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Export Instability, Income Terms of Trade Instability and Growth: Evidence from Pakistan

Faiz Bilquees and Tahir Mukhtar[1]

The study explores the causal relationship among export instability, income terms of trade instability and economic growth in Pakistan. By using the cointegration analysis and vector error correction model for the period 1960 to 2008, the study demonstrates that there exists a long run equilibrium relationship among export instability, income terms of trade instability, investment and economic growth. The Granger causality test results indicate that in the short run there exists a uni-directional causality running from export instability and income terms of trade instability to economic growth. However, in the long run all the variables of the study cause one another. This finding is suggestive of closer coordination among the monetary, fiscal and trade policies in Pakistan.

1. Introduction

Historically, industrial development resulting in the export of manufactured goods has proven to be the major determinants of rapid economic growth. Exports are a reliable source of foreign exchange earnings, essential to the financing of economic development without invoking future indebtedness. Exports not only ease the pressure on the balance of payments but also create employment opportunities and can increase intra-industry trade. While exports help the country to integrate in the world economy and reduce the impact of external shocks on the domestic economy, fluctuations in export revenues lead to macroeconomic instability. Hence, the stable flow of exports and the

[1] The authors are respectively Professor and Assistant Professor at the Department of Economics, Fatima Jinnah Women University, Rawalpindi, Pakistan.

resulting stable income flows provide the basis for a stable growth for any economy.

An income term of trade instability arises due to the instability in prices of exports and imports. If terms of trade worsen, then the country needs to export more to buy the same amount of imports. The instability of income terms of trade affects the economy by reducing real income, which in turn lowers savings and investment, thus causing overall economic instability. Fluctuations in the terms of trade affect the availability of funds for capital formation, and hence growth. Additionally it could also lead to sudden changes in a country's trade and current account balances and create problems in financing the national debt.

Considerable in-depth research on the relationship among the variables like real GDP, real investment, export instability, income terms of trade instability and the terms of trade instability within and across the countries of almost all the regions has been undertaken. Effects of export instability on economic growth have been extensively analyzed by Brempong (1991), Fosu (1992), Love (1992), Ghirmaya et. al.,(1999), Sinha (1999), Afxentiou and Apostolos (2000) and Kaushik et. al., (2008). Except for Kaushik et. al.,(2008), these studies analyze the effects of export instability on economic growth for specific country groupings such as African, South Asian, East Asian and Pacific countries, and the developing countries in general. The results invariably show a negative relationship between export instability and economic growth. Ghirmaya et. al.,(1999) find that export and income terms of trade instability have long run relationships with output. For most countries in their sample, instability in the income terms of trade is negatively related to output while the results for export instability are mixed. With respect to causality it seems that export instability and income terms of trade instability play a causal role in the development process via a variety of avenues. Kaushik et. al.,(2008) examine the relationship among export instability, economic growth and gross fixed capital formation for India. The results show that export instability affects economic growth and causes economic instability. Similar findings are reported by Sinha (1999) for Asian countries including India and Pakistan. While results for India are mixed there exists a positive but insignificant relationship between export instability and economic growth for Pakistan.

The effects of terms of trade instability on economic growth have also been analyzed by a number of studies [see, for example, Ostry and Reinhart (1992), Wincoop (1992), Mendoza (1997), Blattman et.al.,(2003) and Paulino (2007)] for groups of developed and developing countries. The first two studies show that instability of terms of trade affects economic growth indirectly. In the first case terms of trade shocks generate substantial fluctuations in the real exchange rates which in turn change consumption expenditures and also affect the saving behavior. In the second study uncertainty of terms of trade leads to a significant with drawl of labor from the tradable sectors and this affects the output growth negatively. The other two studies show that adverse terms of trade directly affect economic growth leading to an overall macroeconomic instability. Paulino (2007) analyzes the effects of terms of trade shocks on the current account of small Carribean and Pacific island economies. The results indicate adverse effects on the current account balance as well as the overall output growth. The single country study of Malaysia by Wong (2004), uses two measures of terms of trade—commodity and income terms of trade. Both measures are found to be negatively related to economic growth.

