

Impacts of Exports and Foreign Direct Investment (FDI) on Economic Growth of Pakistan

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Abstract: Economic Growth rate is very widely recognized indicator to measure the health of the economy. Higher growth rate is considered to be the necessary- though insufficient- condition for realizing the overall objective of economic development. Among the many variables that affect the GDP growth rate, export and Foreign Direct Investment (FDI) are thought to be the most important in the literature of economics. They contribute, among others, in generating employment opportunities, raising foreign exchange reserves, increasing technological spillovers and improving the marketing skills. Are these favorable impacts of exports and FDI realized in the case economic growth of Pakistan? There is a growing body of literature around this question which often presents mixed findings. Keeping this in view, the present study was designed to estimate the quantitative impacts of exports and FDI on the economic growth of Pakistan. For the purpose of analysis, Co-integration technique was applied on the secondary data ranging from 1975 to 2010, gathered from various sources. The results of the study showed that there is significant impact of export and FDI on the economic growth of Pakistan. It is suggested that relatively more focus should be given to broad based, processed and value added export. Moreover, FDI should come in export oriented sectors such as agriculture.

Key words: Economic growth • FDI • Export • Human capital • Co-integration • Pakistan

INTRODUCTION

Prior to 1970, Gross Domestic Product (GDP) was considered to be the main criterion for assessing the level of economic development of any country. Lately, the focus has been shifted from 'growth' to 'distribution' in the literature of development economics. However, it is still considered to be the necessary condition for realizing the wider objective of economic development.

An analysis of the economic growth history of Pakistan reveals serious shortcomings in making and implementing of economic policies that restricted the inflow of FDI and export expansion of the country. In spite of heavy dependence on the foreign capital inflow, domestic policies of the government rather than foreign environment played an important role in making Pakistan what it is today. The successive Governments in this

country could neither seek similar objectives nor emphasize same sectors of the economy with the result that sustainability could never come in the annual growth rates of the country as compared to the rest of the other third world nations.

In case of Pakistan, available data depicts low volume of export and FDI as compared to the startling growth of these variables for the rest of the other countries of Asia. The central question that emerge, is that why Pakistan, being an Asian country, could not achieve and sustain the similar higher level of GDP growth rates as the contemporary Asia was realizing? Of the many explanations to this question, the most important seems to be that the Government of Pakistan and the related authorities failed to recognize the importance of export and FDI in the growth pattern of the country.

The study in hand was designed mainly to assess the magnitude of the impacts of Exports and FDI on the Economic Growth of Pakistan. We were interested to find out long-run impacts of these variables. Beside this, it also investigated the relationship of imports and the human capital with the growth performance of the country. Expenditures on educations were used as proxy for human capital. We have included 'human capital' in our economic model as this is one of the important variables that explain the growth of the economy. Human capital is understood in various dimensions like education, health and life expectancy. However, the component of education is considered to be all the more important as the rest of other components are directly or indirectly linked with the level of education.

There are various studies which have analyzed the nexus between export, FDI and Economic growth of different countries. In the case of Pakistan, these studies provide mixed findings. For example, [1-2] examined the export led growth hypothesis for different countries including Pakistan and found strong support for long run causality between exports and GDP for Pakistan. However, [3] failed to detect any causality in the case of Pakistan.

Fry [4] examined the role of FDI in promoting growth for 16 developing countries including Pakistan and found that FDI did not exert a significantly different effect from domestically financed investment on the rate of economic growth. Similarly, [5-6] reported that the impacts of FDI are controversial in the literature. In the case of Pakistan, they found that domestic private investment impacted on economic growth more significantly as compared to FDI. On the other hand, [7] found that FDI inflows exerted positive impact on the economic growth in case of Pakistan if the domestic financial system had achieved a certain minimum level development. Ahmad *et al.* [8] examined the causal relationship between FDI, exports and output over the period 1972-2001 for Pakistan and found significant effect from FDI to domestic output. In contrast to this, [9] concluded a negative and statistically insignificant relation between GDP and FDI inflows for Pakistan. Miankhal *et al.* [10] studied the dynamic relationship between export, FDI and GDP for six emerging countries including Pakistan and found that in case of Pakistan, in the short run, GDP growth resulted in an increase in exports and export growth helped drive FDI into the country. The channeling effect was through export growth.

The reason for the mixed findings on the impacts of these variables on economic growth may be due to the difference in specifications of the economic model. Most of the previous studies included either FDI or exports in their economics models. In this paper, we are taking both exports and FDI together along with education (proxy for human capital development) and the imports. It is also important to analyze the data especially from 2000-2010 because the surge in both FDI and exports has taken place during the first decade of the 21st century. In this way our paper will contribute to the literature (especially in the case of Pakistan) by providing fresh evidence on the nature of the impacts between the specified variables.

