

DOES FOREIGN TRADE LIBERALIZATION REDUCE POVERTY IN TURKEY?

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ABSTRACT

Economic liberalization was one of the main components of stabilization policies implemented in the 1970s in many developing countries. In order to overcome the shortcomings of the import substitution industrialization strategy, Turkey started to implement export-led growth strategy in the early 1980s and had become an integral part of the world economy. It is argued that trade liberalization by eliminating the obstacles in front of trade will spur the economic activities in the tradable goods and export sectors and create new employment opportunities. It is expected that trade liberalization leads economic growth and this, in turn, increase per capita income and reduces the poverty.

Therefore, the aim of the study is to investigate the effect of trade liberalization on poverty reduction in Turkey by using modern econometric techniques. The empirical findings show that trade liberalization has reduced poverty in Turkey.

Keywords: Trade liberalization, Poverty Reduction, cointegration, Turkey.

1. INTRODUCTION

Liberalization of trade expresses the process of removing the direct and indirect barriers in front of international trade, increase in the foreign trade volume, foreign direct investments, and becoming widespread of transnational economic activities and multinational companies. This process is associated with becoming easier and cheaper of communication activities, changes in working conditions and, moreover, cultural change.

In the form supporting the theory of classical economics foreseeing that economies, with opening to foreign countries, will reach higher production and consumption level, while liberalization paves the way for rapid growth in economic meaning, increasing the vulnerability of countries, it brought together with it the negative effects on poverty (Yanar and Şahbaz, 2013:5). According to the classical approach, liberalization of trade makes contribution to economic growth through factor prices. Developing countries are rich from economic point of view. Therefore, it is expected that free trade leads to higher wages. This situation leads poverty to decrease. However, it was seen that unqualified labor force remained the poorest. For example, while the wages of workers graduated from primary

school rise with liberalization of trade, the wages of illiterate workers decrease (Winter, 2000: 32). In a large part of the world in less developed feature, besides liberalization of trade, as a result of financial integration that rapidly increases in especially 1990s, sensitivity and vulnerability against crises increased and crises caused a serious impoverishment. Increase of poverty in the world in absolute meaning and not being able to be corrected of income distribution among and within countries increased the worries and criticisms about liberalization (Danışoğlu, 2008:11).

The subject matter of this study is to study the effects of liberalization of foreign trade on poverty and carry out analysis on Turkey. In the first part of study, the theoretical framework of the relationship between opening to foreign countries and poverty was examined. In the part of application of study, emphasizing datasets and econometric method to be applied, model prediction and the results obtained will be evaluated. In the section of Conclusion, the findings obtained and policy suggestion will be discussed.

2. THEORETICAL FRAMEWORK

There is a close relationship between foreign trade and development. In the departments of economics, that economic development and international economics are under the same scientific branch shows that this interaction is so important. Although the subject of liberalization of foreign trade is discussed from many aspects, it is generally expressed that it plays a little role in struggle against poverty. Liberalization of trade provides many resources for coping with poverty and generally makes an influence through income distribution. For average income to increase, liberalization may be an indirect role. However, in a situation that is necessary to be known, most foreign trade reforms will absolutely injure somebody, leave them in a difficult position, or deepen poverty. Even if while some reforms also increases national income in society, they may lead poverty to increase. Therefore, although the general opinion is open for liberalization of trade, the primary question is with what way the outward oriented government policies applied will provide the maximum benefit in reducing poverty and what should be done to intensify poverty (McCulloch et al, 2001:22).

The anti – liberalist views suggest that liberalization will damage to poor peoples from many aspects. For example due to the fact that trade reforms made in the developing countries and flexibility in wage decrease and that intersectorial labor force mobility are limited, they put forward that it will increase the poverty in the short term.

Liberalization of trade reduces the demand to skillful labor force at the expense of unskilled one and, thus, disturbing income distribution, increases poverty. In 1980s and 1990s, especially in Latin America countries, the demand to skillful labor force increase due to the use of high technology and unskillful labor force remained unemployed. As a result, the wage gap between skillful and unskillful labor force also enlarged. For the developing countries, liberalization is a knifeedge case. Just as it creates important opportunities, it can also form a serious danger (Danışoğlu, 2004:6).

From the other aspect, the view for liberalization argues that, since country can use its resources more effectively in long term, growth rate will rise and thus poverty will decrease.