Considering the implications of the adverse impact of terms of trade instability on economic growth with respect to consumption expenditures, saving behavior, unemployment in the tradable sector and growth, it is quite surprising that in case of Pakistan hardly any relevant literature is found. One study by Tariq and Qazi (1995) analyzes the causes of export instability in Pakistan over the period 1969 to 1991. They attribute it to the concentration of exports on a few commodities, fluctuations in export quantities and limited number of export markets. The objective of this study is to investigate the causal relationship among export instability, income terms of trade instability and economic growth of Pakistan over the period 1960 to 2008. The study uses the multivariate Johansen cointegration and vector error correction model (VECM) techniques.

The rest of the study is organized as follows: section 2 describes the methodology adopted by the study, including discussion on the theoretical model and nature of data; results of the study are presented in section 3; and finally, section 4 concludes the study with some policy implications.

2. Methodology

2.1. Theoretical Model

The theoretical model is mainly based on Ghirmaya et. al., (1999). There are three possible channels through which export instability can affect economic growth; through its effect on output, the level of investment, and the level of imports. Export instability can directly affect economic growth by creating distortions, thus creating losses in output, and can directly affect output by affecting the level of investment, and hence capital accumulation, as well as by affecting the flow of imports into the domestic economy (by creating import instability). Hence, four economic variables are involved in these relationships, namely economic growth (Y), investment (INV), export instability (XI) and import instability (MI). Thus, the baseline estimating model can be stated as follows:

$$Z = (Y, INV, XI, MI) \tag{1}$$

The size of export revenue a country accumulates does not in itself reflect its capacity to finance imports. This is because, how much can be imported depends not only on the level of foreign exchange availability but also on the level of import prices. An improved measure of the capacity to import is better reflected by the income terms of trade (*ITT*), which is derived by multiplying the real export value by the terms of trade. A rise in ITT indicates that a country can obtain a larger volume of imports from the sale of its exports. By the same token, income terms of trade instability (*ITTI*) is a better measure of import instability linked with export instability. Therefore, to investigate the relationship between export instability, income terms of trade instability, investment and economic growth, equation (1) is modified as:

$$Z = (Y, INV, XI, ITTI) \tag{2}$$

where Y, INV, XI are the same as in (1) but $ITTI$ represents the instability of the income terms of trade. Gross domestic product (GDP) is used to measure economic growth and gross fixed capital accumulation is used as a proxy for investment. Both GDP and investment are measured in real units using implicit GDP deflator with base 2000. Both these variables are also modeled in natural logarithms. The export variable is measured by real export earnings, which are obtained by adjusting the nominal export values by an export price index. The income terms of trade is calculated using the ratio of export price index to import price index and multiplying by real export earnings. Data for all the time series have been collected from the *International Financial Statistics* (IFS), *World Development Indicators* (WDIs) and the World Bank. The study uses annual time series data for the period from 1960 to 2008 for Pakistan.

Over the years, researchers have used various methods to measure instability. However, the present study follows Basu and McLeod (1991),Tariq and Qazi (1995) and Ghirmaya et.al., (1999) to measure instability. Thus, the instability variable is obtained from the following regression:

$$\log(X_t) = \alpha_0 + \alpha_1 t + u_t \quad (3)$$

where X_t is the variable for which the instability is to be estimated, t is the time trend and u_t is the error term. Equation (3) is estimated by the least squares method and the instability measure is then obtained as squared deviations from the estimated exponential time trend. The instability values for export revenue, and the income terms of trade for Pakistan are derived using this technique.

