

International Trade as an Engine of Growth in Developing Countries: A Case Study of Pakistan (1973-2011)

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Abstract

The paper analyzes the growing role played by exports, imports and inflation in Pakistan's economic growth since 1973. It examines the reasons for the shift over time in Pakistan's growth model, which occurred in stages, and it questions the sustainability of the recent dependence on exports, Imports and Inflation. It proposes structural changes in Pakistan's growth model and considers the obstacles to such changes. The results have been tested for Heteroscedasticity, Multicollinearity and autocorrelation for validation purposes.

Keywords: Economic growth, Export, Import, Inflation, Trade Index, Development Index

1. Introduction

International trade plays a vital role in determining economic and social performance and projection of developing countries like Pakistan. A country cannot be able to prosper without trade. The contribution of trade to development of the country depends upon its mechanism and the objectives it serves. In the recent years, the industrialized Asian countries have managed to firmly gain the advantage of international trade to increase growth and development in their countries.

To act as an engine of progress, trade must lead to stable improvements in human conditions by increasing the range of people's choice, a concept that the idea of human development tries to capture. From this stance, the trade and development performance of a country cannot be seen as the mere sum of its economic growth and export performance. Instead, it is a composite notion, reflecting how trade relates to the range of choices available to people in a country at a particular point in time. The extent of such choice, in turn, depends much on the interplay among factors that determine both trade outcomes and human development outcomes. The trade and development index (TDI) provides a quantitative indication of the trade and development performance of countries by systematically accounting for the interactions among factors governing outcomes.

2. Literature Review

The existing literature studying the impacts of exports, FDI, and remittances on economic growth is enormous. The effect of each variable on economic growth has normally been investigated in a bi-variate context for many countries using various sample periods and econometric procedures. Studies that focused on exports and FDI promotion have shown promising results in their contributions to economic growth in LDCs (Balassa, 1985; Sengupta and Espana, 1994; Yue, 1999).

The benefits associated with exports and FDI have lent support to the export-led growth hypothesis (ELGH) and FDI-led growth hypothesis (FLGH) respectively. The theories are based on the thought that exports and FDI are key variables in determining economic growth. Federici and Marconi (2002) pointed out that many of these studies confuse causation and association. As a result, they expressed serious reservations about their influences on economic growth. The studies examining the relationship between exports and GDP have found strong support for ELGH, which conclude that export promotion can greatly benefit LDCs by generating "greater capacity utilization, economies of scale, improving allocation of scarce resources, and technological progress (Smith, 2001)." A cross-sectional study by Smith (2001) on the Four Tigers of South-East Asia (South Korea, Singapore, Hong Kong, and Taiwan) found that outward-oriented policies have allowed these countries to sustain high rates of economic growth since the 1960s until 1997-98 financial crises. A study by Ghimay and others (2001), consisting of 19 LDCs, found a long-run relationship between exports and economic growth in 12 of the 19 countries. Export promotion also attracted investment and increased GDP in 15 countries.

Some Southeast Asian countries found little impact of exports on overall GDP. Mamun and Nath (2003) found a "long-run unidirectional causality from exports to growth in Bangladesh, but no short-run effects on GDP." A study on Costa Rica found both long- and short-run effects from export promotion, but the effects had a limited impact (Smith, 2001). Studies on FDGH have discovered that FDI promotion can greatly benefit LDCs by introducing new technology and skills, increasing employment creation, surging domestic competition and increasing access to international marketing networks (Mallampally, 1999; Sauvans and Athukorula, 2003). These benefits were found in the case of Morocco, where, Balamoune-Lutz (2004) concluded that FDI had positive effects on economic growth as well as a bidirectional relationship between exports and FDI. This means that another benefit associated with the promotion of FDI is that it can promote

exports and vice versa. On the other hand, a regression analysis on Sri Lanka found that FDI has a positive but weak effect on GDP and a unidirectional causality flowing from GDP to FDI. This suggests that GDP has a greater impact in attracting FDI (Anthukorala, 2003).

