External Market Conditions, Competitiveness, Diversification, and Pakistan's Export Performance

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I. INTRODUCTION

Pakistan's exports evolve broadly in line with total world imports. Accordingly, Pakistan's share in world imports was remarkably stable during the last 20 years, ranging between a minimum of 0.12 percent in 1980 and a maximum of 0.18 percent in 1992. In 1999-2000, the share was 0.15 percent. This would suggest that Pakistan's export performance was not worse than that of the world on average. Compared to regional competitors, however, the performance was unimpressive, especially when compared to China and Thailand throughout the 1980s and 1990s or compared to Bangladesh, India, and Sri Lanka during the 1990s. All these countries succeeded in achieving sustainable market share increases in total world imports (Figure 1).

In light of the growing awareness about the importance of exports in the overall economy of Pakistan and in view of the unimpressive export performance of Pakistan *vis-à-vis* other countries in the region it would be interesting to study the export performance of Pakistan and analyse the possible reasons for this poor performance and see whether it is due to demand deficiency or is it something to do with the supply side of the issue.

There are, of course, many factors that determine the export performance of a country. Analysis of the determinants of export performance, using time series data in regression models encounter difficulties in defining and quantifying explanatory variable sets. The conceptual and practical difficulties involved in specifying, for example, the degree and structure of protection accorded to the domestic industry. However, time series analysis has generally been considered more persuasive than decomposition techniques.

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Fig. 1.

The purpose of this paper is to construct a model, which may be used to investigate the export performance of the country. Determinants of export performance include both supply side (domestic) and demand side (external) factors. The plan of the paper is as follows: Section II gives brief review of literature on the analysis of export performance. Section III presents analytical techniques and methodology. Results of the analysis are described in Section IV. Section V concludes the paper.

Trade Regime in Pakistan's Major Competitors

In this section we have analysed Pakistan's trade performance *vis-à-vis* her major competitors. Major competitors are being identified on the basis of export similarity index. The following Table 1 presents comparative analysis of the importance of trade and export in the overall economy of Pakistan and her major competitors.

Degree of openers of the economy measured in terms of the ratio of external trade to GDP, in Pakistan, remained considerably lower than in most other countries under consideration. Likely reasons for this poor show include:

Table 1

Trade Regime in Pakistan and in her Major Competitors

Countries	Exports* as % of GDP			Trade* as % of GDP		
	1980-89	1990-99	% Change over the Period	1980-89	1990-99	% Change over the Period
Pakistan	**11.5**	**15.6**	**35.6**	**30.5**	**32.9**	**7.9**
Bangladesh	6.3	10.0	58.7	22.8	29.6	29.8
China	9.3	18.8	102.2	20.0	35.6	78.0
India	4.7	7.6	61.7	12.0	17.1	42.5
Indonesia	11.5	18.7	62.6	38.4	48.4	26.0
Korea	31.2	27.8	–10.9	60.0	54.1	–10.0
Malaysia	51.9	80.3	54.7	94.8	149.3	57.5
Philippines	16.3	26.8	64.4	37.2	61.4	65.1
Sri Lanka	22.3	27.5	23.3	58.6	60.1	2.6
Thailand	20.9	34.5	65.1	44.8	68.0	51.8

Source: IMF, International Financial Statistics.

 *Period Average.

- Continued restrictiveness of Pakistan's trade system, especially in relation to that of most other countries (e.g. simple average tariff rate in Pakistan is higher than in any other country except India). This has created considerable anti-export bias in the trade regime in Pakistan (Figure 2).

Fig. 2.

- Cyclical factors and supply shocks (e.g. bad crops) complicate the quantitative assessment of the impact of trade liberalisation on trade performance. These factors in the short run, significantly reduce exports and thus indirectly curb imports as income levels fall.

It is widely acknowledged that good trade performance in general and export performance in particular has strong links with overall economic growth of the country.

The following Figures 3 and 4 gives the comparative position of the export performance of the countries under review in this paper. The figure clearly shows that except Pakistan all the countries have achieved remarkable export performance during the last 7 years and have registered a growth of more than 10 percent. China has topped the table with an impressive growth of almost 70 percent in last seven years, followed by Bangladesh and Sri Lanka, which have grown their exports by more than 50 and 40 percent respectively over the same period. Even India, the most closed economy in this group of countries, has registered a growth of almost 40 percent in her exports.