Due to the developedness degrees of countries and different polices, applied as a result of this, liberalization of foreign trade will give different results from country to country

Therefore, analyzing the issue according to the features of countries will provide more accurate results.

We can examine the effect of liberalization of foreign trade on the poor people through 3 channels: First is price transferring channel: the first effect of liberalization on the poor people can be through price variations of goods. That price variations affect the poor people depends on that the poor households are net consumers or net producers of goods. The primary gain of liberalization is of the price variations that occur not of its creating market or its destroying some markets (In case that the trade of some goods are initiated and some goods cannot find a place in markets, it means stop of production). Besides this, whether or not the price variations in limit reach the poor people. This effect forms, depending on many factors. Especially it shows a change according to the sectorial structure and the that goods is at national or international level (McCulloch et al, 2001:72). Second is wages channel: liberalization of trade can affect household via employment and wages. If wages are flexible and do not provide full employment, price variations, resulted from liberalization, will also modify wages. But since most of employees are poor, when working areas changes with liberalization, employment will also be affected from this change (Winter,2000:10). Third is the channel of taxes and expenditures: liberalization can affect the poor people with the movements of government in fiscal positions and especially taxes that is an important part of national income. With abolishment of customs duty, the share of decrease occurring in national income can be obtained from constricting the expenditures of social aids. That is, the poor can be negatively affected from the policy government will follow(Winter,2000:12)..

The required economic growth for development is another channel that is important in decreasing poverty. The effect of liberalization of foreign trade on economic growth became the issue of hot discussions in the scope of export oriented growth. Foreign trade, enabling the distribution of production factors between sectors (Grossman and Helpman, 1992; Redding, 1997); increasing domestic competition and, thus, productivity (Greenaway and Milner, 1993; Aghion, Dewatripont and Rey, 1997); enlarging market for the domestic producers and leading to the advantages in scale economies (Taylor, 1994; Grossman and Helpman, 1991); increasing the number of input, whose domestic substitution is not possible and leading to more capacity use (Nishimizu and Robinson, 1986; Quah and Rauch, 1990; Grossman and Helpman, 1992); and lastly, accelerating information flow between sectors and countries (Feder, 1982; Grossman and Helpman, 1992), can positively affect economic growth.

A great majority of the studies carried out on Turkey, which examines the contribution of liberalization of foreign trade to economic growth, showed that the result was positive. (Ghatak, Milner and Utkulu, 1995; Bahmani-Oskooee and Domac, 1995; Yiğidim and Köse, 1997; Doğanlar and Fisunoğlu, 1999; Özmen et al., 1999; Tuncer, 2002; Bilgin and Şahbaz, 2009). Besides this, it is also possible to meet the studies finding that there was no relationship between becoming outward –oriented and economic growth (Özmen and Furtun, 1998; Hatemi-J and Irandoust, 2000; Şimşek, 2003).

While it is possible to see empirical studies identifying the relationship between becoming outward - oriented and economic growth in the literature, it is understood that the effect of foreign trade on poverty is neglected and it is not made a subject of analysis. However, the relevant literature review above shows that the interaction between foreign trade and poverty is important. Just as this interaction can be directly, it can be in an indirect way. In other words, liberalization of foreign trade may create new employment, wage increases in outward- oriented sectors and, thus, income increase, and it may directly make effect on

reducing poverty. In addition, just as assumed in export oriented growth hypothesis, liberalization of foreign trade may create an effect increasing national income. This income increase can also be used to correct the income distribution disturbed especially in democratic countries. This interaction can indirectly arise through income increase.