Research examining the impacts of exports and FDI on GDP within the same model has also concluded ambiguous results. For example, a study on Turkey found that economic performance was consistent with ELGH, but did not confirm FLGH because no spillover effects from FDI to output were found (Alia and Deal, 2003). In the Latin American countries of Argentina, Brazil, and Mexico, the empirical data did not support the ELGH, but did find that FDI promotes economic growth and trade (Alguacil, et al., 2000). Dritsaki and Adamopoulos (2004) discovered a unidirectional causal relationship from FDI to GDP and a bidirectional causal relationship between exports and GDP of Greece. Yao (2006) found a strong relationship among exports, FDI, and GDP for Contributions of Exports, FDI and Expatriates' Remittances to Real GDP Of Bangladesh, India, Pakistan and Sri Lanka. He found that the devaluation of the Yuan led to export and FDI promotion, stimulating growth. This study also found that FDI and exchange rates have a "simultaneous relationship with GDP." This means that currency deflation may enhance economic growth by attracting FDI and encouraging exports. Over the past several years, the amount of migrants' remittances has increased substantially. In 2005 alone, remittances totaled to \$160 billion dollars. The impact of remittances can depend on several factors, such as the "skills among employment of migrants, policies of remittance-receiving and source countries, investment climate, and size and geographic locations of countries are a few (World Bank, 2006).

The World Bank report has found that remittances can impact a variety of macroeconomic variables, as well as have direct and indirect effects on other economic factors. The report also mentions several positive effects associated with international migration, including a reduction in poverty and income inequality, increase in per capita income, promotion of entrepreneurial activities, and strengthening of financial development in cash-dependent countries (Page and Adam, 2003; Hulugalle, and Maimbo, 2005; World Bank, 2006).

A cross-sectional study (Page and Adam, 2003) conducted on 74 low-and middle-income developing economies found a reduction in poverty and income inequality, as a share of a country's GDP. Statistically, the study found that on average 10% increases in remittances lead to a 1.6% decrease in poverty. A time series study on Ghana found similar evidence that remittances reduce severity of poverty. The study did find one exception to the positive effects of the variable, in which international remittances reduce poverty more than internal migration. The author reasoned that the impact of the two types of remittances varied on different households (Adams, 2006). Some other studies have found that remittances spur growth by encouraging entrepreneurial activity and strengthening of financial development in cash-dependent countries (Hulugalle and Maimbo, 2005). Remittances are found to be more procyclical in less developed financial markets than in their counterparts, meaning the impact of remittances is larger in less developed financial systems (Giuliano and Arranz, 2005). Chami et al., (2003) found negative effects of remittances on economic growth in the cross-sectional paper on 101 developing countries. They argued that remittances resulted in incentives leading to moral hazard problems, which severed economic growth. The study also stated that remittances move countercyclically in a majority of countries causing negative effects in individual economies. Another study (World Bank, 2006) found that large inflows of remittances cause appreciation of exchange rates resulting in decreasing exports and contracting economic growth. This study found this to be true in 22% of the countries. Many researchers believe that adverse effects are more probable in small economies where dependence on remittances is higher. Other variables that remittances may impact negatively include interest rates, balance of payments, and other macroeconomic variables (World Bank, 2006). In Syria and Egypt, inflation has also increased due to remittance inflows (Wahba, 1996).

3. Hypotheses of the Study

To analyze the relationship, we shall make the following hypotheses;

- i. That Pakistan's export value does not act as an engine of growth in Pakistan i.e. it has no significant impact on international trade.
- ii. That Pakistan's import value does not act as an engine of growth in Pakistan i.e. it has no significant impact on international trade.
- iii. That inflation rate value does not act as an engine of growth in Pakistan i.e. it has no significant impact on international trade.

4. Methodology of the Study

The method that will be use in this study is based on secondary data collected from state bank of Pakistan and World Bank. The ordinary least squares regression techniques will be used to investigate and analyze the impact of the exogenous variables on the endogenous variable of the model.

5. Scope and Limitations

The study will basically cover a period of 24years (1980-2003). This study is limited to external trade as it affects the growth and development of the Pakistan economy. A major constraint of this study is the short time needed to complete this study and problem of consistent and accurate data.