II. REVIEW OF LITERATURE

Trade policies of the less developing countries in the post- war period have been influenced greatly by trade pessimism theory. Arguing that the prospects for LDCs' export expansion were poor because of unfavourable external demand and domestic supply factors Nurkse (1961); Prebisch (1974) and Myrdal (1957), advocated inward-oriented development strategies emphasising import substitution. Increasingly, however, their views have been challenged. Kravis (1970); Diaz-Alijandro (1975) and Bhagwati and Srinivasan (1979) have expressed considerable doubts on the empirical validity of the assumptions underlying the pessimists analysis.

The pessimism expressed by Nurkse about the prospects for the expansion of LDCs' exports embraced both traditional primary products and manufactured goods. Exports of the former where held to be constrained by low price and income elasticities of demand, the development of synthetics and the growth of output in developed country markets and of the latter by the difficulties of achieving a minimum level of productive efficiency and adverse developed country commercial policies.

Diaz-Alejandro (1975) reviewed empirical work on supply responses, including studies by Nowshirvani (1971) and Behrman (1968), observed that 'numerous studies have shown that where markets exist...LDC farmers will respond to relative prices'. However, despite this evidence on favourable market growth and positive supply responses, LDCs have not shared fully in the expansion of world trade in the post-war period [Kravis (1970); Cohen and Sisler (1971)]. [Kravis (1970); Diaz-Alijandro (1975) and Bhagwati and Srinivasan (1979)] agree that as a consequence

Fig. 3

Fig. 4

of trade pessimism LDCs adopted domestic policies which induced or aggravated domestic supply problems and inhibited export performance. Measures such as tariffs, quantitative restrictions, multiple exchange rates, overvalued exchange rates, taxes and subsidies were employed to shift incomes from agriculture into public and manufacturing sectors. Kravis argue that these measures meant that traditional export sectors were not given normal incentives to expand and were paddled with high costs for their manufactured and imported inputs. Consequently market shares were lost. Similar evidence and conclusions are presented by Cohen and Sisler (1971).

The themes of extremely high protection for import substituting industries to the neglect of agriculture, the costs of that strategy in terms of resource misallocation and excess capacities within manufacturing, and resulting poor trade performance are powerfully illustrated in individual country studies in Balassa (1971; Little, Scitovsky and Scott (1970). These studies provide evidence of improved performance in both traditional and non-traditional exports as LDCs shifted away from restrictive trade regimes to policies of trade liberalisation during the 1960s.

III. ANALYTICAL TECHNIQUES AND METHODOLOGY

Two different approaches have been used in the literature to study the determinants of export performance, especially in less developing countries. The first approach is based on decomposition techniques and the second is based on time series analysis which has generally been considered more persuasive than decomposition techniques. It is argued that the former suffers from an important drawback in that residuals play an important role in defining variables. This technique typically decomposes export performance into those parts attributable to growth of market demand, changes in the country's competitive strength, and diversification of commodity composition [Kravis (1970)]. The decomposition procedure involves examining the changes between two time period in indices of elements influencing export performance. The part of the performance of a country's traditional exports which is not explained by growth of world demand is assigned to a competitiveness factor. The difference between the performance of traditional exports and that of total exports is attributed to commodity diversification.

Given the conceptual and practical difficulties in the time series analyses and the residual nature of variables in the decomposition procedure, an alternative approached was developed. An explanatory variable set, suggested by Love, used the decomposition procedure but differently defined and estimated is employed in a time series regression model. This model permits investigation of the relative importance of determinants of export performance for individual countries.

Closely following Love and the customary emphasis in discussion of causal factors, we model Pakistan's export performance as being determined by external market conditions for traditional exports, the country's ability to complete in world

markets, and the extent to which the country succeeds in diversifying the commodity composition of its exports. We shall device indices for each of these three determinants and use these as explanatory variables in a regression model.