MATERIALS AND METHODS

Secondary annual time series data were collected from various issues of Economic Survey and Federal Bureau of Statistics Pakistan covering the period from 1975-2010. To estimate the long run effects of FDI, exports, imports and human capital, VAR (Vector Auto Regressive) approach was employed.

GDP was assumed to be a function of foreign direct investment (*FDI*), exports (*Ex*), imports (*Imp*) and real education (*Ed*) expenditures. The general form of function specified in log form can be written as follows:

$$\ln GDP = \beta_0 + \beta_1 \ln FDI + \beta_2 \ln Ex + \beta_3 \ln Imp + \beta_4 \ln Ed + \mu_t \quad (1)$$

All the variables were converted into real terms by dividing with GDP deflator of respective years and were used in logarithmic form.

Unit Root Test: The first step in co integration modeling is to confirm the stationarity of series. This is done to avoid the problem of spurious regressions. Most of the economic data series are non-stationary i.e. their mean, variance and covariance changes over time. Stationarity can be achieved by appropriate differencing the series. Order of integration is the number of appropriate differencing to make the series stationary. In present study, Augmented Dickey Fuller test [11], both with and without a deterministic trend, was used for unit root testing.

Co-Integration: Two or more time series are said to be co integrated if they are integrated of the same order. The study uses the Johansen's co integration approach [12] based on a maximum likelihood estimation of the vector error correction model:

$$\Delta Y_t = d + I_1' \Delta Y_{t-1} + \dots + I_{n-1}' \Delta Y_{t-n+1} + \Pi Y_{t-n} + e_t \quad (2)$$

Where,

Y_t is a vector of I(1) endogenous series and $\Delta y_t = Y_t - Y_{t-1}$.

$$Y_t = [GDP_t, FDI_t, EX_t, IMP_t \text{ and } ED_t]$$

$$I_i' = -(I - A_1 - A_2 - \dots - A_i), i = 1, \dots, n - 1$$

$$\Pi = (I - A_1 - A_2 - \dots - A_n)$$

This specification provides information about short run and long run adjustments to changes in Y_t through the estimates of ρ_1 and Π , respectively.

Now to check the presence of single co integrating vector, two likelihood (LR) ratio tests can be constructed. The first is Trace test statistics:

$$\lambda_{\text{trace}} = -T_i \sum_{i=r+1}^p \ln(1 - \lambda_i) \quad (3)$$

where range of summation is from $r + 1$ to p . It tests the null hypothesis of at most 'r' co integrating vectors against the alternative that is greater than 'r'. The second is maximal-Eigenvalue test:

$$\lambda_{\text{max}} = -T \ln(1 - \lambda_{r+1}) \quad (4)$$

which tests null hypothesis of 'r' cointegrating vectors against the alternative that is $r + 1$. The critical values for these tests have been derived by Monte Carlo simulations and tabulated by [12, 13].

Impulse Response Function: AR models utilize impulse response functions to analyze the dynamic behavior of time series with respect to a unit shock in the residuals of time series [14]. The effect of a single standard deviation shock is traced out over specific time horizons.

RESULT AND DISCUSSION

Testing for Unit Root: Results of Tables 1 and 2 show that null of unit root cannot be rejected for any of level variables while it can be rejected for their first difference form. This indicates that all variables are first difference stationary or integrated of order one, i.e. I (1)

Testing for Co Integration: To test for co integration between variables, Johansen's procedure was applied. At first, order of Vector Auto Regressive (VAR) was

Table 1: Augmented Dickey Fuller (ADF) unit root test results

| Variables | Trended Model | Non Trended Model | Conclusion |
|----------------|-----------------|-------------------|----------------|
| | Test Statistics | Test Statistics | |
| LED | -0.78 | -2.01 | Non Stationary |
| LFDI | -3.11 | -1.09 | Non Stationary |
| LIMP | -2.19 | -0.44 | Non Stationary |
| LEX | -2.27 | -1.29 | Non Stationary |
| LGDP | -2.95 | -1.28 | Non Stationary |
| Critical Value | 3.56 | 2.95 | Non Stationary |

Note: critical values at 95 % confidence level are taken from Fuller, (1976).

Table 2: Unit root test results for first-differenced form

| Variables | Trended Model | Non Trended Model | Conclusion |
|----------------|-----------------|-------------------|------------|
| | Test Statistics | Test Statistics | |
| DLED | -5.04 | -4.55 | Stationary |
| DLFDI | -5.64 | -5.68 | Stationary |
| DLIMP | -5.09 | -4.62 | Stationary |
| DLEX | -3.59 | -3.60 | Stationary |
| DLGDP | -5.33 | -5.29 | Stationary |
| Critical Value | 3.56 | 2.96 | Stationary |

Where, 'D' shows first difference of these variables.