2.2. Cointegration Test

Since macroeconomic time-series data are usually non-stationary (Nelson and Plosser, 1982) leading to high possibility of spurious regression, we test for stationarity of time series at the outset of cointegration analysis. For this purpose, an augmented Dickey-Fuller (ADF) test is commonly used. However, the ADF unit root test is known to lose power dramatically against stationary alternatives with a low order moving average (MA) process: a characterization that fits well to a number of macroeconomic time series. Consequently, along the lines of ADF test, a more powerful variant is the Dicky-Fuller Generalized Least Square (DF-GLS) de-trending test proposed by Elliott, Rothenberg and Stock (ERS, 1996). This test is similar to an Augmented Dickey-Fuller test, but has the best overall performance in terms of small-sample size and power, dominating the ordinary Dickey-Fuller test. Therefore, to check the stationarity of variables, the study has used the DF-GLS test.

The econometric framework used for analysis in the study is the Johansen (1988) and Johansen and Juselius (1990) Maximum-Likelihood cointegration technique, which tests both the existence and the number of cointegration vectors. This multivariate cointegration test can be expressed as:

$$Z_t = K_1 Z_{t-1} + K_2 Z_{t-2} + ... + K_{k-1} Z_{t-k} + \mu + v_t \qquad (4)$$

Where

$Z_t = (Y_t, INV_t, XI_t, ITTI_t)$ i.e., a 4 x 1 vector of variables that are integrated of order one [i.e. I (1)]

$\mu =$ a vector of constant and

$v_t =$ a vector of normally and independently, distributed error term.

Equation (4) can be reformulated in a vector error correction model (VECM) as follows:

$$\Delta Z_t = \Gamma_1 \Delta Z_{t-1} + \Gamma_2 \Delta Z_{t-2} + \cdots\cdots + \Gamma_{k-1} \Delta Z_{t-k-1} + \Pi Z_{t-1} + u_t \qquad (5)$$

where Γ_i= (I – A_1 - A_2…..-A_k) (i= 1,2,3…..k-1) and Π = -(I-A_1-A_2-A_3…..-A_k) . The Π matrix contains information regarding the long run relationships. Π can be factored into $\alpha\beta'$ where α will include the speed of adjustment to the equilibrium coefficients while the β will be the long run matrix of coefficients. To determine the number of cointegrating vectors, Johansen developed two likelihood ratio tests: trace test (λ_{trace}) and maximum eigenvalue test (λ_{max}.).If there is any divergence of results between these two tests, it is advisable to rely on the evidence based on the λ_{max} test because it is more reliable in small samples [see Dutta and Ahmed (1997) and Odhiambo (2005)].

3. Results and Discussion

The first step in cointegration analysis is to test the unit roots in each variable for which we apply the DF-GLS stationarity tests on variables Y, INV, XI and $ITTI$ for Pakistan. The estimated results of the DF-GLS tests are reported in Table 1. The DF-GLS test is applied both for the level as well as for the first-difference of the relevant variables. The results show that unit root test for all the variables fail to reject the null hypothesis of non-stationarity at level i.e., all the variables are non-stationary at level. However, the null hypothesis of non-stationarity is rejected at the first-difference meaning that all variables are first-difference stationary. This implies that all the series are integrated of order one *I* (1).

Table 1. DF-GLS Unit Root Tests

Variable	Level	1^{st} difference	1%	5%	10%	Order of integration
Y	-1.21	-5.83	-3.77	-3.19	-2.89	I(1)
INV	-2.31	-4.31	-3.77	-3.19	-2.89	I(1)
XI	-2.54	-6.98	-3.77	-3.19	-2.89	I(1)
ITTI	-2.58	-8.69	-3.77	-3.19	-2.89	I (1)

In order to determine appropriate lag length to be used in the cointegration test we use two lag length selection criteria, namely the Akaike Information Criterion (AIC) and the Schwarz Bayesian Criterion (SBC). Table A1 in Appendix presents results for selecting lag length for Pakistan. The results show that the optimal lag length is 4 as measured by AIC but is only 1 as measured by SBC. In this case we have to make a choice of the optimal lag length. We have selected optimal lag length of 1 as given by SBC for two reasons: firstly, SBC is more accurate than AIC; secondly, when we use the lag length 4 for our cointegration analysis in case of Pakistan, then we find no cointegrating vector under both trace and maximum eigenvalue statistics while at lag length 1 we get one cointegrating vector under both these statistics.

