic integration and confirmed that more open economies with high degree of economic integration tended to experience lower inflation in 5 advanced European Economic Community countries.

Whitman (1969) used the Triffin-Grubel framework in his analysis but changed the method and variables. He discovered that a country which is relatively open in one sense is not invariably so in the other investigation of the relationship between capital-flow openness and key economic variables which classify nations.

Iyoha (1973)'s study is one of the very first studies on the relationship between inflation and openness in less developed countries. He estimated ordinary least-squares regression method of 33 less developed countries and analyzed the relationship for both yearly and 5-year averaged data from 1960-61 through 1964-65 and resulted a negative relationship between inflation and the degree of openness measured by the import-income ratio. According to Iyoha, *"... if rapid inflation in fact discourages domestic capital accumulation and if increased capital accumulation is needed for development, it will turn out that an outward-looking trade policy resulting in more openness is optimal..."*

Romer (1993) used a Barro-Gordon type of model for a cross-section of 114 countries and tested a prediction of models in which the absence of precommitment in monetary policy leads to inefficiently high inflation. According to Romer (1993), *"the larger and hence less open, an economy is, the greater is the incentive to expand, and so the higher is the equilibrium rate of inflation. Thus, models of inefficiently high inflation arising from the absence of precommitment predict an inverse relationship between openness and inflation"*.

Lane (1997) examined the time-consistent inflation rate to the degree of trade openness of an economy. Lane (1997) expanded the Romer (1993)'s explanations on the negative relationship between openness and inflation rate. He used the 15-year (over 1973-1988) average of annual data and undertakes only a cross section analysis of 114 countries using OLS. In his paper, he found the openness effect is strengthened when country size is included as a control variable, which suggests that openness is not just working through a terms of trade effect. The strength of the empirical evidence suggests trade openness should be taken seriously as a determinant of average inflation over the long-run.

Sachida et al (2003) used a data of 152 countries for the 1950-1992 period by applying panel data and found that the higher the gains, in terms of product, in generating an inflationary “surprise”, the greater the incentives will be for the government to effect such a “surprise”. The authors verified Romer (1993)’s study with an extension; they also proved that the negative relationship between openness and inflation is not specific to a group of countries, nor is it specific to a certain time period. Thus, countries in which there was an increase in trade openness, also observed a reduction in their rates of inflation.

Ashra (2002)’s study is based on a panel data model for 15 developing countries which are from Latin America, South Asia and East Asia for 3 year periods; 1980-97, 1980-89 and 1990-97. He analyzed with different groupings to investigate the potential difference. He used exports plus import as a percentage of GDP as a measure of openness for all the countries in the panel. He found exports and imports of goods and services had a significant influence on the inflation rate. The exports were observed be positively associated with inflation rate whereas imports were observed to have a negative impact.

Gruben and McLeod (2004) used dynamic panel estimations of five-year averages for inflation and import shares over the period 1971-2000. They argued Romer (1993) and Terra (1998)’s hypothesis and resulted a negative openness-inflation correlation strengthened in the 1990s across all country groups. And contrary to Terra’s (1998) hypothesis, except during 1980s, the openness–inflation relationship is more significant among less indebted countries. More open economies also tend to have less variable inflation, though only in the 1990s.

According to IMF(2006)’s World Economic Outlook that entitle as “Globalization and Inflation, measures of trade and financial integration are highly correlated. In this report, IMF stated that more open economies tend to experience lower inflation rates.

Bowdler and Nunziata (2006) extended Boschen and Weise (2003)’s study and found that increased openness reduces the probability of an inflation start, both directly, and indirectly through restricting the role of general elections in triggering inflation starts.

Mukhtar (2010 and 2012) examined Romer (1993)’s hypothesis for Pakistan. He applied multivariate cointegration and VECM techniques for the period of 1960 to 2007. His findings showed that there is a significant negative long run relationship between inflation and trade openness.

Batra (2001) argues that protectionism is not inflationary, at least in the US.

Alfaro (2005) found that openness does not play a role in restricting inflation in the short run but fixed exchange –rate regime does with a panel data set of developed and developing countries between 1973 and 1998.

Kim and Beladi (2005) estimated the relation between trade openness and price level for 62 countries and analyzed a negative relation for developing countries but a positive relation for advanced economies such as the U.S., Belgium, and Ireland.

Evans (2007) found a positive relationship between openness and inflation rate: higher degree of openness in a country is associated with a higher equilibrium inflation rate. He also examined how the level of imperfect competition, both within a country and between countries, affects the relationship between openness and inflation. The author claims that under increased openness circumstances, citizens of inflating country benefit from an imperfect competition environment by spending larger portion of their currency holdings on foreign goods and also inflation n causes the terms of trade to appreciate in favor of the home country. These two benefits working together result in a country’s real wage increasing.