6. Empirical Analysis

In the empirical analysis of the impact of international trade as an engine of growth in Pakistan, the method used in the empirical analysis is the Ordinary Least Square (OLS) regression techniques. The data used in this analysis are the Gross Domestic Product (GDP), exchange rate, export, import and inflation.

The data for different variables were compiled for a period (1973-2011). To analyze the relationship, we shall make the following hypothesis;

- i. That Pakistan 's export value does not act as an engine of growth in Pakistan i.e. it has no significant impact on international trade.
- ii. That Pakistan 's import value does not act as an engine of growth in Pakistan i.e. it has no significant impact on international trade.
- iii. That inflation rate value does not act as an engine of growth in Pakistan i.e. it has no significant impact on international trade.

7. Model Specification

To test the above hypotheses, we shall specified the following model:

$$GDP = C + \beta_1 EX + \beta_2 IMP + \beta_3 INF$$

Where

GDP = Gross Domestic Product

EX = Export value as percentage of GDP IMP = Import as percentage of GDP

INF = Inflation as percentage of GDP

8. Interpretation of Results

Dependent Variable: GDP Method: Least Squares

Date: 01/12/13 Time: 00:21

Sample: 1973 2011

Included observations: 39

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.462581	3.663230	8.218209	0.2313
EXPORT	-0.143143	0.148587	-0.963365	0.3420
IMPORT	0.158088	0.128128	1.233828	0.2255
INFLATION	-0.064172	0.062933	-1.019693	0.3149
R-squared	0.900871	Mean dependent var		62.052821
Adjusted R-squared	0.883803	S.D. dependent var		12.104588
S.E. of regression	4.079389	Akaike info criterion		4.398940
Sum squared resid	603.3350	Schwarz criterion		4.569561
Log likelihood	-81.77932	F-statistic		58.308861
Durbin-Watson stat	1.691500	Prob(F-statistic)		0.000000

Relatively high square value 0.90 implies good fit of data with the regression line. This suggest that approximately 90% of the variation in the GDP of Pakistan is being explained jointly by all variable in regression model specified above i.e. Export , Import and Inflation.

$$GDP = 4.462 - 0.14EXP + 0.158 IMP - 0.064 INF$$

8.1 Chow Test

Dividing the sample data in to two time periods: 1973-1991 and 1992-2011 to see if there is any structural change. Now by running the three regression i.e. from -1991 and 1992-2011, we get the following empirical result.

Dependent Variable: GDP Method: Least Squares

Date: 01/12/13 Time: 01:51

Sample: 1973 1991

Included observations: 19

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000000	0.000000	NA	1.0000
EXPT	1.000000	0.000000	NA	0.0000
IMPT	0.000000	0.000000	NA	1.0000
INF	0.000000	0.000000	NA	1.0000

R-squared	1.000000	Mean dependent var	5.995263
Adjusted R-squared	1.000000	S.D. dependent var	1.791044
S.E. of regression	0.000000	Sum squared resid	0.000000
Sum of Square Resid	142.183		

Dependent Variable: GDP Method: Least Squares

Date: 01/12/13 Time: 01:58

Sample: 1992 2011

Included observations: 20

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.368864	5.431268	-0.252034	0.8042
EXPT	0.403331	0.318025	1.268236	0.2229
IMPT	-0.020974	0.189761	-0.110529	0.9134
INF	-0.021700	0.125286	-0.173205	0.8647

R-squared	0.105629	Mean dependent var	4.157500
Adjusted R-squared	-0.062065	S.D. dependent var	2.021778
S.E. of regression	2.083575	Akaike info criterion	4.482904
Sum squared resid	80.46056	Schwarz criterion	4.682050
Log likelihood	-40.82904	F-statistic	0.629891
Durbin-Watson stat	1.323616	Prob(F-statistic)	0.606259

RSS1= 142.183 RSS2= 80 RSS3=603

Hence RSS UR =142+ 80+= 222

Therefore,

$$F = (\text{RSSR} - \text{RSSUR})/k / (\text{RSSUR})/ (n1 +n2 - 2k)$$

$$F = (603.93 - 222)/19 / (222)/37$$

$$F = 8.24$$

From F table, we find that for 5 and do df the 1% Critical F value is 4.10 and 5% value is 2.71. since F calculated exceeds the F Critical value, we may reject the hypothesis of parameter stability.