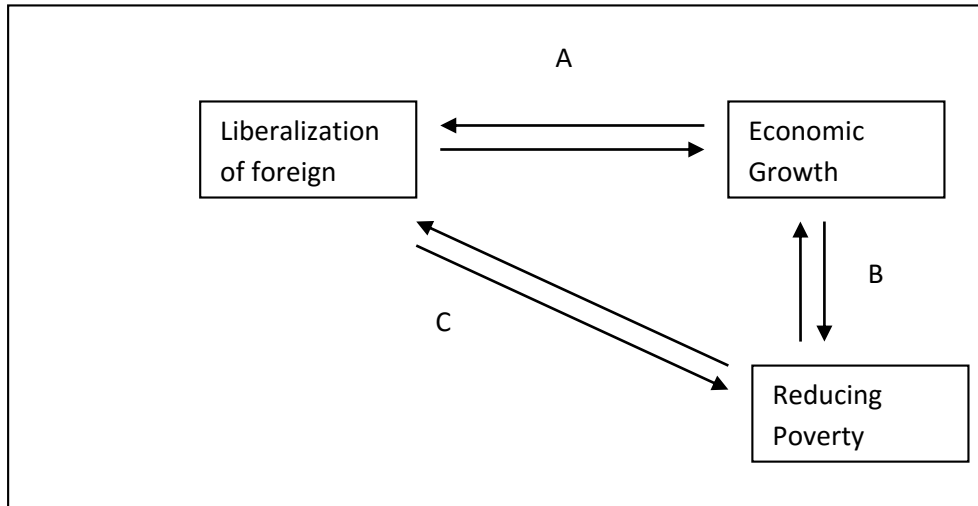


Figure 1. Direct and Indirect Interaction between Foreign Trade and Poverty

According to these discussions, interaction between variables can be crystalized as in Figure 1. C in Figure 1 shows that the direct relationship between foreign trade and poverty can be two directional, while A shows an interaction between liberalization of foreign trade and economic growth in the framework of export oriented growth hypothesis. B reflects that income increasing with liberalization of foreign trade indirectly reduces poverty.

Setting out from this theoretical framework, the dual relationships between liberalization of foreign trade and reducing poverty, and economic growth can be examined in the context of direction of causality (Table 1)

Table 1. *Becoming Outward -Oriented, Economic Growth and Reducing Poverty*

Model No.	Variables
A	The relationship between liberalization of foreign trade and economic growth
B	The relationship between liberalization of foreign trade and reducing poverty
C	The relationship between economic growth and reducing poverty

3. DATA AND METHOD

3.1. Dataset and Its Resources

Turkey, after 1980 Economic Crisis, giving up the applications of policies based on the import substitutive and intervening government approach, adopted an export oriented growth policy. In this frame, first of all, liberalization of foreign trade, then, liberalization of financial

structure, and, finally, liberalization of capital movements, with the decree numbered 32, issued in 1989, were provided (Ağır, 2010; Kara, 2002; Taş, 2001).

Dataset of this thesis aiming at examining the effect of foreign trade on reducing poverty covers the period 1970-2010. Liberalization of foreign trade (OPEN) is measured by the rate of the sum of import and export to GDP. For economic development, the variable of GDP per capita (PGDP) will be used.

There are the various measuring method, but it is rather to find a time series directly measuring poverty. In the developing countries, for measuring poverty, it is suggested that in empirical studies, the various proxy indicators (the closest variables) are used. Deininger and Squire (1996) and Lundberg and Squire (1999) put forward that the number of poor individual (head counting scale) is the variable showing poverty the best. However, that the data belonging to this series regarding to many countries are not existent as time series directed researchers to develop alternative scales. In this framework, consumption expenditure per capita, reported in reliable way in the recent years and presenting a highly stable structure, is seen to be used as poverty indicator (Ravallion, 1992; Woolard and Leibbrandt, 1999; Odhiambo, 2008, 2009, 2010). According to Odhiambo (2009), consumption expenditures per capita is also compatible with the definition of World Bank in the form of “not being able to provide a minimum life standard”. It is clear that consumption expenditures per capita is not a high quality indicator for poverty. However, in case that there is no time series associated with poverty, using this indicator can enable the indicator aimed findings to be obtained about the developments experienced in the area of poverty.

Based on these discussions, since the number of poor individual (the number of head) for Turkey is interruptedly calculated in the recent time and is not presented as time series, in this thesis, household final consumption expenditures per capita (PHFCE) will be used as poverty indicator.

The data used in the analyses, associated with the variables of GDP per capita, liberalization of foreign trade (OPEN), and household final consumption expenditures per capita (PHFCE) were drawn from OECD database (OECD, 2012).. While the variables per capita are calculated, the data of census were drawn from the database of World Development Indicators of World bank (WB 2012)

While analysis is carried out, PGDP variables were included in model, taking their natural logarithms. L, in front of the symbols of variables, denotes that logarithm of variable was taken. With defining the variables to be used in the analyses, variable combinations that will be the subject of economic analyses can be rewritten as follows.

