Paradigms: A Research Journal of Commerce, Economics and Social Sciences
ISSN 1996-2800, 2013, Vol. 7, No. 1, pp. 37-47.
DOI: 10.24312/paradigms070104.

IMPACT OF TRADE OPENNESS AND MACROECONOMIC VARIABLES ON GDP GROWTH OF PAKISTAN[**]

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ABSTRACT

This study is about the impact of trade openness and selected macroeconomic variables on economic growth of Pakistan. Economic growth of Pakistan is measured interms of annual nominal GDP growth rate. Trade openness, employment rate, exchange rate, foreign direct investment and inflation rate are taken as independent variables in this study. Augumanted Dickey Fuller (ADF) test is applied to check unit root problem, which is not found in the data. Johansen Co-integration test is used and reuslts of all the variables are significnat, indicating that there exists long term relationship among the variables. Ordinary Least Square (OLS) method is then applied to check the causal effect of exogenous variables. Results show that all variables are co-integrated at 5% level of significance.

Keywords: Trade Openness; Exchange Rate; Foreign Direct Investment; Economic Growth; Co-integration.

INTRODUCTION

Most of the developed and developing countries have access to international markets through multilateral trade. Pakistan being a developing country and facing many other problems like policy issues, poor governance, policy implementation, terrorism, corruption, lawlessness, unskilled labor, obsolete technology and poverty, does not find herself in a very comfortable position in the era of globalization. The concept of world being a global village refers to the ease of trade in various countries. International trade in the global village depends on various factors such as labor cost, technology, availability of other factors of production and economic activity in each country. This multilateral trade is also due to easing

[**] The views or opinions expressed in this manuscript are those of the author(s) and do not necessarily reflect the position, views or opinions of the editor(s), the editorial board or the publisher.
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the terms and conditions of trade called Trade Openness. Yanikkaya (2003) wrote that trade openness is considered an important indicator of economic growth of a country.

The research objectives of this study are to determine the impact of trade openness on GDP growth rate of Pakistan and to find out the impact of Employment Rate, Exchange Rate, Inflation, and FDI on GDP growth rate. This study is useful to identify the significant macro-economic factors responsible for economic growth of Pakistan. This research can assist policy makers with reference to achieving high economic growth in Pakistan. It is hypothesized in the study that Trade Openness does have a significant effect on the GDP growth rate of Pakistan and further Exchange Rate, Employment Rate, Inflation, and FDI have significant effect on the GDP growth rate; the variables are co-integrated in the long run.

Regression analysis and Johansen's Co-integration tests are used to find out the effects and relationship of variables. Augmented Dickey Fuller (ADF) test is used to check stationarity of data before applying Johansen's Co-integration test to develop a long term relationship between variables.

LITERATURE REVIEW

Beine (2011) and Mahboob-ul-Hasan and Mahmood (2013) studied the effect of Remittances and Financial Openness; they also studied the impact of Exchange Rate and Economic Growth on Export Performance of Pakistan; Exchange Rate, GDP, Foreign Direct Investment-FDI, Real Exchange Rate, Labor Force and Trade Liberalization were used as independent variables, Exports and Financial Openness as dependent variables in the studies; they applied Augmented Dickey Fuller test to check stationarity, Auto-regressive Distributed Lag (ARDL), and Co-integration to find out the relationship among variables; the researchers found that Remittances have greater effect on Human Capital and also on Economic Stability and FDI has positive but insignificant relationship with GDP of Pakistan. Ahmad and Hyat (2013), Chaudhry and Akhtar (2011), and Alam (2013) empirically and statically found that there is strong positive effect of Remittances on Financial Openness. Atique and Azhar (2004) wrote that growth impact of FDI tends to be greater under export promotion.