Table 3: ALR test on VAR with maximum of 4 lags

| Order | List of variables included in unrestricted VAR: LGDP, LFDI, LEX, LIMP, LED | | |
|-------|--|-----------|------------------|
| | AIC | SBC | Adjusted LR test |
| 4 | 105.2013 | 31.9145 | ----- |
| 3 | 97.8069 | 42.8418 | 24.2958(.502) |
| 2 | 98.8229 | 62.1795 | 42.2838(.773) |
| 1 | 107.4375 | 89.1158 | 54.5729(.964) |
| 0 | -126.7875 | -126.7875 | 248.9917 (0.000) |

AIC = Akaike information criterion

SBC = Schwarz Bayesian criterion

Note: values in parenthesis are at 95 % significance level.

Table 4: Maximal Eigenvalue and Trace Test

| Null | Alternative | List of variables included in unrestricted VAR: LGDP, LFDI, LEX, LIMP, LED | | | |
|--------|-------------|--|----------|-------------|----------|
| | | ME statistic | 95 % C.V | T statistic | 95 % C.V |
| r = 0 | r = 1 | 36.5485 | 34.4000 | 85.4340 | 75.9800 |
| r <= 1 | r = 2 | 24.9031 | 28.2700 | 48.8856 | 53.4800 |
| r <= 2 | r = 3 | 14.1904 | 22.0400 | 23.9824 | 34.8700 |
| r <= 3 | r = 4 | 7.0762 | 15.8700 | 9.7920 | 20.1800 |
| r <= 4 | r = 5 | 2.7158 | 9.1600 | 2.7158 | 9.1600 |

Table 5: Estimated co integrated vectors in Johansen estimation

| Variables | List of variables included in unrestricted VAR: LGDP, LFDI, LEX, LIMP, LED Intercept | |
|-----------|--|--|
| | Long Run Elasticities | |
| LGDP | -1.00 (1.00) | |
| LFDI | -0.154 (1.39) | |
| LEX | 0.814 (3.81) | |
| LIMP | -0.073 (0.24) | |
| LED | 0.428 (2.24) | |
| Intercept | 1.948 (0.74) | |

Note: values in brackets are t ratios.

elected. For this purpose Adjusted LR test on the VAR was used with a maximum of 4 lags. Table 3 presents the results of this step.

As per the information given in Table 3, the parenthesis value of adjusted LR is greater than 0.05 at order 1. Moreover values of AIC and SBC are also maximum at order 1, resultantly VAR=1.

After the selection of VAR, next step is to test the presence and number of co integrating vector among the series of each model. For this purpose Maximal Eigenvalue and trace test can be used.

Results of Table 4 show that there is one co integrating vectors at 95 % critical level because first statistical values of both Maximal Eigenvalue and Trace test are greater than its 95 % critical values.

In the Johansen model, parameters in the co integrating vector can be interpreted as estimates of long run co integrating relationship between variables. Therefore the estimated parameter values from these equations when normalized are long run elasticities. Table 5 presents the results of long run elasticities.

As per Table 5, the relationship between GDP and FDI is negative and statistically significant. The long run FDI elasticity is -0.154. It means that 1 % increase in FDI will decrease the GDP by 0.154 %. In 2009 [9] reported negative long run relationship between FDI and economic growth with coefficient size of 0.16 which is almost same as of present study. Negative association of FDI and economic growth for Pakistan was also confirmed by the studies of [7, 15]. Favorable host country's environment is prerequisite to benefit from FDI. Developing countries are characterized by weak institutions and administrative structure with underdeveloped local markets which act as a constraint to growth enhancing effects of FDI. Favorable economic environment along with investment friendly policies are the need of the time to benefit from FDI.

The relationship between exports and GDP is positive and in accordance with priori expectation. Long run elasticity of exports is 0.814. It means that 1 % increase in exports will increase the GDP by 0.814 % in the long run. This result matches with the findings of [16-18]. Specifically with respect to Pakistan, this finding is in line with the studies of [19-22]. The result of the present study supports the export-led growth hypothesis. Pakistan needs to focus on exports of primary as well as manufactured products to accelerate the growth.

The relationship between real education expenditures (used as proxy of human capital) and GDP is also positive and statistically significant. Coefficient size is

0.428. It means that 1 % increase in real education expenditures will increase the GDP by 0.428 %. This result is consistent with the studies of [22-26]. No doubt investment in education plays very important role in the economic development of a country. Educated and skilled labor force enhances the economic growth and productivity ultimately resulting economic development.