(a) External Market Conditions

World market condition for particular products are determined by the interaction of aggregate demand and aggregate supply.   With a few exceptions, individual developing countries have little influence over events on world markets. The value of world trade in a particular product may therefore be taken as an indicator of external market condition for that product. For the set of commodities a country traditionally exports an index of market conditions in year *t*, M_t, may then be constructed as

$$M_t = \sum w_{it} \ V_{it} \qquad i = \ 1\ldots\ldots\ldots j \quad \ldots \qquad \ldots \qquad \ldots \qquad \ldots \qquad (1)$$

where, for $t = 1 \ldots.n$, w_i represents the share of commodity *i* in the country's earnings from traditional exports, V_i is an index number for the value of world trade in commodity *i* with $V_i = 100$ for $t = 1$, and *j* is the number of the country's traditional exports.[1]

(b) Competitiveness

Internal factors, both spontaneous and policy-induced, influence export performance through their impact on the country's market shares. In the face of deteriorating external market conditions, for example, a country may off set, wholly or at least partially, any resulting decline in earnings and may even raise earnings of improvements in its competitive standing enable it to raise its market shares. The effect of competitiveness will be reflected in differences between actual market shares and some market share norm. Definition of a country's share norm is inevitably largely arbitrary. In the decomposition analysis used by Kravis, example, a norm is established in terms of a country's actual market shares in an initial period. However, as trading patterns in world markets for a given commodity adjust over time, what is regarded as country's "normal" share of the market is likely to change. Following the procedure adopted by Love, we have defined country's share norm for a given commodity as the average of the observed market shares in the immediately preceding four years. A measure of country's overall competitiveness for year *t, Ct*, may then be defined as:

$$G = \sum w_{it} \ (m_{it}/s_{it}), \quad i = \ 1\ldots\ldots.j \quad \ldots \qquad \ldots \qquad \ldots \qquad \ldots \qquad (2)$$

where m_{it} represents the commodity's actual market share, s_{it} represents its market share norm and m_i /s_i is set equal to 100 for $t = 1$. The cost of this greater simplicity

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[1]An export product was defined as traditional if it accounts for at least 5 percent of total export earnings over the first four years of the period concerned.

is that the influences of individual supply-side variables cannot be identified. However, this index does capture the net impact of supply factors and is, therefore suitable for present purposes.

(c) Diversification

Success in reducing a country's dependence on a narrow range of export products may be judged by the extent to which an index of concentration is reduced. We may construct an index of concentration in year t, G_t using the Gini-Hirschman coefficient[2] which is defined as

$$G_t = \sum_k W_{it}^2)^{\frac{1}{2}} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (3)$$

where k is the number of products the country exports, W_i is the share of commodity i in total export earnings, and G_t is set equal to 100 for $t = 1$.

Having defined the three explanatory variables we may then specify the following regression model:

$$X_t = \alpha_0 + \alpha_1 M_t + \alpha_2 C_t + \alpha_3 G_t + \varepsilon \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (4)$$

f or $t = 1\ldots.n$, where X_t is an index of total export earnings with X_t set equal to 100 for $t = 1$, and where ε is an error term.

Trade pessimists would expect the external market conditions variable to perform well and, as a result of domestic rigidities, the competitiveness and diversification variables to explain little of country's export performance.   In contrast, while stressing the post-war growth of markets, the followers of export-led growth theory would expect export performance to be largely explained by the abilities to compete and diversify. Given the definition of G, the expected sign of the coefficient on G would be negative.

Pakistan moved away from import substitution and towards more liberalised trade regime in the mid-1980s. In order to see if this movement towards liberalisation has any impact on export performance of the country, we have introduced a dummy variable, D. Equation 4 now may be reformulated as:

$$X_t = \alpha_0 + \alpha_1 M_t + \alpha_2 C_t + \beta_1 DC_t + \alpha_3 G_t + \beta_2 DG_t + \varepsilon \quad \ldots \quad \ldots \quad (5)$$

where $D = 1$ for a restrictive regime, 0 otherwise.

The coefficients on the competitiveness and concentration variables for a restrictive regime are $(\alpha_2 + \beta_1)$ and $(\alpha_3 + \beta_2)$, respectively, and for a liberal regime are α_2 and α_3, respectively.   Whether the shift to a liberal regime induced a significant change in behavioural relations may be examined by testing the statistical significance of β_1 and β_2.[3]

[2]This coefficient is discussed in MacBean and Nguyen (1980).
[3]See Johnston (1972), pp. 179–180.