After determining the optimal lag length the next step is to perform the co-integration test. The Long run relationship among all the variables i.e. Y, INV, XI, and

Table 2.Cointegration Test Based on Johansen's Maximum Likelihood Method

Null Hypothesis	Alternative Hypothesis			Critical values	
λ_{trace} rank tests		Eigen values	λ_{trace} rank value	95%	P-values◦◦
H_0: r=0	H_1: r=1	0.555953	79.35298***	63.87610	0.0015
H_0: r=1	H_1: r=2	0.399891	41.19723	42.91525	0.0735
H_0: r=2	H_1: r=3	0.231334	17.19693	25.87211	0.4004
H_0: r=3	H_1: r=4	0.097687	4.831320	12.51798	0.6207
λ_{max} rank tests			λ_{max} rank value		
H_0: r=0	H_1: r=0	0.555953	38.15575***	32.11832	0.0081
H_0: r≤1	H_1: r≥1	0.399891	24.00030	25.82321	0.0854
H_0: r≤2	H_1: r≥2	0.231334	12.36561	19.38704	0.3819
H_0: r≤3	H_1: r≥3	0.097687	4.831320	12.51798	0.6207
Normalized Cointegrating Vector (t-values in the parenthesis)					
$Y_t = 1.851 + 0.843INV_t - 2.325\ XI_t - 1.356ITTI_t$ (1.822)* (13.819)*** (-2.571)** (-1.991)**					

Notes:

- ◦◦ MacKinnon_Haug_Michelis (1999) p_values
- Both the tests (i.e.,Trace and Max-eigenvalue) indicate 1 cointegrating equation at 1% percent significance level.
- *** , ** and* indicate significance at 1 percent ,5 percent and 10 percent levels respectively.

ITTI has been investigated using the Johansen technique. Its ability to capture the properties of the time series, to produce estimates of all possible cointegrating vectors, and to provide test statistics for the number of cointegrating vectors are among other reasons for choosing this technique. From the results reported below in Table 2 it is observed that both trace statistic (λ_{trace}) and maximal eigenvalue (λ_{max}) statistics indicate at least one cointegrating vector among all the variables (Y, INV, XI, and ITTI). Hence we can reject the null hypothesis of no cointegrating vector in favor of one cointegrating vector in both test statistics at 1 percent level of significance. However, we cannot reject the null hypothesis of at most one cointegrating vector against the alternative hypothesis of two cointegrating vectors under both the trace and maximum eigenvalue test statistics.

The cointegrating equation given at the bottom of Table 2 is normalized on economic growth just to get meanings from the coefficients. The coefficient of INV is significant at 1 percent level and it carries the expected positive sign. Thus we may say that 1 percent increase in INV brings 0.84 percent increase in Y in Pakistan. Increase in investment will lead to increase the production process which will cause growth in the economy. XI is significantly and negatively related with Y such that a one unit increase in XI brings about a 2.32 percent decrease in Y of Pakistan. This result of the study supports the findings of Fosu (1992), Dawe (1996), and Kaushik et. al., (2008). Study by Fosu (1992) shows that the export instability has a significant negative effect on the GDP of the country and creates uncertainty about future income. The results of the study conducted by Dawe (1996) indicate that the export instability is harmful for economic growth. Export instability creates income instability, reducing the returns on investment that creates instability in production process and adversely affects the growth. Finally, Kaushik et.al., (2008) also show that the export instability adversely affects the economic growth and causes macroeconomic instability in the country. However, this result contradicts the finding of Sinha (1999) who reports a positive association between exports instability and economic growth in Pakistan. Finally, the negative sign of the coefficient of ITTI also indicates the expected inverse relationship between ITTI and Y. As ITTI is significantly affecting Y, so a one unit increase in ITTI produces

1.356 percent decrease in the Y in Pakistan. This implies lower savings, reduced investment, and further decline in exports.

