EXPORTS AND ECONOMIC GROWTH IN SOUTH ASIA

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1. INTRODUCTION

It is generally believed that developing countries can enhance their growth prospects through export promotion strategies. Underpinning this belief is the export-led growth hypothesis, which postulates a positive relationship between export growth and economic growth. A variety of factors are highlighted in the literature for their role in the exports-economic growth nexus. First, a vibrant export sector allows economies with narrow domestic markets to overcome size limitations and to reap economies of scale. Second, by easing the foreign exchange constraint, higher exports can permit higher imports of capital goods and intermediate goods thereby enlarging the productive capacity of the economy. Third, exports lead to an improvement in economic efficiency by increasing the degree of competition. Fourth, exports contribute to productivity gains through diffusion of technical knowledge and learning by doing. It is mainly in view of these considerations that many countries around the world have abandoned import substitution policies in favor of export promotion strategies.

This paper carries out an empirical examination of the export-led growth hypothesis for the five largest economies of the South Asia region, namely India, Pakistan, Sri Lanka, Bangladesh and Nepal[1]. The study is organized as follows. Section 2 spells out the theoretical considerations underlying the relationship between export growth and economic growth. Section 3 provides an overview of the South Asian economies while section 4 briefly reviews the empirical literature on the export-led growth hypothesis. Data and methodology are described in section 5, and section 6 presents the empirical results. Finally, section 7 summarizes the discussion and spells out the major conclusions.

[1] Bhutan and Maldives could not be included owing to data limitations.

2. THEORETICAL CONSIDERATIONS

The literature on the relationship between export growth and output growth concentrates mostly on causality from exports to output. Yet, there are logical arguments for reverse causality from output to exports too. Here, we briefly look at both.

The export-led hypothesis suggests a sharp growth in output through various avenues. First, an increase in exports facilitates more imports into a country. If these imports include capital and intermediate goods, they would act as a catalyst for higher output growth. Second, export development tends to concentrate investment in the most efficient sectors of the economy where comparative advantage lies. Specialization in these improves productivity in the economy leading to higher output growth. Third, the addition of international markets to already prevailing domestic market gives scope for economies of scale in the export sector. This also pushes up the growth in output. Fourth, export growth represents an increase in aggregate demand, which can serve to increase output. Fifth, exchange control relaxation and the export growth it induces can lower allocative inefficiencies in the economy, yielding higher output growth. Sixth, higher export growth can lead to higher investment – both local and foreign. Finally, international spread of technology and market innovation which exports capture can have output effects. In general, all these characteristics of export growth tend to reinforce each other stimulating further expansion of exports, investment and consumption. The result is a significant rise in the rate of growth of output.

The reverse causality from output to exports is also plausible. In a growing LDC it is possible that there are some dynamic industries which are expanding rapidly. It is unlikely that domestic demand in these countries will rise as rapidly as output of these industries. Consequently, these domestic producers will explore foreign markets for sales. If this were the case, it is increased output that causes increased exports. Also, higher output growth can stimulate higher investment, part of which can be for increasing the capacity to export.

Combining the two lines of arguments put forward so far, it is possible to hypothesize bi-directional causality between the two variables. That is export growth causes and is caused by output growth.

It is also possible to postulate a hypothesis of negative correlation between the two variables. If real output is induced by an exogenous increase in consumer demand that is highly concentrated in exportable and non-traded goods, then a decrease in exports would occur. Also, increased exports from some types of foreign direct investment might lower domestic output due to various distortionary effects (Bhagwati, quoted in Jung and Marshall; 1985). There is also the possibility that the adoption of export-led growth strategies by a number of LDCs simultaneously could be self-defeating as it can generate excessive competition amongst them in the world market.

3. AN OVERVIEW OF SOUTH ASIAN ECONOMIES

The South Asian region is home to roughly a quarter of world's population but accounts for only 1.8 percent of the world GDP. Little wonder, then, that per capita incomes are low and the region houses a large number of poor. The South Asian economies differ rather significantly in size. For example, India accounts for more than three-fourth of the region's GDP while Sri Lanka and Nepal have only 2.79 and 0.87 percent of the regional GDP respectively. Pakistan and Bangladesh with medium sized economies account for 10.15 and 8.02 percent respectively of the regional GDP. There are also sharp variations in per capita incomes across the countries; Sri Lanka's per capita income is four times that of Nepal (Table 1).

Table 1: Population and Gross Domestic Product in South Asian Economies

Country	Population (Percent of Region)				GDP (Percent of Region)				Per Capita Income (US $)			
	1981	1995	1998	1999	1981	1995	1998	1999	1981	1995	1998	1999
Bangladesh	9.77	9.88	9.82	9.80	8.00	8.07	8.07	8.02	220.40	316.78	350.97	360.00
India	77.48	76.69	76.56	76.53	77.67	75.13	76.70	78.09	269.79	380.07	427.77	448.41
Nepal	1.64	1.76	1.79	1.79	0.93	0.93	0.89	0.87	152.98	206.32	212.31	213.59
Pakistan	9.38	10.10	10.28	10.34	11.51	13.02	11.39	10.15	330.22	500.10	472.92	431.44
Sri Lanka	1.65	1.49	1.47	1.46	1.81	2.73	2.82	2.79	294.69	707.66	820.16	840.58

Source: World Development Indicators 2001 CD-ROM

There has been a sharp transformation of the regional economies over the past two decades: on average, the share of agriculture in GDP declined from 37.8 percent to 28.5 percent whereas the shares of industry and services increased from 21.8 and 40.4 percent to 24.2 and 47.3 percent respectively over the 1981-99 period (Table 2). Despite sharp structural changes, however, the agriculture sector continues to play a dominant role in most of the South Asian economies: agriculture still accounts for 42 percent, 25 percent and 21 percent of GDP respectively in Nepal, Bangladesh and Sri Lanka, and 27 percent in both India and Pakistan.

Table 2: Sectoral Composition of National Income in South Asia

(as % of GDP)

Country	Agriculture				Industry				Services			
	1981	1995	1998	1999	1981	1995	1998	1999	1981	1995	1998	1999
Bangladesh	32	25	24	25	22	24	25	24	46	51	51	50
India	37	28	29	28	25	28	26	26	38	44	45	46
Nepal	61	42	40	42	12	23	22	21	27	35	38	37
Pakistan	31	26	27	27	23	25	24	23	47	50	49	49
Sri Lanka	28	23	21	21	27	25	26	26	45	52	51	54

Source: World Development Indicators 2001 CD-ROM
Annual Report 2000, Central Bank of Sri Lanka

The South Asian Economies mostly followed protectionist trade policies during their initial phases of development. The overriding principles behind the restrictive trade regimes were protection of the domestic industries from foreign competition and

conservation of foreign exchange for balance of payments support. Extensive tariff and non-tariff barriers, exchange-rate regulations, and other administrative controls were used to promote import-substituting industrialization. While the protectionist trade strategies initially provided some impetus to industrialization and economic growth, the capacity to sustain high growth rates considerably eroded over time. In particular, protectionism resulted in inefficiencies, promoted rent-seeking and stifled exports due to the anti-export bias inherent in protectionist trade policies. These factors led to a general recognition of the detrimental effects of import substituting trade strategy, leading consequently to a shift in economic policy in favor of trade liberalization and export-led growth. Accordingly, trade policy reforms were initiated in almost all countries of the region with a view to integrating themselves into the world economy and to improving their growth prospects. In general, each country initiated a series of steps which included liberalization of trade and foreign investment regimes, macroeconomic policy reforms, and adjustments in the regulatory framework. The current trade policy of each country reflects the broad aim of achieving greater openness through import liberalization, export promotion, and competitive exchange rate policies.

