THE CAUSALITY RELATIONSHIP BETWEEN TRADE OPENNESS AND ECONOMIC GROWTH:

THE CASE OF IRAN 1995-2014 PERIOD

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ABSTRACT

Trade openness is defined as the ratio of export and import sum of a country to GDP and it is expected to affect the economic growth. The aim of this study is to research the dynamic relationship between trade openness and economic growth with the quarterly data of the 1995-2014 periods. The existence of dynamic relationship between variables was researched with the causality tests, based on Vector Autoregressive Model (VAR) and VAR with increased lag. Whereas the results of econometric analysis state that economic growth is the Granger cause of trade openness, a causality relationship from trade openness to economic growth could not be found.

Key Words: Trade Openness, Economic Growth, Toda-Yamamoto Causality Test

1. INTRODUCTION

Total Trade (the sum of exports and imports)/GDP which is used as a measure for the ratio of overseas trading to domestic trading is also called the ratio of trade openness. The ratio of trade openness is calculated as the ratio of exports and imports sum (i.e. foreign trade volume) to GDP and this ratio shows the dependency of countries on foreign trade. In addition, indicators such as the growth rate of import, the export/import coverage ratio and export/national product ratio determine the openness ratio of countries and are also used to analyse the relationship between openness and growth. The size of openness can also be used to show the importance of foreign trade in the development of countries (Kurt and Berber, 2002). These ratios are frequently used to measure the importance of foreign trading to domestic trading. Besides, various methods are used to measure the trade openness. The major ones of these measures are the fundamental methods such as the ratio of trade dependency, the growth rate of import, the averages of tariff, the index of trading tendency, and the scope of quantitative restrictions. Even though different techniques are considered to measure the trade openness in the literature, one of the commonly used methods is the division of import value and export value sums to GDP (özel, 2012).

The aim of this study is to analyse the relationship between growth and trade openness in Iran over the period 1995-2014 by studying the time series data with VAR and Toda-Yamamoto causality techniques. In the study, consisting basically three chapters, after the introduction chapter in which the information regarding the relationship between trade openness and economic growth are provided, literature review on the issue is made in the first chapter. In the second chapter, econometric method was introduced; a general assessment was made regarding the results of data set, practice and analysis in the third and last chapter.

2. LITERATURE REVIEW

Alimi tested the financial and trade openness in Pakistani economy for the period 1990-2004 by using non-linear time series methods. According to the findings, it was found out that financial openness slows down the economic growth rate and trade openness affects positively the growth.

Mimori analysed the data of 1991:1-2005:4 period by using co-integration and causality tests in order to study the relationship between financial and trade openness and growth in Iran. With the causality tests, it was found out that there is an interrelationship between trade and financial openness and growth; while the effect of trade openness on economic growth is positive in the long-term; the effect of financial openness on economic growth is negative.

Hassen put forward a similar relationship between trade openness and growth by using openness measures (trade shares, adjusted trade flows, qualitative measures, tariffs, nontariff barriers, compound indexes, price-based measures) which she discussed under seven categories.

Masome discussed the relationship between openness and growth with 1989:Q1 – 2003:Q4 data by using the VAR model and variance decomposition method. According to the results of analysis, it was concluded that there is a mutual causality between openness and growth, openness would enhance growth.

Mimori analysed the relationship between trade and financial openness and growth for the 1992-2006 period. According to the results of analysis, it was concluded that there is a co-integration relationship between financial openness and growth; according to the results of causality test, it was concluded that there is an interrelationship between trade openness and growth, and financial openness does not have effect on growth.

Masome studied the relationship between trade and financial openness and growth by using the quarterly data of 1991:1 and 2010:4 periods. According to the obtained findings, it

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was concluded that financial openness reduces the economic growth while trade openness enhances the growth.

Azizi analysed the short-term and long-term dynamics between economic growth and trade openness with 1970 and 2009 period for 158 countries by using panel co-integration tests and panel error-correction models. The results of analysis show that the causality between trade openness and growth is in bidirectional.

Rafiq studied the relationship between trade openness and growth within the scope of developing countries with the panel data econometrics. According to the empirical results, the relationship between trade openness and growth is positive and statistically significant for developing countries.