3.2. Causality Tests

Engle and Granger (1987) demonstrated that once a number of variables (say, x_t and y_t) are found to be cointegrated, there always exists a corresponding error-correction representation which implies that changes in the dependent variable are a function of the level of disequilibrium in the cointegrating relationship (captured by the error-correction term) as well as changes in other explanatory variable(s).This direction of the Granger (or temporal) causality can be detected through the vector error-correction model derived from the long run cointegrating vectors. In addition to indicating the direction of causality amongst variables, the VECM approach allows us to distinguish between "short run" and "long run" Granger causality. When the variables are cointegrated, then in the short term, deviations from this long run equilibrium will feed back on the changes in the dependent variable in order to force the movement towards the long run equilibrium. If the dependent variable is driven directly by this long run equilibrium error, then it is responding to this feedback. If not, it is responding only to short-term shocks to the stochastic environment. The Wald χ^2 tests of the "differenced" explanatory variables gives an indication of the "short-term" causal effects, whereas the "long run" causal relationship is implied through the significance or other wise of the *t* test(s) of the lagged error-correction term(s) that contains the long term information, since it is derived from the long run cointegrating relationship(s). The coefficient of the lagged error-correction term, however, is a short term adjustment coefficient and represents the proportion by which the long run disequilibrium (or imbalance) in the dependent variable is being corrected in each short period (Masih and Masih, 1997).

Table 3. Short Run Causality Patterns

	$\Delta RGDP$	ΔRI	ΔXI	$\Delta ITTI$
Dep. Variable		χ^2(Sig. Levels)		
$\Delta RGDP$	-	0.024**	0.069*	0.093*
ΔRI	0.044**	-	0.099*	0.097*
ΔXI	0.995	0.768	-	0.061*
$\Delta ITTI$	0.861	0.679	0.029**	-

Note: ** and * indicate significance at 5 percent and 10 percent levels respectively.

The results for the short run causal relationship among the variables i.e., (Y, INV, XI, and ITTI) for Pakistan are reported in Table 3. Apparently there exists a bi-directional causality between Y and INV. This finding is consistent with the findings of Chimobi (2010) who has found a strong evidence of bi-directional causality between economic growth and investment. We find that XI and ITTI both Granger cause Y but Y does not cause XI and ITTI. This implies that unidirectional causality runs from XI and ITTI to Y and the opposite does not happen. This finding supports the contention that export instability and income terms of trade instability induce short run macroeconomic instability. For real investment as dependent variable both export instability and income terms of trade instability Granger cause INV at 10 percent but opposite does not happen. It means unidirectional causality runs from XI and ITTI to INV. Export revenue instability results in income instability, which makes estimation of expected returns on investment difficult, generating risks and uncertainty for entrepreneurs. In addition, government revenue is often directly linked to export revenue, implying that instability in the latter will lead to instability in the former and thus reduced investment by governments in infrastructure (Ghirmaya et.al.,1999). However it is important to note that many governments, particularly in the developing countries tend to provide maximum infrastructure facilities to attract domestic and foreign investors. It is particularly well documented in case of Pakistan (see Ahmed and Amjad,1984). Finally, export instability and income terms of trade instability both Granger cause each other. Therefore, a bi-directional causality exists between XI and ITTI.

To examine the stability of long run equilibrium relationship and long run causality patterns among the variables of the study we look at the sign and significance of error correction term (ECT) in the estimated vector error correction model (VECM). The results are reported in Table 4. The coefficient of the ECT of economic growth variable carries the expected negative sign and it is statistically significant at 1 percent. It shows that RI, XI, and ITTI Granger cause economic growth in the long run in Pakistan. Furthermore, it also indicates that the long run equilibrium relationship in case of economic growth variable is stable and whenever there is any disturbance in the system in the long run, in every short run period, i.e. in a year almost 27 percent correction to disequilibrium will take place.

