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THE EFFECT OF TRADE OPENNESS ON INFLATION IN D-8 MEMBER COUNTRIES WITH AN EMPHASIS ON ROMER THEORY

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ABSTRACT

Economists believe that globalization increases the role of external factors and reduces the role of internal factors in the process of inflation. Despite the rising global oil prices during recent years and the adoption of expansionary monetary policies in most countries, global prices have had a low and stable level growth. The adoption of expansionary monetary policies in D-8 member countries has been conducive to prices growth and inflation. Economists believe this phenomenon is caused by many reasons and have tried to analyse the effect of globalization on countries inflation. Openness as an indicator of globalization can affect the rate of inflation. The present study aims to investigate the effect of trade openness on D-8 Member countries with an emphasis on Romer theory. The Econometric method used in this research is the method of regression using panel data. The results show that trade openness has a positive and significant effect on the inflation as the dependent variable. This result does not confirm the Romer theory and shows that the influence of monetary policies on the international markets is very high and the degree of influence leads to swings in consumption demands for domestic goods. According to new theories of growth, trade openness reduces inflation rates by increasing production efficiency, better allocation of resources, better use of capacities and increasing foreign investments to reduce the inflation rate. In this regard, lack of full competition in domestic markets and price instabilities in non-commercial sectors has led to a reverse relationship between inflation and trade openness.

1. INTRODUCTION

Related issues of globalization and international factors affecting the increase in the volume of transactions have created many questions in macroeconomics. One of the most important topics discussed in this context, the relationship between trade openness and macroeconomic variables such as inflation. Analyzing this relationship is one of the most important aspects of the study in the economics literature today. The importance of relation is so much that that some researchers think of it as one of the international macroeconomic puzzles (Temple, 2002).

Inflation is a very complex phenomenon and its causes and levels differ from one country to another and from one period to another and thus give rise to a variety of governmental, non- governmental , structural and nonstructural problems. Fiscal and foreign trade policies and even foreign policies of governments and socio-economic structures of society are among such important factors. From the 1990s onwards, the dynamics of inflation in the world has changed. The average inflation rate in industrialized countries during this decade has had significant reduction comparing to the decades before so that the rate has been swinging by about 2 to 3 percent for

many years. These developments are not just limited to the developed countries and many developing countries have also experienced such developments. While high inflation was a common feature of many of the developing economies at that time. These facts implicitly denote the globalization capacity of inflation. To investigate this influence, different reasons are provided by analysts the most important of which is the influence of the globalization process on inflation. Most economists contribute inflation reduction to the increase in competitiveness of countries in the world (Rogoff, 2003).

At first the theoretical framework and literature review are discussed and then research methodology and the proposed model will be described. Finally, we have the research findings and the final part of this article will be dedicated to a conclusion.

2. REVIEW OF LITERATURE

Today, the relationship between inflation and trade openness is one of the most controversial areas of economy in the world. Trade openness is one of the most important tools for economic globalization process. According to economic theories, free trading fosters the production and export of goods and forms economic systems based on competitive advantages. Many researchers believe that free trading has major benefits such as improving competitiveness; improving the quality of goods and services ,accelerating economic growth and deployment of skilled labor. On the other hand, inflation has been the focus of attention of economic policy makers due to widespread uncertainty in the economy. Increasing the general level of prices is not only because of its impact on economic instability, but also is due to the pressure on low-income walks of life (Hanif and Batool, 2006). Supporters of the idea of an open economy, in most cases consider trade openness in relation with a reduction in the general level of prices of goods and services. According to this traditional approach, a higher degree of trade openness leads to lower inflation in the long term through its impact on demand for export and import, Aron and Muellbauer (2007) while some evidence of are to reject this claim in recent years (Zakaria, 2010). In describing the mutual effects of inflation and trade openness, there are two general approaches. The first position is that the ratio of imports to GDP in each country depends not only on its extent but it also depends on the monetary policy of regulatory organizations. The other approach mostly depends on government budgeting and implementation of monetary policy. According to these approaches, trade openness affects inflation caused by the lack of trade and the benefits associated with effective inflation cost. Therefore, it is expected that in economic systems with more openness, incentives of policy-makers for further expansion of economic policy is lower and inflation rates under appropriate precautionary policies is also low (Romer, 1993). In contrast, some claim that trade openness does not necessarily lead to a reduction in the general level of prices is, for example, Evans (2007) emphasizes the positive effects of free trading on inflation is often due to the fact that influence of monetary policies is very high in international markets, and this leads to swings in consumption demands for domestic goods. According to new theories of growth, trade openness reduces inflation rates by increasing production efficiency, better allocation of resources, better use of capacities and increasing foreign investments to reduce the inflation rate (Jin, 2000). In this regard, lack of full competition in domestic markets and price instabilities in non-commercial sectors has led to a reverse relationship between inflation and trade openness (Lane, 1997). Okun (1981) also believes that fluctuations in the level of domestic production are due to the shock to general level of prices which ultimately facilitates economic openness. Based on the above-mentioned approaches, a significant relation between inflation and trade openness is expected.