Zakaria (2010) examined the relationship between trade openness and inflation in Pakistan using annual time-series data for the period 1947 to 2007 and found a positive relation.

Feleke (2014) examined his study for Ethiopia using annual time series data over the period 1970/1971-2010/2011 by applying auto regressive distributed lag(ARDL) model for inflation and indicated that the role of trade openness on reducing inflation is insignificant both in the long run and short run, in the contrary to Romer (1993) hypothesis.

Data & Empirical Results

In order to analyze the relationship, I adopted a model similar to Romer (1993) and added other explanatory variables such as crisis years and elections.

$$LGDPD_t = \beta_0 + \beta_1 LOPEN_t + \beta_2 LRER_t + \beta_3 LGDPPC_t + \beta_4 CRISIS_t + \beta_5 ELECT_t + \varepsilon_t$$

where the dependent variable is the $LGDPD_t$ for the GDP deflator as a proxy for inflation. The independent variables; $LOPEN_t$ stands for openness to trade at the time period t , $LGDPPC_t$ stands for the GDP per capita at the time period t ; $CRISIS_t$ is the dummy variable showing the crisis years and $ELECT_t$ is also dummy variable showing the election years in Turkey; finally ε_t is the residual.

Table 2: Descriptive Statistics

Variables	Abbr.	Definition	Source
GDP Deflator	LGDPD	Logarithm of the GDP deflator used as a proxy for inflation	Turkish Statistics Institution (TUIK) & IMF – International Financial Statistics
Trade Openness	LOPEN	Shows the trade openness, which is calculated by the share of total trade in GDP	Turkish Statistics Institution (TUIK) & Worldbank - World Development Indicators
GDP per capita	LGDPPC	Shows the GDP per capita in current US\$	Worldbank - World Development Indicators
Real Exchange Rate	LRER	Shows the real exchange rate index (2005=100)	OECD Stats
Elections	ELECT	Election years in Turkey	-
Crisis years	CRISIS	Shows the crisis years affected Turkey between years 1980-2011	Author's choice
Note: All data were converted to one currency and expressed in millions of US\$. The nominal variables were expressed in logarithm form.			

All data were converted to one currency and expressed in millions of US\$. The nominal variables were expressed in logarithm form. In this study, annual data obtained from different sources. GDP deflator data obtained from Turkish Statistics Institution and IMF-International Financial Statistics; GDP and GDP per capita data obtained from World Bank-World Development Indicators and foreign trade data from Turkish Statistics Institution. Trade openness is the share of the sum of exports and imports to GDP. Real exchange rate is obtained from OECD Stats.

The empirical study deals with Turkey over the period 1980-2011 with 32 observations totally.

Table3: Empirical Results

LGDPD				
Observation	32		32	
C		23.85542 (0)***		24.46463 (0)***
LOPEN	-	1.419452 (0.0161)**	-	0.158287 (0.0047)**
LRER	-	3.265936 (0)***	-	0.3368681 (0)***
LGDPDPC	-	0.122135 (0.625)		
ELECT	-	0.14905 (0.4453)		
CRISIS		0.108725 (0.5958)		
R-squared		0.788547		0.780603
Adjusted R-squared		0.747883		0.757096
F-prob.		0.00000		0.00000
(***), (**) and (*) denote to statistical significance levels of 1%, 5%, and 10 %, respectively.				
Number of observations equals those of the years in the model; p-values are given in parentheses.				

According to empirical results above, the results obtained in the empirical analysis are in line with the earlier studies in the literature reviewed. OLS model results show that there is a negative relationship between trade openness and inflation and supports Romer (1993) hypothesis.

It is determined with Durbin-Watson test in two models that there is no autocorrelation. While first model consist of all variables, the second model consist of only significant variables. The model satisfied the diagnostic tests.

LRER is statistically significant at %1 significance level. LOPEN is statistically significant at %5 significance level and the independent variables affect the LGDPD negatively. As a result, all the coefficients are consistent with predictions. Empirical results show that there is a negative relationship between inflation and trade openness in Turkey over the period 1980-2011.

Conclusion

In this study the relationship between trade openness and inflation has been examined in Turkey over the period 1980-2011 by using OLS method. Empirical analysis results show that there is a negative relationship between inflation and trade openness that supports the literature. LOPEN and LRER variables are negative and statistically significant. The finding of a negative and statistically significant effect of LOPEN variable provides evidence in favor of Romer (1993) hypothesis. More open countries have less inflation rates. The finding of a negative and statistically significant effect of LRER variable confirms the literature for developing countries. LGDPDPC, ELECT and CRISIS variables are statistically insignificant.

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