Table 2. Variable Combinations for Economic Analysis

Model	Variables
A	LOPEN, LPGDP
B	LOPEN, LPHFCE
C	LPGDP, LPHFCE

Analyses were carried out by means of Eviews 7.

3.2. Stationarity Analysis

Examination of time series characteristics of the variables used in the model and determination of whether or not the series is stable has an importance in terms of selecting prediction method applied in the analyses. If the common and conditional probability distribution of a stochastic process does not change in time, this series is called as stable in a strong meaning (Charemza-Deadman, 1993:118). In other words, if a time series is stable, its mean, variance, and covariance do not vary in time. However, it is known that time series includes a stochastic tendency and that its mean can show a variation in time. If there is a such a situation, it is expressed that the analyses to be carried out by using these series will lead to the problem of pseudo regression (Granger and Newbold, 1974).

If a series is not stable, it includes unit root. Many tests have been developed toward testing the existence of unit root. In applied studies, Dickey-Fuller (DF), Augmented Dickey Fuller (ADF), and Phillips/Perron tests were used. Whether or not the variables used in the analyses (whether or not they include unit root) was decided according to the result of these two tests.

(Table following on the next page)

Table 3. Results of ADF Unit Root Tests

Variables	ADF t Statistics (Level)		ADF t Statistics (First Difference)		
	Without Trend	With Trend	Without Trend	With Trend	
LOPEN	-0.865278(0)	-2.139332(0)	-4.770407(0)	-4.717471(0)	
LPGDP	-0.494124(0)	-2.896116(0)	-6.390608(0)	-6.291658(0)	
LPHFCE	-0.542394(0)	-2.979076(0)	-6.266614(0)	-4.722329(4)	
Significance Levels	%1	-3.605593	-4.205004	-3.610453	-4.211868
	%5	-2.936942	-3.526609	-2.938987	-3.529758
	%10	-2.606857	-3.194611	-2.607932	-3.196411

Note: The value in parenthesis are lagging lengths, selected by using Modified Akaike Criterion. Maximum lagging length were taken as 7.

Table 4. Results of PP Unit Root Tests

Variables	t statistics (Level)		t statistics (First Difference)		
	Without Trends	With Trend	Without Trend	With Trend	
LOPEN	-0.8695187(2)	-2.467531(1)	-4.652661(4)	-4.594365(4)	
LPGDP	-0.477213(2)	-2.983458(1)	-6.390527(2)	-6.291824	
LPHFCE	-0.074912(13)	-2.906735	8.365402(14)	9.031578(16)	
Significance levels	%1	-3.605593	-4.205004	-3.610453	-4.211868
	%5	-2.936942	-3.526609	-2.938987	-3.529758
	%10	-2.606857	-3.194611	-2.607932	-3.196411

Note: In PP test, optimal lagging length, Barlett Kernel (Default) Spectral Estimation method, and Newey-West Bandwidth criteria were utilized. The numbers in parenthesis are lagging lengths.

According to the results of both unit root tests, all variables include unit root in respect with their levels; hence, they are not stable. Besides this, when their first differences are taken, our variables of LOPEN, LPGDP and LPHFCE became stable. PP test results support ADF test results. Integration degree of variables is technically 1(1).

3.3. Co-integration Analysis

Stationarity discussions in econometrics of time series led alternative methods to be studied. For eliminating the problems in predictions made with non-stable series, in the second half of 1980s, co-integration analyses were developed. Co-integration expresses that the variables that economic theory foresees long termed relations between them will not go away from each other (Kadilar, 1996:78).. From the other aspect, co-integration accepts that the variables that are the subject of analysis will be able to show fluctuations and going away from each other due to some seasonal factors in the short period. In other words, co-integration means that in case that the variables, which economic theory expect that they will move together, are in tendency to go away, with working of market forces or the other policy instruments, the balance between them will be reestablished (Tari, 2002:372) . In this context, co-integration emphasizes that the linear -combinations of one or more variables, even if a variable is not stable, can be stable (Charemza and Deadman, 1997; Tari, 2002:375)

Today, co-integration that is commonly used in econometric studies was first developed üby Granger (1986) and Engle and Granger (1987) and acquired a large use of area in the applied economics.