Thanks to liberal trade policies in recent years, the volume of foreign trade has generally increased in the South Asian economies (Table 3). For instance, during the period from 1990 to 1998, the share of total exports in GDP increased from 6.3 percent to 13.78 percent in Bangladesh, from 7.59 percent to 11.18 percent in India, and from 10.53 percent to 23.15 percent in Nepal. In the case of Pakistan, however, the share of exports in GDP remained constant at around 15 percent during the 1990s. Similarly, the share of imports in GDP has also exhibited an increasing trend in most countries: it rose from 13.76 percent to 32.65 in Bangladesh, from 7.73 percent to 9.87 percent in India, and from 21.10 percent to 34.38 percent in Nepal. The increasing outward orientation of the South Asian economies is also borne out by the generally rising trade openness indices, (ratio of foreign trade to GDP). In Bangladesh, the share of foreign trade in GDP rose from 20.07 percent in 1990 to 32.65 percent in 1998. India has made major strides in opening up its economy, as indicated by an increase in its foreign trade from 15.32 percent of GDP in 1990 to 21.06 percent in 1998. In Pakistan, however, the share of

foreign trade in GDP remained almost unchanged during the past two decades or so at around 36 percent. In Nepal, foreign trade amounted to 57.53 percent of GDP in 1998, up from 31.63 percent in 1990.

Table 3: Trade Openness Indices for South Asian Economies

Country	1960[a]	1970	1980	1990	1998
Bangladesh					
Exports as %age of GDP	7.4	6.2	4.2	6.3	13.8
Imports as %age of GDP	8.1	10.8	15.9	13.8	18.9
Total Trade as %age of GDP	15.5	17.0	20.1	20.1	32.7
India					
Exports as %age of GDP	5.2	3.8	6.6	7.6	11.2
Imports as %age of GDP	7.3	3.7	8.6	7.7	9.9
Total Trade as %age of GDP	12.5	7.5	15.2	15.3	21.1
Nepal					
Exports as %age of GDP	7.8	4.9	11.5	10.5	23.2
Imports as %age of GDP	13.9	8.3	18.7	21.1	34.4
Total Trade as %age of GDP	21.7	13.2	30.3	31.6	57.5
Pakistan					
Exports as %age of GDP	9.2	7.8	12.5	15.5	15.8
Imports as %age of GDP	18.1	14.7	24.1	23.4	20.2
Total Trade as %age of GDP	27.3	22.4	36.6	38.9	36.0
Sri Lanka					
Exports as %age of GDP	28.9	15.4	28.3	27.4	34.0
Imports as %age of GDP	31.0	17.5	54.5	37.1	41.6
Total Trade as %age of GDP	59.9	33.0	82.8	64.4	75.6

a: Figures for Nepal and Pakistan are for the years 1965 and 1967 respectively

Sources: Based on data taken from: WDI 2001 CD-ROM
Annual Report 2000, Central Bank of Sri Lanka

In the case of Sri Lanka it would be observed that the economy gradually 'closed' up reflecting a trade dependency ratio of almost 60 percent in 1960 (it was over 70 per cent in 1950) to just over 33 percent by 1976. Since the 'opening' up of the economy in 1977 the ratio has been on a rising trend (reaching 87 percent in 1980), stabilizing at around 75

percent of GDP in the 1990s. The period from 1960 to 1976 was not only characterized by import compression, but also by decline in exports. The reasons for the setback have been identified broadly as unavailability of imported inputs for production, and the consequences of an overvalued currency. Although export earnings increased significantly after 1977, so did import expenditure, even by a bigger margin. Whereas in 1976 the Trade Account recorded a surplus of 0.6 percent of GDP; by the 1980s and 1990s the trade deficit widened significantly; in 2000 it was as high as 12 percent of GDP.

In recent years, export promotion has been the hallmark of trade policies of the major South Asian Economies. While trade liberalization episodes have generally reduced the anti-export bias, the South Asian economies are also relying on a variety of direct export measures to facilitate export growth. In Bangladesh, there are a number of export support measures in operation. The 'Special Bonded Warehouse (SBW)' scheme aims at enhancing export competitiveness through providing exporters access to duty free inputs. The 'Duty Drawback System' provides rebates of custom duties and taxes levied on imported inputs. Exporters are allowed access to financial capital through the 'Export Development Fund' and the 'Export Credit Guarantee Scheme'. In keeping with its strategy of export-oriented growth, Bangladesh has adopted a liberal foreign investment policy to attract private foreign investment in the export sector. Various incentives like national treatment to foreign investors, legal cover to foreign-owned enterprises, duty free import facilities for export production, unfettered repatriation of capital and profits, and tax holidays are available for foreign investors. In addition, export processing zones have been set up in Dhaka and Chittagong to encourage export-related investment. These zones are characterized by better infrastructure and other support facilities, and enterprises located in these zones are provided preferential access to imported inputs and other financial incentives.

The successive export policies of India over the last several years have relied on various export incentives with a view to sustaining high growth rates through the expansion of exports. Export promotion measures include exemptions or concessional tariffs on raw

materials and capital inputs, and access to Special Import Licenses (SIL) for restricted inputs. Concessional income tax provisions apply to exports and commercial banks provide export financing on soft terms. For exporters who need to import specific items on which the incidence of customs duty is very high, the actual user advanced licensing scheme provides exemptions from all kinds of duties like basic customs duty, countervailing duty, special additional duty, anti-dumping duty, and safeguard duty. Replenishment licenses allow exporters to import certain raw materials that are normally banned or restricted. The duty drawback facility reimburses the exporters for tariffs paid on imported raw materials and intermediates and for the central excise duties paid on domestically produced inputs. In addition, special economic zones have been set-up to attract investment in export-oriented activities. Industrial units located in these zones are treated outside the customs territory of the country, and are, in general, not subjected to any pre-determined conditions on value addition, export performance, and local content. Foreign investment on full ownership basis is permitted in units set up in special economic zones.