3. A REVIEW OF PREVIOUS STUDIES

In examining the relationship between inflation and trade openness in various countries, various studies have been done that a number of them will be briefly discussed in the following:

Romer (1993) in his studies in selected countries presented evidence showing that in some developed countries because of low inflation, there is no significant relationship with the open economic system, but in other countries a strong negative and significant relationship exists between inflation and trade openness. Hanif and Batool (2006) tested Romer (1993) on Pakistan's economy using regression methods and annual data between years (1973- 2005) and indicated that trade openness had a negative and significant effect on the general level of prices. Aron and Muellbauer (2007) in their study on South Africa found that promotion of trade openness significantly reduced the rate of inflation and exchange rates. Zakaria (2010) in his empirical study on Pakistan evaluated the relationship between inflation and trade openness between (1947- 2007) using the GMM and reported a positive correlation between inflation and trade openness. Lin (2010) investigated the relationship between trade openness and inflation through the analysis of panel data for 106 countries (including 58 countries in debt crisis in 1980) over the 1970-2007 period .His results suggest a negative effect of trade on inflation is true when inflation is high, but if inflation is low, economic openness does not affect inflation. This negative effect is directly correlated with inflation increase and increases along with it. Mukhtar (2010) used multivariate co-integration test and vector error correction model to investigate the relationship between inflation and trade openness in Pakistan between the years (1960- 2007) and came to the conclusion that there was a negative relationship between inflation and trade openness there in the long run. Kurihara (2013) in a study of data from several Asian countries and the member countries of the Organization for Economic Cooperation and Development in the 1990s and 2000s used GMM to show a significant correlation between inflation and trade openness in these countries.

4. INTRODUCTION OF THE MODEL AND VARIABLES

In this study, the panel data from 2001 to 2013 is used for D-8 Member countries. All data used in the study and variables (GDP, prices index, money supply, consumption, exports and imports) are extracted from the World Bank. The general form used is as follows:

$INF_t=\alpha_0+\alpha_1 EXCH_t+\alpha_2 OPEN_t+\alpha EMP_t+\alpha_4 M_t+\alpha_5 GDP_t+\alpha_6 INF_{t-1}$

Where INF: inflation, M: liquidity growth, EXCH: exchange rate, GDP: GDP growth, OPEN: trade openness which is total exports to imports divided by GDP, EMP: employment rate.

5. STATIONARITY OF STUDY VARIABLES

In this study, Levin, Lin, Chui test is used for testing the unit root and stationarity of data. Each series is the product of a stochastic or random process. One of stochastic processes in the time series is analyzed, the stochastic process is stationary. A random process is stationary when mean and variance are constant over time and the amount of covariance between the two periods, only depends on the distance or the gap between the two periods and is not dependent upon real-time calculation of the covariance. On the other hand if time series variables are not stationary, spurious regression problems may occur. In this type of regression, though there may be no relationship between the variables, but the coefficient of determination is high and the researcher concludes misconceptions about the relationship between variables. The stationarity of variables was evaluated using Levin, Lin, Chui and the results are presented in Table 1.