Impulse Response Function: Figures 1 to 4 indicate the response of variables specified in the model to one standard error shock. The shock in the equation for FDI has impacted the economic growth to some extent. It takes almost 15 years for economic growth to become stable after a one standard error shock. For equation of real imports, it takes almost five to seven years for the economic growth to become stable after shock. Finally, it takes seven to eight years for the economic growth to become stable after a shock in equation of education expenditures.

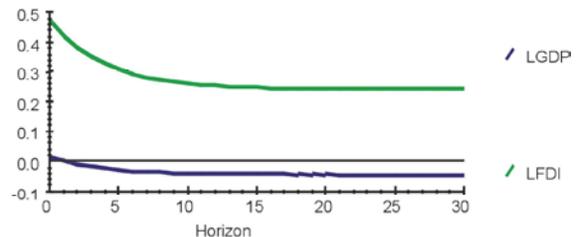


Fig. 1: Generalized Impulse Response(s) to one SE shock in the equation for FDI

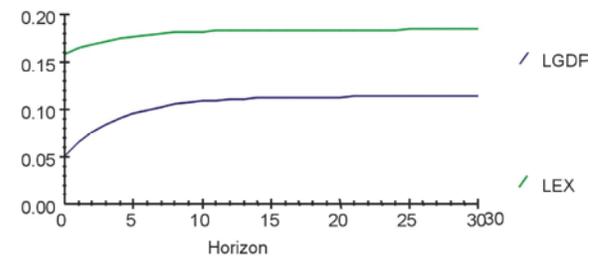


Fig. 2: Generalized Impulse Response(s) to one SE shock in the equation for EX

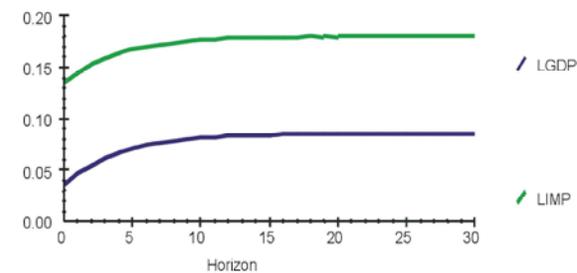


Fig. 3: Generalized Impulse Response(s) to one SE shock in the equation for IMP

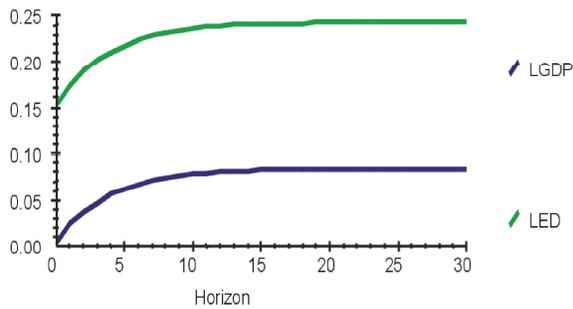


Fig. 4: Generalized Impulse Response(s) to one SE shock in the equation for LED

CONCLUSION

We have investigated the long run relationship of economic growth with FDI, imports, exports and education expenditures using Johansen's co-integration approach for the period 1975 to 2010. Our results suggested that all the independent variables significantly affected economic growth in the long run. The impacts of exports were found to be positive while that of FDI as negative. To foster the process of development it is indispensable for the government to focus on creating favorable environment for FDI so that it enhances economic growth rather than retarding it. Moreover, FDI may generate positive impacts in export oriented but neglected sector such as agriculture. In the case of Pakistan, export-oriented strategy is the need of the time instead of import substitution policy. Export of semi-manufactured and manufactured products should be enhanced. Moreover, there is a need to enhance the capabilities of the unskilled labor force by investing in education. Skilled human capital can proved to be a significant contributor in economic growth by adopting new technologies of production from FDI.

REFERENCES

1. Anwar, M.S. and R.K. Sampath, 2000. Exports and Economic Growth. *Indian Economic Journal*, 47(3): 79-88.
2. Klasra, M.A., 2011. Foreign Direct Investment, Trade Openness and Economic Growth in Pakistan and Turkey: An Investigation Using Bounds Test. *Quality and Quantity*, 45(1): 223-231.
3. Jim, L. and R. Chandra, 2005. Testing Export Led Growth in South Asia. *Journal of Economic Studies*, 32(2): 132-145.