Table 4. Long Run Causality Patterns

	DL (RGDP)	DL (RI)	D (XI)	D (ITTI)
Constant	0.0396 (4.487)	0.030 (0.831)	0.001 (0.015)	-0.002 (-0.308)
ECT (−1)	-0.277*** (-3.712)	-0.161*** (-2.773)	0.118* (1.813)	0.238*** (3.977)
R^2	0.829	0.853	0.253	0.404
Adjusted R^2	0.791	0.835	0.228	0.361
S.E of Regression	0.023	0.096	0.023	0.018
F-Stat	11.111	10.201	2.736	5.563
Diagnostic Tests	χ^2 (*p* values are in the parenthesis)			
Serial Correlation (Breusch–Godfrey serial LM	1.146(0.483)	0.884(0.529)	0.993(0.322)	1.292(0.246)
Heteroscedasticity (White Heteroskedasticity Test)	0.04(0.982)	0.675(0.662)	0.977(0.491)	1.247(0.297)
Normality (Jorque-Bera)	0.661(0.544)	0.387(0.715)	0.682(0.471)	1.338(0.226)
AR.Cond. Heteroscedasticity (ARCH LM Test)	0.057(0.828)	1.211(0.346)	0.075(0.904)	1.427(0.235)

Note: t-values given in parenthesis with, ***, **, *, indicate significance at 1 percent, 5 percent and 10 percent level s respectively.

The coefficient of the ECT of investment also carries the correct (negative) sign and it is statistically significant at 5 percent level. It implies that Y, XI and ITTI are all causing investment in the long run. Moreover, it also corresponds to the stability of the system and nearly 16 percent correction occurs to disequilibrium in the system every year to restore the equilibrium position. The coefficients of the error correction terms (ECTs) of export instability and income terms of trade instability variables have positive sign and are statistically significant at 10 percent and 1 percent level respectively. It implies that these two variables not only Granger cause each other but they are also caused by economic growth and investment variables. However, the positive sign with the coefficients of the ECTs of the two variables indicates that their long run systems are unstable. Thus, it is evident from the long run causal analysis that all the four variables Granger cause one another. This implies a closer coordination among the monetary, fiscal and trade policies in Pakistan. Finally, the study uses some diagnostic tests which involve χ^2_tests for the hypothesis that there is no serial correlation; that the residual follow the normal distribution; that there is no heteroscedasticity; and lastly that there is no autoregressive conditional heteroscedasticity.Table 4 also contains the results for all these tests. In all equations the diagnostics suggest that the residuals are Gaussian as the Johansen method presupposes.

IV.Conclusion and Policy Implications

The purpose of the study is to examine the causality patterns among export instability, income terms of trade instability and economic growth in Pakistan. For this purpose the Johansen cointegration technique and vector error correction model are applied. We have used annual data for the variables real GDP, real investment, export instability and income terms of trade instability over the period 1960 to 2008.

The results of the study show that there exists a long run relationship among economic growth, real investment, export instability and income terms of trade instability in Pakistan. In order to determine the direction of causality in the short run and the long run among the variables of the study, we have applied vector error correction model framework. The results indicate that in the short run both the economic growth and real investment Granger causes each other while a uni -directional causality runs from exports instability and income terms of trade instability to economic growth and real investment . For export instability and income terms of trade instability a bi-directional causality exists between the two time series. However, in the long run all the variables being considered cause one another as reflected by significant Granger causality test results.

Several policy recommendations can be drawn from this study. Firstly, as export instability has negatively affected economic growth in Pakistan, there is a need to reduce reliance on the exports of a few primary commodities, and rather exports should be diversified by increasing the share of non-traditional exports. Secondly, there is a need to increase savings as a precautionary motive. As export instability creates income instability which affects investment, domestic savings will sustain the levels of the investment which will stabilize the growth path. Thirdly, the findings of the study suggest that both economic growth and investment are highly correlated. Thus on one hand, increase in investment will lead to production of more goods which will cause growth in the economy and on the other hand, economic growth will guarantee increase in investment and promote exports.