Table-1. The results of variables stationarity test

variable	symbol	Levin, Lin, Chui test	Probability	result
Inflation	INF	-6.38798	0.0000	I(0)
Exchange rate fluctuations	EXCH	-3.89463	0.0000	I(1)
Trade openness	OPEN	-2.48410	0.0065	I(0)
Employment	EMP	-1.85643	0.0317	I(0)
The quantity of money	M	-13.7210	0.0000	I(0)
GDP growth	GDP	-4.79609	0.0000	I(0)

Source: research findings

As you can see, all the variables in the model are stationary and only exchange rate fluctuations variable is stationary with a time difference.

6. CHOW TEST

To determine whether a variable is used in the form of panel data or combinatory, the Chow statistic is used so that if the calculated F is greater than the F in the table , the H_0 hypothesis is rejected and using panel data is better, otherwise the combinatory approach should be used.

In Chow test, the H_0 hypothesis (combinatory data) is placed opptsite to H1 hypothesis (data panel). Therefore, we can write:

H_0: $\alpha_1 = \alpha_2 = \cdots = \alpha$

H_1 = at least one of the intercepts is different from the rest of them

So they were calculated using Eviews Software. As for selecting the estimation methods, either the panel data or combinatory data, Chow statistics were calculated. In this test, the H_0 hypothesisis the combinatory data and the H_1 hypothesis is the estimation method based on panel data. the calculated Chow statistic shows 2.192, which implies panel data method should be used in this study.

Table-2. Chow statistic Test results

Test Statistic	Degree of freedom	probability	test result
2.192636	(7,70)	0.0451	Panel Data

Source: research findings

7. HAUSMAN TEST

According to Chow test, it is necessary to use Hausman test to determine the type of panel data. As Table 3 shows, the observed results of Hausman test indicate that panel data are are constant with changes and the probability of this statistic is less than 5%, thus the research model for the variables is estimated based on panel data with constant effects.

Table-3. The Hausman test results

Test Type	Statistic	Degree of Freedom	Probability	Result
Hausman	15.308508	6	0.0180	panel data with Fixed effects

Source: Findings

8. THE MODEL ESTIMATION

The analysis Method is panel data with constant effects and the results are presented in Table 4.

Table-4. The results of the model estimation(dependent variable: inflation)

variable	Symbol	coefficient	standard deviation	t-statistic	significant factor
Intercept	C	-9.602252	4.472817	-2.146802	0.0353
Exchange rate fluctuations	EXCH	0.821886	0.333599	2.463696	0.0190
Trade openness	OPEN	0.839033	0.404739	2.073023	0.0473
Employment	EMP	0.866743	0.381026	2.274755	0.0260
The quantity of money	M	0.295738	0.057108	5.178601	0.0000
GDP growth	GDP	-0.221663	0.119715	-1.851589	0.0744
Lagged Inflation	INF(-1)	0.490573	0.132642	3.698479	0.0004
R^2: 0.450309 Durbin Watson statistic: 1.569976			F-statistic: 4.411106 Probability: 0.000021		