Co-integration approach of Engle and Granger consists of two stages (Gujarati, 1999:726-730). In the first stage, two or more non -stable variables (Equation 1) are estimated by least squares method (LSM)

$$Y_t = \alpha + \beta X_t + u_t \quad (1)$$

Error term (u_t), obtained from the estimation made by LSM, is subjected to stationarity test with the approach of Dickey Fuller (DF) or Augmented Dickey Fuller (ADF) unit root. If error term is stable, it is expressed that the estimated variables are co-integrated and show the existence of a long termed relationship between variables. Second stage is called as error correction mechanism (ECM) and with the variable, made stable (whose difference is taken), and one-period lag of error term, obtained in the first stage, (u_{t-1}), clearly including in model, estimations are made.

$$\Delta Y_t = \alpha + \beta \Delta X_t + \psi u_{t-1} + \varepsilon_t \quad (2)$$

In case that the coefficient of term u_{t-1} in Equation 2 is negative and statistically significant, it is expressed that Error Correction Mechanisms works. That the sign is negative means that the error made one period earlier is corrected in the short period. The magnitude of lagged error term shows how rapidly the relationship between variables is corrected (Tari, 2002)..

Due to the fact that Eagle and Granger co-integration is easily applicable, despite its common use, it was seriously criticized from some aspects. The first criticism is made toward that this method arbitrarily divides the variables as dependent and independent. In some cases, it was seen that the existence of co-integration was excessively sensitive to the selection of dependent variable. Enders (1995) puts forward that it is unacceptable that Engle-Granger

approach depends on the selection of dependent variable; and that this selection should not change the long termed relationship that should be existent between variables.

The second criticism that Engle and Granger approach reduces the number of long termed relationship between variables to 1. In other words, this method can suggest only one long termed relationship in analyses carried out between two or more variables. However, long termed relationship can increase depending on the number of variable. Specifically, in a model of n variables, it is suggested that n-1 pieces of long termed relationship will be.

The third criticism is related to the econometric results of one equation predictions. In other words, this method result in emerging of ineffective results (Haris, 1995).). This explanation means that this approach derives the least variance (property of minimum variance) compared to the other approaches. In other words, if there are variables more than 2 in the model, a relationship more than one is under consideration. This means that in error correction mechanism, co-integration vector more than one will be effective.

Johansen (1988) and Johansen and Juselius (1990), considering the criticisms raised against Engle - Granger Approach, developed a new co-integration approach. The dominance of this method arises from that (i) it does not make any distinction of dependent and independent between the variables that are the subject of analysis at the beginning; that (ii) the number of co-integration vectors that may be present among the variables to be able to use in analysis is detectable; and that (iii) parameters related to co-integration obtain the predictions of maximum probability (Holden and Thompson, 1992:30-31).

Johansen is based on a multi - variable VAR /(Vector Autoregressive) Model. Following Johansen (1988), aa autoregressive process, whose lag is distributed, can be expressed as follow:

$$X_t = \Pi_1 X_{t-1} + \Pi_2 X_{t-2} + \dots + \Pi_k X_{t-k} + \varepsilon_t \quad (3)$$

where X_t denotes a vector (including internal and external variables) showing a variable in the number of p; k the number of lagging; and ε_t , error term. Equilibrium relationship or vector is in the form of $\Pi = I - \Pi_1 - \dots - \Pi_k$. The number of co-integration vectors that may be present among the variables in vector X_t is determined by the rank of matrix Π

The equation can be rewritten in the form vector error correction mechanism as follows (Kadilar, 1996):

$$\Delta X_t = \Gamma \Delta X_{t-1} + \Pi X_{t-2} + \mu + \varepsilon_t \quad (4)$$

where

$$\Gamma = \begin{bmatrix} -(1 - \Pi_{11}) & \Pi_{12} \\ \Pi_{21} & -(1 - \Pi_{22}) \end{bmatrix}$$

and

$$\Pi = \begin{bmatrix} -(1 - \Pi_{11} - \Pi_{13}) & (\Pi_{12} + \Pi_{14}) \\ (\Pi_{21} + \Pi_{23}) & -(1 - \Pi_{22} - \Pi_{24}) \end{bmatrix}$$

It is easily understood that Equation (4) is a form of error correction and Π denotes equilibrium matrix.