Similar studies were conducted by various researchers with slightly different topics having similar results. The studies of Shaheen and Kauser (2013) and Chaudhry and Faridi (2010) aimed to determine the impact of Trade Liberalization on Economic Growth of

Pakistan. Impact of Trade Liberalization on Economic Growth of India was studied by Hosseini and Leelavathi (2013); they took explanatory variables as Trade Liberalization (Trade Openness), FDI, Inflation, Gross Fixed Capital Formation, Capital Stock, Human Capital, and Real GDP Growth Rate as dependent variables; Johansson Co-integration was used to determine the relationship of variables. Pauline (2000) and Qayyum (2006) used ARDL approach to estimates he relationship. Asiedu (2013) concluded that Trade Liberalization, Capital Formation, and Human Capital have positive and significant relationship with GDP and FDI, Inflation has negative effect on GDP growth rate.Asiedu (2013) concluded that Capital Stock has positive impact on GDP growth rate and FDI has negative impact on real GDP.

Studies conducted by Robinson (2013) and Cohen and Soto (2007) showed that Trade Openness and Human Capital has positive and significant relationship with Agricultural Sector Growth; for this purpose researchers used Auto-regressive Distributed Lag (ARDL) Model to determine long run relationship between the variables; they concluded that Trade Openness and Human Capital have positive long run relationship with Agricultural Growth; using Granger Causality Test they found that causal relationship exists between of Trade Openness, Human Capital and Physical Capital and Real Agricultural Gross Domestic Product.

Researchers such as Jilani and Asim (2010), Sinha (1998), Ramzan and Kiani (2012)and Yanikkaya (2003) used similar titles to investigate Foreign Direct Investment, Openness and Economic Growth; they used annual data of developing countries for almost three decades. Error Correction Model was used by Ramzan and Kiani (2012) and Fixed Affect Regression Model was used by various authors; results show that Openness has significant impact and foreign direct investment is insignificant determinant of growth. Shabbir (2006) mentioned his key findingsi.e. Trade Openness is helpful for growth in developing countries and Foreign Direct Investment does not play a significant role in growth. FDI and Trade promote growth of real sector economy of Pakistan (Ramzan & Kiani, 2012). Jilani, Asim, and Ali (2010) found that there is significant and positive impact of Interest Rate, FDI and Exchange Rate on Gross Domestic Product growth of Pakistan.

Other similar studies include Jaffri and Asjed (2012), Ali and Shaheen (2013), Iqbal, Ahmad, and Anwar (2014), and Liargovas and Skandalis (2011); general findings were that Foreign Direct Investment decision is dependent on many factors and FDI Inflow is affected by many factors as well. Mahboob-ul-Hasan and Mehmood (2013) used GDP Per

Capita Income, Trade Openness, Pakistan's Export (to OEC), Exchange Rate, Pakistan's Total Export and Political Conditions as determinants of FDI; the results showed a direct causality between dependent and independent variables. Shaikh (2010), and Kaur and Gautam (2012) concluded that Trade Openness has significant effect on FDI Inflow and found positive relationship among Trade Openness and FDI Inflow. Munir and Jamal (2009) expressed that some other factors like Exchange Rate, GDP, and Political Instability also affect Inflow. Shaheen and Kauser (2013) concluded that Gross Fixed Capital Formation and Liberlization have significant and positive effect on Economic Growth of Pakistan. Ali and Shaheen (2013) found that FDI Inflow in Pakistan has negative implications on Current Account of Pakistan.

Ellahi (2010) and Siddiqui (2005) investigated the relationship between openness, industry value added and economic growth of Pakistan; annual time series data was used; authors used OLS and Co-integration techniques; it was found that Trade Openness has positive and significant effect on Economic Growth. Hye (2011), Arif and Ahmad (2012), and Musleh-Ud-Din and Siddique(2003) investigated long term effect of Trade Openness and economic growth; annual data set for almost four decades was used; researches included Human Capital, Physical Capital, Trade Openness as independent variables and GDP Growth Rate as dependent variable; using Autoregressive Distributed Lag (ARDL) Model, Co-integration and Dynamic Ordinary Least Square (DOLS) they found that most of the variables are significant. Arif and Ahmad (2012) concluded that bidirectional significant relationship exists between trade oppenness and economic growth of Pakistan. Mustafa and Rizov (2012) found that Physical Capital and Human Capital have positive and significant relationship with Economic Growth; Trade Openness has negative and significant association with Economic Growth.