The export policy of Nepal seeks to create a dynamic export sector that will generate foreign exchange and increased employment opportunities. The policy emphasizes the enhancement of the contribution of the export sector in the national economy through the creation of an open and liberal economic environment, promotion of export-oriented activities with strong backward linkages, and simplified administrative procedures for export marketing. Export-related industries enjoy many concessions in respect of income tax and sales tax, and are entitled to refund of customs duty on imported inputs via the duty drawback scheme. Industries exporting at least 90 percent of their products are accorded special treatment in the country's industrial policy. These industries are provided bonded warehouse facilities and can import raw materials, machinery, and other inputs without payment of customs duty.

Pakistan's export policy is geared towards encouraging export-led growth through the development of an efficient, competitive, and diversified export sector. To stimulate export-oriented industries, the Government provides a variety of incentives including

income and sales tax concessions, exemption from customs duty on imported intermediate inputs and capital goods, and easy access to credit facilities. Exporters are allowed rebates on customs duty, sales tax, and surcharges through the duty drawback facility. The duty drawback rates are standardized as a percentage of the free on board value of exports or a specific amount per unit of goods exported. Recently, duty drawback rates of some 300 items have been enhanced. In addition, all direct and indirect exporters are allowed the facility to import inputs through no duty no drawback scheme, bonded warehousing facilities, and other temporary import schemes without payment of customs duty, sales tax, and withholding of income tax. With a view to promoting foreign investment in the export sector, Pakistan has established export processing zones at Karachi and Lahore. These zones offer better infrastructure facilities as well as various other incentives including tax holidays, and unrestricted repatriation of capital and profits.

Box 1: Pakistan's Trade Policies over the Decades

1960-69	Efforts to remove the anti-export bias. The Export Bonus Scheme introduced in late 1959.
1970-79	The 1970's saw the implementation of three important measures of trade liberalization, and movement towards more uniform exchange rates for exports. Rupee devaluation in 1972. Export Bonus Voucher Scheme replaced by free and tied lists for imports the export duties on a number of items have been gradually removed, and compensatory rebate schemes were initiated in 1976-77.
1980-89	Banned and restricted lists replaced the free and restricted lists in 1983-84. Measures introduced in 1985-86 to facilitate import of items required by export oriented industries. Import/Export license procedure simplified in 1985-86. Quantitative restrictions applicable to some industries replaced by tariffs. From 1980 to 1986, compensatory rebates were provided on most manufactured goods, but were then withdrawn. The Federal Export Promotion Board was reactivated in 1988-89.
1990-99	Licensing requirement for otherwise freely importable goods removed in March 1991. Quantitative Restrictions were removed in 1993-94. Measures were also undertaken to improve the infrastructural support for exports, including priority being given to exporters in the provision of electricity and new connections, deregulation of chartered cargo flights and improvement in port facilities.

In the period following independence in 1948, Sri Lanka continued with the free trade regime consequent to favorable commodity export prices and balance of payments outcomes. The Korean War boom of 1951/52, which significantly increased rubber exports and the tea boom during 1954/55 helped the country to possess a comfortable external assets position. From the mid 1950s to the late 1970s the country's trade regimes have been mainly dictated by the way successive governments responded to fluctuations in output and world prices of tea, rubber, and coconut which constituted the major exports. In dealing with the problem of narrow export base and dwindling export revenues, successive governments have dabbled in both diversification of the production and export structure, and selective import controls to minimize the net effects of reduced exports. Between 1960 and 1977 the trade regime was 'closed' with a strategy of import substitution. However, there was a brief experimentation with partial liberalization of trade during the period 1965 to 1969. For the first time after independence, serious attempts were made to diversify the export base. Amongst the measures taken were devaluation and the establishment of a dual exchange rate system and foreign exchange reforms coupled with tariff reductions and selective relaxation of import controls. The period 1970 to 1977 saw the most stringent trade restrictions in the history of the country in the wake of rapid deterioration of the terms of trade.

In 1977, the new government 'opened' up the economy substantially to foreign trade and introduced a wide range of measures aimed at trade liberalization, in tandem with a market-based economic philosophy. The export-led growth policy of the government placed particular emphasis on trade diversification from the traditional commodity base. To achieve these objectives, the government committed itself to introducing necessary institutional reforms and provision of a host of incentives to exporters, including easy and concessionary financing, duty free machinery imports, duty-draw back schemes for intermediate inputs which were later extended to cover indirect exporters, and official assistance in trade promotion and market diversification. For the latter purpose, the government created an apex inter-ministerial body, funded by a cess on traditional exports, which focused on providing assistance to non-traditional exporters and small and medium scale exporters through a range of incentive schemes. Export-oriented projects

which export 90 percent of the output are permitted to import machinery and equipment free of import and excise duties for the life of the project. In addition to these incentives, companies that export 90 percent of their output and use advanced technology in manufacturing are allowed tax exemptions on profits and dividends for 5 years. Sri Lanka

Box 2: Sri Lanka's Trade & Exchange Rate Policies & Export Incentives

1960-64	Relatively 'closed economy'. Import restrictions in the form of quotas and licenses. Increases in tariff rates. Encouragement of import substitution. An overvalued fixed exchange rate and exchange controls. Limited number of incentives for exporters in the form of tax concessions, granting of import quotas and licenses for importation of capital and intermediate goods.
1965-69	Partial liberalisation. Partial relaxation of import controls and reduction of tariff structure on some categories of imports. Devaluation of the currency in 1967. Introduction of a dual exchange rate system in 1968 to encourage non-traditional exports and discourage non-essential imports. A Bonus Voucher Scheme in 1966 gave exporters of non-traditional products the opportunity to import items up to 20 percent of their export earnings. Duty concessions for imported inputs by exporters, some tax holidays and concessions, incentives for foreign direct investment.
1970-76	'Closed economy'. Most stringent trade restrictions ever applied. All imports under licenses. Continuation of dual exchange rate system with revisions. Official exchange rate overvalued. Convertible Rupee Account scheme for exporters of non-traditional goods which allowed them use of a certain proportion of export proceeds for importation of goods. Duty rebate for imported inputs of exporters. Setting up of institutional facilities for exporters.
1977-	'Open' economy. Controls on current account removed. Quantitative restrictions on imports removed. Tariff structure rationalised and simplified. Exchange rate unified and a managed float introduced after an initial devaluation of 46 percent. A full float of the exchange rate in 2001. Export licensing and export duties gradually removed. Export processing zones established. Institutional support to exporters strengthened. Tax and duty concessions for exporters. Generous incentives for foreign direct investment.

has established six export processing zones which offer a full range of incentives including exemptions from taxes and customs duty, quality infrastructure, and simplified administrative procedures. There are no export controls except for products in the categories of coral chunk and shells, wood and articles of wood, ivory, and antiquities.