Indeed it is quite ironic to see that these implications reflect the history of export development in Pakistan. In the first decade of its existence (1947-58) Pakistan was faced with serious instability of export earnings since it could only export raw jute and raw cotton (Andrus and Mohammed, 1966). Pakistan adopted the import substituting industrialization (ISI) strategy and through massive inflow of aid and subsidized loans coupled with concerted efforts to attract investors through heavy subsidies and tax holidays eventually moved to the export of manufactured goods in the mid sixties (see Naqvi, 1970). Pakistan was acknowledged to have reached the “Take-off” stage, ready to produce heavy machinery and capital goods for export [see, for example, Lewis (1970), Haq (1973) and Papanek (1967)]. However, the whole structure of industrial growth and export promotion was stalled with the virtual stoppage of external inflows due to the 1965 Indo-Pakistan war. Due to easy access to foreign capital inflows successive governments completely ignored the domestic resource mobilization; rather the available inflows were used to provide duty free raw materials and extended tax holidays to producers of exports goods. They were also entitled to retain certain proportion of the foreign exchange earnings for their own use. These policies resulted in increasing income inequalities among the rich and the poor with serious consequences (see Griffin and Khan, 1972 and Ahmed and Amjad, 1984). The process of industrialization was completely thrown out of gear with the nationalization of the large scale manufacturing sector by the new government in 1971-2. Since then all efforts to revive the industrial sector to the levels reached earlier have failed mainly due to the domestic resource constraint, lack of confidence of the private investor (both domestic and foreign) in the piece meal policies of the successive governments, and the deteriorating economic and political situation. Over time Pakistan is once again faced with the situation that prevailed in the first decade of its existence – lack of domestic resources and heavy reliance on the export of two primary commodities- raw cotton and rice with some manufactured goods.

This situation corresponds to the classification of the less developed countries (LDCs) by the Latin American Structuralist School of thought in the fifties. The LDCs are characterized by agriculture sector constraints due to division of land assets, low tax ratios and the foreign exchange constraint due to heavy reliance on the agriculture sector exports. This calls for due consideration of the implications of this study.

References

Afxentiou, P and A.Serletis (2000), “Output Growth and Variability of Export and Import Growth: International Evidence from Granger Causality Test”, The Developing Economies, 38, 141–63.

Ahmed, V and Rashid A. (1984), The Management of Pakistan’s Economy, Oxford University Press.

Andrus J.S and Azizali F. Mohammed (1966), Trade, Finance and Development in Pakistan, Oxford University Press.

Basu, P and McLeod D. (1991), “Terms of Trade Fluctuations and Economic Growth in Developing Economies”, Journal of Development Economics, 37, 89-110.

Blattman, C, J.Hwang, and J.G.Williamson (2003), The Terms of Trade and Economic Growth in the Periphery 1870-1983, Working Paper No.9940, National Bureau of Economic Research, Cambridge.

Brempon, K.G. (1991), “Export Instability and Economic Growth in Sub-Saharan Africa”, Economic Development and Cultural Change, 39: 815-28.

Chimobi, O P. (2010), “The Estimation of Long Run Relationship between Economic Growth, Investment and Export in Nigeria”, International Journal of Business and Management, 5, 215-22.

Dawe, D. (1996),”A New Look at the Effects of Export Instability on Investment and Growth”, World Development, 24,1905-14.

Dutta, D. and N. Ahmed (1997), An Aggregate Import Demand Function for Bangladesh: A Cointegration Approach, Working Paper in Economics, University of Sydney.

Elliot, G., Rothenberg, T. J.,and Stock, J. H. (1996), “Efficient Tests for an Autoregressive Unit Root”, Econometrica, 64, 813-36.

Engle, R. F. and C. W. J. Granger (1987), “Cointegration and Error Correction Representation, Estimation and Testing”, Econometrica, 55, 251-76.

