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Foreign Direct Investment, Exports, and Domestic Output in Pakistan

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1. INTRODUCTION

The impact of the policy reform on economic performance has been one of the stifling issues in development economics in the recent years. Since the middle 1970s, there has been considerable progress in the trade reform in the most developing countries, turning from an import substitution strategy to export-oriented approach. Pakistan also follows export-oriented policies. Pakistan's trade pattern and trade policy have been moving towards fewer and fewer controls, tariffs rates have come tumbling down. Export-led-growth hypothesis (ELG) suggests that due to positive correlation between export and growth, therefore, export-oriented policies contribute to economic growth. Thus, international trade and development theory suggests that export growth contributes positively to economic growth. On the basis of this framework, most empirical work on the effects of export promoting strategy followed in developing countries evaluated openness with trade. Empirical research about the effect of this liberalisation process has treated export as principal channel for growth. The relationship with exports and growth, grounded in endogenous growth theory, has been tested for Pakistan [Khan (1995); Ahmad, Butt, and Alam (2000) and Akbar (2000)].

The rapid growth in foreign direct investment over the last few decades, 5 percent of world GDP in 1980 to 10 percent in 1995 [World Investment Report (1997)], has spurred a large body of literature examining the determinants and its effects on FDI. The effects of FDI can be wide-reaching, with evidence suggesting that FDI impacts significantly on trade, employment and factor cost.[1] The source of the fragility of trade and growth results may stem from the omission of relevant mechanisms through which openness can promote growth. In particular, the liberalisation process is expected to increase not only trade but also foreign direct

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[1]See Braconier and Ekholm (2000) and Freenstra and Hanson (1997).

investment. In this context, intrinsic importance of foreign direct investment (FDI), focussing only on trade as a proxy for openness may be misleading [Goldberg and Klien (1999)]. Sun (1998) summaries the argument about nexus between economic growth and inward FDI as follows: foreign capital inflow augment the supply of funds for investment thus promoting capital formation in the host country. Inward FDI can stimulate local investment by increasing domestic investment through links in the production chain when foreign firms buy locally made inputs or when foreign firms supply source intermediate inputs to local firms. Furthermore, inward FDI can increase the host country's export capacity causing the developing country to increase its foreign exchange earning.

In the best of our knowledge, no study has been done to examine existence and nature of any causal relationship between FDI, export and output by employing Granger non-causality procedure recently developed by Toda and Yamamoto (1995) and Dalado and Lutkepohl (1996) over the period 1972 to 2001 in Pakistan.

The plan of the paper is as follows: Section 2 examines FDI influence on the export-growth relationship, Methodology and Data source presents in Sections 3 and 4 respectively, Section 5 analysis the empirical results and Section 6 presents a concluding summary.

2. FDI INFLUENCE ON THE EXPORT-GROWTH RELATIONSHIP

The export-led growth hypothesis postulates that export is a main determinant of overall economic growth. There are quite a few arguments that can be used to provide the theoretical rationale for this hypothesis. Firstly, export sector may generate positive externalities on non-export sectors through more efficient management styles and improved production techniques [Feder (1982)]. The second argument is that export expansion will increase productivity by offering potential for scale economies [Helpman and Kruman (1985)]. Thirdly, exports are likely to alleviate foreign exchange constraints and can thereby provide greater access to international market. These arguments have recently been supplemented by the literature on endogenous growth theory which emphasises that exports are likely to increase long run growth by allowing a higher rate of technological innovation and dynamic learning from abroad [Lucas (1988) and Edwards (1992)].

Despite of popularity of the ELG hypothesis, the empirical evidence is not clear. While a substantial literature, applying a range of cross-section type methodologies, supports an association between exports and growth, time series evidence fails to provide uniform support for the ELG hypothesis [See Edwards (1993) and Giles and Williams (2001)]. Moreover, the results obtained by cross sectional studies have been brought into question due to some limitations [See Grossman and Helpman (1995)]. A number of time series studies have conducted to examine ELG hypothesis, but the results are not uniform. Baldwin and Sbergami (2000) argue that the source the fragility of the trade and growth results may stem

from the imposition by empirical researcher of a linear relationship between openness proxies and growth.

The relationship between GDP growth and openness is extremely complex and as we mentioned before, the liberalisation process in developing countries has increased not only trade but also FDI flows. So, for a complete knowledge of the relation between openness and growth, one should include not only FDI but also the existence of linkages between trade and FDI. FDI can effect growth is by the generation of productivity spillovers, Blomstrom (1986) find evidence that FDI has led a significant positive spillover effects on the labour productivity of domestic firms and the rate of growth of domestic productivity in Mexico. Similarly evidences were also found in most of other Latin countries.