THEORETICAL FRAMEWORK

Trade Openness has positive relationship with Gross Domestic Product; trade with other countries increases GDP and Trade Openness have direct relationship with increase in trade; different researchers have also concluded the same. Nevertheless, there are evidences that this relationship is negative. Increase in Trade Intensity in USA had negative effect on Gross Domestic Product of USA and on the other hand increase in Trade Intensity in Japan showed a positive effect on Gross Domestic Product of Japan (Mody, 2007). Chaudhry and

Faridi (2010) concluded that education and Trade Openness are beneficial for sustainable economic growth of a country. Spagnoli (2014) found that Agricultural Employment has positive relationship with Gross Domestic Product; improvement in agriculture causes more employment in agriculture, which results into increase in exportable agriculture products causing more international trade, terms of trade affect economic growth positively.

Exchange rate also has impact on economic growth. When local currency gets stronger imports become cheaper and value added exports can be made causing more trade in international market positively affecting an economy. Depreciation of local currency makes product of a country cheaper and hence results into increase in exports but also has adverse effect on imports. Accordingly, findings of researchers suggest that importance of Exchange Rate depends on the level of development of the country (Huang & Malhotra, 2004); more imports of capital goods leads to more benefit to a country. The relationship between FDI and GDP is very relevant to policy making with reference to macroeconomics and international finance. More investment in a country results into increase in income, which ultimately increases GDP of country. Mody (2007) concluded that Gross Domestic Product has positive and strong effect on Foreign Direct Investment.

The first objective of the policy makers is to obtain high and sustainable economic growth with low rate of inflation. With high rate of inflation economic growth can be achieved but it is dependent on the state of economic of a country. To achieve high and sustainable economic growth rate low rate of inflation is the ultimate objective. Gokal and Gokal (2004) used different economic theories in their paper to find out the relationship of Inflation and Economic Growth.

DATA AND METHODOLOGY

Annual time series data is used in the study. The variables taken in this study are:

- GDP = Gross Domestic Product (Nominal Growth Rate
- TO = Trade Openness
- EM = Employment Rate
- EX = Exchange Rate
- FDI = Foreign Direct Investment
- IR = Inflation Rate
- βt = Parameters of variables

So for available data the expected model is:

$$GDP = \beta_0 + \beta_1 TO + \beta_2 EM + \beta_3 EX + \beta_4 FDI + \beta_5 IR + \varepsilon$$

To apply ordinary least square all assumption are checked including Linearity using PP Plots, Normality using Histogram, Autocorrelation using Durbin Watson Test, Multicoliearity using Variance Inflation Factor and Heteroskedasticity using Scattered Diagram. Data is found stationary at second difference. Augmented Dickey Fuller test is applied to check stationarity of data.

Trade Openness is the ratio of total import plus Export to GDP. The formula of Trade Openness is TO= [(Import + Export)/GDP] x 100. Exchange Rate is taken as Pakistani Rupee per United States Dollar i.e. PKR/USD. Employment Rate is the percentage of total labor force that is employed and is considered an economic indicator for economic growth of country. Consumer Price Index-CPI is taken as the measure of inflation.

RESULTS AND INTERPRETATIONS

Johansen's Co-integration Model

The objective of applying Co-integration is to check long run dynamic relationship among the five variables, Trade Openness, Employment Rate, Exchange Rate, Foreign Direct Investment and Inflation. Johnson Co-integration test is used to find whether variables are integrated in same order.