9.0 TEST FOR HETEROSCEDASTICITY:

9.1 Park Test:

The residuals obtained from the original regression were regressed on explanatory i.e. Export, Import and Inflation and giving following results:

Dependent Variable: LOG(RESIDUALS^2) Method: Least Squares

Date: 01/12/13 Time: 00:54

Sample: 1973 2011

Included observations: 39

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.883306	8.654550	0.564247	0.5762
LOG(EXPORT)	-0.792760	1.708338	-0.464054	0.6455
LOG(IMPORT)	-1.355848	2.212574	-0.612792	0.5440
LOG(INFLATION)	0.698128	0.574815	1.214526	0.2327
R-squared	0.044506	Mean dependent var		0.252214
Adjusted R-squared	-0.037394	S.D. dependent var		1.788349
S.E. of regression	1.821479	Akaike info criterion		4.134089
Sum squared resid	116.1225	Schwarz criterion		4.304711
Log likelihood	-76.61474	F-statistic		0.543419
Durbin-Watson stat	2.013116	Prob(F-statistic)		0.655804

Obviously, there is no statistically significant relationship between the two variables. Following the Park's test, we may conclude that there is no Heteroscedasticity in the error variance.

9.2 Glejser's Test:

The absolute value of residuals were obtained from original regression, and regressed on variable export, import and inflation giving the following results

Dependent Variable: ABS (RESIDUALS) Method: Least Squares

Date: 01/12/13 Time: 01:17

Sample: 1973 2011

Included observations: 39

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.899613	2.136054	0.421156	0.6762
EXPORT	0.026373	0.086642	0.304387	0.7626
IMPORT	-0.006316	0.074712	-0.084544	0.9331
INFLATION	0.046046	0.036697	1.254788	0.2179
R-squared	0.046184	Mean dependent var		1.580227
Adjusted R-squared	-0.035571	S.D. dependent var		1.191499
S.E. of regression	1.212505	Akaike info criterion		3.320169
Sum squared resid	51.45591	Schwarz criterion		3.490791
Log likelihood	-60.74329	F-statistic		0.564906
Durbin-Watson stat	1.822508	Prob(F-statistic)		0.641782

It is evident from the regression above, that there is no significant relationship between the absolute value to the residuals and the regressors Exports, Imports and Inflation. This reinforces the conclusion based on the Park test that there is no Heteroscedasticity.

10. Testing for Multicollinearity

10.1 High R² but few significant t ratios:

Multicollinearity means perfect or less than perfect (very high R²) inter correlation amongst the X-variables. Since R² in the original GDP model is already very high i.e. greater than 0.8 i.e. 0.9 and the individual t test are significant for only two variable. Hence, this shows that there is multi-collinearity to some extent.

10.2 High Pair-Wise Correlations among Regressors:

To test for multicollinearity, intercorrelations between the X-variables were obtained, using E-Views, called correlation matrix, to determine the R² values for the regression between each X variable and the other X variables in the regression model. The results of inter-correlations were as follows:

Correlations

	GDP	Export	Import	Inflation
GDP Pearson Correlation	1	-.213	.221	-.123
Sig. (2-tailed)		.193	.176	.455
N	39	39	39	39
Export Pearson Correlation	-.213	1	-.270	-.024
Sig. (2-tailed)	.193		.097	.885
N	39	39	39	39
Import Pearson Correlation	.221	-.270	1	.189
Sig. (2-tailed)	.176	.097		.250
N	39	39	39	39
Inflation Pearson Correlation	-.123	-.024	.189	1
Sig. (2-tailed)	.455	.885	.250	
N	39	39	39	39

Some of the pair-wise correlations are quite high, suggesting that there might be some multi-collinearity problem. The highest pair wise correlation existing between the independent variables is between Export and Inflation, which is about 88%