Vigorous export promotion strategies coupled with reduction of anti-export bias inherent in restrictive trade practices have paid dividends: total regional exports grew at an average annual rate of 10.3 percent during the 1991-97 period, increasing from $28.3 billion in 1991 to $51.0 billion in 1997. Trends in exports of individual countries also present a similar picture (Appendix Table 1). For example, exports of Bangladesh more than quadrupled since the late 1980s, increasing from $974 million in 1985 to $5057 million in 1998. Similarly, Indian exports leapt during the same period, rising from $8.9 billion in 1985 to $34.7 billion in 1998. Exports of Nepal, though small as compared to other countries of the region, grew by more than three-fold to $405 million in 1998, from $129 million in 1985. Pakistan and Sri Lanka also witnessed an expansion in their export sectors in the past decade or so: total exports of Pakistan increased form $2708 million in 1985 to $ 8437 million in 1997, whereas exports of Sri Lanka amounted to $3192 million in 1994, up from $ 1246 million in 1985.

The commodity-composition of exports reflects sharp changes in the structure of exports (Appendix Table 1). Whereas exports of agricultural products have generally declined in all the five countries, exports of manufactured goods have constituted an increasing proportion of total exports. Exports of minerals, except in India where they were 3.13 percent of total exports in 1998, are negligible in all the countries of the region. While manufacturing accounted for more than 70 percent of total exports in 1998, most of the manufactured goods consisted of textiles products. In 1998, machinery and transport equipment accounted for only 1.1, 8.0, 0.2, and 0.4 percent of exports in Bangladesh, India, Nepal, and Pakistan respectively.

4. REVIEW OF LITERATURE

A growing body of literature has sought to test the export-led growth hypothesis using a variety of techniques and data sets. The early empirical work employed cross section data of various country groups to explore the relationship between export growth and economic growth. Based on a cross-section data of 41 less developed countries, Michealy (1977) uses the spearman's rank correlation to detect the association between export growth and economic growth. The study finds evidence of a positive relationship between export growth and economic growth while emphasizing the fact that export expansion contributes to economic growth only when countries achieve some minimum level of development. Balassa (1978) argues that, in an inter-country context, the correlation between export growth and economic growth may also capture the indirect effects of exports emanating from changes in incomes and costs. To disentangle the direct and indirect effects of exports on economic growth, the study develops several measures of exports and income to explore the relationship between export expansion and economic growth in a sample of 11 developing countries having a substantial industrial base. The overall results suggest that export growth favorably affects the rate of economic growth.

Tyler (1981) analyzes the empirical relationship between economic growth and export expansion in a sample of 55 middle income developing countries using inter-country cross section analysis. Bivariate correlation tests (simple Pearson and Spearman rank correlation tests) reveal a strong positive association between export growth and economic growth. The study supplements the correlation analysis by estimating an aggregate production function relating output with traditional inputs (capital and labor) and exports. This analysis suggests that export performance is important, along with capital formation, in explaining the inter-country variance in the rate of output growth. Kavoussi (1984) examines the relationship between export expansion and economic growth in a sample of 73 developing countries. The correlation tests indicate that export expansion is associated with better economic performance in both groups of low and middle income countries. The study also examines the effect of export growth on total

factor productivity in terms of an estimated production function, and concludes that export expansion has a positive impact on total factor productivity leading to higher economic growth. Gonclaves and Richtering (1986) conduct empirical analysis for a sample of 70 developing countries for the period 1960-1981 and find that export growth rate and change in export/GDP ratio are significantly correlated with GDP growth. The study finds no significant correlation between non-export output growth and export growth.

A common feature of the above studies is their reliance on correlation analysis based on cross section data sets. This approach has been criticized in the literature on the ground that contemporaneous relationship between exports and output can not be taken as an indication of causality between export growth and economic growth. It is argued that the question of causality is essentially a dynamic one and thus can be meaningfully studied only in a dynamic framework based on time series data. Consequently, a number of studies have examined the export-led growth hypothesis by employing Granger's (1969) and Sims' (1972) causality tests. In a seminal contribution, Jung and Marshall (1985) analyze the relationship between export growth and economic growth using time series data for 37 developing countries. Based on the standard Granger causality tests, four causal patterns are identified: Export Promotion, Internally Generated Exports, Export-Reducing Growth, and Growth-Reducing Exports. The study finds evidence for the export-led growth hypothesis in only 4 of the 37 countries included in the sample: Indonesia, Egypt, Costa Rica, and Ecuador.

Chow (1987) applies causality tests on time series data of 8 newly industrialized countries (NIC, s) to investigate the causal pattern between export growth and growth in manufacturing output. The study finds evidence of bi-directional causality in the case of Brazil, Hong Kong, Israel, Korea, Singapore, and Taiwan; and no causality in the case of Argentina. This finding is in sharp contrast to Jung and Marshall for four out of six countries common in the two samples, namely Brazil, Korea, Mexico and Taiwan. More specifically, as opposed to Chow's evidence of dual causality between exports and economic growth, Jung and Marshall find no significant causality in Brazil or Mexico,

and causality only from output to exports in Korea and Taiwan. The contrast in empirical findings of the two studies may be partly explained by the fact that Chow uses output of the manufacturing sector as a measure of aggregate output as opposed to Jung and Marshall who utilize gross domestic product.

In a study of four Asian NICs, (Hong Kong, South Korea, Singapore, and Taiwan), Darrat (1986) finds no evidence of unidirectional causality from exports to output in all the four economies. In the case of Taiwan, however, the study detects unidirectional causality from output growth to export growth. Similarly, Ahmad and Kwan (1991) find no support for the export-led growth hypothesis in their empirical study of 47 African developing countries. Bahmani-Oskooee et al (1991) examine the relationship between export growth and economic growth for 20 less-developed countries by employing the Granger concept of causality in combination with the Akaike's Final Prediction Error (FPE) criterion for the selection of optimal lag length. Though the study detects evidence of a causal association between exports and growth in half of these countries, the export-led growth hypothesis is supported only in the case of Indonesia, Korea, Taiwan and Thailand. Whereas the study confirms the finding of Jung and Marshall for Indonesia, the two studies reach different conclusions for Korea, Taiwan and Thailand. In a more recent study, Dodaro (1993) shows some support for the export-led growth hypothesis — seven out of a sample of 87 economies reveal a positive causality from exports to GDP.

Another strand of literature on the export-led growth hypothesis argues that the results of time series studies that have employed standard Granger or Sims causality tests may be misleading owing to the fact that these tests are inappropriate in a setting where variables are non-stationary and share a common stochastic trend. To address the problem of non-stationarity of variables, recent studies on the export-led growth hypothesis have adopted the Error Correction Modeling (ECM) approach, due to Engle and Granger. Notable among these are Marin (1992), Bahmani-Oskooee and Alse (1993), Henriques and Sadorsky (1996), Dutt and Ghosh (1996), Al-Yousif (1997) and Xu (1996). In general, these studies have found empirical support for the export-led growth hypothesis for a majority of economies. For instance, Bahmani-Oskooee and Alse re-examine the

relationship between export growth and economic growth for 9 developing countries within the framework of an Error Correction Model, and find strong support for the export-led growth hypothesis for all the countries included in the sample. Similarly, in a study of 26 low, middle and high-income countries, Dutt and Ghosh provide evidence in favor of the export-led growth hypothesis in roughly half of the countries. In another study along the same lines, Xu (1996) finds evidence of export-led growth in 17 out of 32 developing countries included in the analysis. Al-Yousif (1997) uses a multivariate model to examine the relationship in the case of Malaysia and finds evidence in support of the export-led growth theory as a short run phenomenon. In a recent study, El-Sakka et al. (2000) use a number of cointegration and causality tests and obtain mixed results regarding the direction of causality in 16 Arab countries.