Source: research findings

The coefficient of determination examines the suitability of the fitted regression based on a set of data. The higher the value of this coefficient is indicates that the behavior of the dependent variable is affected by independent variables. As shown in Table 4, the coefficient of determination, based on the results of the regression model is R2= 0.45. The estimated coefficient of determination shows that about 45% of the dependent variable behavior is explained by the independent variables. Since Durbin Watson test result is 1.56 which is between 1.5 and 2.5 ,it can be concluded that the residues are independent. The results also indicated that the exchange rate (dependent variable) positively and significantly affects inflation by 0.821886. The results show that if the exchange rate increases the price of imported goods will increase. Since domestic production depends on the price of the imported raw materials, the prices of domestic goods and the risk of inflation will consequently increase. The results also indicated that the trade openness positively and significantly affects inflation (dependent variable) by 0.839033. This result doesn't confirm the Romer theory and shows that the influence of monetary policy on the international markets is very high and the degree of influence leads to swings in consumption demands for domestic products. According to new theories of growth, trade openness reduces inflation rates by increasing production efficiency, better allocation of resources, better use of capacities and increasing foreign investments to reduce the inflation rate. In this regard, lack of full competition in domestic markets and price instabilities in non-commercial sectors has led to a reverse relationship between inflation and trade openness. The results also show that employment positively and significantly affects inflation (dependent variable) by 8.866743. This result confirms the Phillips theory. The higher the unemployment rate is (lower employment), the lower the rate of wages will be. In other words, it's about an exchange between wage inflation and unemployment. Phillips states the reverse relation between wage inflation and unemployment. So if the countries in the study want to have higher employment (lower unemployment) they should accept higher inflation. The results suggest that the money volume positively and significantly affects inflation (dependent variable) by 0.295738. This result confirms the money volume theory and the prices level is directly proportional to the money volume. The main hypothesis of the theory is that there is a stable demand function for real balance effect. People predict inflation rate in order to maintain their cash balance purchasing power and adjust their real balance effect According to that. Fisher's analysis of this theory, with the assumption of money flow speed and full employment of production staff, any change in the money volume is reflected at the prices level.

The money impact on prices mechanism could be explained by real balance effect and cash balance effect, which affect the lack of money imbalance demand for goods and services .This mechanism in Wicksell's analysis, affects the real balance at first and eventually the prices by the difference in interest rates. The results suggest that production growth negatively and significantly affects inflation (dependent variable) by 0.221663. So the more the production is, the less the prices will be and the inflation will reduce.

The results show that inflation in the past has positively and significantly affected the current inflation by 0.490573 and proves that the inflation rate in the past affects the inflation rate in the present.

9. CONCLUSIONS AND RECOMMENDATIONS

According to the results of the econometric model, an increase in trade openness in D-8 countries makes their national economy take effect from external factors. According to the estimation coefficients, increasing openness can increase inflation due to the increased global energy prices from 2001 to 2013 as well as currency fluctuations. Therefore, taking into account the increasing trend of globalization, we must take the necessary measures to control inflation in the coming years. The effect of global price changes on economic variables of a country can be studied according to its degree of openness and its interaction with other countries. The Increase in global prices, in recent years, on the one hand and the continuous rise of domestic prices, on the other hand, prove the importance of studying how domestic economy takes effect from global prices.The estimation results show that openness, exchange rate, money supply, GDP growth and employment affect inflation and have a significant correlation with inflation, and that inflation is not purely monetary. Positive relationship between trade openness and inflation in

D-8 country members has different reasons. Increased export revenues will lead to the rapid growth of liquidity in the countries under the study and is rejected into the economy quickly. So in export earnings periods in which these countries expand their relationships with the world economy, liquidity and high demand will increase inflation. On the other hand an increase in exports, increases imports too. In terms of inflation, governments curb the inflationary trends to reduce tariffs and import deals will be accelerated. The increasing economic openness leads to outflow of foreign currency and damages domestic producers both due to the imports of consumer goods, and in terms of changing consumer tastes and also due to lower imports of goods. The increase in the relative prices of imported goods can be considered as supply shocks and will increase inflation. The reduction of the relative prices of imported goods also reduces inflation. This is a golden opportunity for economic policymakers to reduce inflation without suffering severe recessions. Globalization and more openness of domestic economy and the increase in the share of exports and imports of GDP have a significant effect on the prices. It is expected that in the future this variable will increase more and more. Since the relationship between the exchange rate and inflation, is positive according to research findings, the volatility and instability of exchange rates can have a devastating effect on the economies of these countries under the study. Since mostly foreign exchange rate fluctuations cause inflation, it is a priority to use tools that will enable the country's economy in the face of such problems.

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