Nevertheless, the effect of FD on economic growth is an empirical question, as it seems to be dependent upon a set of condition in the host country economy. Openness can play a crucial role in the growth of both trade and FDI may encourage export promotion, or greater trade in intermediate inputs, especially between parent and affiliate producers [Goldberg and Klien (1998)].

However, the empirical evidence about the relationship between trade and FDI is ambiguous.

This brief review of literature reveals that a full understanding of the relationship among trade in goods, FDI and output is required in order to analyse the extent and sources of international linkages between openness and economics performance in developing countries.

3. DATA

The model consists of five variables, total exports (*exp*), manufacturing production (*mi*) as proxy of domestic output, foreign direct income (*fdi*) foreign income (*y*),[2] and real exchange rate (*er*) the last two variables were included to avoid the possibility of spurious association, as a result of variation in common determinants. The sample consists of annual time series observation (1972–2001).

Data for industrial production, foreign income, foreign direct investment and exchange rate were obtained from various issues of International Financial Statistics (IFS) and total export data obtained from *Pakistan Economic Survey* (Various Issues). All the data are taken in real term and consumer price index was used to convert them into real term.

4. METHODOLOGY

Prior to testing the long run and non-causality, it is necessary to establish the order of integration presented. To this end, an Augmented Dickey Fuller (ADF) was carried out on the time series levels and difference forms.

[2]As regards foreign income, we have used the US GDP because the US is a major trade partner of Pakistan.

According to Johansen's (1988) technique, to avoid spurious results in the causality testing we need to proceed as follows: firstly, determine the order of integration of the series. Secondly, identify the possible long-term relationships among the integrated variables included in the system. In the absence of cointegration vector, with I(I) series, valid results in Granger causality testing are obtained by simply first differentiating the VAR model. With cointegration variables, Granger causality will further require inclusion of an error term in the stationary model in order to capture the short-term deviations of series from their long-term equilibrium path.

It is important to determine the stationary properties of time series before we proceed with the multivariate cointegration analysis. In this study we employ the Augmented Dickey-Fuller (ADF) unit root test to determine the order of integration for all the series. To find out the long run relationship among the variables, we employed the Johansen's (1988) and Johansen and Juselius (1990) multiple cointegration test.[3]

Giles and Mirza (1999) have pointed out that the pretesting for non-stationarity and cointegration before the Granger causality test can lead to over rejection of a non-causal null; i.e. pretesting for non-stationarity can lead to the wrong conclusion of causality.

To deal with the possibility of distortion in the inference procedure, Toda and Yamamoto (1995) and Dalado and Lutkepohl (1996), (after called TYDL) argue that we might test Granger's concept of causality on an augmented VAR in levels even if analysed series are integrated or cointegrated of an arbitrary order. However, this procedure does not replace the conventional hypothesis testing of unit roots and cointegration ranks. It should be considered as complementary the pretesting method that may suffer inference biases [Toda and Yamamoto (1995)].

A modified Wald test for restrictions on the parameters of a *VAR* (k), where k is the lag length in the system, is utilised by procedure that developed by Toda and Yamamoto (1995). When a *VAR* ($k+dmax$) is predicted (where *dmax* is the maximum order of integration to occur in the system), this test displays asymptotic chi-square distribution, it is also shown that if variables are integrated of order d, the usual selection procedure is valid whenever $k \geq d$.

5. EMPIRICAL RESULTS

We employed Granger's (1969) concept of causality to test the relationship between trade, FDI and domestic output using the annual data for Pakistan. We formulate a vector autoregressive (VAR) system, comprised of export, foreign direct investment; foreign income, exchange rate and domestic income, all of them are in

[3]JJ (Johansen and Juselius) procedure have been quite more popular in a multivariate context, results arrived from JJ statistics in bivariate studies have also been shown to be more robust than those arrived adopting the Engle-Granger approach [see, by example, Masih and Masih (1994, 1995)].

the real terms. In selection of lag to be included in our model, we followed the Akaike Information Criteria (AIC). The time series properties of the data are investigated using the Augmented Dickey Fuller (ADF) test based on inclusion of an intercept as well as a linear time trend and without the trend term. The results are reported in Table 1. It is evident from the results shown in Table 1 that all the variables have a unit root in their levels and are stationary in their first differences. Thus all five variables (*y, mi, fdi, er* and *exp*) are integrated of order one.