To sum up, in the economics literature, it is seen that there is a positive relationship between trade openness and growth, and a mutual causality between the two variables.

3. ECONOMETRIC METHODS

Because the variables used in the study are time series, the analysis of integration grades of series should firstly be made. Hence, it was tried to determine the integration grades of series by making Augmented Dickey-Fuller (ADF) unit root test, developed by Dickey and Fuller (1979) and Phillips-Perron (PP) unit root test.

4. DATA SET and ANALYSIS INFERENCES

While the variable of trade openness is calculated as (import+export)/GDP, the variable of economic growth is calculated as annual growth rate of GDP at constant prices. Data in the study was measured at trimester periods and obtained between 1999 and 2015 years. All of data was obtained from World Bank Global Economic Monitor (GEM) database. Data was analysed with E-views 9 package. The situation of trade openness and growth variables within the sample period is shown in Figure 1. The left axis shows the growth rates and the right axis shows trade openness rates in Figure 1. Within the sample period, when rates of economic growth analysed, it is seen that the growth was generally positive except of 2001 and 2008 years.

With the effect of banking crises, faced in Iran, and mortgage crisis, began in the USA in 2001 and 2009 years, it is seen that the Iran economy significantly contracted. In the study, two dummy variables were created for them in order to consider the effect of 2001 and 2009 crises and dummy variable were considered in the model in the causality tests. On the other

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hand, it is seen that the rate of trade openness started to increase at the end of 1990s and it varied from 40% to 45% throughout 2000s. It was determined that the rate of trade openness increased in 2001 yet it decreased with the economic contraction in 2009.

Table1: The Results of Unit Root Test

Variables	Level Values		First Differences	
	ADF	PP	ADF	PP
Growth	-3.043** [0.037]	-3.376** [0.015]	-4.756*** [0.000]	-6.832*** [0.000]
Trade Openness	-2.031 [0.273]	-1.871 [0.344]	-6.700*** [0.000]	-8.365*** [0.000]

Note: Optimal delay count in ADF test was determined according to Akaike information criterion. Bracketed values show the denial possibility of null hypothesis (p-value). *** and ** marks show that the variable is stationary at %1 and 5% significance levels.

After the determination of co-integration grades of variables, VAR-model with two variables was estimated and the number of optimal delay count was settled as one. Later, VAR-model with two lags Seemingly Unrelated Regression (SUR) model was estimated and the causality relationship was analysed by putting null limitation in one lag value of variables. The results of causality tests for the variables of economic growth and trade openness are shown in Table 2. According to these results: while economic growth was found as the Granger cause of trade openness at 1% significance level; a causality relationship from trade openness to economic growth could not be found.

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Table 2: The results of Causality Tests

Causality Relationship	Test Value
Growth → Trade Openness	16.027***
Trade Openness → Growth	0.002

Note: *** mark shows the causality at 1% significance level.

5. GENERAL ASSESSMENT AND CONCLUSION

There is not a consensus regarding how exactly the relationship between trade openness and grow is in the literature. Theoretical and empirical literature on the relationship between two variables puts forward different approaches regarding the relationship between abovementioned variables. In this study, the causality relationship between trade openness and growth within Iran economy in particular, based on the quarterly data of 1995-2014 period, was analysed with econometric methods, and valid approaches for Iran were tried to put forward.

At the first stage of econometric analysis, unit root tests were applied to determine the integration grades of variables. Test results determine that growth series is stationary at level and trade openness is stationary at first differences. At the second stage, VAR model was estimated with the optimal delay count and Toda-Yamamato causality test was made with this model. The results of causality tests show that economic growth is a Granger cause of trade openness. At the third stage, impulse response analysis was made to reach new findings that would support the direction of causality. The results of this analysis confirmed that there is a causality relationship, obtained from economic growth to trade openness.

Empirical findings, obtained in this study, supported the bidirectional causality which is frequently emphasized in the related literature, and provided evidence that the economic growth increased the rate of foreign trade and trade openness during the 1995 and 2014 period Iran economy, which economic crises were also considered.

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