Ram (1985), in a cross-section study of 88 countries using the production function methodology, finds that the role of exports in growth is predominantly positive. Greenway and Nam (1988) conduct empirical tests for a sample of 41 LDCs and suggest that outward orientation has been more conducive to growth than inward orientation. Khan and Saqib (1993) use a simultaneous equation model and find a strong association between export performance and economic growth in Pakistan.

It is widely believed that many East Asian economies have achieved higher rates of economic growth through export-oriented industrialization. However, the empirical evidence is generally mixed. Kwan and Kwok (1995) use exogeneity tests and find that current real export growth has a positive impact on output growth in China. Applying a vector auto-regressive model for Taiwan, USA and Japan, Ghartey (1993) observes that export growth Granger-causes economic growth in Taiwan, economic growth Granger-causes export growth in the USA, and a feedback causal relationship exists in the case of Japan. On the other hand, Kwan et al. (1996) report mixed results for Taiwan, while Boltho (1996) finds that domestic forces rather than foreign demand propelled longer run growth in Japan. Ahmed and Harnhirun (1996) find no statistical evidence in support of the export led growth hypothesis for 5 ASEAN economies. Gupta (1985) explores the link between exports and economic growth for Israel and South Korea using quarterly

data for the period 1960-1979. The results reveal that the relationship between the two variables is bi-directional for both countries.

In the context of South Asian economies, a number of studies have investigated the relationship between export growth and economic growth using a variety of techniques. Nandi (1991) applies the Granger causality tests to examine the export-led growth hypothesis for India for the period 1960-1985, and finds evidence of unidirectional causality from export growth to economic growth. Based on a longer data set (1950-1993), Bhat (1995) re-examines the export-economic growth nexus for India by utilizing the error-correction modeling approach, and finds evidence of bi-directional causality between export growth and economic growth. Using the same methodology, Ghatak and Wheatley (1997) conclude that export growth is Granger-caused by output growth in India. It is noteworthy that these results are in sharp contrast to Xu (1996), who obtains rejection of the export-led growth hypothesis for India for the period 1960-1990.

For Bangladesh, Begum and Shamsuddin (1998) investigate the impact of exports on economic growth for the period 1961-92 using a two sector growth model. The key finding of their study is that export growth has significantly increased economic growth of the country through its positive impact on total factor productivity. Mollik (1996) provides evidence in favor of the export-led growth hypothesis within the conventional Granger causality framework. Mutairi (1993) adopts a causality testing framework to determine whether exports, the capital stock, or the labour force cause output growth in Pakistan for the period 1959-91. The study finds that the impact of exports on output growth in the country is not significant for the sample period. Khan et al (1995) find strong evidence of bi-directional causality between export growth and economic growth for Pakistan. Rana (1985) departs from the Granger causality approach by estimating an export-augmented production function for 14 Asian developing countries including Bangladesh, India, Nepal, Pakistan, and Sri Lanka. The results show that exports contribute positively to economic growth.

Anwar and Sampath (2000) examine the export led growth hypothesis for 97 countries (including India, Pakistan and Sri Lanka) for the period 1960-1992 using cointegration and Granger causality tests. They find evidence of unidirectional causality in the case of Pakistan and Sri Lanka, and no causality in the case of India. Ahmed et al (2001) undertake an examination of the relationship between exports, economic growth and foreign debt for Bangladesh, India, Pakistan Sri Lanka and four South East Asian countries using a trivariate causality framework. The study find no evidence of a joint feedback effect between export revenue, external debt servicing and economic growth except in the case of Bangladesh (where unidirectional causality is observed between exports and economic growth favoring the export led growth hypothesis).

Fernando (1988) examines the relationship between exports and economic growth in Sri Lanka through (1) supply side estimates based on a Cobb-Douglas type production function, and (2) demand side estimates based on the Keynesian goods market equilibrium condition. Granger causality tests are used in this study. While the estimated supply side equations support the hypothesis that exports have been a major vehicle of economic growth in Sri Lanka, the study finds no such relationship based on the demand side equations. Abhayaratne (1996) employs the techniques of causality and cointegration to examine the relationship between exports and economic growth in Sri Lanka during the period 1960-92. Using the Johansen's test of cointegration and a Seemingly Unrelated Regression (SUR) model, the study finds no evidence of any long–term cointegrating relationship or short-term relationship between the two variables and hence rejects the hypothesis of export-led growth. These results are in sharp contrast to Xu (1996), who finds reverse causality running from output to exports.

5. DATA AND METHODOLOGY

The analysis is based on annual time series data on real exports and real GDP in local currency units. For Bangladesh, Nepal and Pakistan, the data are obtained from the World Development Indicators CD-ROM (2001) for the period from 1960 to 1998 (1975-1998 in the case of Nepal). For India, data on real exports and real GDP are collected from

various issues of the IFS yearbook, covering the 1960-1998 period. In the case of Sri Lanka, the data cover the period 1960 through 2000 and are gathered from several sources including the publications of the Central Bank, Census and Statistics Department and Customs.

Within a vector auto-regression (VAR) framework, the concept of Granger causality is employed to assess whether or not each South Asian country exhibits statistically significant evidence of export-led growth. In a two variable universe, y_t is said to cause x_t in the Granger sense if the one-step ahead forecast of x_t improves by taking into account the historical values of y_t. More specifically, tests for Granger causality are based on the following VAR model.

$$x_t = a_0 + \sum_{i=1}^{m} b_{0i} x_{t-i} + \sum_{j=1}^{n} c_{0i} y_{t-i} + u_t \qquad (1)$$

$$y_t = a_1 + \sum_{i=1}^{p} b_{1i} y_{t-i} + \sum_{j=1}^{q} c_{1i} x_{t-i} + u'_t \qquad (2)$$

If the c_{0i} are jointly significant but c_{1i} are not, there is unidirectional causality from y_t to x_t. On the other hand, if c_{1i} are jointly significant but c_{0i} are not, there is unidirectional causality from x_t to y_t. There is bi-directional causality between the two variables if both sets of coefficients of the lagged independent variables are jointly significant in their respective equations.