11. Testing for Auto Correlation

11.1 Run Test:

N = total No. of observations = $N_1 + N_2 = 38$

N_1 = No. of + symbols (positive residuals) = 17

N_2 = No. of - symbols (negative residuals) = 21

R = Number of runs = 12

Under null hypothesis that the successive residuals are independent and $N_1 > 10$ & $N_2 > 10$ the number of runs is asymptotically normally distributed: therefore using the formulas: Mean:

$$E(R) = \frac{2N_1N_2}{N} + 1 = 19$$

$$\text{Variance: } \sigma^2 R = \frac{2N_1N_2(2N_1N_2 - N)}{N^2(N-1)} = 8.61 \quad \sigma = 4.8$$

Using the following properties of the normal distribution, under 95% confidence interval for R

$$\text{Prob} [E(R) - 1.96\sigma R < R < E(R) + 1.96\sigma R] = 0.95 \quad [19 + 1.96(4.8)] = (11.6, 24.6)$$

The calculation above includes 12 ie number of runs.

Following the decision rule: We do not reject the null hypothesis of randomness with 95% confidence, since R the number of runs lies in the preceding confidence interval ie: we do not reject the hypothesis that the residuals in the IM-SAL model are random. In other words, residuals do not exhibit autocorrelation. Since the number of runs is 12, i.e many, there is negative autocorrelation.

11.2 Durbin Watson Test:

To conduct another test for auto-correlation, we would use the Durbin-Watson test for autocorrelation. Considering all the assumptions for the test being met, the D.W. Stat was 2.013116 (generated by E-Views). This value helps us determine the possible auto-correlation between the residuals. With 38 observations and 3 explanatory variables, $dL = 1.93$ and $dU = 2.45$. This means that the D.W. stat for the regression model, which is 2.013, lies inside of the lower and upper bounds. Hence, at 5% level of significance, we have sufficient evidence to say that there is some possible autocorrelation between the residuals. But we cannot conclude since it falls in the indecisive zone i.e.: $dL \leq d \leq dU$. This problem is to be remedied if we have to make the model more effective and accurate for the purposes of estimation and forecasting, by making modifications of the d test.

12. Recommendation

The lifting of trade barriers should not be followed by the introduction of new ones" – should be modified to imitate that, after years of market distortions favoring developed countries, some form of medium-term investment/tariff/subsidy policy will be necessary to enable developing countries to build their productive capacity, meet their food security needs, and generate surpluses for international markets.

Similarly, the calls for elimination of output and export subsidies in developed countries' agriculture, and of their trade barriers to developing country manufacturing exports are also positive. However, these commitments would be strengthened by reference to the need for concrete policies designed to enhance local productive capacity and food security in developing countries. Distinction should also be drawn between the elimination of developed country export subsidies and the proposal for export credits to stimulate infrastructure investment in developing countries.

There should be a Draft calls for consultations geared towards establishing "a world economic body at the highest political level... to provide political leadership to enhance the coherence and consistency of the international monetary, financial and trading systems in support of development". If such a body better balances economic policy with human rights, social and environmental goals, it could make a significant contribution to solving the problems of development finance over the long term.

A Draft should be made to commit UN agencies to "ensuring greater policy coherence and better cooperation among UN, its agencies, the Bretton Woods Institutions and the World Trade Organization, as well as other multilateral bodies", so as to better provide global public goods and consolidate the international financial system. It should be strengthened to note that the primary goal of enhanced coherence is "development," as defined and measured by the UN human rights framework. Such organizations (the Bretton Woods Institutions and the World Trade Organization) should serve to support nationally-designed development strategies, rather than undermining them.

13. Summary and Conclusion

This study has examined International trade as an engine of growth in developing country. At Independence in 1960, agricultural produce was Pakistan major export trade. The advent of petroleum considerably boosted foreign exchange earnings from the early part of the mid-

1970s. Export earnings grew at an estimated annual rate of 67.4 during the period of 1970-

1974. The trend and pattern of exports tended to suggest that the country was moving from a mono-cultural agrarian economy to a more diversified economy. The illusion in that hope, however, soon became apparent with the observation that expansion in exports till date was singularly accounted for by petroleum and hydrocarbon. This situation created the "Dutch disease" of the 1980s.

To end this, it is therefore imperative that conscious efforts should be made by government to fine-tune the various policy measures relating to the various macroeconomic variables in order to provide an enabling environment to stimulate international trade.

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