Johansen (1988) is interested in the rank of Π coefficients matrix and examines that whether or not this vector has information about long termed relationships between variables. And there are 3 cases here:

- i) If $\text{rank}(\Pi)=0$, as explained earlier, VAR transforms into a model, whose first degree difference is taken.
- ii) If $\text{rank}(\Pi)=p$, coefficients matrix will have a full rank. This means that variables vector is stable.
- iii) If $0 < \text{rank}(\Pi) = r < p$, this means that there are r pieces ($n-1$ pcs) of long termed relationship between the variables. This is the case that is met the most in practice.

Johansen (1988) determines the presence of co-integration with the hypothesis $\Pi = \alpha\beta'$, where Π and β ($p \times r$) consists of two dimensional matrix. In addition, while β gives co-integration matrix, α denotes "correction matrix". The small values of α means that error correction is slow, while its large values, that correction made in each period is rapid.

Johansen (1988), for determining the number of co-integration vector among the variables, suggests the statistics of trace and maximal eigenvalue. In case that statistics of trace and maximal eigenvalue calculated is bigger than critical values, null hypothesis is rejected.

Since Johansen co-integration test is highly sensitive to the establishment of VAR Model, it is necessary to be careful. In determining, the number of lagging, Akaike Information Criterion (AIC), Schwarz Criterion (SC), and Hannan and Quinn (HQ) criteria are suggested. In co-integration analyses, in determining the lagging length regarding the variables taking place in VAR, SC is more commonly used.

Lagging length regarding the models to be predicted are presented in Annex 1. As summarized in Table 5, according to SC criterion, in optimal lagging length, for every three models, 1 (one) lagging is suggested.

Table 5. Lagging lengths for VAR

Model	Variables	Lagging Length
A	LOPEN, LPGDP	1
B	LOPEN, LPHFCE	1
C	LPGDP, LPHFCE	1

With 1 lagging, suggested by SC, VAR results obtained for Model A, B, C are presented in Annex 2.

After lagging length is determined for VAR, according to Johansen co-integration method, it can be determined whether or not there is a long termed relationship between the relevant pairs of variables.

Table 6. Johansen Co-integration Test

Model	Variables	Co-integration Tests				Result
		Maximal Eigenvalue	Critical Value % 5	<i>iz</i>	Critical Value % 5	
A	LOPEN ve LPGDP	19.40*	15.89	26.01*	20.26	There is co-integration
		6.60	9.16	6.60	9.16	
B	LOPEN ve LPHFCE	13.80	15.89	21.34*	20.26	There is co-integration
		7.54	9.16	7.54	9.16	
C	LPGDP ve LPHFCE	10.56	15.89	17.72	20.26	There is no co-integration
		7.16	9.16	7.16	9.16	

According to statistics of trace and maximal eigenvalue, between the variables taking place in Model A (LOPEN and LPGDP) and Model B (LOPEN and LPHFCE), it is understood that there is one piece of long termed relationship from the results of Johansen Approach in Table 6. It was seen that the variables taking place in Model C (LPGDP and LPHFCE) were not co-integrated and it was not observed that there was a long termed relationship between the variables. Co-integration analysis, developed by Granger (1986) and Engle and Granger (1987), deeply affected the direction and interaction of causality relationship between the variables. After co integration analysis, the information obtained in the long period is included in analyses via error correction mechanism (ECM) in the short term. Applying this new approach is only possible with only the presence of co-integration between variables.

Since between the variables taking place in Model C, a long termed relationship (co-integration) was not detected, analysis can only be conducted by means of traditional standard causality test (Granger, 1969). Before unit root tests regarding the stationarity of time series and co-integration analyses were not developed, the studies on direction of the causality between variables can be realized, based on Granger's (1969) original article (Taban, 2006)

For Model A and B, long term vectors are presented in Table 7. According to the first variable subjected to analysis, for these normalized vectors, GDP per capita positively affects openness (becoming outward-oriented). When this is normalized according to LPGDP, this means that openness positively affects GDP per capita. In similar way, between openness (LOPEN) and household final consumption expenditure per capita, it is seen that there is a positive relationship in long term.

(Table following on the next page)

Table 6. Co-integration Vectors

<i>Model No</i>	<i>Long term relationship</i>
A	LOPEN = -11.98 + 2.2 LPGDP (1.24) (0.18)
B	LOPEN = -12.8 + 2.45 LPHFCE (1.89) (0.29)
Note	The numbers in parentheses indicate standard error .