4. Fry, M.J., 1993. Foreign Direct Investment in a Macroeconomic Framework: Finance, Efficiency, Incentives and Distortions, 1141. World Bank Publications.
5. Azeem, M.M. and M.K. Bashir, 2011. Foreign Direct Investment, Domestic Private Investment and Economic Growth: A reference from Pakistan. *World Applied Sciences Journal*, 14(1): 140-144.
6. Fatima, S., M.M. Azeem, E. Elahi and M. Abid, 2012. Comparative Analysis of Foreign Capital Inflows and Domestic Resources in the Economic Growth of Pakistan. *J. Agric. and Soc. Sci.*, 8: 34-36.
7. Khan, A., 2007. Foreign Direct Investment and Economic Growth: The Role of Domestic Financial Sector. *Pakistan Institute of Development Economics (PIDE). Working*, pp: 18.
8. Ahmad, M.H., S. Alam, *et al.*, 2003. Foreign Direct Investment, Exports and Domestic Output in Pakistan with Comments. *The Pakistan Development Review*, 42(4): 715-723.
9. Falki, N., 2009. Impact of Foreign Direct Investment on Economic Growth in Pakistan. *International Review of Business Research Papers*, 5(5): 110-120.
10. Miankhel, A.K., S.M. Thangavelu, *et al.*, 2009. Foreign Direct Investment, Exports and Economic Growth in South Asia and Selected Emerging Countries: A Multivariate VAR Analysis. *Centre for Contemporary Asian Studies Doshisha University*, pp: 1-28. <http://www1.doshisha.ac.jp/~ccas/japanese/publications/WP23 Miankhel Shandre.pdf>.
11. Dickey, D.A. and W.A. Fuller, 1981. Likelihood Ratio Statistics for Autoregressive Time Series with a Unit Root. *Econometrica: Journal of the Econometric Society*, 49(4): 1057-1072.
12. Johansen, S., 1988. Statistical Analysis of Co-integrating Vectors. *Journal of Economic Dynamics and Control*, 12(2): 231-254.
13. Osterwald-Lenum, M., 1992. A Note with Quantiles of the Asymptotic Distribution of the Maximum Likelihood Cointegration Rank Test Statistics 1. *Oxford Bulletin of Economics and Statistics*, 54(3): 461-472.
14. Polasek, W. and L. Ren, 2001. Volatility Analysis during the Asia Crisis: A Multivariate GARCH-M Model for Stock Returns in the US, Germany and Japan. *Applied Stochastic Models in Business and Industry*, 17(1): 93-108.
15. Atique, Z., M.H. Ahmad, *et al.*, 200. The Impact of FDI on Economic Growth under Foreign Trade Regimes: A Case Study of Pakistan with Comments. *The Pakistan Development Review*, 43(4): 707-718.

16. Khalafalla, K.Y. and A.J. Webb, 2001. Export-Led Growth and Structural Change: Evidence from Malaysia. *Applied Economics*, 33(13): 1703-1715.
17. Panas, E. and G. Vamvoukas, 2002. Further Evidence on the Export-Led Growth Hypothesis. *Applied Economics Letters*, 9(11): 731-735.
18. Maneschiöld, P.O., 2008. A Note on the Export-Led Growth Hypothesis: A Time Series Approach. *Cuadernos de economía*, 45(132): 293-302.
19. Ram, R., 1985. Exports and Economic Growth: Some Additional Evidence. *Economic Development and Cultural Change*, 33(2): 415-425.
20. Rana, P.B. and J.M. Dowling, 1988. The Impact of Foreign Capital on Growth: Evidences from Asian Developing Countries. *The Developing Economies*, 26(1): 3-11.
21. Khan, A.H. and N. Saqib, 1993. Exports and Economic Growth: The Pakistan Experience. *International Economic Journal*, 7(3): 53-63.
22. Shirazi, N.S. and T.A.A. Manap, 2005. Export-Led Growth Hypothesis: Further Econometric Evidence from South Asia. *The Developing Economies*, 43(4): 472-488.
23. De Meulemeester, J.L. and D. Rochat, 1995. A Causality Analysis of the Link between Higher Education and Economic Development. *Economics of Education Review*, 14(4): 351-361.
24. Zafar, I. and G.M. Zaidi, 1998. Macroeconomic Determinants of Economic Growth in Pakistan. *Pakistan Development Review*, 37(2): 125-148.
25. Ravinder, R., 2007. Higher Education in Africa - A Case of Eritrea. *Journal of Educational Planning and Administration*, 21(2): 125-140.
26. Imran, M., S. Bano, M. Azeem, Y. Mehmood and A. Ali, 2012. Relationship between human capital and economic growth: use of Co-integration approach. *J. Agric. Soc. Sci.*, 8: 135138.