Table 1

Test of the Unit Root Hypothesis

	Level				First Difference			
	No Trend	*k*	Trend	*k*	No Trend	*k*	Trend	*k*
y	2.84	1	–0.88	1	–3.01**	1	–3.94**	1
mi	1.23	3	–3.12	3	–3.36**	4	–3.41***	4
fdi	–2.15	1	–3.07	3	–4.57*	1	–4.65*	1
er	2.23	1	–0.12	1	–3.08**	1	–4.01**	4
exp	1.83	3	–1.75	3	–3.16**	2	–4.18**	2

The optimal lags (*k*) for conducting the ADF test were determined by AIC (Akaike information criteria).
** and * Indicate significance at the 5 percent and 1 percent levels, respectively.

Given the common integrational properties of the variables under the consideration the next stage in the analysis is to test for the presence of multivariate cointegration in the five dimensional *VAR* model (*exp, fdi, mi, er, y*) by employing the Johansen (1988) and Johansen and Juselius (1990) procedure, using the an optimal lag structure for the VAR, are presented in Table 2 and indicates that there exist at most $r=3$ cointegration vectors Evidence of multivariate cointegration suggest that these variables are cointegrated. So there is long run relationship among the variables. This evidence of cointegration among the variables rules out spurious correlations and also implies at least one direction of Granger causality.

Table 2

Johansens's Test for Multiple Cointegration Vectors

	Hypotheses		Tests Statistics	
Vector	H0:	H1:	Max Eigenvalue	Trace
[*exp, fdi,mi,er,y*]	$r = 0$	$r > 0$	59.37*	126.84*
	$r \leq 1$	$r > 2$	35.64*	67.48*
	$r \leq 2$	$r > 3$	21.14**	31.92**
	$r \leq 3$	$r > 4$	8.05	10.64
	$r \leq 4$	$r > 5$	2.64	2.52

**And * Indicate significance at the 5 percent and 1 percent respectively.

The outcomes of Granger causality tests based on TYDL augmented lag method are shown in Table 3.[4] According to estimation results, Granger causality unidirectional running from export to output growth. This seems to confirm the ELG hypothesis for Pakistan. The results also show the existence of FDI-domestic output growth nexus. This suggests that domestic firms through spillover effect mechanism have got benefit from FDI. The findings do not shows the FDI-led export growth nexus at the traditional level of significant. This would confirm the idea that most of multinational companies (MNCs) investment in Pakistan is not export-oriented investment. Causality also runs from foreign income to export.[5] The results show that no causality run from export, output to FDI.

Table 3

Granger Causality Test (TYDL Augmented Lags Methods)

	Sources of Causation				
	mi X^2 (5)	*exp* X^2 (5)	*fdi* X^2 (5)	*Er* X^2 (5)	*y* X^2 (5)
Mi	–	42.46*	13.05**	6.8	14.87**
Exp	0.702	–	6.07	6.15	25.26*
Fdi	5.04	4.03	–	13.27**	8.01

**And * Indicate significance at the 5 percent and 10 percent respectively. Figures parantheses are degree of freedom.

6. CONCLUSION

Recent theoretical and empirical advancement on growth accounting and endogenous growth front has emphasised that FDI can be a catalyst for development of developing countries. FDI can contribute to the domestic stock of knowledge and its very presence generates a host of externalities enhancing productivity and competitiveness of the host country. The increasing importance of international capital flows and especially FDI seems to be another important component of outward-looking development policies that should not be ignored. FDI can contribute in growth in both direct and indirect ways. First, introduction of new technology by MNCs has high skill content. This reflects by new vintages of capital, quality control and precision in production and accompanying increased training skill upgradation [World Bank (1997)]. Secondly, they bought with them a package of market knowledge and marketing skill accumulated from their long-standing experience and broader exposure to world wide competitive markets. The indirect contributions of FDI in enriching the over all knowledge of the host economy, these include productivity and export spillovers.

[4]We have considerd the foreign income and exchange rate as exogenous variables.

[5]In the case of Pakistan, empirical studies suggest that world income is an important determinant of export demand of Pakistan [See Khan (1995) and Anwer (1985)].

Thus, we examine the effects of openness in the Pakistan economy by taking into account both the trade and FDI growth links. In this paper, we analyse existence of causality between export, FDI and domestic output in Pakistan over the period 1972–2001. We found the long run relation between foreign direct investment, export and domestic growth.

Our results support the export-led hypothesis but also the existence of FDI-growth nexus. In other words we have found significant spillovers effect from FDI to domestic output. Furthermore, our findings do not suggest a kind of FDI-led export growth linkage. This would confirm the idea the most of multinational firms investment in Pakistan is not an export-oriented investment.

In short, these findings suggest Pakistan's capacity to progress on economic development will depend on her performance in attracting foreign capital. Pakistan's outward looking development strategy should include FDI as an essential part in addition to export promotion strategy.

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