3.4. Causality Analysis

Although co-integration analysis shows whether or not there is a long termed relationship between variables, it does not give any information about the direction of causality between variables. For the direction of causality between two variables to be able to be empirically tested, there are various causality tests (Geweke et al 1983; Granger, 1969; Sims, 1972). In empirical studies, Granger (1969), due to the easiness in applicability of standard causality test, is the most favorable method. However, toward the late 1980s, after co-integration analysis was developed, instead of Standard Granger Causality test, causality test based on Error Correction Mechanism, (ECM) suggested by Granger (1986) and Engle and Granger (1987), has been carried out.

According to this new approach, if co-integration is provided to be between two variables (for example, let LOPEN represent openness (liberalization of foreign trade), LPGDP, GDP per capita), Engle and Granger (1987) show that there is an Error Correction Mechanism (ECM) eliminating unbalances in short term. This means that the variations in dependent variables is a function of the variation in explanatory variables and lagged error term in co-integrated regression.

Model A (the relationship between LOPEN and LPGDP) is technically expressed with the terms of Vector Error Correction Mechanism (VECM) as follows:

$$\Delta LOPEN_t = \alpha_1 + \sum_{i=1}^m \beta_{1i} \Delta LOPEN_{t-i} + \sum_{i=1}^n \gamma_{1i} \Delta LPGDP_{t-i} + \sum_{i=1}^r \delta_{1i} ECM_{r,t-1} + u_t \quad (1)$$

$$\Delta LPGDP_t = \alpha_2 + \sum_{i=1}^m \beta_{2i} \Delta LOPEN_{t-i} + \sum_{i=1}^n \gamma_{2i} \Delta LPGDP_{t-i} + \sum_{i=1}^r \delta_{2i} ECM_{r,t-1} + u_t \quad (2)$$

where Δ represents that the first difference of variable is taken (that series is made stable) In this VECM, the source of causality can be determined in some ways (Charemza and Deadman, 1997; Demetriades and Hussein, 1996; Islam, 1998; Masih and Masih, 1995, 1998);

- a) with statistical significance of F or Wald χ^2 test jointly applied to the sum of laggings of each explanatory variable;
- b) of t-test applied to lagged error correction term, and
- c) of F or Wald χ^2 test, applied together to total of lagging of each explanatory variable

The indication of Model B in VECM format was not written to avoid repeating. Substituting LPGDP in Equation 1 and 2, with LPHFCE, it can easily be written. In similar way in the tests carried out in related to the coefficients regarding the resource of causality, it can be harmonized.

VECM results, in which vector (ECM) detected among the variables taking place in Model A and B is clearly included, are presented in Annex -3.

In VECM stage, now that lagging of explanatory variables, lagging of error correction term and explanatory variable, and error term is made meaningful together, among the variables taking place in Model A and Model B, the source of causality is presented in Table 8.

Table 8. Source of Causality

	Dependent Variable	Wald Test		t-test	Wald test	
MODEL A		$\Sigma\Delta\text{LOPEN}$	$\Sigma\Delta\text{LPGDP}$	ECM_{t-1}		F-statistics
	ΔLOPEN	-----	-0.57 (0.13)	0.09 (0.21)	$(\Sigma\Delta\text{LPGDP}, \text{ECM}_{t-1})$	1.6 (0.21)
	ΔLPGDP	-0.12* (0.08)	-----	0.13*** (0.00)	$(\Sigma\Delta\text{LOPEN}, \text{ECM}_{t-1})$	11.71*** (0.00)
MODEL B		$\Sigma\Delta\text{LOPEN}$	$\Sigma\Delta\text{LPHFCE}$	ECM_{t-1}		
	ΔLOPEN	-----	-0.30 (0.28)	0.007 (0.90)	$(\Sigma\Delta\text{LPHFCE}, \text{ECM}_{t-1})$	0.59 (0.55)
	ΔLPHFCE	-0.19** (0.04)	-----	0.12*** (0.00)	$(\Sigma\Delta\text{LOPEN}, \text{ECM}_{t-1})$	7.15*** (0.002)
MODEL C	LPGDP and LPHFCE	Null Hypothesis			F-Statistics	Probability Value
		LPGDP, does not Granger cause LPHFCE			0.30	0.74
		LPHFCE does not Granger cause LPGDP			3.86**	0.03
	Notes	1. Σ represents sum of lagging coefficients of the relevant variable 2. *, ** and *** represents significance at the levels of 10, 5, and 1, respectively. 3. The numbers in parentheses represents p- values (probaility) 4. For determining the direction of the relationship between the variables in Model III, standard Granger (1969) causality test was applied. In the productions, made according to this method, in the prediction made without including lagging of Equation 1 and Equation II error term in, through Wald test (F Statistics) of explanatory variable, applied to coefficients, the direction of causality is determined ((Taban, 2006))				