A critical issue in testing for Granger causality is the specification of the data generating process underlying the observed time series. The standard Granger test is valid only if the variables are stationary and do not share a common stochastic trend. In a setting where the variables are non-stationary, as is the case with most economic time series, Engle and Granger (1987) argue that the conventional Granger causality tests could provide

misleading results.[2] One must, therefore, investigate the stationarity properties of the data prior to applying tests for causality in the Granger's sense. If in fact variables turn out to be non-stationary, then the recommended approach to testing for the Granger causality is the Cointegration and Error-Correction framework, due to Engle and Granger (1987). The key elements of this approach are elaborated below.

Testing for the order of Integration

Engle and Granger define a variable x_t to be integrated of order d — denoted as $x_t \sim I(d)$ — if it achieves stationarity after being differenced d times. Since the causality tests require that the variables be integrated of the same order, the first step is to check the order of integration of the time series variables. This is accomplished by testing for the unit roots using the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) testing procedures. The ADF test is based on the following equation:

$$(1-L)x_t = a + bx_{t-1} + \sum_{i=1}^{k} c_i (1-L)x_{t-i} + w_t \qquad (3)$$

where L is the lag operator and k is chosen to ensure that the residuals are white noise. The null hypothesis is that x is generated by a unit root process, i.e. $b = 0$. The ADF test statistic is calculated by dividing the estimate of b by its standard error. Since x is not stationary under the null hypothesis, the test statistic does not have the standard t-distribution. The critical values for the test statistic, however, have been provided by Fuller (1976). If the calculated ADF test statistic is less than the critical value (in absolute terms), the null hypothesis of a unit root can not be rejected and x is said to be non-stationary. The order of integration of x is determined by conducting the ADF test on its

[2] Strictly speaking, the problem of non-stationarity alone can be handled within the standard Granger causality framework by appropriate techniques (e.g. first differencing) to make the time series stationary. It is the presence of common stochastic trends (cointegration) among the non-stationary variables that makes the standard Granger test invalid. This is because the conventional Granger causality test ignores the long run equilibrium relationships implied by the co-integration properties of the time series, and hence omits an important channel through which causality may be detected.

first difference. The series will be integrated of order 1 if its first difference does not possess a unit root.

The ADF test is based on the assumption that the residuals in equation (3) are independently and identically distributed. Phillips and Perron (1998) provide an alternative test for the unit roots that is robust to a wide variety of stochastic processes for the disturbance term. The Phillips-Perron (PP) test is based on the following equation:

$$x_t = a + bx_{t-1} + c(t - T/2) + w_t \qquad (4)$$

where T is the sample size, a, b, c are the regression coefficients obtained by OLS, and w_t is a zero-mean disturbance term. Phillips and Perron derive test statistics for the regression coefficients under the null hypothesis that x is generated by the following process:

$$x_t = x_{t-1} + w_t \qquad (5)$$

Testing for Cointegration

If individual time series turn out to be non-stationary in their levels (contain stochastic trends), it is possible that stochastic trends are common across series leading to stationary combinations of the levels. For instance, in a bivariate set up, a linear combination of two variables may be stationary even though each variable follows a random walk process. This is known as cointegration[3]. More formally, consider two series, x_t and y_t, both integrated of order d. According to Engle and Granger, if a linear combination, $z_t = x_t - \delta y_t$ is integrated of order $(d-b)$ and $b > 0$, i.e. $z_t \sim I(d-b)$, then x_t and y_t are said to be cointegrated. Tests for cointegration are carried out by using the Johansen's

[3] The concept of Cointegration was introduced by Granger (1981) and further developed by Engle-Granger (1987) and Johansen (1988), where the latter manages to nest the concept into the vector autoregressive model. Many aspects of the theory have been developed since then, as they arose from economic hypotheses of interest, several of these can be found in Johansen (1996).

testing procedure which involves the estimation of a vector error-correction model (VECM) in order to obtain the likelihood ratios (LR). To describe this procedure, consider the following vector auto-regression (VAR) of order *p*:

$$y_t = A_1 y_{t-1} + \ldots\ldots\ldots + A_p y_{t-p} + \varepsilon_t \qquad (6)$$

where y_t is k-dimensional vector of non-stationary variables, and ε_t is a vector of white noise residuals. The above VAR can be written alternatively as:

$$\Delta y_t = \Pi y_{t-1} + \sum_{i=1}^{p} \mathrm{T}_i \Delta y_{t-i} + \varepsilon_t \qquad (7)$$

The rank of Π determines the number of linear combinations of y_t that are stationary. Given that the rank is r, the matrix Π can be factored as $\alpha \beta'$, where the elements of α are the adjustment parameters in the error-correction model, and β contains the cointegrating vectors. Johansen derives two test statistics for testing the cointegrating rank. The first is the maximum eigenvalue test, which tests the null hypothesis of r cointegrating vectors against the alternative of $r+1$ vectors. This test utilizes the $r+1^{\text{st}}$ largest eigenvalue in the following likelihood ratio:

$$\lambda_{\max} = -T \ln(1 - \lambda_{r+1}) \qquad (8)$$

The second test statistic, known as the trace statistic, provides a test for a more general alternative hypothesis ($r \leq n$) and is computed as:

$$\lambda_{trace} = -T \sum_{i=r+1}^{n} \ln(1 - \lambda_i) \qquad (9)$$

Testing for Causality: The Error Correction (restricted VAR) Model

To determine the direction of causation between exports and output, the error correction modeling approach is employed. As opposed to the conventional Granger causality test, an error-correction model combines the short run dynamics with the long run properties of the data and thus provides a convenient tool for investigating short run as well as long run causal patterns. The error-correction models are formulated as follows:

$$(1-L)x_t = a_0 + b_0\varepsilon_{t-1} + \sum_{i=1}^{m} c_{0i}(1-L)x_{t-i} + \sum_{j=1}^{n} d_{0i}(1-L)y_{t-i} + u_t \qquad (10)$$

$$(1-L)y_t = a_1 + b_1\varepsilon'_{t-1} + \sum_{i=1}^{p} c_{1i}(1-L)y_{t-i} + \sum_{j=1}^{q} d_{1i}(1-L)x_{t-i} + u'_t \qquad (11)$$

where L is the lag operator and the error-correction terms ε and ε' are the stationary residuals from the co-integration equations. These terms re-introduce the long run information in the levels of the variables that is lost in first differencing, and thus provide an additional channel — the adjustment of variables towards a long run equilibrium — through which causality can be detected. For example, in equation (10), y is said to Granger-cause x not only if the d_{0i}'s are jointly significant, but also if b_0 is significant. Therefore, in contrast to the standard Granger test, as long as the error-correction term has a significant coefficient, the error-correction model allows for the possibility that y Granger-causes x even if the d_{0i}'s are not jointly significant.