Results

The period cover in the analysis is 1973–1999 before doing the time series regression analysis we have followed the usual practice and tested for the integration and co-integration of the variables used in the regression. Results of the Augmented Dicky-Fuller test reveal that all the variables are stationery and time invariant. Results of the test are presented in Appendix I.

Results of the regression analysis based on Equation 5 are presented in Table 2 (and also shown in Figure 5). Adjusted R2 is significant at 95 percent level of confidence. The Durbin-Watson statistics indicate the absence of serial correlation.

From the results it may be seen that external market conditions are important in determining export performance of Pakistan. The coefficient on the market variable, M is statistically significant at the 99 percent level of confidence.

Any encouragement which might be given to a Nurksian-type view of demand-determinism by the results for the external market variable is largely dispelled by the results obtained for the supply-side variables. The coefficient for the competitiveness variable C_t is statistically significant at 99 percent level of confidence. Comparison with the coefficient on M_t reveal a greater sensitivity of exports to external market conditions compared to supply-side variable. The coefficient on M_t is greater than that of C_t.

Fig. 5.

Table 2

Results of the Regression Model

Dependent Variable: X_t				
Method: Least Squares				
Sample: 1973–1999				
Included Observations: 26				
Variable	Coefficient	Std. Error	*t*-Statistic	Prob.
C_t	0.5689	0.06062	9.3862	0.000
DC_t	–0.3774	0.23521	–1.6046	0.127
G_t	–0.7552	1.04828	–0.7204	0.481
DG_t	0.8275	0.43099	1.9199	0.072
M_t	0.7932	0.13764	5.7631	0.000
Constant	–28.8621	82.94464	–0.3479	0.732
R-squared	0.98073	Mean Dependent Var		226.541
Adj R-squared	0.97506	S.D. Dependent Var		165.572
S.E. of Regression	26.17599	Akaike info. Criterion		9.5870
Sum Squared Resid	11648.1321	Schwarz Criterion		9.8832
Log Likelihood	–104.2521	F-statistic		173.0259
D/Watson Stat	2.2073	Prob (F-Statistic)		0.0000

The other supply side variable performed less well however. Although the coefficient on G_t has the correct and expected negative sign but it is not statistically significant. The sign on the coefficient for DC_t is negative and are, therefore, consistent with the argument that the fairly widespread shift towards more liberal trade regimes improved countries abilities to compete in the world markets. However, the coefficient on DC_t is not statistically significant.

There is some evidence from the coefficient on DG_t which is consistent with policy shifts having positively affected country's abilities to move resources into non-traditional exports. The positive coefficient on *DG*, indicates that there had been shifts towards more diversified export structure.

CONCLUSION

The paper has developed a model which permits analysis of the determinants of trade performance. The results obtained suggest that export performance is sensitive to both domestic factors, particularly the ability to compete in the world markets, as well as external market conditions. Comparison of the supply-side and demand-side variables indicate that export performance of Pakistan is relatively more sensitive to demand-side variable than to other factors. The results of this paper also supports the emphasis paced by the opponents of trade pessimism on the importance of policies designed to improve domestic supply conditions for exportable.

Augmented Dickey-Fuller Test Results

Pakistan's Real Exports

ADF Test Statistic	–2.5868	1 % Critical Value*	–2.6819
		5 % Critical Value	–1.9583
		10 % Critical Value	–1.6242

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D (XT, 2)
Method: Least Squares

Variable	Coefficient	Std. Error		t-statistic	Prob.	
D (XT (–1))	–0.51239		0.19808	–2.5868		0.0176
R-squared	0.250605	Mean Dependent Var				–0.41847
Adjusted R-squared	0.250605	S.D. Dependent Var				38.51603
S.E. of Regression	33.3424	Akaike Info Criterion				9.897985
Sum Squared Resid	22234.31	Schwarz Criterion				9.947724
Log Likelihood	–102.929	Durbin-Watson Stat				1.942217

Export Competitiveness

ADF Test Statistic	–2.7997	1 % Critical Value*	–2.6889
		5 % Critical Value	–1.9592
		10 % Critical Value	–1.6246

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D (CT, 2)
Method: Least Squares