TABLE 1

Augmented Dickey Fuller Test (Unit Root Test)

Variables	2st Differences	
	t-statistics	Probability
D(GDP(-1),2)	-5.292725	0.0000
D(TRADE(-1),2)	-4.661828	0.0004
D(EMPLOYMENT(-1),2)	-141.96717	0.0000
D(EXCHANGE(-1),2)	-6.069729	0.0000
D(FDI(-1),2)	-6.494273	0.0000
D(INFLATION(-1),2)	-6.250718	0.0000

Table 1 shows results of ADF test. The results indicate that GDP, Trade Openness, Employment Rate, Exchange Rate, Foreign Direct Investment and Inflation are stationary

at2nd difference. The null-hypotheses can be rejected for all the variables that are included in this study at 2nd difference. Results of 2nddifference show that all variables are stationary.

TABLE 2

Unrestricted Co-integration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigen value	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.901355	210.0474	95.75366	0.0000
At most 1 *	0.845838	152.1417	69.81889	0.0000
At most 2 *	0.806862	105.3979	47.85613	0.0000
At most 3 *	0.767745	64.28904	29.79707	0.0000
At most 4 *	0.523375	27.79111	15.49471	0.0004
At most 5 *	0.309694	9.265493	3.841466	0.0023

Trace test indicates 6 co-integrating eqn(s) at the 0.05 level.
* denotes rejection of the hypothesis at the 0.05 level.
**MacKinnon-Haug-Michelis (1999) p-values.

TABLE 3

Unrestricted Co-integration Rank Test (Maximum Eigen-value)

Hypothesized No. of CE(s)	Eigen value	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.901355	57.90569	40.07757	0.0002
At most 1 *	0.845838	46.74381	33.87687	0.0009
At most 2 *	0.806862	41.10882	27.58434	0.0005
At most 3 *	0.767745	36.49793	21.13162	0.0002
At most 4 *	0.523375	18.52562	14.26460	0.0100
At most 5 *	0.309694	9.265493	3.841466	0.0023

Max-Eigen value test indicates 6 co-integrating eqn(s) at the 0.05 level.
* denotes rejection of the hypothesis at the 0.05 level.
**MacKinnon-Haug-Michelis (1999) p-values.

Table 2 and 3 show results of Co-integration relations of variables. Both tables are Trace Statistics and Eigen Value Statistic respectively. The first column is Null Hypothesis,

the second column is the Ordered Eigen Values, the third column is the Test Statistic and the last two columns are the 5% critical values. Both values show that all the variables are Co-integrated with each other at 5% significance value.

TABLE 4

Ordinary Least Square Method

	Coefficient	Std. Error	t-Statistic	Prob.
C	24.95452	2.287865	10.90734	0.0000
LOG(TRADE)	-0.788771	0.174878	-4.510416	0.0002
LOG(EXCHANGE)	0.401705	0.087357	4.598418	0.0001
LOG(EMPLOYMENT)	-0.646229	0.556400	-1.161448	0.2574
LOG(FDI)	0.143764	0.052690	2.728508	0.0120
LOG(INFLATION)	0.069475	0.055273	1.256960	0.2214
R-squared	0.969001	Akaike info criterion		-1.559837
F-statistic	143.7932	Schwarz criterion		-1.276948
Prob. (F-statistic)	0.000000	Hannan-Quinn criterion		-1.471240
Durbin-Watson stat	1.353922			

$$Y_t = 24.95 - 0.78TRADE + 0.401EXCHANGE + 0.143FDI$$

The value of Durbin Watson is 1.353, which indicates that slight problem of Autocorrelation exists in the data. F-Statistic is also significant indicating that the model is a good fit. Akaike, Zchwarz and Hannan criterion show the best model with the lowest values (negative values).

CONCLUSIONS

Results of Ordinary Least Square Method indicate that there exists between Trade Openness, Foreign Direct Investment, Exchange Rate and GDP growth of Pakistan. According to the findings of this analysis Exchange Rate and Foreign Direct Investment have significant and positive impact on GDP growth of Pakistan, while Trade Openness negatively affects GDP Growth Rate. The result of co integration shows Trade Openness, Employment

Rate, Exchange Rate, Foreign Direct Investment and Inflationhave positive relationship with GDP.

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