6. EMPIRICAL RESULTS

Following convention, we use log of real exports (x) and log of real GDP (y) so that first differences of these variables reflect the rate of change. A univariate analysis is carried out to investigate the stationarity properties of the data. Table 4 reports the results of the ADF and Phillips-Perron unit root tests for real exports and real GDP. Both these

tests indicate the acceptance of the unit root hypothesis in the levels of real exports and real GDP for all countries. To determine the order of integration of the time series, unit root tests are applied on first differences as well. The results indicate that the first differences of variables are on a stationary process, and hence both real exports and real GDP are integrated of order 1, i.e. $I(1)$.

Having determined the order of integration of the two variables, Johansen's cointegration test is applied to ascertain whether or not the variables share a common stochastic trend. According to Table 5, the Likelihood Ratio test indicates the existence of one cointegration relationship between real exports and real GDP for all countries. According to the Granger representation theorem (Engle-Granger 1987), a system of cointegrated variables has an error-correction representation that combines the short run dynamics of the variables with their long run properties as implied by the cointegrating relationships. Consequently, error-correction models (ECM) are estimated to determine the direction of causality between export growth and economic growth. The selection of lag length in the ECMs is based on the Akaike's information criteria.

Table 4: Unit Root Test Results for Logs of Exports and GDP

Country	Variable	Augmented Dickey Fuller Test				Phillips Perron Test			
		No. Of Observations	(1)	(2)	(3)	No. Of Observations	(1)	(2)	(3)
Bangladesh									
	Exports								
	Level	37	3.42	1.76 *	-0.63 *	38	3.45	2.37 *	-1.14 *
	1st Difference	36	-3.71	-5.12	-6.27	37	-6.85	-8.56	-10.49
	GDP								
	Level	37	3.57	0.75 *	-1.51 *	37	5.34	0.81 *	-1.35 *
	1st Difference	36	-2.83	-4.72	-4.99	36	-3.98	-5.81	-5.99
India									
	Exports								
	Level	37	4.07	1.19 *	-2.04 *	38	7.57	1.68 *	-2.08 *
	1st Difference	36	-1.32	-3.54	-3.77	37	-1.87	-4.66	-4.94
	GDP								
	Level	37	5.81	2.23 *	-1.05 *	38	22.03	3.6	-1.25 *
	1st Difference	36	-0.67	-5.53	-7.39	37	-0.48	-5.48	-6.53
Nepal									
	Exports								
	Level	24	2.65	-1.12 *	-2.13 *	25	2.89	-0.56 *	-1.93 *
	1st Difference	23	-2.72	-3.25	-3.2 *	24	-3.79	-4.99	-4.85
	GDP								
	Level	37	6.05	2.9 *	-0.48 *	38	8.18	3.16	-0.76 *
	1st Difference	36	-1.73	-4.76	-6.66	37	-3.77	-7.71	-10.25
Pakistan									
	Exports								
	Level	37	2.93	-0.59 *	-1.74 *	38	3.21	-0.55 *	-2.05 *
	1st Difference	36	-3.44	-4.67	-4.59	37	-5.67	-6.83	-6.73
	GDP								
	Level	37	4.92	-1.74 *	-1.26 *	38	12.47	-1.72 *	-1.37 *
	1st Difference	36	-1.05	-3.45	-3.94	37	-1.4	-5.65	-5.98
Sri Lanka									
	Exports								
	Level	38	3.44	2.25 *	-0.85 *	39	3.82	3.09	-0.59 *
	1st Difference	37	-3.74	-5.76	-7.60	38	-6.47	-8.08	-11.30
	GDP								
	Level	39	5.71	0.76 *	-2.17 *	40	14.10	1.09 *	-2.41 *
	1st Difference	38	-0.86	-3.68	-3.74	39	-1.22	-6.08	-6.12

Note: * indicates variable is integrated of order 1 at 5% significance level
(1): No Trend, No Intercept
(2): Only Intercept
(3) Trend and and Intercept

Table 5: Johansen's Cointegration Tests

Eigenvalue	Likelihood Ratio [A]	5 % Critical Value	1 % Critical Value	Hypothesized No. of CE(s)
Bangladesh				
0.37	21.66	19.96	24.60	None *
0.12	4.83	9.24	12.97	At most 1
India				
0.39	24.89	19.96	24.60	None **
0.20	7.70	9.24	12.97	At most 1
Nepal				
0.75	36.71	19.96	24.60	None **
0.20	5.13	9.24	12.97	At most 1
Pakistan				
0.52	30.65	19.96	24.60	None **
0.09	3.36	9.24	12.97	At most 1
Sri Lanka				
0.34	15.63	15.41	20.04	None *
0.00	0.06	3.76	6.65	At most 1

*(**) denotes rejection of the hypothesis at 5%(1%) significance level
A: This is simply the λ trace statistic

Table 6 reports the results of Granger causality tests based on error correction models. Column 2 provides the t-statistics for the error-correction terms, while column 3 contains the F-statistics for the joint significance of the lagged independent variables in the causality equations. The statistical significance of the error-correction term and the F-statistic respectively indicate the presence of long-run and short-run causality. It is evident that the results support the hypothesis of short run causality from exports to GDP for Bangladesh and Sri Lanka, and reverse short run causation (from GDP to exports) for India and Nepal. For Pakistan, there seems to be no evidence of short-run causality in either direction. Turning to the question of long-run causation between exports and GDP, there is strong support for long-run causality from exports to GDP for Pakistan and India.

On the other hand, long-run bi-directional causality is detected for Bangladesh, Nepal and Sri Lanka.

Table 6: Causality Results Based on Error Correction Models

Direction of Causation	EC Term: T - Statistic	F-Statistic
	Bangladesh	
Exports to GDP	-3.663 *	5.346 *
GDP to Exports	-4.072 *	2.332
	India	
Exports to GDP	-2.469 *	2.044
GDP to Exports	1.852 *	3.248 *
	Nepal	
Exports to GDP	6.593 *	1.808
GDP to Exports	3.952 *	4.930 *
	Pakistan	
Exports to GDP	-5.584 *	0.338
GDP to Exports	-0.453	0.669
	Sri Lanka	
Exports to GDP	2.34 *	4.77 *
GDP to exports	3.91 *	1.57

Note: * indicates significance at 5% level

The evidence of both short-run and long-run causality between export growth and economic growth has interesting economic interpretation. For example, exports can help output growth in the short-run by allowing the utilization of excess capacity in cases where domestic demand is less than full capacity production. The presence of short-run causality is also consistent with the Keynesian view, which postulates that changes in the components of aggregate demand lead to changes in aggregate output in the short-run. In a longer term perspective, exports can have a positive effect on economic growth through a variety of channels. First, higher exports can allow economies to benefit from economies of scale due to larger markets. Second, by enhancing foreign exchange earnings, higher exports can permit higher imports of capital goods thereby enlarging the

productive capacity of the economy. Third, exports lead to an improvement in economic efficiency by increasing the degree of competition. Fourth, exports contribute to productivity gains through diffusion of technical knowledge and learning by doing. Finally, export development tends to concentrate investment in the most efficient sectors of the economy fostering a pattern of production consistent with the country's comparative advantages. Specialization in these sectors improves productivity in the economy leading to higher output growth.