Fosu, A.K. (1992), “Effect of Export Instability on Economic Growth in Africa”, Journal of Developing Areas, 26, 323-32.

Ghirmaya ,T., Subhash C. Sharmaa and Richard G.(1999), “ Export Instability, Income Terms of Trade Instability and Growth: Causal Analyses”, The Journal of International Trade & Economic Development,8(2), 209-29.

Griffin, Kieth and A.Khan (1972), Growth and Inequality in Pakistan, MacMillan.

Haq, Mahboob Ul (1966), The Strategy of Economic Planning, Oxford University Press.

Johansen, S (1988),“Statistical Analysis of Cointegrating Vectors”, Journal of Economic Dynamics and Control, 12, 231-54.

Johansen**,** S. and K .Juselius (1990), “The Maximum Likelihood Estimation and Inference on Cointegration-with Application to Demand for Money”, Oxford Bulletin of Economics and Statistics, 52,169-210.

Kaushik, K.K, Arbenser, L.N.Anang, Klein, and K.K. (2008), “Export Growth, Export Instability, Investment and Economic Growth in India: A Time series Analysis”, Journal of Developing Areas, 41,155-70.

Lewis.S.R. (1970), Pakistan Industrialization and Trade Policies, Oxford University Press.

Love, J. (1992) “Export Instability and the Domestic Economy: Questions of Causality”, Journal of Development Studies, 28, 735-42.

Masih, Abul M.M. and Rumi Masih(1997), “On the Temporal Causal Relationship Between Energy Consumption, Real Income, and Prices: Some New Evidence From Asian-Energy Dependent NICs Based on A Multivariate Cointegration Vector Error-Correction Approach “, Journal of Policy Modeling 19(4),417-40 .

Mendoza, E.G (1997), “TOT Uncertainty and Economic Growth”, Journal of Development Economics, 54, 323-56.

Naqvi, S.N.H. (1970), Allocative Biases of Pakistan's Commercial Policy, in Nurul Islam (ed), Studies on Commercial Policy and Economic Growth, Pakistan Institute of Development Economics; Islamabad.

Nelson, C. and C. Plosser (1982), "Trends and Random Walks in Macroeconomic Time Series: Some Evidence and Implications," Journal of Monetary Economics, 10, 130-62.

Odhiambo, N. M. (2005), "Financial Liberalization and Financial Deepening: Evidence from Three Sub-Saharan African Countries", African Review of Money, Finance and Banking (Savings and Development Supplement, 2005), 5-23.

Ostry, J.D and C. M. Reinhart (1992), "Private Saving and Terms of Trade Shocks: Evidence from Developing Countries", International Monetary Fund, 39,495-517.

Papanek, G. (1967), Pakistan'Development: Social Goals and Private Incentives, Harvard University Press.

Paulino, A.U.S. (2007), Terms of Trade Shocks and the Current Account in Small Island States, Working Paper No. 2007(20), World Institute for Development Economics Research, United Nations University.

Sinha, D. (1999), Export Instability, Investment and Economic Growth in Asian countries: A Time Series Analysis, Working paper No.799, Economic Growth Centre, Yale University.

Tariq, A and Qazi Najeeb (1995), "Export Earnings Instability in Pakistan", The Pakistan Development Review, 34, 1181-89.

Wong, H.T. (2004), "Terms of Trade and Economic Growth in Malaysia", Labuan Bulletin of International Business and Finance, 2, 105-22.

Wincoop, E. (1992), "Terms of Trade Uncertainty, Saving, and the Production Structure", Journal of International Economics, 33,305-25.

Appendix

Table A1. Lag Length Criteria

Lag	AIC	SBC
0	-10.60986	-10.44927
1	-18.79393	-17.99097*
2	-18.63551	-17.19018
3	-18.88683	-16.79914
4	-19.06407*	-16.33401

*Indicates lag order selected by the criterion
AIC: Akaike Information Criterion
SBC: Schwarz Bayesian Criterion