Variable	Coefficient	Std. Error		t-statistic	Prob.	
D (CT(–1))	–0.9128		0.326034	–2.7997		0.0111
D (CT(–1), 2)	–0.03282		0.241759	–0.13576		0.8935
R-squared	0.471624	Mean Dependent Var				–0.63303
Adjusted R-squared	0.44227	S.D. Dependent Var				104.6013
S.E. of Regression	78.11766	Akaike Info Criterion				11.64895
Sum Squared Resid	109842.6	Schwarz Criterion				11.74852
Log Likelihood	–114.49	F-statistic				16.06666
Durbin-Watson Stat	2.011405	Prof (F-statistic)				0.000824

Appendix I—(*Continued*)

External Market Factors

ADF Test Statistic	–3.83136	1 % Critical Value*		–3.8067
		5 % Critical Value		–3.0199
		10 % Critical Value		–2.6502

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D (MT, 2)
Method: Least Squares

Variable	Coefficient	Std. Error	t-statistic	Prob.
D (MT (–1))	–1.34714	0.351607	–3..83136	0.0013
D (MT (–1),2)	0.237075	0.238471	0.994146	0.3341
C	13.95377	7.897252	1.766915	0.0952
R-squared	0.567894	Mean Dependent Var		–0.15792
Adjusted R-squared	0.517058	S. D. Dependent Var		44.84205
S.E. of Regression	31.16255	Akaike Info Criterion		9.853792
Sum Squared Resid	16508.78	Schwarz Criterion		10.00315
Log Likelihood	–95.5379	F-statistic		11.17109
Durbin-Watson Stat	1.94615	Prob(F-statistic)		0.000799

Export
Diversification

ADF Test Statistic	–3.77756	1 % Critical Value*		–2.6889
		5 % Critical Value		–1.9592
		10 % Critical Value		–1.6246

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D (CT, 2)
Method: Least Squares

Variable	Coefficient	Std. Error	t-statistic	Prob.
D (CT(–1))	–1.51585	0.401278	–3.77756	0.0014
D (CT(–1), 2)	0.074444	0.235493	–0.31612	0.7555
R-squared	0.702869	Mean Dependent Var		0.145637
Adjusted R-squared	0.686362	S.D. Dependent Var		16.1286
S.E. of Regression	9.03257	Akaike Info Criterion		7.33419
Sum Squared Resid	1468.572	Schwarz Criterion		7.433764
Log Likelihood	–71.3419	F-statistic		42.57933
Durbin-Watson Stat	1.838985	Prob (F-statistic)		0.000004

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Comments

The study under discussion touches on an important area of research. It estimates an econometric model to investigate the export performance of Pakistan, using time-series data for 1973–99. Determinants of export performance include both supply side (domestic) and demand side (external market condition) factors. The regression results show that export performance is sensitive to both domestic and external factors. Comparing the supply and demand side variables, the results show that Pakistan's export performance is more sensitive to the demand side variables (i.e. external market conditions) than to supply side factors (i.e. competitiveness and diversification). The general thrust of the study and its objectives are useful. I wish to point out, however, a few limitations that are not dealt with explicitly in the paper, mainly for the purpose of improving the contents of the analysis.

First, the study provides a comprehensive review of the literature in the case of other countries, but unfortunately it is completely silent on the existing literature in the case of Pakistan. Many studies on the estimates of Pakistan's export demand and supply functions have been undertaken, for example, Akhtar and Malik (2000); Iqbal (2000); Khan (1998); Khan, Hasan and Malik (1995) and Khan and Saqib (1993). The authors must indicate the weaknesses of the existing literature, particularly for Pakistan, and they should clarify how their study relates to the existing body of knowledge.

Second, the authors use an indirect way of estimating the export function. The variables used in the model are, in fact, proxy variables for external market conditions, competitiveness, and diversification. They could have use the more relevant explanatory variables like domestic economic growth, inflation rate, exchange rate, unit value of exports, export incentives, and world demand, which can have a direct impact on Pakistan's export performance.

Third, estimation of time-series econometric models can be prone to the problem of multicollinearity and thereby provide misleading results. The authors should hold this concern more carefully in order to provide credibility to their results.

Finally, since the study contains rich time-series data, a more disaggregated analysis would have raised its usefulness for policy-makers. I hope these suggestions will help improve the paper and provide some potent policy prescriptions.

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