7. SUMMARY AND CONCLUSIONS

In the theoretical literature that has evolved during the last three decades, there has been greater focus on the critical role of the export sector as a vehicle to accelerate economic growth. Most economists have argued that opening up of economies is an effective strategy of achieving faster economic growth. It is asserted that export growth emanating from outward oriented economic polices leads to augment GDP growth. Also, there is potential for reverse causality, i.e. GDP growth leads to export growth. These issues are still debatable, and there is contradictory empirical evidence which rejects the hypothesis of such relationships between economic and export growth. However, the broad consensus among economists as well as among policy makers is that there is a close symbiotic relationship between GDP growth and export growth.

Against this backdrop, this study has carried out an empirical analysis of the export-led growth hypothesis for Bangladesh, India, Nepal, Pakistan, and Sri Lanka. Within a Vector-Auto Regressive (VAR) framework, the concept of Granger causality is employed to determine the direction of causation between exports and output, duly taking into account the stationarity properties of the time series data. Various tests for the existence of unit roots confirm that both real exports and real GDP are non-stationary processes that are integrated of order 1 for all countries. Furthermore, cointegration tests indicate that there exists a long run equilibrium relationship between real exports and real GDP in all countries. The presence of common stochastic trends in real exports and real GDP

dictated the use of a restricted Vector Auto Regressive framework, i.e. an error-correction model (ECM), to address the question of Granger causality. Within this framework, the hypothesis of export-led growth is accepted for all countries, though through different channels for different countries. For instance, the results support the hypothesis of short-run causality from exports to GDP for Bangladesh and Sri Lanka, and reverse short-run causation (from GDP to exports) for India and Nepal. For Pakistan, there seems to be no evidence of short run causality in either direction. Turning to the question of long-run causation between exports and GDP, there is strong support for long-run causality from exports to GDP for Pakistan and India. On the other hand, long-run bi-directional causality is detected for Bangladesh, Nepal, and Sri Lanka.

To summarize, the study confirms that export growth has been instrumental in accelerating economic growth in all the economies. The evidence of both short-run and long-run causality between export growth and economic growth points out that there are several ways in which exports can have a positive effect on economic growth. For example, exports can boost output growth in the short-run by allowing the utilization of excess capacity in cases where domestic demand is less than full capacity production. The presence of short-run causality is also consistent with the Keynesian view, which postulates that changes in the components of aggregate demand lead to changes in aggregate output in the short-run. In a longer term perspective, exports can have a beneficial effect on economic growth through a variety of channels. First, export production allows economies with narrow domestic markets to overcome size limitations and to reap economies of scale. Second, by relaxing the foreign exchange constraint, higher exports can permit higher imports of capital goods thereby strengthening the productive capacity of the economy. Third, exports lead to an improvement in economic efficiency by enhancing the degree of competition. Fourth, exports contribute to productivity gains through diffusion of technical knowledge and learning by doing. Finally, export-oriented production and investment tend to take place in the most efficient sectors of the economy fostering a pattern of production that is consistent with a country's comparative advantages. Specialization in these sectors improves productivity in the economy leading to higher output growth.

The empirical results of this study lend support to the export-oriented policies that are the hallmark of current trade regimes of the major South Asian economies. A major policy implication is that the South Asian countries ought to continue the strategy of export-led growth to tackle the myriad developmental challenges facing these economies. However, caution must be exercised in interpreting these results owing to several limitations of the empirical analysis. Firstly, the Granger causality approach is atheoretical in the sense that it is based solely on the statistical properties of the data and not on the structural relationships implied by economic theory. Secondly, wide-ranging structural transformations as well as changes in trade policy regimes have taken place in all the major South Asian economies in the last two decades or so. Such policy shifts bring about structural breaks and, as a result, the estimated statistical coefficients may become unstable across different policy regimes. Finally, a limitation of these tests emerges from the assumption that GDP growth is a function of export growth. In reality, exports are a component of GDP. Thus, in any case, a change in the component (exports here) must lead to a change in the total (GDP). Statistical estimates based on such assumptions therefore need to be interpreted with care.

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APPENDIX

Table 1: Export Structure By Major Product Categories

(Percent)

Country	Year	Total Value (Million Us $)	All Food Items	Agricultural Raw Materials	Fuels	Ores And Minerals	Un-Specified	Manufact-ured Goods	Of Which		
									Chemical Products	Other Manufact-ured Goods	Machinery & Transport Equipment
SITC Code			0+1+22+4	2 Less (22+27+28)	3	27+28+68	9	5 To 8 Less 68	5	(6+8) Less 68	7
Bangladesh											
	1985	974	17.92	13.29	2.55	0	0.45	65.8	0.15	64.06	1.58
	1990	1,556	14.31	6.81	1.28	0	0.1	77.49	1.1	75.47	0.92
	1995	3,407	10.45	2.65	0.45	0	1.3	85.15	3.03	80.52	1.6
	1998	5,057	7.23	1.7	0.22	0	0.16	90.68	0.86	88.77	1.05
India											
	1985	8,950	25.35	2.84	6.04	7.64	0.1	58.03	3.6	48.19	6.24
	1990	17,859	15.58	3.09	3.88	5.77	1.6	70.08	7.42	55.26	7.41
	1995	31,650	18.68	0.45	2.51	3.58	1.53	73.25	8.1	57.69	7.46
	1998	34,721	17.76	0.93	2.22	3.13	1.92	74.04	9.79	56.27	7.97
Nepal											
	1985	129	35.08	5.6	0	0.19	0.04	59.09	3.52	55.56	0.01
	1990	180	13.2	3.01	0	0.27	0.26	83.26	0.47	82.79	0
	1995	359	7.81	1.12	0	0.13	7.21	83.73	1.21	82.37	0.14
	1998	405	9.96	0.56	0	0.12	12.68	76.68	1.99	74.54	0.16
Pakistan											
	1985	2,708	17.31	17.95	1.44	0.45	0.91	61.93	3.4	57.52	1.01
	1990	5,522	9.3	10.21	1.28	0.3	0.21	78.68	0.4	77.97	0.31
	1995	8,125	11.78	3.85	0.98	0.16	0.26	82.96	0.67	82.11	0.18
	1998	8,437	13.54	1.91	0.32	0.19	0.14	83.91	0.71	82.76	0.43
Sri Lanka											
	1985	1,246	47.43	9.78	10.96	1.06	0.13	30.64	0.79	29.27	0.58
	1990	1,894	34.25	5.8	1.47	1.57	4.17	52.74	1.02	49.77	1.94
	1994	3,192	21.23	3.52	0.7	0.64	1.88	72.02	0.87	68.88	2.28

Source: UNCOMTRADE Database.