According to Table 8, in Model A, in causality examination between LOPEN and LPDGP, the null hypothesis that “LPDGP” does not cause LOPEN in the context of Granger” can be rejected. The acceptance of this hypothesis is supported by the result of the coefficient of LPDGP, coefficient of ECM, and tests, made regarding the together significance of ECM and LPDGP. On the other hand, the null hypothesis that “LOPEN does not cause LPGDP in the

context of Granger” is rejected according to statistics obtained from every three channels. Empirical findings reveal that the causality relationship between openness and economic growth is from LOPEN to LPGDP. This phenomenon shows that there is case in Turkey, which supports the predictions of export-oriented economic growth.

In Model B, it is understood that the direction of the causality between LOPEN and LPHFCE is from liberalization of foreign trade (LOPEN) to reducing poverty (LPHFCE). In this model, it is seen that there is a one directional causality.

For Model C, according to he analyses, in which Granger (1969) standard causality test is carried out, the null hypothesis that “LPHFCE does not cause LPGDP in the context of Granger” is rejected. According to this, it is seen that the direction of causality is from LPHFCE to LPGDP

4. CONCLUSION

In liberalization process, initiated to be applied, beginning from 1980s, rapid interactions and transformations experienced in international markets also modified and affected the policies in countries. In the recent time the importance of following the process in terms of its effect on the poor people is increasingly more felt. In these analyses carried out, there is no consensus about that liberalization of foreign trade is effective on poverty. However, in some part of studies, while reaching the conclusion that poverty is improved, in some part of them, it was reached that poverty increase. These different results derived is also resulted from that the different policies, applied by countries, together with liberalization process, affect the consumption of the poor people via income distribution, economic growth, taxes, and wages. In this study we have carried out on Turkey, the effect of liberalization of foreign trade on poverty was dealt with the data of the period 1970 -2010. In analyses, establishing 3 models; A, B, and C, both direct and indirect effect on poverty were predicted. When empirical findings, obtained from prediction of Model A, B, and C, are evaluated together, the direction of causality between variables can be summarized as in Figure 2. Liberalization of foreign trade leads direct national income to increase and poverty to decrease (household final consumption expenditures per capita to increase). From the other aspect, liberalization of foreign trade did not indirectly (through income increase) reduce poverty. However, it is seen that there is a causality from household final consumption expenditures to national income. This situation can have resulted from the quality of poverty variable selected.

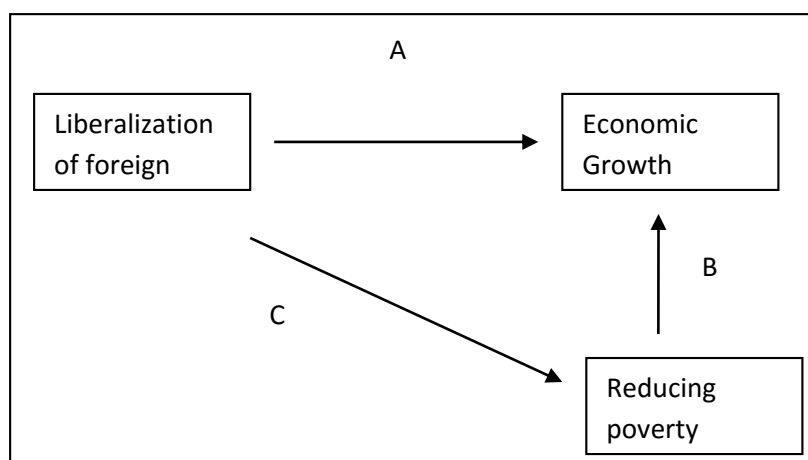


Figure 2. The direction and results of causality between variables

When these findings are collectively evaluated, they reveal that liberalization of foreign trade has an important function in increasing national income and reducing poverty (in increasing of household final consumption per capita). Empirical results obtained have a quality supporting the predictions regarding that in Turkey, economic growth is based on foreign trade and internal demand.

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